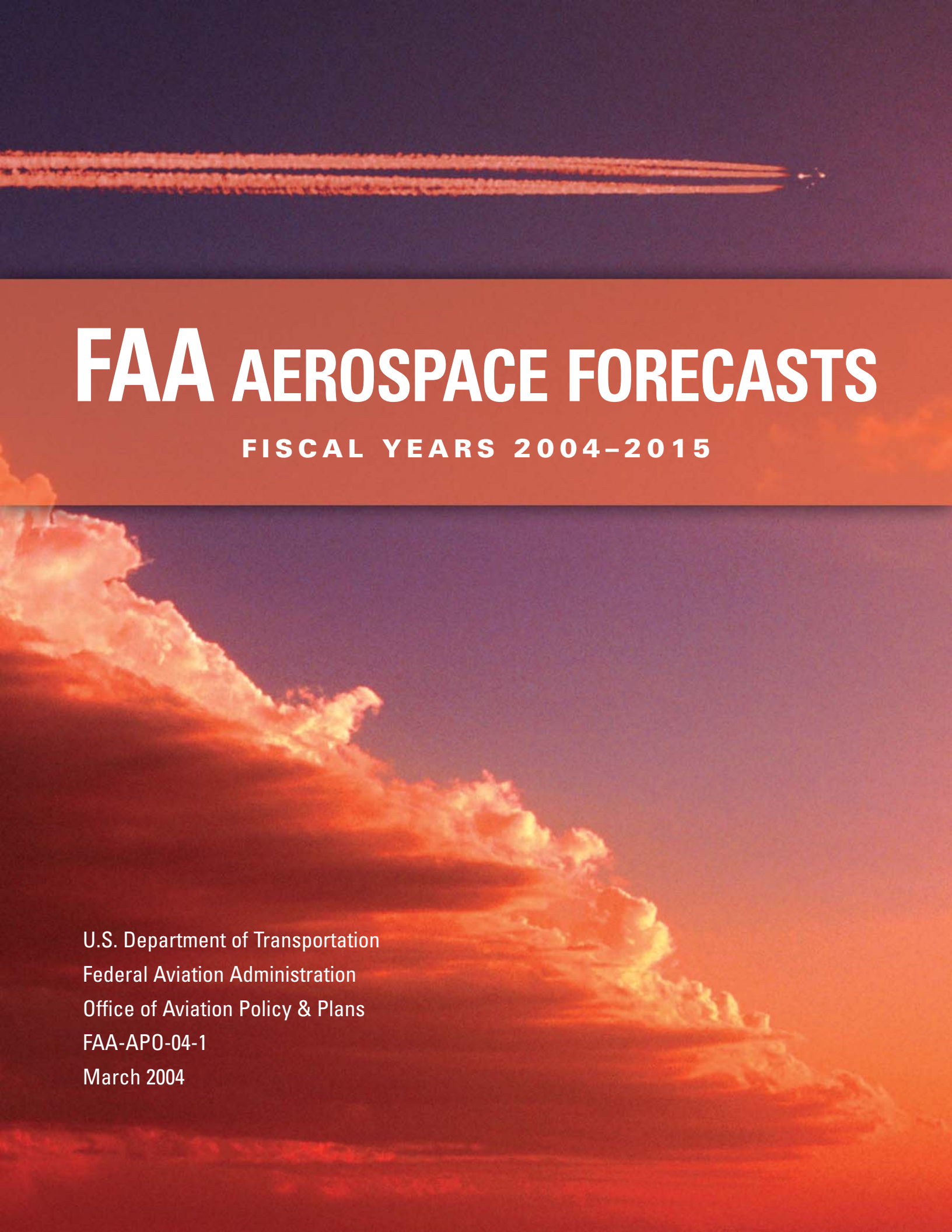

FAA AEROSPACE FORECASTS

FISCAL YEARS 2004–2015

U.S. Department of Transportation
Federal Aviation Administration
Office of Aviation Policy & Plans
FAA-APO-04-1
March 2004

PREFACE

Last year's *Aerospace Forecasts* proved to be an accurate depiction of the year to come. We hit the nail on its statistical head, correctly anticipating the number of instrument operations for commercial aircraft. The forecast was just as close in other areas as well. We came within a percentage point of predicting precise figures in domestic revenue passenger miles and en route center activity. Our forecast for tower operations and instrument operations overall were within tolerance, but not as close as we'd anticipated.

This year, we foresee that the demand for aviation products and services will continue to increase from the low levels of the past few years. To be sure, the terrorist strike of 9/11 and the economic challenges in the industry have triggered financial woes for major carriers. Also, continued international tensions and the prospect of additional bankruptcies have increased the risk and uncertainty of the current forecasts, both in the short- and long- term.

Our analysis of the metrics, trends and accounts of the aviation industry show that aviation is on the rebound. In summary, U.S. economic activity is expected to continue the strong recovery that began during the second half of fiscal year 2003 well into 2004-05. Aviation demand, which was relatively weak in 2003, is expected to recover strongly in the same time period.

This year's report contains 10 chapters that address four major areas:

- U.S. and world economic environment, assumptions, and predictions used in developing the FAA aviation forecasts;
- historical data and forecasts of future aviation demand and aircraft activity for three major non-military user groups--large commercial air carriers, regional/commuter airlines, and general aviation/helicopters;
- workload forecasts for FAA and contract towers, en route centers, and flight service stations; and
- the outlook for commercial space transportation.

The report concludes with a discussion of our forecast accuracy and year-by-year historical data and forecasts for selected aviation demand and activity series. I would like to thank my staff, mentioned on the following page, for their hard work in putting together this document.

Sharon L. Pinkerton
Assistant Administrator for Policy,
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ACKNOWLEDGMENTS

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CHAPTER 1

EXECUTIVE SUMMARY

FORECAST HIGHLIGHTS

Despite the economic hardships--many of which were triggered by 9/11--the numbers are slowly, steadily swinging in the favor of aviation. The U.S. and international economies will expand rapidly over the next two years. Moderate growth thereafter is expected through 2015.

That marks a 12-year pendulum that is sure to sway aviation along with it. The large air carriers and regionals/commuters will grow at an annual rate of 4.3 percent over the forecast period. Passenger demand will return to pre-September 11th levels by 2005.[1] When all is said and done, the number of passengers will climb above 1 billion by 2014.

Those numbers don't tell half of the story. International and domestic markets will recover strongly over the next 2 years. The growth of regional/commuter passenger traffic in the U.S. will continue to outpace that of its larger domestic counterparts--6.4 percent compared to 3.6 percent annually.

We expect that low-cost carriers and regionals/commuters could account for more than half of all domestic passengers by the end of the 12-year forecast period.

The forecast for air cargo and general aviation indicates growth as well.

Terrorism and fuel prices remain a concern. The profitability of commercial aviation hinges on business travel returning sufficiently to improve revenue streams.

This forecast confirms what the industry has long known: air travel remains the mode of choice for long distance travel, both in the U.S. and abroad. Aviation is faster and safer. This forecast indicates that it will stay that way through 2015.

REVIEW OF 2003

In the 7 years prior to the September 11th terrorist attacks, the U.S. and world commercial and civil aviation community achieved a period of unprecedented growth in both the demand for aviation services and profitability. The impact of the terrorist attacks on airlines, travel markets, and economic growth was immediate,

[1] All references of comparison to the pre-September 11th period use fiscal year 2000 (October 1999 to September 2000) as the base year.

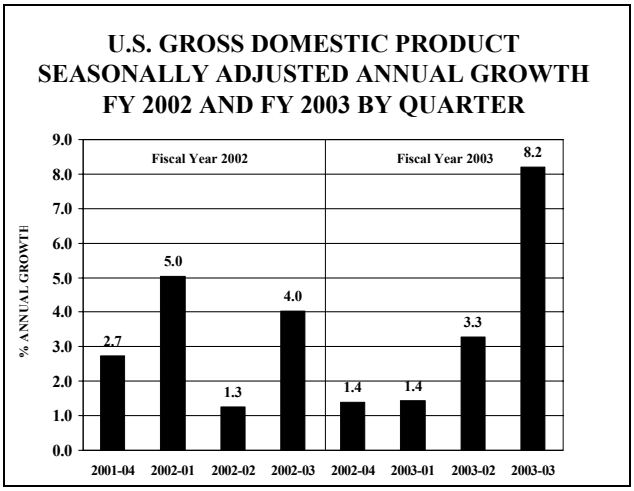
significant, and worldwide, although the greater impact occurred in the United States. While the U.S. and world aviation industries have both begun to recover, for various reasons, there are differing levels of recovery around the world.

In the U.S., what started as a fairly strong recovery in the demand for aviation services began to wane in the second quarter of the fiscal year 2003. Sluggish traffic demand, coupled with increased competition from the low-cost carriers for the high-end business traveler, forced the network carriers to continue discounting to fill empty seats, thus continuing the industry's poor financial performance for a third consecutive year. The general aviation industry recorded its third consecutive year of declining shipments and second straight year of decreased billings. The decline was particularly evident in the market for business jets where increasing numbers of used business jets for sale at bargain prices, combined with aircraft cancellations and weakening fractional sales, reduced not only the volume of units sold but also put significant pressure on pricing as well.

The greatest impact from the events of September 11th occurred during the fourth quarter of calendar year 2001 (the first quarter of fiscal year 2002). Consequently, the recovery (growth) will appear strongest in 2003 on a fiscal year basis and in 2002 on a calendar year basis. Historically, the difference between calendar and fiscal year results and growth rates has varied only slightly. However, the difference is relatively large between the calendar and fiscal year growth rates for the 2001 to 2003 time period. Where appropriate, statistics and growth rates are noted on both a fiscal and calendar year basis.[2] In addition, summary Table I-10 provides calendar year traffic statistics and growth rates for selected aviation demand measures. [3]

UNITED STATES AND WORLD ECONOMIC ACTIVITY

On an annual basis, U.S. Gross Domestic Product (GDP) grew by 1.7 and 2.7 percent in fiscal year 2002 and 2003, respectively. This compared to an average of 3.2 percent annual growth during the previous 10-year expansion period. Seasonally adjusted quarterly growth has ranged from a low of 1.3 percent in 3rd quarter FY 2002 to a high of 8.2 percent in 4th quarter FY 2003, the latter reflecting the impact of the mid-year 2003 tax cut. However, the recent broad expansion in U.S. economic activity (up an average 5.8 percent over the last half of FY 2003) is expected to continue well into 2004.

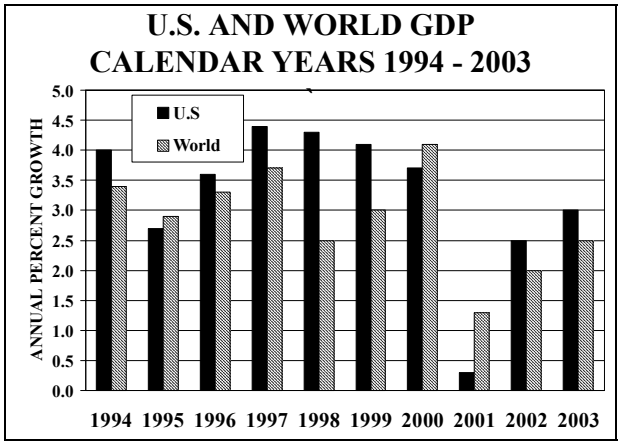


U.S. inflation (as measured by the consumer price index [CPI]) averaged 1.5 percent in FY 2002 and 2.4 percent in FY 2003. The relative difference in the annual rates of the CPI in 2002 and 2003 reflects, to some degree, the change in fuel prices in those years—down 14.1 and up 17.7 percent, respectively.

[2] All stated years and quarters for U.S. economic and U.S. air carrier traffic, and financial data and forecasts are fiscal years (October 1 through September 30); all stated years and quarters for international economic and world traffic and financial data and forecasts are calendar years (CY), unless otherwise denoted.

[3] See page I-37.

Globally, economic gains averaged about a half percentage point less than those of the United States during the past economic expansion. World GDP growth also slowed considerably during the past 3 years, averaging 1.3 percent in 2001, 2.0 percent in 2002, and 2.5 percent in 2003. The slowdown was due, in part, to the growing dependency of many world economies on export trade with the United States.



On a calendar year basis, economic growth in Canada is expected to average almost half that of the United States in CY 2003—up 1.7 percent compared to 3.0 percent. The combined economies of the Asian/Far East nations are expected to grow at an annual rate of 3.6 percent in 2003, the growth buoyed by strong economic activity in China (up 8.3 percent) and the start of the long anticipated economic recovery in Japan (up 2.2 percent). The economies of the Europe/Middle East/Africa nations are expected to grow by only 1.2 percent in 2003, partly the result of relatively sluggish growth in Eurozone countries (up 0.5 percent)[4]. Economic growth in Latin American countries, weakened by political and social tensions in Venezuela (down 10.5 percent) and economic slowdowns in Uruguay (down 0.1 percent) and Brazil (up 0.4 percent), is expected to be only 1.2 percent in 2003.

COMMERCIAL AVIATION

The Severe Acute Respiratory Syndrome (SARS) epidemic and, to some extent the war in Iraq, have amply demonstrated how sensitized global air travel has become to any form of extraordinary event. The demand for air travel both within the U.S. and between the U.S. and other world travel regions declined significantly following the onset of these two events, once again forcing both U.S. and foreign flag carriers to reduce scheduled flights. Worldwide travel demand, both local and international, was also impacted by these two events, forcing world airlines to adjust schedules accordingly.

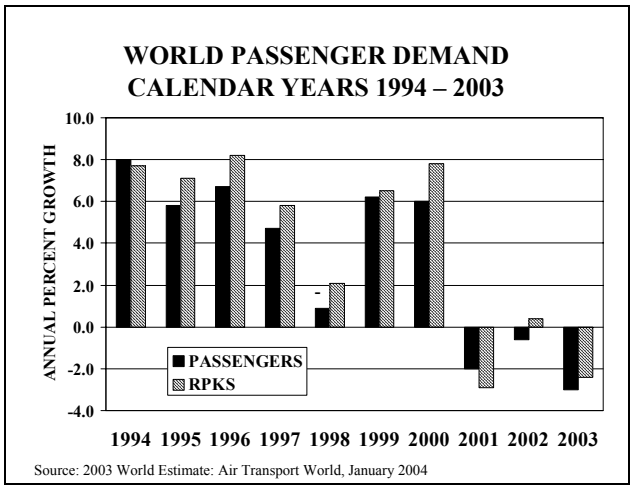
World Travel Demand

The relatively strong growth in both U.S. and world GDP prior to September 11th was largely responsible for the strong demand for world aviation services exhibited between 1993 and 2000--revenue passenger kilometers (RPKs) and passengers up 6.4 and 5.4 percent annually over the 8-year time period.

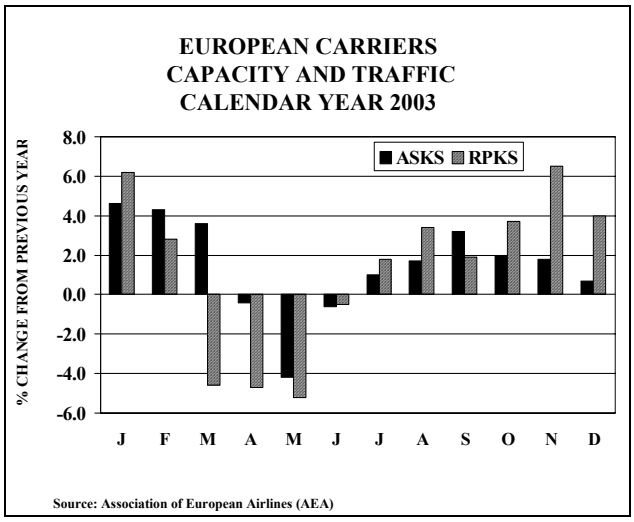
Worldwide RPKs and passengers declined 2.9 and 1.9 percent, respectively, in 2001. In 2002, RPKs increased 0.4 percent while the number of passengers transported declined 0.6 percent. However, RPKs and passengers both remain 2.5 percent below 2000 levels. Although worldwide traffic results are not available for full year 2003, *Air Transport World* estimates that world RPKs will decline by 2.4 percent and the number of passengers carried will decline by 3.0 percent in 2003.[5]

[4] Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal, and Spain.

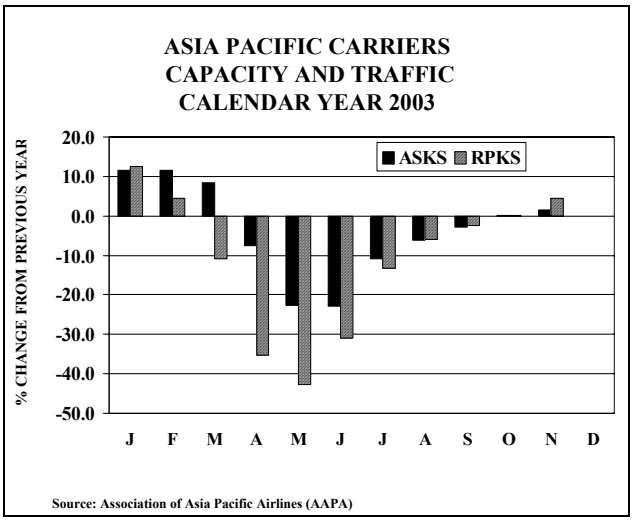
[5] *Air Transport World*, January 2004



Statistics from the Association of European Airlines (AEA) indicate increases of 1.2 percent in RPKs and 1.4 percent in available seat kilometers (ASKs) for calendar year 2003. Although positive, these numbers would have been significantly higher except for the impact of SARS and the war in Iraq. Traffic and capacity during the March to May period showed declines of 4.8 and 0.4 percent, respectively. Traffic to the Far East/Australia markets was down 18.7 and 3.3 percent during the same period.



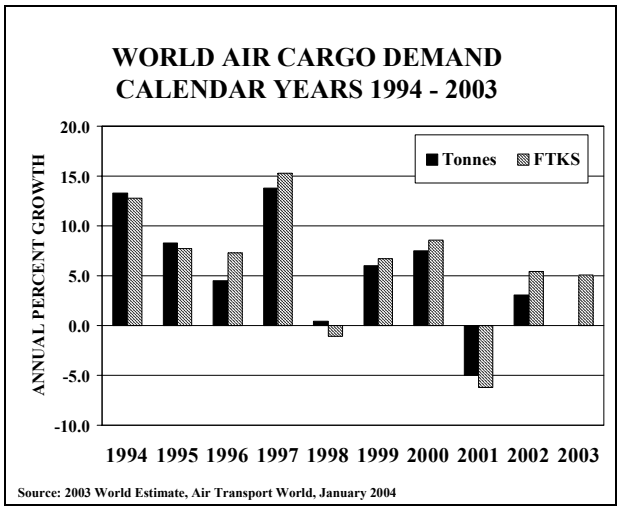
The Association of Asian Pacific Airlines (AAPA) reported declines of 11.0 percent in RPKs and 4.0 percent in ASKs for the 11 months ending November 2003. For the 3-month period April to June, the height of the SARS epidemic, traffic and capacity were down 35.9 and 17.3 percent, respectively. Both traffic and capacity turned positive in October—RPKs up 0.2 and 4.5 percent, respectively, in October and November; ASKs up 0.1 and 1.5 percent over the same period.



In CY 2003, it is estimated that U.S. and foreign flag carriers combined transported a total of 116.9 million passengers between the United States and the rest of the world, a decline of 3.2 percent from 2002. Passenger traffic volume is estimated to have declined in three of the four world travel regions in 2003--Asia/Pacific markets, 19.5 million (down 12.3 percent); transborder Canadian markets, 17.3 million (down 5.4 percent); and Atlantic markets, 43.2 million, (down 0.5 percent). Passenger demand was up 0.1 percent (36.9 million) in Latin American markets.

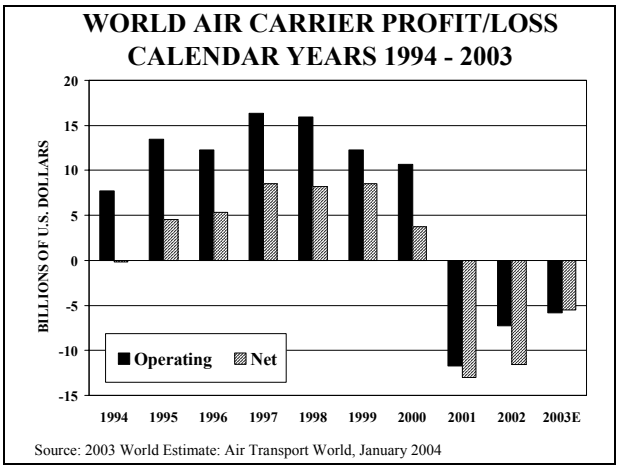
Prior to 2001, air cargo demand grew at a faster pace than passenger demand, with worldwide freight tonnes and freight ton kilometers (FTKs) growing at average annual rates of 8.6 and 8.0 percent over the 1994-2000 period. However, a slowing in U.S. economic activity and imports from key world regions, combined with the collapse of the high-tech industry and the demand for information technology equipment, resulted in significant decline in the demand for air cargo services worldwide in 2001--freight tonnes and FTKs down 5.0 and 3.9 percent, respectively. However, worldwide cargo demand has responded positively to stronger economic activity throughout the

world, with freight tonnes and FTKs up 3.1 and 1.6 percent in 2002. *Air Transport World* estimates that worldwide FTKs will increase by 5.1 percent in 2003.[6]



In 2003, AEA statistics indicate its members' FTKs were up 2.5 percent. AAPA statistics show an increase of 3.7 percent over the January to November period.

Based on data compiled by the International Civil Aviation Organization (ICAO), world air carriers (including U.S. airlines) reported cumulative operating and net profits totaling $89.0 and $42.0 billion, respectively, over the 7-year period ending in 2000. However, the events of September 11th, combined with a worldwide slowdown in economic activity, resulted in record operating losses of $11.8 in 2001 and $7.3 billion in 2002. Net losses totaled $13.0 billion in 2001 and $11.7 billion in 2002. Preliminary estimates by *Air Transport World* indicate that worldwide operating and net losses could total $5.8 and $4.4 billion, respectively, in 2003.[7]

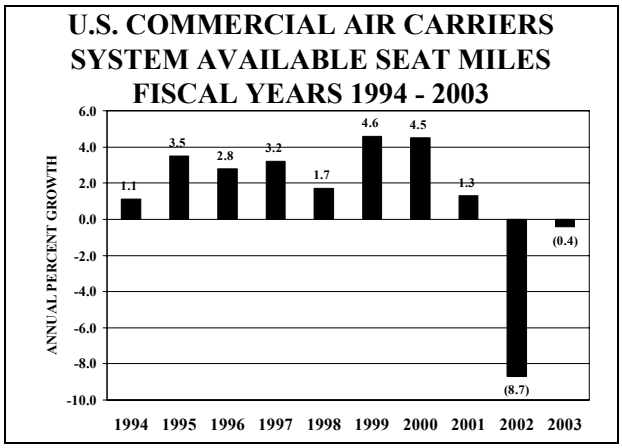


U.S. Travel Demand

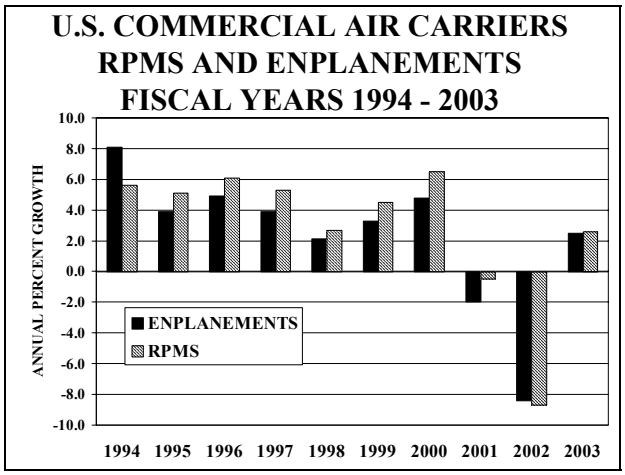
The U.S. commercial aviation industry consists of 40 large air carriers (operate jet aircraft with over 70 seats) and 75 regionals/commuters (operate smaller piston, turboprop, and jet aircraft) who provide both domestic and international passenger service between the U.S. and foreign destinations. Additionally, there are 26 large all-cargo carriers who provide domestic and/or international air cargo service.

Commercial air carriers sharply reduced capacity in the months that followed the events of September 11th. Although capacity has recovered from the low levels flown in the months immediately following the terrorist attacks, capacity has yet to return to pre-September 11th levels. After growing at an average annual rate of 2.9 percent during the 1994-2000 period, U.S. commercial air carrier system capacity (domestic plus international), as measured by available seat miles (ASMs), has declined for the past 2 years—down 8.7 percent in 2002 and 0.4 percent in 2003.

[6] *Air Transport World*, January 2004
[7] Ibid.



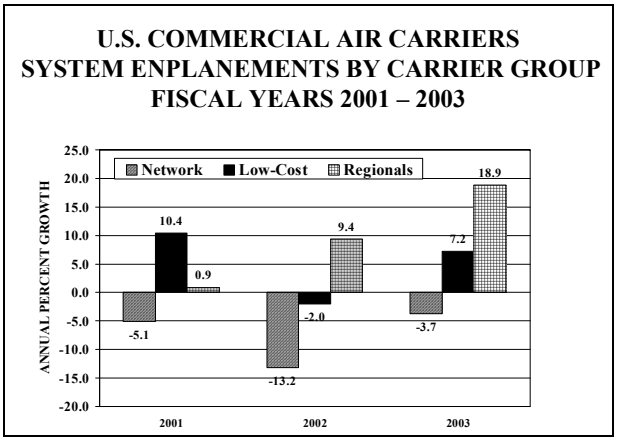
During the 1994-2000 period, U.S. commercial air carrier system revenue passenger miles (RPMs) and passenger enplanements grew at annual rates of 5.1 and 4.3 percent respectively. Following the events of September 11th, traffic levels declined in both 2001 and 2002, with RPMs and enplanements down a combined 9.1 and 10.3 percent, respectively, over the 2-year period. However, both RPMs and enplanements increased in 2003—up 2.6 and 2.5 percent, respectively. Despite increased traffic levels in 2003, passenger demand remains below pre-September 11th levels.



U.S. commercial air carriers achieved an all-time high load factor of 72.8 percent in 2003, up 2.1 points over the previous year.

In CY 2003, it is estimated that commercial air carrier system capacity and traffic will increase/decrease as follows: ASMs down 1.5 percent; RPMs up 0.4 percent; and enplanements up 1.0 percent.

There are three distinct trends that have emerged within the commercial aviation passenger market since the events of September 11th, trends that have, in effect, reshaped the industry. The first is the major restructuring and downsizing that has occurred among the legacy network carriers.[8] The second is the rapid growth among the low-cost carriers,[9] particularly in nontraditional long-distance markets. The third trend is the phenomenal growth that has occurred among regional/commuter carriers, this trend due, in large part, to downsizing among the legacy carriers. These trends will be discussed more fully in subsequent sections that follow.



The combined enplanements of the low-cost carriers and regionals/commuters have increased by 22.5 percent since 2000, totaling 236.0 million in 2003. In 2003, the combined passenger count represented 36.8 percent of system commercial enplanements, up from 27.6 percent in 2000.

[8] Alaska Airlines, American Airlines, Continental Airlines, Delta Air Lines, Northwest Airlines, United Airlines, and USAirways.

[9] American Trans Air, America West Airlines, AirTran, Frontier Airlines, JetBlue Airways, Southwest Airlines, and Spirit Air Lines.

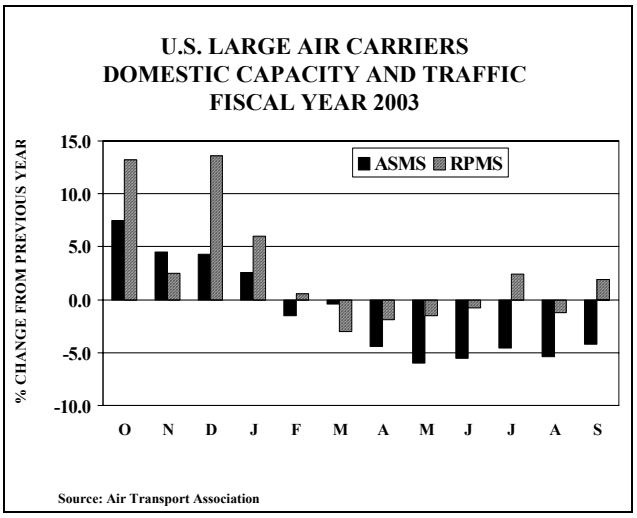
Large Passenger Air Carriers

In fiscal 2003, the large U.S. air carriers' system ASMs (the sum of domestic and international services) declined by 1.8 percent, this on top of a 9.9 percent decline in 2002. Passenger demand was mixed in 2003, with RPMs up 1.2 percent and enplanements down 0.3 percent. The system-wide load factor increased 2.2 points to 73.4 percent in 2003, an all-time high.

Domestic Markets

Domestic capacity (50 states, Puerto Rico, and the U.S. Virgin Islands) was down 1.5 percent in 2003, the decline due largely to the schedule reductions implemented in April in response to reduced passenger demand resulting from the war in Iraq. Domestic capacity was up 2.6 percent during the first half of fiscal year 2003, but declined 5.3 percent during the latter half of the year.

Despite posting positive gains during the first half of fiscal year 2003—RPMs and enplanements up 5.0 and 2.4 percent respectively—overall results were mixed in 2003. Domestic RPMs and passenger enplanements declined 0.3 and 3.7 percent, respectively, over the last 6 months of the year. For the entire year, domestic RPMs were up 2.2 percent while enplanements declined 0.8 percent. Despite the gains achieved in 2003, domestic traffic levels, as a whole, remain considerably below pre-September 11th levels.



The large air carriers achieved an all-time high load factor of 72.7 percent in fiscal 2003, an increase of 2.6 points over the previous year.

In calendar year 2003, it is estimated that large air carrier domestic capacity and traffic will increase/decrease as follows: ASMs down 2.5 percent; RPMs up 0.3 percent; and enplanements down 2.1 percent.

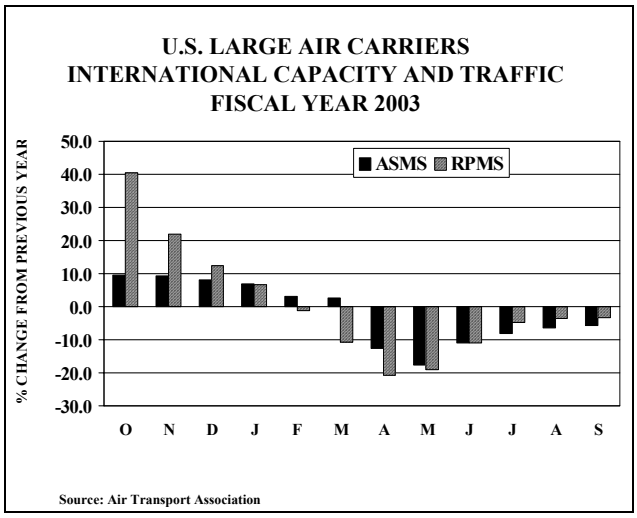
Since 2000, the legacy network carriers have reduced their domestic capacity by 16.8 percent while the low-cost carriers have reported capacity increases of 25.9 percent. Owing to the large reductions in capacity, legacy carriers have seen their traffic fall by similar amounts--RPMs and enplanements down 14.8 and 21.7 percent, respectively. During this same time period, low-cost carrier RPMs and enplanements have increased 28.1 and 16.0 percent, respectively. The bottom line result is that the legacy carriers' share of domestic capacity flown by large air carriers has fallen from 82.9 percent in 2000 to 76.2 percent in 2003 while their share of traffic (RPMs) has fallen from 83.1 to 76.8 percent.

International Markets

International capacity and traffic were both impacted by the war in Iraq and SARS in fiscal year 2003. International ASMs declined 2.8 percent in 2003, this on top of a 13.9 percent

decline in 2002. However, all of the loss occurred during the latter half of the year--down 10.3 percent compared to an increase of 5.9 percent during the first 6 months of the year. Capacity was up 0.9 percent in Latin American markets but declined in the other two world travel regions. For the full year, capacity in Pacific markets was down 4.7 percent--down 20.0 percent over the last 6 months of the fiscal year. Capacity in Atlantic markets declined 3.4 percent in 2003--down 9.9 percent over the latter half of the year.

International RPMs declined 1.6 percent in fiscal 2003, with all of the loss (down 10.2 percent) occurring during the last 6 months of the year. RPMs were up 5.2 percent in Latin American markets but down 5.7 and 2.0 percent, respectively, in Pacific and Atlantic markets. Over the last 6 months of 2003, RPMs were down 16.3 percent in Pacific markets and down 10.5 percent in Atlantic markets.



International passenger enplanements were up 4.4 percent in 2003, this despite a 3.8 percent decline during the latter half of the year. In 2003, enplanements were up 8.6 percent in Pacific[10] markets and 7.3 percent in Latin American markets. Enplanements declined 1.1 percent in Atlantic markets.

International load factors averaged 75.5 percent in 2003, up 0.9 percentage points over the previous year. The highest load factor was achieved on Atlantic markets (78.1 percent), followed by 76.6 and 69.3 percent, respectively, on Pacific and Latin American markets.

In calendar year 2003, it is estimated that international capacity and traffic will decrease as follows: ASMs down 5.3 percent; RPMs down 5.3 percent; and enplanements down 0.2 percent.

Large Cargo Air Carriers

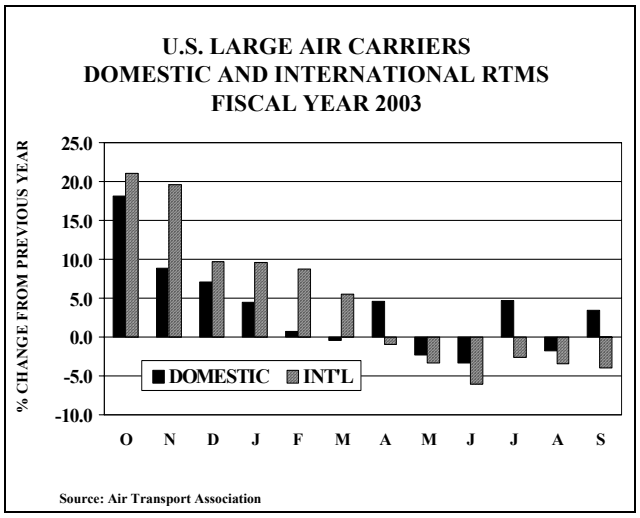
In the aftermath of the September 11th attacks, the FAA issued a new security directive to strengthen security standards for transporting cargo on passenger flights. This directive has impacted air cargo activity, diverting a portion of the freight and mail cargo from passenger to all-cargo carriers. In November 2003, the Transportation Security Administration (TSA) issued additional security directives impacting the transportation of cargo on both passenger and all-cargo flights.

The recovery in U.S. cargo activity has been somewhat stronger than that of passenger traffic, reflecting, in part, the recovery currently underway in both U.S. and world economic activity. U.S. air carrier cargo revenue ton miles (RTMs) increased 18.5 percent in fiscal 2003, up 13.1 percent in domestic markets and up 23.1 percent in international markets. However, these growth rates are distorted since they include a number of changes implemented by the DOT in 2003 regarding the reporting requirements for air cargo carriers. In domestic markets, Airborne Express reported traffic on a comparable basis with other carriers for the first time in 2003. Without Airborne, domestic growth would have been 7.7 percent. In international markets, contract services by U.S.

[10] Based on traffic figures reported by the Air Transport Association, Pacific market enplanements declined 1.9 percent in fiscal 2003. It appears that there are problems with the DOT enplanement data reported in years prior to 2003, thus inflating the growth in 2003.

carriers for foreign flag carriers were reported for the first time in 2003.[11]

In 2003, all–cargo carriers transported 74.8 percent of domestic RTMs and 62.6 percent of international RTMs, up from 70.0 and 49.3 percent, respectively, in 2000.

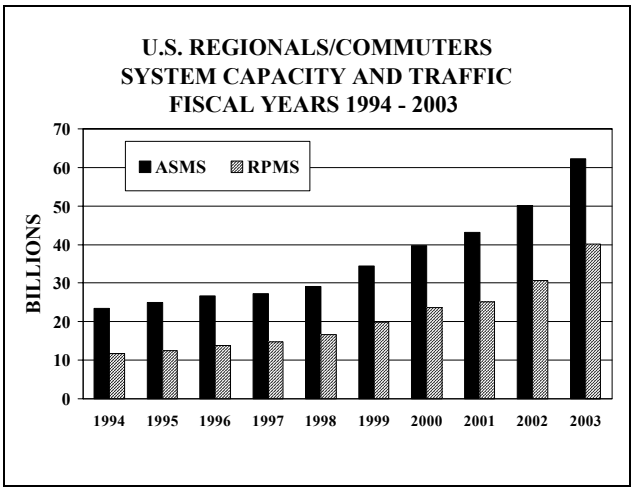


Regionals/Commuters

Although regional/commuter carriers were impacted by the events of September 11th, the negative impact was of relatively short duration and most of the impact since appears to have been largely positive. This is due, in large part, to the fact that the regionals/commuters have been the beneficiary of the restructuring and downsizing that is taking place among their larger code-share partners. This has allowed the larger carriers to rationalize their capacity and cut costs while still maintaining a presence in the markets transferred to their smaller code-share partners.

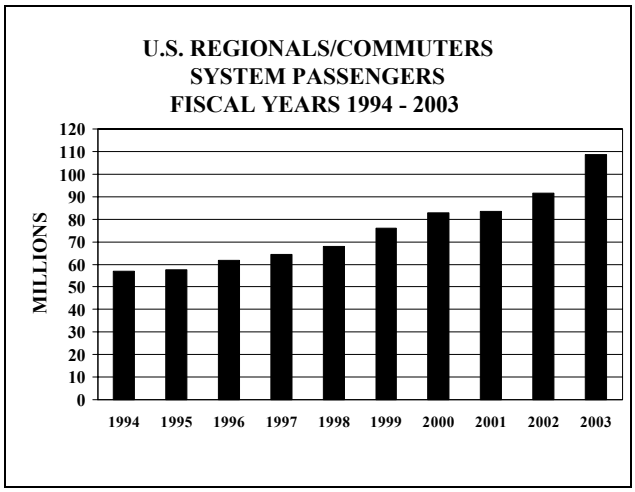
Regional/commuter capacity has grown rapidly since the introduction of the new regional jets in 1993, up an average of 11.4 percent a year. Regional/commuter ASMs were up 24.0 percent in fiscal 2003 (up 54.4 percent since 2000), 24.0 percent in domestic markets and 26.8 percent in international markets. A large part of the increase is due to the fact that the average flight stage and passenger trip length increased 26.0 and 34.4 miles, respectively, in 2003. This reflects the fact that the routes transferred from the larger partners tend to be in medium-haul, non-traditional regional markets that can be flown more efficiently by smaller regional jets. This fact becomes clearer when it is noted that the number of regional/commuter departures increased just 3.6 percent in 2003.

Regional/commuter traffic also continued to grow in 2003. System RPMs were up 31.0 percent (up 70.2 percent since 2000), 31.3 percent in domestic markets and 23.1 percent in international markets. In addition, regionals/commuters achieved an all-time high load factor of 64.7 percent in 2003, up 3.4 percentage points over the previous year.



Regionals/commuters enplaned a total of 108.7 million passengers in fiscal 2003, up 18.9 percent over 2002 and 31.3 percent over 2000. Domestic passengers totaled 105.1 million (up 18.6 percent) while international passengers totaled 3.6 million (up 26.9 percent). The large disparity in growth relative to passenger miles is due to the large increase in stage and passenger trip length.

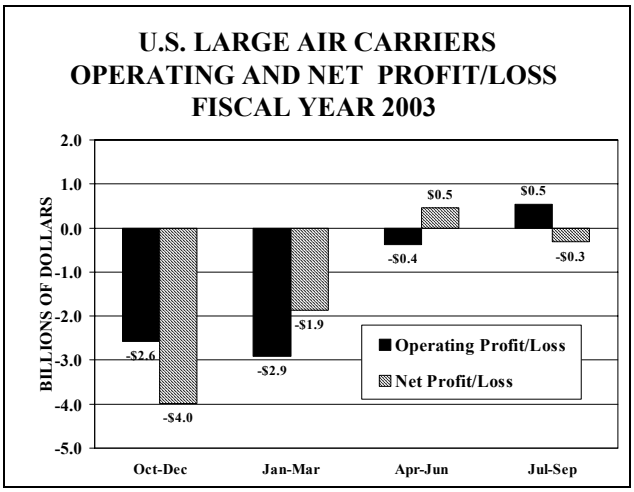
[11] Air Transport Association statistics indicate that U.S. international RTMs increased 4.1 percent in fiscal 2003.



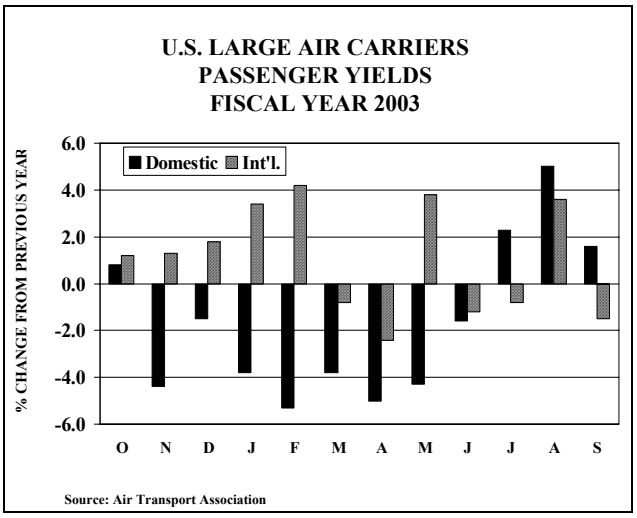
In calendar year 2003, it is estimated that system regional/commuter capacity and traffic will increase as follows: ASMs up 25.7 percent; RPMs up 29.9 percent; and enplanements up 17.6 percent.

U.S. Air Carrier Financial Results

Prior to the start of the 2nd quarter of fiscal year 2001, large commercial air carriers had strung together 24 consecutive profitable quarters; a period during which the carriers reported cumulative operating and net profits totaling $43.9 and $22.3 billion, respectively. The large carriers have now incurred losses in 10 of the last 11 quarters, with cumulative and net losses totaling $19.8 and $20.0 billion, respectively. Operating and net losses are expected to total $5.3 and $5.7 billion, respectively, in fiscal 2003--a significant improvement over losses of $10.5 billion and $10.7 billion, respectively, in 2002. Losses would have been greater in 2003 had the industry not received $2.3 billion in Transportation Security Administration Airline Relief payments in May plus an additional $100 million in September as reimbursement for reinforcing cockpit doors. The payments are included in the carriers' financial filings for 2003.



Operating revenues (passenger and cargo) were up 5.2 percent in fiscal year 2003, this despite continuing weak traffic (RPMs up only 1.2 percent) and depressed passenger yields (down 0.2 percent). The weakness in passenger yields reflects a number of factors, including lower business fares; reduced business travel demand; the war with Iraq; the SARS epidemic; and increased competition from low-cost airlines.



On the other hand, operating expenses were up only 1.1 percent despite a 22.0 percent increase in jet fuel prices. Reduced operating expenses are due, in large part, to capacity reductions and strict adherence to stringent cost reduction measures.

In 2003, the seven legacy network carriers reported operating and net losses of $6.8 billion

and $6.7 billion, respectively. Two carriers—American and United—accounted for over 60 percent of the operating loss. On the other hand, the seven low-cost carriers reported operating and net profits of $680.9 million and $579.0 million, respectively. Although Southwest accounted for almost 70 percent of the group's operating profit, all but two of the low-cost carriers reported operating profits in 2003. The remaining 20 passenger airlines reported operating and net profits of $46.4 million and $49.5 million, respectively, in 2003.

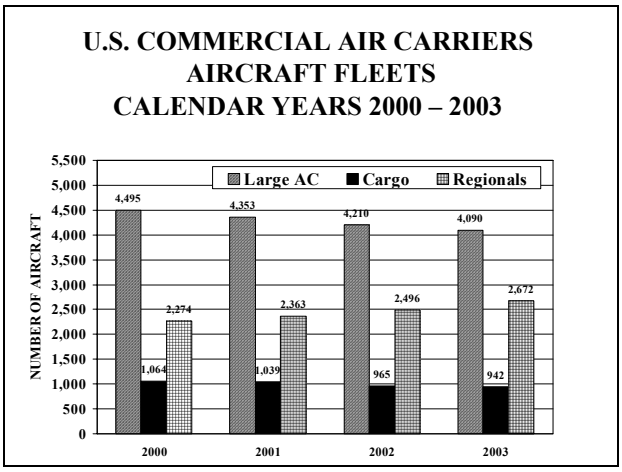
Contrary to the passenger airlines, all-cargo carriers have basically remained profitable over the past several years. In 2003, this carrier group reported an operating profit of $768.0 million and a net profit of $368.1 million. FedEx and United Parcel accounted for almost 84 percent of this group's operating profits.

The regional/commuter airline industry posted an operating profit of $641.6 million for the 12 months ending June 2003, a significant improvement over the loss of $106.8 million reported for the same period a year earlier. Operating revenues and expenses were up 15.4 and 6.7 percent, respectively. During this same period, regionals/commuters reported a net profit of $381.5 million compared to a net loss of $157.9 million for the previous 12-month period.

U.S. Commercial Air Carrier Fleets

In the immediate aftermath of September 11th, many of the larger airlines grounded large numbers of their older, less efficient aircraft and deferred delivery of many of the new aircraft scheduled for delivery over the next several years. In addition, some carriers have continued to ground additional aircraft as part of their restructuring and cost reduction efforts. As of December 14, 2003 Airclaims, Ltd. estimates that a total of 2,095 aircraft remain grounded. Many in the industry believe that only a small fraction of these aircraft will ever return to active service.

The number of aircraft in the U.S. commercial fleet (including regionals/commuters) is estimated to total 7,704 in 2003, a decline of 33 aircraft from 2002. This includes 4,090 large air carrier passenger aircraft (over 70 seats), 942 large air carrier cargo aircraft, and 2,672 regional/commuter aircraft (jets, turboprops, and pistons).



The large air carrier passenger fleet declined for a third consecutive year in 2003. Over the 3-year period, the large air carrier passenger fleet has declined by 405 aircraft—down 142 aircraft in 2001, 143 aircraft in 2002, and 120 aircraft in 2003. During this same 3-year period, the legacy network carriers' fleet has declined by 476 aircraft while the low-cost carriers' fleet has increased by 133 aircraft.

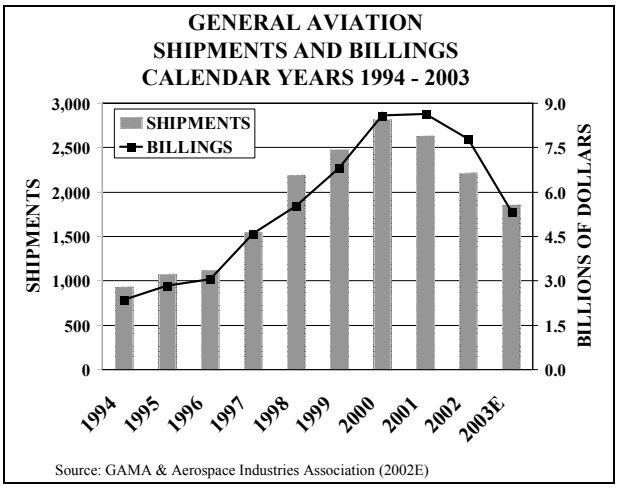
The large air carrier cargo fleet has declined for 3 successive years—down 25 aircraft in 2001, 74 aircraft in 2002, and 23 aircraft in 2003. On the other hand, the regional/ commuter fleet has increased by a total of 398 aircraft over the past 3 years. During this 2-year period, a total of 751 regional jets were added to the fleet while the numbers of turboprops/pistons have declined by 353 aircraft.

Worldwide orders for commercial jet aircraft totaled 614 during the first 3 quarters of 2003, a 46.2 percent increase over the same period in 2002. Most of this increase is due to a 229 percent increase (from 72 to 237) in orders for the smaller regional jets. However, orders for the larger Boeing and Airbus jet aircraft were up 8.3 percent during the first 9 months of 2003. Although up over 2002, aircraft orders remain significantly below prior year levels.

A total of 639 commercial jet aircraft were delivered worldwide during the first 3 quarters of 2003, an 11.1 percent decline over the same period in 2002. This included delivery of 235 regional jets (up 8.3 percent) and 404 large jet aircraft (down 19.5 percent).

GENERAL AVIATION

Based on reports released by the General Aviation Manufacturers Association (GAMA), industry shipments declined 8.7 percent during the first 3 quarters of 2003, the third consecutive year of decline. Business jet shipments declined for a second consecutive year, down 31.7 percent during the same period. Billings declined for a second consecutive year in 2003, down 21.6 percent. The one bright spot among otherwise negative statistics is that piston aircraft shipments were up slightly in 2003, providing some indication that the array of new aircraft models has stimulated sales in the low end of the market. Based on projections by the Aerospace Industries Association of America (AIA), general aviation aircraft shipments are expected to total 1,853 in full year 2003, a decline of 15.9 percent. AIA also projects that industry billings will decline 27.2 percent to $5.3 billion in 2003.[12]



General aviation activity at FAA air traffic facilities was, for the most part, negative in 2003. Operations at combined FAA and contract towers declined 5.6 percent in 2003 (down 11.0 percent since 2000) with itinerant and local operations both down a like amount. Instrument activity at combined FAA and contract towers was down 5.2 percent.

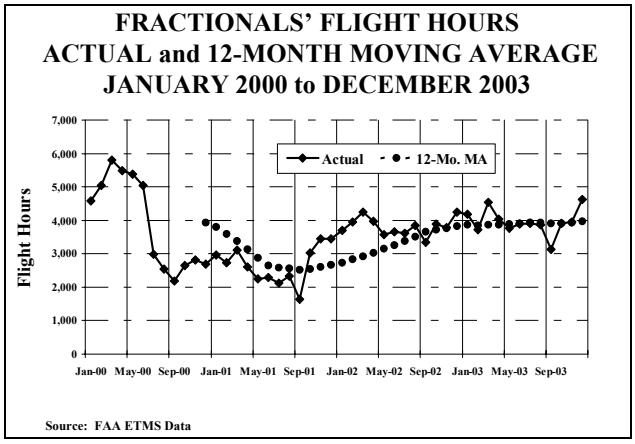
While the number of general aviation IFR aircraft handled at FAA en route centers was down 2.2 percent in 2003, there were some encouraging trends in oceanic statistics. General aviation oceanic departures were up 10.9 percent while oceanic overflights increased 5.7 percent. These trends provide some credence to assertions that corporate/business flyers are turning more toward private/company jets to conduct international business in times of heightened security.

Based on the results of the FAA's General Aviation and Air Taxi Activity and Avionics Survey, both the general aviation active fleet and hours flown remained basically static in 2002. In 2002 the active general aviation fleet totaled 211,244 (down 0.1 percent) and flew an estimated 27.0 million hours (up 0.1 percent). Based on reported general aviation activity at FAA air traffic facilities in 2003, the active fleet is projected to remain fairly static in 2003 while general aviation hours flown decline 1.3 percent. The expected decline in general aviation flight hours is based on a combination of activity at FAA/contract towers (down

[12] *2003 Year-end Review and 2004 Forecast—An Analysis*, Aerospace Industries Association of America, December 2003.

5.7 percent) and reported activity from FAA's Enhanced Traffic Management System (ETMS) database—IFR flight hours up 1.1 percent.

Despite a noted slowdown over the past several years, the business/corporate segment continues to be the segment that offers the greatest potential for future growth for the industry, where it is hoped that increased growth in fractional ownership companies and corporate flying will expand the market for jet aircraft. Based on ETMS data, fractional aircraft activity continues to outpace the rest of the industry, with flight hours up 3.8 percent in 2003. This compares to an increase of 2.7 percent for all jets and an increase of 0.9 percent in flight hours for non-jets.

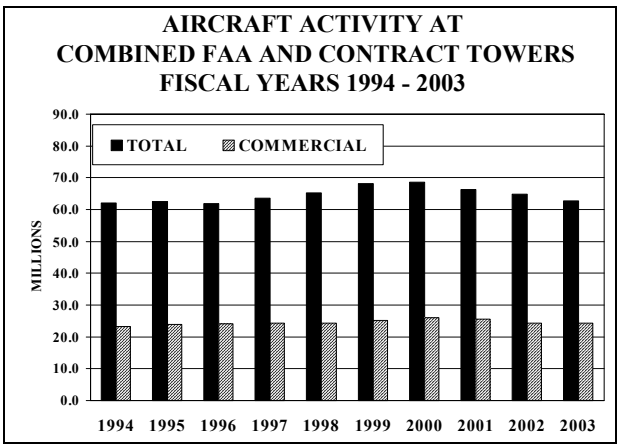


The key to the future of general aviation is increased numbers of student pilots. Based on statistics compiled by the FAA's Registry, the number of student pilots increased by 1.5 percent in 2003 following three consecutive years of decline. The industry has, over the past several years, instituted a number of industry-wide programs designed to attract new pilots to general aviation. The future of the general aviation industry will depend, in large part, on how successful the industry is in continuing to rebuild and stimulate new interest in these programs.

FAA WORKLOAD

During the 1997-2000 time period, the demand for both commercial and general aviation services at FAA air traffic facilities expanded significantly--up 2.6 percent annually at combined FAA and contract towers and up 3.3 percent a year at en route centers. It is this growth that gave rise to the delays that plagued aviation at many U.S. commercial airports in 2000 and 2001. After the events of September 11th, delays became much less of an issue as activity at FAA air traffic facilities declined. However, as demand for air travel recovers, changes in the mix of aircraft using the system (fewer large jets, more regional jets) is fueling an increase in delays at some airports in the country.

During 2003, total activity at combined FAA and contract tower airports (62.7 million), declined by 3.3 percent while the number of IFR aircraft handled at en route centers (43.7 million) remained basically static. At the end of 2003, combined activity at FAA and contract towers is 8.6 percent below the peak activity level recorded in 2000. Activity at FAA en route centers is 4.9 percent below its 2000 peak level.



Commercial activity (the sum of air carrier and commuter/air taxi) at combined FAA and contract towers was basically flat in 2003 while activity at en route centers was up 0.8 percent.

Air carrier operations at towered airports declined 2.9 percent to a total of 12.8 million, its lowest activity level since 1993. The number of air carrier aircraft handled at FAA en route centers declined 0.3 percent to 22.7 million, its lowest level since 1997. Commuter/air taxi activity was up 3.6 percent at towered airports and 3.8 percent at en route centers.

Non-commercial activity (the sum of general aviation and military) at combined FAA and contract towers declined 5.3 percent in 2003, largely the result of a 5.6 percent decline in general aviation operations. The number of non-commercial aircraft handled at FAA en route centers was down 2.0 percent--general aviation activity down 2.2 percent and military activity down 1.7 percent. Non-commercial activity at combined FAA and contract towers and centers in 2003 is 10.0 and 8.4 percent, respectively, below 2000 activity levels.

The number of traditional (non-automated) services provided at FAA Flight Service Stations (FSS) totaled 27.7 million in 2003, a decline of 6.0 percent from 2002. All categories of flight services decreased in 2003: flight plans originated, down 6.2 percent; pilot briefings, down 6.0 percent; and aircraft contacted, down 5.4 percent.

FAA AEROSPACE FORECASTS FISCAL YEARS 2004 - 2015

The challenges in developing this year's aviation forecasts continue to be daunting. The challenges and uncertainties confronting the aviation industry remain both complex and difficult to quantify. In addition, many are questioning whether past relationships can be viewed as accurate predictors of the future. Nevertheless, the FAA has developed a set of assumptions and forecasts that we believe to be consistent with emerging trends and the structural changes taking place within the aviation industry.

Once again, the main assumption in this year's forecasts is that there will not be any successful terrorist incidents against either U.S. or world aviation. Additionally, the forecasts are based on the assumption that there will not be a major contraction of the industry through bankruptcy or consolidation.

The commercial aviation forecasts and assumptions have been developed around emerging trends with regard to three carrier groupings—the legacy network carriers, low-cost carriers, and regionals/commuters. While strategies and levels of success may differ for each grouping, econometric models and assumptions have been developed to forecast passenger demand for each of the three groups of carriers.

Legacy Network Carriers—It is this group of carriers that were the most negatively impacted by the events of September 11th and, as such, have embarked upon massive restructuring efforts in an attempt to redefine themselves in light of the post September 11th operating environment and new industry realities. These carriers operate hub-and-spoke networks and generally have higher operating costs than their competitors. Their strategies since September 11th have been characterized by downsizing and cost cutting so

as to bring their costs more in line with reduced revenue streams resulting from lower levels of demand. In addition, these carriers hope to narrow the cost gap between themselves and their lowest cost competition. Profitability has remained elusive to most of the carriers in this group.

Low-cost Carriers—This group consists of established low-cost carriers, new entrants, as well as former network carriers who have restructured themselves as low-cost operators. Although impacted by the events of September 11th, these carriers have generally prospered and experienced relatively high growth over the past several years. These carriers operate point-to-point route systems and generally have significantly lower operating costs than their chief competitors. Their strategy since September 11th has been one of growth—growth in the number of airports and city-pairs served, growth in longer distance transcontinental and Florida markets, and growth in the numbers of aircraft in their fleets. Unlike the larger legacy carriers, this group has generally been profitable.

Regionals/Commuters—This grouping consists of approximately 75 carriers who generally operate jet and turboprop aircraft having 70 seats or less. The mission of these carriers has been to provide feeder traffic to their larger code-share or equity partner's hub networks, although a number of the larger regionals/commuters have begun to provide point-to-point service that is often in direct competition with the larger network carriers. Since September 11th these carriers have benefited significantly from the route restructuring and cost cutting of the larger network carriers, taking over service to many medium to long-haul markets previously served by their larger partners. For the most part, these carriers are generally profitable, receiving direct compensation from their partners either through a fixed-fee-per-flight contract or on a prorated fare basis for connecting flights.

The starting point for the commercial aviation forecasts (air carriers and regionals/commuters) was the future schedules published in the Official Airline Guide (OAG). Using monthly schedules allowed FAA forecasters to develop capacity and demand forecasts on either a monthly (large air carrier) or quarterly (regionals/commuters) basis for the year 2004, then to extrapolate these schedules/demand forecasts into 2005. The long-term forecasts (2006-2015) are based on econometric models that are discussed in subsequent chapters.

The general aviation forecasts once again rely heavily on the assumptions developed at the September 2002 12th FAA/Transportation Research Board (TRB) International Workshop on Future Aviation Activities.[13] These assumptions have been updated by FAA economists to reflect more recent data and/or actual results, recent trends, as well as additional discussions with industry staff.

As a final step in finalizing this year's forecast, the forecasts and assumptions were presented to numerous industry staff and aviation associations who were asked to comment as to the reasonableness of the assumptions and forecasts. Their comments have been incorporated into the forecasts that are contained herein.

ECONOMIC FORECASTS

The economic forecasts used by the FAA to project domestic aviation demand are provided by the Executive Office of the President, Office of Management and Budget (OMB). In addition to the OMB forecasts, the FAA uses the U.S. macro economic projections of the Congressional Budget Office (CBO) as well as those of Global Insight, Inc., a commercial forecasting service. These alternative forecasts provide the FAA with a range of economic

[13] Transportation Research Circular Number E-C051, *Future Aviation Activities 12th International Workshop*, Transportation Research Board of the National Academies, January 2003.

forecasts with which to gauge the risk associated with variations from the OMB projections. The FAA uses the world and individual country economic projections provided by Global Insight to forecast the demand for international aviation services.

In any given year there are likely to be variations around the long-term trend. None of the current economic models used by the FAA are sufficiently precise to predict interim business cycles. In addition, the impact from unanticipated developments, such as the 2003 war in Iraq and SARS cannot be predicted.

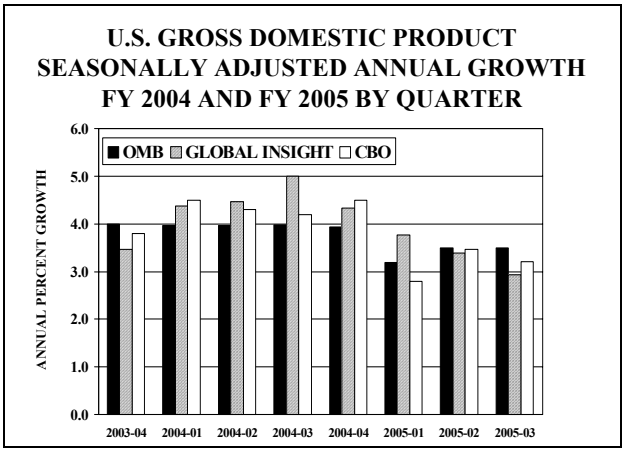
The projected growth of aviation demand discussed in this and subsequent chapters is consistent with the national short and long-term economic growth forecasts discussed in greater detail in Chapter II. Table I-1 (page I-17) summarizes the key U.S. and world economic assumptions used in developing the domestic and international aviation demand forecasts. Annual historical data and economic forecasts are presented in tabular form in Chapter X, Tables 1 through 6.

United States Economy

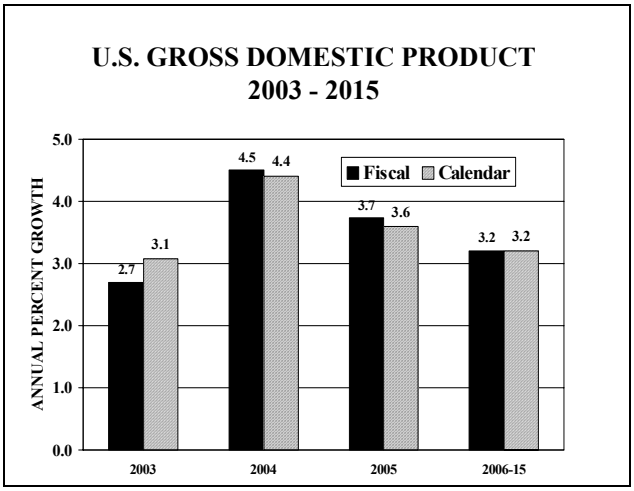
While there is basic agreement among the three economic projections used by the FAA as to the general direction of the U.S. economy—a strong recovery beginning in 2004—there is some variance in both short and long-term growth. There are also some differences regarding future energy prices.

The OMB economic forecasts project that the U.S. economic recovery will be in full upswing in fiscal 2004, with real GDP expanding by 4.5 percent. OMB expects strong growth to continue over the next several years, with U.S. economic activity increasing by 3.7 percent in 2005 and 3.4 percent in 2006.

Global Insight forecasts higher growth in 2004 (4.6 percent) and 2005 (up 4.2 percent), but slower growth in 2006 (3.2 percent). CBO projects slower growth in 2004 (up 4.4 percent), higher growth in 2005 (up 3.9 percent), and lower growth in 2006 (up 3.2 percent).



Over the entire 12-year forecast period, OMB projects U.S. real GDP to grow at an annual rate of 3.3 percent. CBO and Global Insight forecast growth averaging 3.2 and 3.0 percent, respectively, over the same period.



OMB projects that energy prices (as measured by the oil and gas deflator) will increase by 0.7 percent in 2004, decline by 10.0 percent in 2005, and then increase at an annual rate of 1.8 percent over the remainder of the forecast period. Over the entire 12-year period, the OMB forecast assumes that nominal energy prices will increase by only 0.7 percent annually. In real terms, OMB expects energy

TABLE I-1

ECONOMIC FORECASTS
UNITED STATES AND WORLD

FISCAL YEARS 2004-2015

ECONOMIC VARIABLE	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
UNITED STATES											
Gross Domestic Product--Chain Weighted (BIL 1996$)	7,503.6	9,372.5	9,630.2	10,064.5	10,439.6	14,266.7	3.2	2.7	4.5	3.7	3.3
Consumer Price Index (1982-84 = 100)	151.4	178.9	183.1	186.0	188.6	238.0	2.4	2.4	1.6	1.4	2.2
Oil & Gas Deflator (1996 = 100)	95.2	105.4	124.1	124.9	112.4	134.3	3.4	17.7	0.7	(10.0)	0.7
INTERNATIONAL											
Gross Domestic Product (In Billions of U.S. 2000$)											
World	26,693.3	32,434.7	33,243.4	34,474.3	35,695.8	48,521.6	2.8	2.5	3.7	3.5	3.2
Canada	591.2	762.2	775.0	803.0	831.9	1,102.4	3.4	1.7	3.6	3.6	3.0
Europe*	8,752.8	10,407.4	10,530.5	10,782.5	11,093.0	14,311.9	2.3	1.2	2.4	2.9	2.6
Latin America/Mexico	1,574.3	1,815.3	1,836.7	1,901.2	1,968.8	2,911.9	1.9	1.2	3.5	3.6	3.9
Pacific**	7,096.9	8,581.1	8,885.8	9,243.4	9,601.1	13,647.9	2.8	3.6	4.0	3.9	3.6
EXCHANGE RATES											
(U.S.$/Local Currency)											
Canada	0.729	0.637	0.714	0.784	0.802	0.861	(0.2)	12.2	9.7	2.4	1.6
Euro	NA	0.944	1.129	1.242	1.287	1.360	NA	19.6	10.0	3.7	1.6
United Kingdom	1.580	1.501	1.635	1.767	1.813	1.863	0.4	8.9	8.1	2.6	1.1
Japan***	10.631	7.983	8.610	9.228	9.631	11.601	(2.6)	7.9	7.2	4.4	2.5

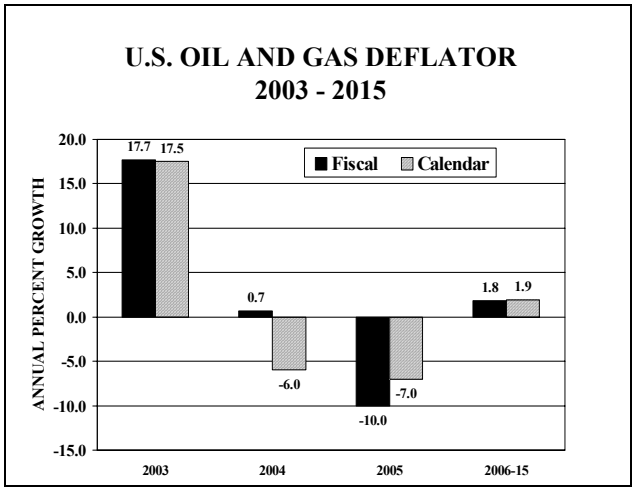
Source: United States: FY 1995-2014; Executive Office of the President, Office of Management and Budget
FY 2015; Consensus growth rate of Global Insight
International CY-1995-2015, Global Insight

* Sum of GDP for Europe, Africa, and Middle East

** Sum of GDP for Japan, Pacific Basin, China, Other Asia, Australia, and New Zealand

*** U.S.$ per 1,000 Yen

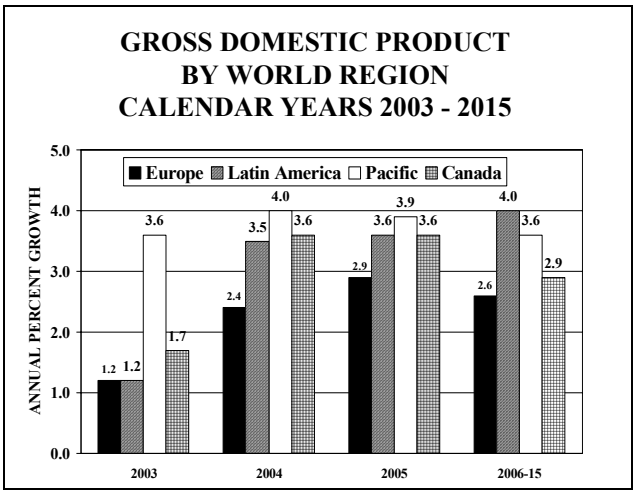
prices to decline at an annual rate of 1.5 percent over the 12-year period. CBO forecasts a 1.5 percent annual increase in nominal fuel prices and an annual decline of 0.9 percent in real prices. Global Insight projects nominal fuel prices to increase by 1.8 percent a year—a decline of 0.5 percent annually in real terms.



OMB projects that consumer prices (as measured by the Consumer Price Index) will remain at relatively low rates throughout the forecast period, averaging 2.2 percent annually. CBO and Global Insight both predict slightly higher prices over the 12-year forecast period—up 2.4 and 2.3 percent annually.

World Economy

Worldwide economic activity is predicted to expand rapidly over the next several years—up 3.7 and 3.5 percent, respectively, in 2004 and 2005. Over the entire 12-year forecast period, worldwide economic growth is forecast to increase at an average annual rate of 3.2 percent, trailing that of the United States by 0.1 percentage points yearly. Economic growth is forecast to be greatest in the Latin American and Asia/Pacific regions, expanding at annual rates of 3.9 and 3.6 percent, respectively. Economic growth in Canada and Europe/Africa/Middle East countries are expected to average 3.0 and 2.6 percent, respectively, over the forecast period.



AVIATION TRAFFIC AND ACTIVITY FORECASTS

Total traffic and activity forecasts for commercial air carriers (the sum of larger carriers and regionals/commuters) are summarized in Table I-2 (page I-20). Chapter X--Tables 8 through 11 contains year-to-year historical data and forecasts.

Large commercial air carrier traffic and activity forecasts are summarized in Table I-3 (page I-23) and the forecast assumptions in Table I-4 (page I-24). Chapter III contains a detailed discussion of the large air carrier forecasts and underlying assumptions. Chapter X--Tables 7, 12 through 20, 22, 24, and 25--contains year-to-year historical data and forecasts.

Table I-5 (page I-27) summarizes the regional/ commuter forecasts and assumptions. Chapter IV provides a detailed discussion of the forecasts and assumptions. Chapter X--Tables 26 through 30--provides year-to-year historical and forecast data.

Table I-6 (page I-29) summarizes the air cargo forecasts. Chapter III (page III-15, pages III-46 to III-51, and III-53) provides a detailed

discussion of the forecasts and assumptions. Tables 21 and 23 (Chapter X) provide year-to-year historical and forecast data.

Table I-7 (page I-32) summarizes the general aviation forecasts. Chapter V provides detailed discussions of the forecasts and assumptions. Chapter X--Tables 31 through 35--provides year-to-year historical data and forecasts.

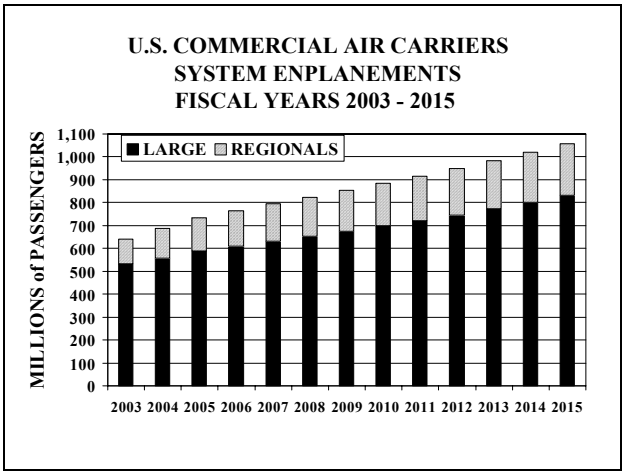
Table I-8 (page I-34) provides summary forecasts of aircraft activity at combined tower facilities. Table I-9 (page I-35) gives summary forecasts of activity at FAA facilities only, including FAA towers, en route centers, and flight service stations. Chapter VII and Tables 36 through 53 in Chapter X give more detailed forecasts and discussion of aircraft activity at FAA and contract facilities.

Table I-10 (page I-37) provides summary domestic and international traffic forecasts on a calendar year for large air carriers, regionals/commuters, and air cargo carriers, as well as IFR aircraft handled.

Commercial Aviation

In fiscal 2003, the U.S. commercial aviation industry, consisting of large air carriers and regional/commuter airlines, flew a combined 890.1 billion ASMs. These carriers enplaned 641.4 million passengers who flew 647.8 billion RPMs, achieving a load factor of 72.8 percent. In 2003, the carriers' trip length averaged 1,010.0 miles while their aircraft averaged 136.9 seats.

In 2015, the FAA forecasts that U.S. commercial air carriers will fly a total of over 1.5 trillion ASMs (up 4.6 percent annually) and transport nearly 1.1 billion passengers (up 4.3 percent annually) just over 1.1 trillion passenger miles (up 4.8 percent annually). Load factor is forecast to average 74.5 percent in 2015. The passenger trip length is expected to increase to 1,072.5 miles (up 5.2 miles annually) while aircraft size increases to 138.6 seats (up 0.1 seats a year).



The combined RPMs of these carriers are expected to return to pre-September 11th levels in 2004 (a year earlier than projected in last year's forecast) while enplanements and ASMs not until 2005 (same as last year's forecast).

Large Air Carriers
Domestic Capacity and Traffic

U.S. large air carriers continued to reduce domestic capacity during much of fiscal 2003, with domestic ASMs falling 1.5 percent. At the end of 2003, domestic capacity remained 9.5 percent below 2000 levels. Domestic capacity is forecast to increase 4.6 percent in 2004 and 5.7 percent in 2005, largely in response to an expanding U.S. economy and stronger passenger demand. Thereafter, capacity is expected to increase at an average annual rate of 3.5 percent over the final 10 years of the forecast period. Capacity is expected to return to pre-September 11th levels in 2005.

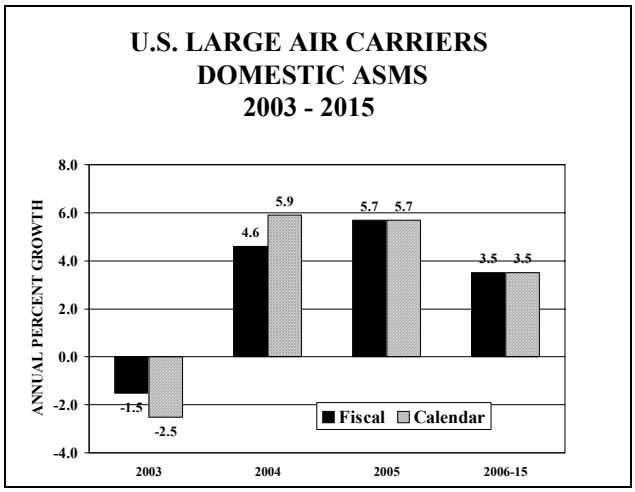
TABLE I-2

AVIATION DEMAND FORECASTS
TOTAL U.S. COMMERCIAL CARRIERS 1/

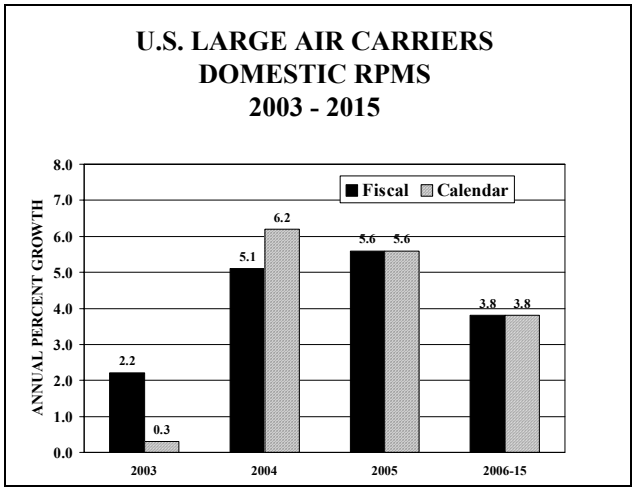
FISCAL YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
Sum of U.S. Large Air Carriers/ Regionals/Commuters											
ASMs (Billions)											
Domestic	617.1	681.3	683.2	728.0	778.0	1,126.3	1.3	0.3	6.6	6.9	4.3
International	202.7	212.3	206.8	221.8	241.2	395.2	0.3	(2.6)	7.2	8.7	5.5
Atlantic	85.9	97.0	93.7	101.0	107.9	168.8	1.1	(3.4)	7.8	6.8	5.0
Latin America	39.2	52.1	52.9	58.1	62.3	109.2	3.8	1.6	9.8	7.3	6.2
Pacific	77.6	63.2	60.3	62.7	70.9	117.3	(3.1)	(4.7)	4.1	13.1	5.7
System	819.7	893.6	890.1	949.8	1,019.2	1,521.5	1.0	(0.4)	6.7	7.3	4.6
RPMs (Billions)											
Domestic	399.8	473.0	491.9	525.5	560.1	830.8	2.6	4.0	6.8	6.6	4.5
International	144.6	158.2	155.9	174.0	186.7	303.4	0.9	(1.5)	11.6	7.3	5.7
Atlantic	64.4	74.7	73.2	81.9	87.0	135.1	1.6	(2.0)	11.9	6.2	5.2
Latin America	24.7	34.5	36.5	40.9	43.7	76.2	5.0	5.8	12.0	7.0	6.3
Pacific	55.5	49.0	46.2	51.2	56.0	92.0	(2.3)	(5.7)	10.8	9.5	5.9
System	544.4	631.2	647.8	699.4	746.8	1,134.2	2.2	2.6	8.0	6.8	4.8
Enplanements (Millions)											
Domestic	529.8	574.5	587.3	627.2	668.5	958.4	1.3	2.2	6.8	6.6	4.2
International	49.7	51.2	54.1	59.5	63.3	99.1	1.1	5.8	10.0	6.3	5.2
Atlantic	16.2	18.0	17.8	19.6	20.8	31.7	1.2	(1.1)	9.9	6.3	4.9
Latin America	19.1	23.5	25.8	28.5	30.0	47.3	3.8	10.0	10.4	5.2	5.2
Pacific	14.3	9.6	10.5	11.4	12.5	20.1	(3.8)	8.6	9.1	9.1	5.6
System	579.5	625.7	641.4	686.7	731.8	1,057.6	1.3	2.5	7.1	6.6	4.3

Source:1995-2003 U.S. Air Carriers, Form 41, U. S. Department of Transportation
1/ Sum of U.S. Large Air Carriers and Regionals/Commuters



Domestic air carrier RPMs and passenger enplanements are forecast to increase at average annual rates of 4.0 and 3.6 percent, respectively, over the 12-year forecast period. Domestic RPMs are forecast to increase by 5.1 percent in 2004, 5.6 percent in 2005, and to average 3.8 percent growth over the remaining 10 years of the forecast period. Domestic enplanements are projected to increase by 4.2 percent in 2004, 5.3 percent in 2005, and 3.4 percent annually between 2006 and 2015. Much of the growth forecast over the 12-year forecast period is expected to come from the low-cost carriers. Similar to last year's forecast, domestic RPMs are projected to return to pre-September 11th levels in 2005; enplanements not until 2007.



The domestic load factor for the large carriers increased to 72.7 percent in 2003 (up 2.6 percentage points), an all-time high. Load factor is expected to average 73.0 percent in both 2004 and 2005, and then increase slowly over the remainder of the forecast period, reaching a high of 74.8 percent in 2015.

Domestic passenger yield, which declined 0.5 percent (down 2.9 percent in real terms) in 2003, is forecast to hold constant in 2004, then increase by 3.8 percent in 2005. Passenger yield is forecast to increase at an annual rate of 1.2 percent over the remaining 10 years of the forecast period. In real terms, yields are projected to decline by 1.5 percent in 2004, increase by 2.3 percent in 2005, and then decline an average 1.2 percent over the remainder of the forecast period. Nominal domestic yields are not expected to return to pre-September 11th levels during the 12-year forecast period.

The decline in real yields over the latter years of the forecast is based on the assumption that competitive pressures from low-cost carriers will continue to exert pressure on carriers to hold the line on fare increases. Competition in domestic markets will come from established low-fare carriers such as Southwest, as well as smaller low-cost carriers such as AirTran, Frontier, and JetBlue. In addition, low-cost subsidiaries of the network carriers--Delta's Song and United's Ted—can also be expected to exert downward pressure on fares and yields.

Large air carrier aircraft operations, which declined by 13.1 percent over the past 2 years, are forecast to increase 2.2 percent in 2004 and 4.4 percent in 2005. Thereafter, large air carriers operations grow at an average annual rate of 2.7 percent over the remaining 10 years of the forecast period. Large air carrier operations are not expected to return to pre-September 11th activity levels until 2009.

The slower growth in air carrier activity at FAA air traffic facilities relative to expected traffic growth (2.8 versus 3.6 percent growth in domestic enplanements) reflects increased

efficiencies in three operational measures—aircraft size, load factor, and trip length.

The average domestic aircraft size is forecast to increase by 0.5 seats annually, from 148.5 seats in 2003 to 154.0 seats in 2015. Domestic load factors are expected to increase from 72.7 percent in 2003 to 74.8 percent in 2015.

The domestic passenger trip length is up 53.6 miles over the past 2 years, due largely to continued air carrier restructuring and the transfer of shorter distance routes to their regional affiliates. As demand recovers, the larger carriers are expected to resume operation of some of these medium-haul routes. However, the average domestic passenger trip length is forecast to increase by 3.8 miles a year, reaching 984.4 miles in 2015.

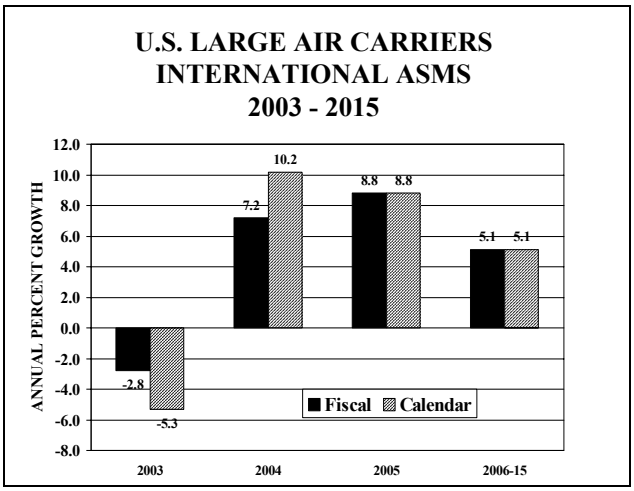
Large Air Carriers
International Capacity and Traffic

FAA provides forecasts of total international passenger demand (sum of U.S. and foreign flag carriers) for travel between the United States and three world travel areas--Atlantic, Latin America (including Mexico and the Caribbean), and Asia/Pacific--as well as for U.S./Canadian transborder traffic. These forecasts are based on historical passenger statistics obtained from the United States Immigration and Naturalization Services (INS) and Transport Canada and on regional world historical data and economic projections obtained from Global Insight.

Total passenger traffic between the United States and the rest of the world is estimated to total 116.9 million in 2003, down 16.9 percent from its peak in 2000. Passenger traffic is expected to increase 9.5 percent in 2004, 7.7 percent in 2005, and to average 4.4 percent over the rest of the 10-year forecast period, reaching 212.5 million in 2015. Total traffic between the U.S. and the rest of the world is expected to return to pre-September 11th levels in 2006.

Over the entire forecast period, passenger demand is expected to be strongest in Latin American and Pacific markets, with both regions growing at an annual rate of 5.7 percent. Passenger traffic is projected to grow 5.0 percent annually in Atlantic markets and 3.3 percent a year in Canadian transborder markets.

At the end of 2003, U.S. air carrier international capacity remained 13.9 percent below pre-September 11th levels. International capacity is forecast to increase 7.2 percent in 2004 and 8.8 percent in 2005. Thereafter, capacity increases 5.1 percent annually over the last 10 years of the forecast period. The relatively strong growth in 2004 and 2005 largely reflects recovering passenger traffic demand from the impacts resulting from the September 11th terrorist attacks, the war in Iraq, and SARS.



U.S. carriers international RPMs declined 1.6 percent in 2003 while enplanements were up 4.4 percent. International RPMs are forecast to increase 11.6 percent in 2004, 7.4 percent in 2005, and 5.0 percent annually over the remainder of the forecast period. Enplanements are projected to grow 10.0 percent in 2004, 6.5 percent in 2005, and 4.6 percent annually over the final 10 years of the forecast period, reaching 93.0 million in 2015. U.S. carrier international RPMs are expected to exceed pre-September 11th levels in 2005; enplanements in 2004.

TABLE I-3

AVIATION DEMAND FORECASTS
LARGE AIR CARRIERS--PASSENGERS

FISCAL YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
U. S./Foreign Flag Carriers 1/											
Total Passengers to/from											
United States (Millions)	104.8	120.8	116.9	127.9	137.7	212.5	1.4	(3.2)	9.5	7.7	5.1
Atlantic	37.0	43.4	43.2	47.1	51.1	77.5	1.9	(0.5)	9.0	8.5	5.0
Latin America	32.1	36.9	36.9	41.1	44.0	71.6	1.7	0.1	11.5	7.1	5.7
Pacific	20.8	22.3	19.5	21.7	23.5	37.8	(0.8)	(12.3)	11.0	8.7	5.7
Canadian Transborder	14.8	18.3	17.3	18.0	19.1	25.5	1.9	(5.4)	4.5	5.8	3.3
U.S. Air Carriers											
Enplanements (Millions)											
Domestic	474.3	485.9	482.2	502.4	529.0	738.4	0.2	(0.8)	4.2	5.3	3.6
International	47.6	48.3	50.5	55.6	59.2	93.0	0.7	4.6	10.0	6.5	5.2
Atlantic	16.2	18.0	17.8	19.6	20.8	31.7	1.2	(1.1)	9.9	6.3	4.9
Latin America	17.1	20.7	22.2	24.6	25.9	41.2	3.4	7.6	10.5	5.4	5.3
Pacific	14.3	9.6	10.5	11.4	12.5	20.1	(3.8)	8.6	9.1	9.1	5.6
System	522.0	534.2	532.7	558.0	588.2	831.4	0.3	(0.3)	4.8	5.4	3.8
RPMs (Billions)											
Domestic	387.8	443.2	452.8	475.9	502.6	726.9	2.0	2.2	5.1	5.6	4.0
International	144.2	157.3	154.7	172.6	185.3	301.0	0.9	(1.6)	11.6	7.4	5.7
Atlantic	64.4	74.7	73.2	81.9	87.0	135.1	1.6	(2.0)	11.9	6.2	5.2
Latin America	24.3	33.6	35.4	39.5	42.3	73.9	4.8	5.3	11.8	7.0	6.3
Pacific	55.5	49.0	46.2	51.2	56.0	92.0	(2.3)	(5.7)	10.8	9.5	5.9
System	532.0	600.5	607.5	648.5	687.9	1,027.8	1.7	1.2	6.7	6.1	4.5
Fleet (Large Jets Only) 1/											
Passenger	3,897	4,210	4,090	4,125	4,249	5,732	0.6	(2.9)	0.9	3.0	2.9
Hours Flown (Millions)* 1/	12.0	13.0	12.6	13.2	13.8	19.0	0.6	(2.7)	4.3	4.5	3.5

Source:1995-2003; U.S. Air Carriers, Form 41, U. S. Department of Transportation; Total Passengers, INS Form I-92, U.S. Department of Commerce
2004-2015; FAA Forecasts

1/ Historical and forecast on a calendar year basis

* Includes both passenger (excluding regional jets) and cargo aircraft.

TABLE I-4

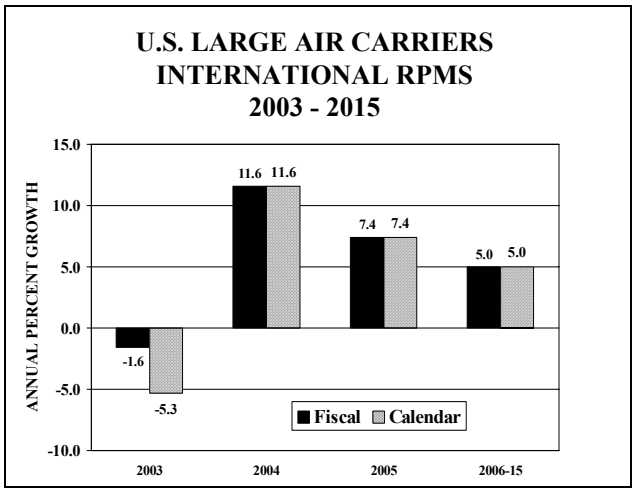
AVIATION FORECAST ASSUMPTIONS
LARGE AIR CARRIERS--PASSENGERS

FISCAL YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT/POINT* AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
Large Air Carriers											
Passenger Yields (Cents/RPM)											
(In Current Dollars)											
Domestic	13.04	11.88	11.82	11.82	12.27	13.78	(1.2)	(0.5)	0.0	3.8	1.3
International	11.14	9.78	9.84	9.96	10.02	11.90	(1.5)	0.6	1.2	0.6	1.6
Atlantic	9.88	9.29	9.53	9.53	9.57	11.43	(0.4)	2.6	0.0	0.4	1.5
Latin America	13.56	12.49	12.34	12.28	12.40	14.88	(1.2)	(1.2)	(0.5)	1.0	1.6
Pacific	11.55	8.67	8.42	8.84	8.92	10.19	(3.9)	(2.9)	5.0	0.9	1.6
Average Aircraft Size (Seats)											
Domestic	149.9	148.0	148.5	148.5	149.0	154.0	(0.2)	0.5	0.0	0.5	0.5
International	249.2	228.5	224.6	223.6	225.3	229.3	(3.1)	(3.9)	(1.0)	1.7	0.4
Atlantic	238.2	233.8	231.2	233.7	235.2	240.7	(0.9)	(2.6)	2.5	1.5	0.8
Latin America	184.3	172.3	171.8	170.8	171.3	176.3	(1.6)	(0.5)	(1.0)	0.5	0.4
Pacific	322.0	295.2	286.6	281.6	282.4	287.6	(4.4)	(8.6)	(5.0)	0.8	0.1
Average Trip Length (Miles)											
Domestic	817.6	912.1	939.1	947.2	949.9	984.4	15.2	27.0	8.1	2.7	3.8
International	3,026.1	3,255.2	3,062.9	3,106.4	3,132.1	3,154.8	4.6	(192.3)	43.5	25.7	7.7
Atlantic	3,966.1	4,147.5	4,109.3	4,184.5	4,180.5	4,257.8	17.9	(38.2)	75.2	(4.0)	12.4
Latin America	1,421.2	1,625.8	1,590.8	1,609.5	1,633.5	1,794.7	21.2	(35.0)	18.7	24.0	17.0
Pacific	3,872.4	5,077.6	4,409.1	4,477.8	4,494.2	4,576.9	67.1	(668.5)	68.7	16.4	14.0
Average Load Factor (Percent)											
Domestic	65.4	70.1	72.7	73.0	73.0	74.8	0.9	2.6	0.3	0.0	0.2
International	71.4	74.6	75.5	78.6	77.6	76.9	0.5	0.9	3.1	(1.0)	0.1
Atlantic	75.0	77.0	78.1	81.1	80.6	80.0	0.4	1.1	3.0	(0.5)	0.2
Latin America	63.1	66.5	69.3	70.8	70.5	70.0	0.8	2.8	1.5	(0.3)	0.1
Pacific	71.5	77.5	76.6	81.6	79.0	78.5	0.6	(0.9)	5.0	(2.6)	0.2

Source:1995-2003; U.S. Air Carriers, Form 41, U. S. Department of Transportation.
2004-2015; FAA Forecasts

* Passenger Yield, annual percent change; all other series, annual absolute change.



The faster growth in U.S. carrier international traffic compared to total international traffic over the 12-year forecast period (5.2 versus 4.4 percent) reflects gains in market share from foreign flag carriers. However, despite these gains, U.S. carriers will also continue to shift flying to foreign flag code-share and alliance partners. These shifts enable U.S. carriers to continue to promote and sell travel to foreign travel destinations without incurring the costs of actually operating aircraft on these routes.

The forecasts of international demand assume that U.S. air carriers will benefit from the strong economic recovery expected to start in 2004 in both the United States and world markets. International air carrier RPMs and passenger enplanements are forecast to increase at annual rates of 5.7 and 5.2 percent, respectively, over the 12-year forecast period. The stronger growth in international travel relative to domestic markets is being driven by the strong passenger demand projected in the Latin American and Asia/Pacific markets--passengers up 5.3 and 5.6 percent, respectively.

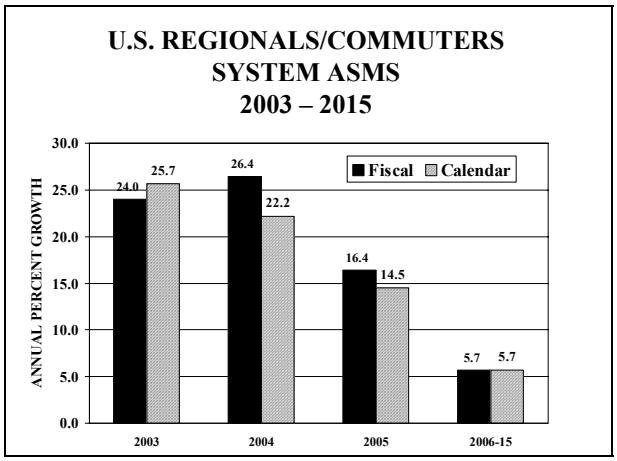
International load factors are forecast to increase from 75.5 percent in 2003 to 78.6 percent in 2004 and then decline gradually over the over the next 3 years, reaching 77.0 percent in 2007. Load factors are expected to fluctuate around this level throughout the remainder of the forecast period, averaging 76.9 percent in 2015.

International passenger yields were up 0.6 percent in 2003, due in large part to stronger traffic demand in the higher priced Latin American markets. International yields are expected to increase by 1.2 percent in 2004, reflecting strong passenger demand in all three world travel regions. International passenger yields are expected to increase 1.6 percent annually over the entire forecast period. In real terms, international yields decline at an annual rate of 0.6 percent over the forecast period. The decline in real yields is based on the assumption that competitive pressures will continue to exert pressure on carriers to hold the line on fare increases. In international markets, this takes the form of expanded open sky agreements and new and existing global alliances.

Regionals/Commuters
Capacity and Passenger Traffic

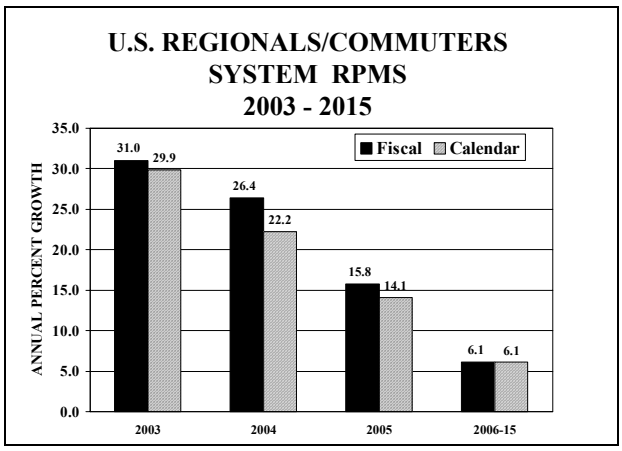
Regionals/commuters ASMs are up 54.4 percent since 2000, 54.8 percent in domestic markets and 41.4 percent in international (largely the Caribbean and Mexico) markets. These large increases are due, in part, to the restructuring among the large network carriers and the transfer of large numbers of routes to their smaller code-share partners. Of course, these route transfers would not have been possible without the addition of 751 regional jets to the fleet over this 3-year period.

Regional/commuter capacity is forecast to increase an additional 26.4 in 2004 and 16.4 percent in 2005, the large increases due to the projected delivery of an additional 549 regional jets over this 2-year period. Growth in capacity is expected to slow to 5.7 percent annually over the remainder of the forecast period and to average 8.1 percent over the 12-year forecast period.

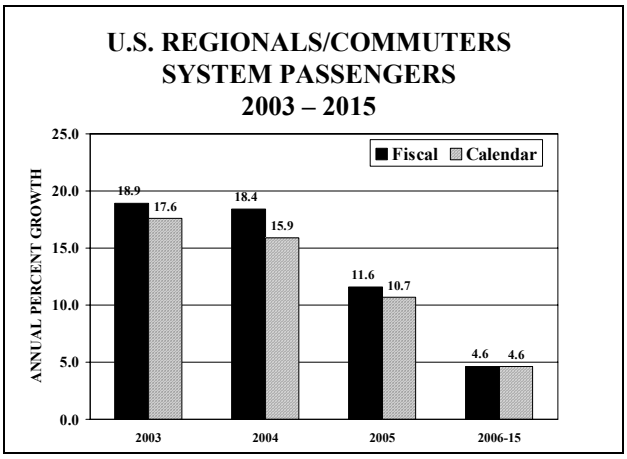


Regional/commuter RPMs are up 70.3 percent since 2000, up 71.4 percent in domestic markets and 37.7 percent in international markets. RPMs are projected to increase 26.4 percent in 2004, 15.8 percent in 2005, and to average 6.1 percent over the remaining 10 years of the forecast period.

Regional/commuter carriers achieved a load factor of 64.7 percent in 2003, up 3.4 percentage points over the previous year. Load factors are projected to remain constant in 2004 and decline slightly in 2005. Thereafter, load factors are forecast to increase gradually and reach 67.1 percent in 2015.



Passenger growth is expected to be less than that forecast for RPMs, growing by 18.4 percent in 2004 and 11.6 percent in 2005. Over the 12-year forecast period, regional/commuter passengers are forecast to increase an average of 6.3 percent a year, from 108.7 million in 2003 to 226.2 million in 2015. In 2015, regionals/commuters are expected to transport 21.4 percent of all passengers in scheduled commercial air service, up from 16.9 percent in 2003.



Despite the relatively large increases in capacity over the past 3 years, regional/commuter aircraft operations at FAA air traffic facilities are up only 6.2 percent over the same period. The significantly slower growth relative to ASMs is largely the result of the increase in the passenger trip length of 84.7 miles over the 3-year period—from 285.5 to 370.2 miles. This longer trip length is also reflected in the number of regional/commuter aircraft handled at en route centers--up 13.0 percent over the same 3-year period. This increase at en route centers is due, in large part, to a 59.6 percent increase in the number of overflights, that is, flights that traverse one or more en route centers.

Regional/commuter activity is expected to increase rapidly over the next several years, averaging 5.5 percent over the next 2 years. Thereafter, regional/commuter operations are forecast to grow at an average annual rate of 2.3 percent over the rest of the forecast period. Slower growth in activity at FAA air traffic facilities relative to ASMs (2.8 versus 8.1 percent) and passengers compared to and RPMs (6.3 versus 8.4 percent) results from higher load factors, longer trip lengths, and larger aircraft.

TABLE I-5

AVIATION DEMAND FORECASTS AND ASSUMPTIONS
REGIONALS/COMMUTERS

FISCAL YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT/POINT* AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
REGIONAL/COMMUTERS											
Enplanements (Millions)											
Domestic	55.4	88.6	105.1	124.7	139.5	220.1	8.3	18.6	18.7	11.8	6.4
International	2.1	2.8	3.6	4.0	4.1	6.1	7.3	26.9	9.8	3.9	4.5
System	57.5	91.5	108.7	128.7	143.6	226.2	8.3	18.9	18.4	11.6	6.3
RPMs (Billions)											
Domestic	12.0	29.8	39.1	49.6	57.5	104.0	16.0	31.3	26.7	16.0	8.5
International	0.4	0.9	1.1	1.3	1.4	2.4	13.8	23.1	18.4	5.5	6.5
System	12.4	30.7	40.2	50.9	58.9	106.4	15.9	31.0	26.4	15.8	8.4
Fleet (As of December 31) 1/											
Turboprops/Pistons	2,031	1,461	1,351	1,287	1,242	1,081	(5.0)	(7.5)	(4.7)	(3.5)	(1.8)
Jets	78	1,035	1,321	1,598	1,870	3,222	42.4	27.6	21.0	17.0	7.7
Total	2,109	2,496	2,672	2,885	3,112	4,303	3.0	7.1	8.0	7.9	4.1
Block to Block Hours (000) 1/	4,659	5,558	5,872	6,351	6,862	10,241	2.9	5.6	8.2	8.0	4.7
Average Aircraft Size (Seats)											
Domestic	31.0	42.8	44.7	47.2	48.8	53.7	1.7	1.9	2.5	1.6	0.8
International	28.4	41.0	43.2	43.7	44.2	49.2	1.9	2.2	0.5	0.5	0.5
System	31.0	42.8	44.7	47.1	48.7	53.6	1.7	1.9	2.4	1.6	0.7
Average Trip Length (Miles)											
Domestic	216.0	336.3	372.3	397.3	412.3	472.4	19.5	36.0	25.0	15.0	8.3
International	193.4	320.4	310.8	335.0	340.0	390.0	14.7	(9.6)	24.2	5.0	6.6
System	215.2	335.8	370.2	395.4	410.2	470.2	19.4	34.4	25.2	14.8	8.3
Average Load Factor (Percent)											
Domestic	49.2	61.3	64.9	64.9	64.5	67.1	2.0	3.6	0.0	(0.4)	0.2
International	59.2	61.1	59.3	60.0	60.5	65.5	0.0	(1.8)	0.7	0.5	0.5
System	49.4	61.3	64.7	64.7	64.4	67.1	1.9	3.4	0.0	(0.3)	0.2

Source: Regionals/Commuters; 1995-2003, Forms 298-C and 41, U.S. Department of Transportation; 2004-2015, FAA Forecasts
1/ Historical and forecast data on a calendar year basis
* Enplanements, RPMs, Fleet, and Hours Flown: annual percent change; all other series, annual absolute change.

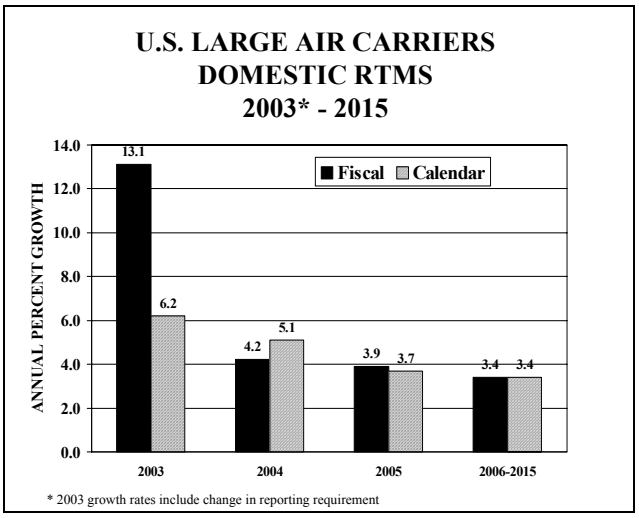
Over the 12-year forecast, the average passenger trip length is forecast to increase from 370.2 miles in 2003 to 470.2 miles in 2015. However, much of the growth occurs during the first 3 years of the forecast period--up an average 16.6 miles a year. The relative large increases during this period result from two factors--the integration of large numbers of regional aircraft into the regional/commuter fleet and the expected continuation of medium- to long-haul route transfers from their larger code-share partners. Thereafter, the passenger trip length increases by almost 5.6 miles annually over the remainder of the forecast period.

Greater use of the larger regional jets also results in the average seating capacity of the regional fleet increasing from 44.7 seats in 2003 to 53.6 seats in 2015.

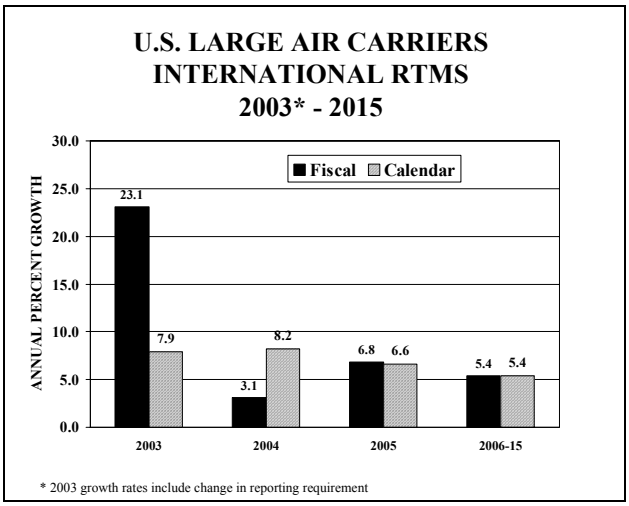
Air Cargo

Total air cargo traffic is projected to increase at rates similar to those for passenger traffic, although the domestic and international entities both grow slower than those for passengers.[14] System RTMs and RPMs both increase at average annual rates of 4.5 percent over the 12-year forecast period. Domestic RTMs are forecast to increase 3.5 percent annually (versus 4.0 percent for domestic RPMs) while international RTMs are projected to increase 5.3 percent a year (versus 5.7 percent for international RPMs).

Domestic RTMs are forecast to increase 4.2 percent in 2004, 3.9 percent in 2005, and to average 3.4 percent over the final 10 years of the forecast period. Most of the growth in the demand for domestic cargo services is forecast to occur among all-cargo carriers due to their larger share and the advantages of the integrated carriers. All-cargo carrier domestic RTMs are projected to increase 3.9 percent a year over the entire forecast period, compared with growth of only 2.0 percent annually for passenger carriers. All-cargo carriers' share of domestic RTMs is forecast to increase from 74.8 percent in 2003 to 78.7 percent in 2015.



International RTMs are forecast to increase 3.1 percent in 2004 and 6.8 percent in 2005. After that, international cargo traffic is forecast to increase 5.4 percent a year over the rest of the forecast period. All-cargo and passenger carrier international RTMs are projected to increase at annual rates of 5.8 and 4.5 percent, respectively, over the 12-year forecast period. All-cargo carriers' share of international RTMs is projected to increase from 62.6 percent in 2003 to 66.0 percent in 2015.



[14] This is due to differences in the relative weights for the domestic and international components of cargo and passenger traffic.

TABLE I-6

AVIATION DEMAND FORECASTS
LARGE AIR CARRIERS--AIR CARGO

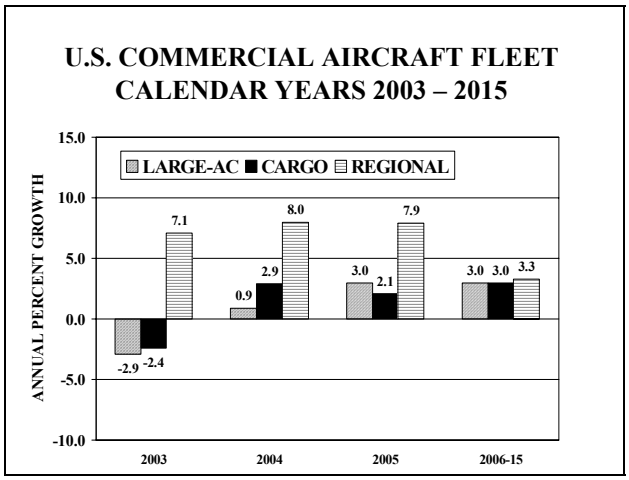
FISCAL YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
Total Cargo RTMs (Millions)											
Domestic	12,416	12,967	14,670	15,293	15,894	22,155	2.1	13.1	4.2	3.9	3.5
International	10,812	14,796	18,217	18,783	20,069	33,872	6.7	23.1	3.1	6.8	5.3
System	23,228	27,763	32,887	34,076	35,963	56,026	4.4	18.5	3.6	5.5	4.5
Total RTMs--Passenger Airlines											
Domestic	4,661	3,337	3,704	3,811	3,909	4,719	(2.8)	11.0	2.9	2.6	2.0
International	5,479	6,594	6,809	6,968	7,389	11,516	2.8	3.3	2.3	6.0	4.5
System	10,140	9,931	10,514	10,779	11,298	16,235	0.5	5.9	2.5	4.8	3.7
% RTMs--Passenger Airlines											
Domestic	37.5	25.7	25.2	24.9	24.6	21.3					
International	50.7	44.6	37.4	37.1	36.8	34.0					
System	43.7	35.8	32.0	31.6	31.4	29.0					
Total RTMs--All-Cargo Airlines											
Domestic	7,754	9,630	10,966	11,482	11,985	17,436	4.4	13.9	4.7	4.4	3.9
International	5,333	8,202	11,407	11,815	12,681	22,355	10.0	39.1	3.6	7.3	5.8
System	13,087	17,832	22,373	23,297	24,666	39,791	6.9	25.5	4.1	5.9	4.9
% RTMs--All-Cargo Airlines											
Domestic	62.5	74.3	74.8	75.1	75.4	78.7					
International	49.3	55.4	62.6	62.9	63.2	66.0					
System	56.3	64.2	68.0	68.4	68.6	71.0					
Cargo Aircraft 1/	824	965	942	969	989	1,332	1.7	(2.4)	2.9	2.1	2.9

Source:1995-2003; U.S. Air Carriers, Form 41, U. S. Department of Transportation.
2004-2015; FAA Forecasts
1/ Historical and forecast data on a calendar year basis

Commercial Aircraft

The number of commercial aircraft is forecast to grow from 7,704 in 2003 to 11,367 in 2015, an average annual growth rate of 3.3 percent or just over 305 aircraft annually. The commercial fleet grows by 275 aircraft in 2004 and 371 aircraft in 2005; however, most of the growth occurs among regional/commuters.



The number of large passenger jets (over 70 seats) declined by 120 aircraft in 2003 but are expected to increase by 35 aircraft in 2004 and an additional 124 aircraft in 2005. Over the remaining 10 years of the forecast period, the large air carrier passenger fleet increases by an average of 148 aircraft a year, reaching a total of 5,732 aircraft in 2015. The narrowbody fleet (including regional jets ordered by JetBlue) is projected to grow by 125 aircraft annually over the 12-year forecast period, the widebody fleet by less than 12 aircraft a year.

The regional/commuter passenger fleet is forecast to increase by 594 aircraft over the next 3 years--213 in 2004, 227 in 2005, and 154 in 2006. Thereafter, the regional/commuter fleet is expected to increase by an average of 115 aircraft (3.1 percent) over the remaining 9 years of the forecast period, reaching a total of 4,303 aircraft in 2015. The number of regional jets (up to 70 seats) in regional/commuter service is projected to grow from 1,321 in 2003 to 3,222 in 2015, an average annual increase of 7.7 percent. However, the turboprop/piston fleet is expected to decline from 1,351 in 2003 to 1,081 in 2009 and to remain at this level throughout the remainder of the forecast period. Turboprop/piston aircraft are expected to account for only 25.1 percent of the regional fleet in 2015, down from a 50.6 percent share in 2003.

Cargo large jet aircraft are forecast to increase to 969 aircraft in 2004, to 989 aircraft in 2005, and 1,332 aircraft in 2015. The narrowbody jet fleet is projected to decline by 4 aircraft over the 12-year forecast period. The widebody jet fleet is projected to increase by almost 33 aircraft yearly.

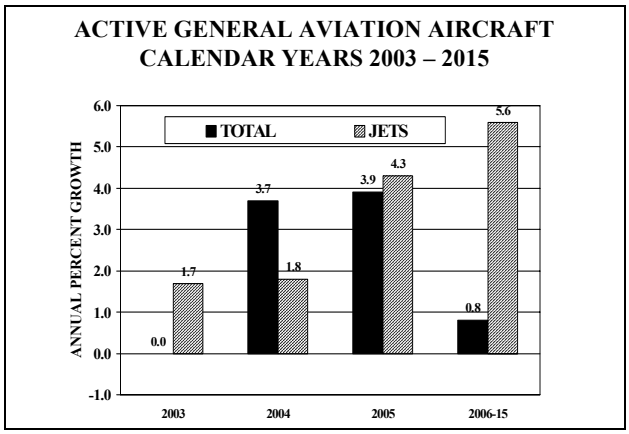
General Aviation

Despite the slowdown in the demand for business jets, the current forecast assumes that business use of general aviation aircraft will expand at a more rapid pace than that for personal/sport use. The business/corporate side of general aviation should continue to benefit from safety concerns for its corporate staff. These safety concerns, combined with increased processing times at some U.S. airports have made fractional, corporate, and on-demand charter flights viable alternatives to travel on commercial flights. In addition, the bonus depreciation provision of the President's economic stimulus package should also help stimulate business jet sales, especially during the latter months of 2004.

The active general aviation fleet is projected to increase at an average annual rate of 1.3 percent over the 12-year forecast period, growing from an estimated 211,190 in 2003 to 246,415 aircraft in 2015. The more expensive and sophisticated turbine-powered fleet (including rotorcraft) is projected to grow at an average annual rate of 3.1 percent over the 12-year forecast period. However, the jet fleet is responsible for most of

this growth, increasing from 8,500 in 2003 to 15,510 in 2015, an average annual increase of 5.1 percent.

At the September 2002 TRB/FAA workshop, the Business Aviation Panel suggested that the market for the new Eclipse jet aircraft could add an additional 5,000 aircraft to the active fleet by 2010. The Eclipse, a relatively inexpensive (priced at under $1 million) twin-engine business aircraft, is believed to have the potential to redefine the business jet segment by expanding business jet flying and offering performance that may support a true on-demand air-taxi business service. This year's forecast assumes that the Eclipse (or a similar type aircraft) will enter the active fleet in 2006 (100 aircraft) and grow by between 400 to 500 aircraft a year, reaching a total of 4,600 by 2015.



The numbers of piston-powered aircraft (including rotorcraft) are projected to increase from 163,250 in 2003 to 167,640 in 2015, an average increase of only 0.2 percent annually. This slow growth is due to declining numbers of multi-engine aircraft and the attrition of approximately 1,500 single engine aircraft annually. Single engine pistons and piston rotorcraft increase at annual rates of 0.3 and 1.0 percent, respectively, during the 12-year forecast period.

Starting in 2004, owners of ultralight aircraft (not currently included in the FAA's aircraft registry counts) can begin registering these aircraft as "light sport" aircraft. The forecast assumes registration of 15,535 aircraft over a 2-year period beginning in 2004. In addition, it is projected that approximately 300-500 newly manufactured light sport aircraft will enter the active fleet on an annual basis beginning in 2006. This new aircraft category is expected to total 20,915 by 2015.

Excluding the new sport aircraft, the number of general aviation hours flown is projected to increase by just only 0.4 percent in 2004, largely the result of the lingering effects of the slowdown in the demand for business jets and fractional flying. However, hours flown are expected to increase 1.6 percent a year over the last 11 years of the forecast period. Much of the increase over this latter period reflects increased flying by business and corporate aircraft as well as increased utilization rates on most general aviation aircraft.

Hours flown by turbine aircraft (including rotorcraft) increase an average of 3.8 percent yearly over the forecast period, compared with only 0.6 percent for piston-powered aircraft. Jet aircraft account for a large part of the increase, expanding at an average annual rate of 6.6 percent. The large increases in jet hours are due to expected increases in the fractional ownership fleet and its activity levels. Fractional ownership aircraft average approximately 1,200 hours annually compared to only 360 hours for all business jets. In addition, the introduction of the Eclipse (or similar type aircraft) may result in an increase in the activity and hours flown by on-demand air taxis.

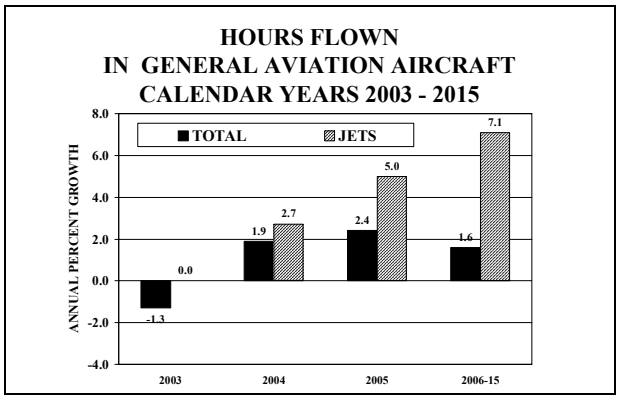
TABLE I-7

AVIATION DEMAND FORECASTS AND ASSUMPTIONS
GENERAL AVIATION

CALENDAR YEARS 2004-2015

AVIATION ACTIVITY	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
GENERAL AVIATION											
Total Active Fleet(000)	188.1	211.2	211.2	219.1	227.6	246.4	1.5	(0.0)	3.7	3.9	1.3
Total less Sport Aircraft (000)	188.1	211.2	211.2	211.4	212.1	225.5	1.5	(0.0)	0.1	0.3	0.5
Pistons	152.8	161.1	160.9	160.8	160.8	164.9	0.6	(0.1)	(0.0)	0.0	0.2
Single Engine	137.0	143.5	143.4	143.4	143.5	148.5	0.6	(0.1)	0.0	0.1	0.3
Multi-Engine	15.7	17.6	17.5	17.4	17.3	16.5	1.3	(0.5)	(0.5)	(0.5)	(0.5)
Turbine	9.6	15.2	15.4	15.6	16.0	23.6	6.1	1.1	1.2	3.0	3.7
Turboprops	5.0	6.8	6.9	6.9	7.0	8.1	4.0	0.3	0.6	1.4	1.4
Turbojets	4.6	8.4	8.5	8.7	9.0	15.5	8.1	1.7	1.8	4.3	5.1
Rotorcraft	5.8	6.6	6.7	6.7	6.7	7.2	1.7	0.0	0.5	0.6	0.7
Experimental	15.2	21.9	22.0	22.0	22.1	23.1	4.7	0.1	0.2	0.2	0.4
Sport Aircraft	NA	NA	NA	7.7	15.5	20.9	NA	NA	NA	101.8	NA
Other	4.7	6.4	6.4	6.4	6.4	6.6	3.8	0.0	0.3	0.3	0.3
Total Hours Flown(Mil)	26.6	27.0	26.7	27.2	27.9	32.7	0.0	(1.3)	1.9	2.4	1.7
Total less Sport Aircraft (Mil)	26.6	27.0	26.7	26.8	27.1	31.7	0.0	(1.3)	0.4	1.0	1.4
Pistons	20.3	18.9	18.6	18.6	18.7	20.0	(1.1)	(1.5)	0.1	0.5	0.6
Single Engine	17.8	16.3	16.1	16.1	16.2	17.5	(1.3)	(1.6)	0.2	0.6	0.7
Multi-Engine	2.4	2.6	2.5	2.5	2.5	2.4	0.6	(1.0)	(0.4)	(0.4)	(0.4)
Turbine	2.9	4.6	4.6	4.7	4.8	7.8	5.7	(0.4)	1.6	3.2	4.6
Turboprops	1.5	1.9	1.8	1.8	1.8	1.9	2.6	(1.1)	0.0	0.5	0.5
Turbojets	1.5	2.7	2.7	2.8	3.0	5.9	8.3	0.0	2.7	5.0	6.6
Rotorcraft	2.0	1.9	1.8	1.9	1.9	2.1	(0.8)	(1.7)	1.1	0.8	1.1
Experimental	1.2	1.3	1.3	1.3	1.4	1.5	1.5	0.0	0.0	0.4	0.6
Sport Aircraft	NA	NA	NA	0.4	0.8	1.1	NA	NA	NA	101.8	NA
Other	0.3	0.3	0.3	0.3	0.3	0.3	3.0	(0.9)	1.5	0.0	0.4
Total Aircraft Utilization(Hrs)	141.5	128.0	126.4	124.1	122.4	132.9	(1.4)	(1.3)	(1.8)	(1.4)	0.4
Total less Sport Aircraft (Hrs)	141.5	128.0	126.4	126.8	127.7	140.5	(1.4)	(1.3)	0.3	0.7	0.9
Pistons	132.5	117.3	115.6	115.8	116.3	121.0	(1.7)	(1.4)	0.2	0.4	0.4
Turbine	308.2	302.4	297.9	299.0	299.6	330.7	(0.4)	(1.5)	0.4	0.2	0.9
Rotorcraft	336.4	282.2	277.4	279.2	279.8	292.0	(2.4)	(1.7)	0.6	0.2	0.4
Total Active Pilots (000)	639.2	632.8	625.0	638.9	654.4	755.5	(0.3)	(1.2)	2.2	2.4	1.6
Total less Sport Pilots (000)	639.2	632.8	625.0	630.8	638.3	734.7	(0.3)	(1.2)	0.9	1.2	1.4
Instrument Rated Pilots (000)	298.8	317.4	315.4	318.5	323.3	385.5	0.7	(0.6)	1.0	1.5	1.7

Source: Fleet and Hours: 1995-2002, FAA General Aviation and Air Taxi Activity Survey; 2003-2015, FAA Forecasts
Pilots: 1995-2003, FAA Aeronautical Center; 2004-2015, FAA Forecasts



The number of active general aviation pilots (excluding air transport pilots) is projected to total 581,020 in 2015, an increase of almost 99,500 (up 1.6 percent annually) over the forecast period. A large part of this growth is due to the certification of 20,800 new sport pilots over the forecast period. However, more than half of the expected growth (50,300 pilots) is projected to occur in the private and commercial categories, reflecting the expected increase in the demand for pilots among fractional ownership companies, business corporations, and on-demand charter operations. The number of private pilots is projected to total 267,800 (up 0.8 percent annually) in 2015. Commercial pilots are forecast to increase from 123,700 in 2003 to 149,210 in 2015, an average annual increase of 1.6 percent. More than 21,100 new student pilots are projected to be certificated over the 12-year forecast period. The number of student pilots increase from 87,296 in 2003 to 108,430 in 2015, an average annual rate of 1.8 percent.

FAA Workload Forecasts

There were 484 towered airports at the end of September 2003, 266 FAA towers and 218 contract towers. While the number of FAA towers is expected to remain constant at 266 in 2004, the number of FAA contract towered airports is forecast to increase by 13 to 231. In 2003, aircraft activity at these 13 airports totaled approximately 1.2 million operations, with general aviation accounting for 96.5 percent of the total activity.

FAA and Contract Towers

Activity at the combined FAA and contract towers totaled 62.7 million operations in 2003, a decline of 3.3 percent from 2002. Activity is expected to increase 3.4 percent in 2004 and 4.3 percent in 2005, largely the result of increases of 4.0 and 4.7 percent, respectively, in commercial activity. Activity at combined FAA/contract towers is projected to increase at an average annual rate of 1.8 percent over the remaining 10 years of the forecast period, reaching 80.5 million operations in 2015. Most of the growth over the 12-year forecast period is due to increased commercial aircraft activity (up 2.8 percent annually). Activity at combined FAA/contract towers is expected to return to pre-September 11th levels in 2006.

General aviation activity is forecast to increase by 3.2 percent in 2004, 4.2 percent in 2005, and 1.3 percent annually over the remainder of the forecast period, reaching 43.4 million operations in 2015. General aviation activity would have increased by only 0.7 percent in 2004 without the addition of the 13 new contract towers.

Military activity, which declined by 1.8 percent in 2003, is expected to increase by 1.5 percent in 2004 and by 2.2 percent 2005. This increase is due to activity at the 13 new contract towers. (These airports are not included in the traffic count for previous years.) Military activity is held constant at the 2005 activity level (3.1 million) throughout the remainder of the forecast period.

Combined instrument operations counts at FAA and contract towered airports (48.2 million) declined by 2.7 percent in 2003. Instrument activity is expected to increase 2.8 percent in 2004 and 2.9 percent in 2005. Thereafter, instrument operations increase at an average annual rate of 2.0 over the remainder of the

TABLE I-8

AVIATION ACTIVITY FORECASTS
COMBINED FAA AND CONTRACT TOWERS

FISCAL YEARS 2004-2015

ACTIVITY MEASURES (In Millions)	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
NUMBER OF TOWERS											
FAA Towers	326	266	266	266	266	266					
FAA Contract Towers	95	217	218	231	231	231					
TOTAL	421	483	484	497	497	497					
AIRCRAFT OPERATIONS											
Air Carrier	13.6	13.2	12.8	13.1	13.7	17.9	(0.8)	(2.9)	2.2	4.4	2.8
Commuter/Air Taxi	10.2	11.0	11.4	12.1	12.7	16.0	1.4	3.6	5.9	4.9	2.9
General Aviation	35.9	37.6	35.5	36.6	38.2	43.4	(0.2)	(5.6)	3.2	4.2	1.7
Itinerant GA	20.9	21.4	20.2	20.8	21.6	24.6	(0.4)	(5.6)	3.0	3.8	1.7
Local GA	15.1	16.2	15.3	15.8	16.6	18.8	0.2	(5.6)	3.5	4.8	1.7
Military	2.6	3.1	3.0	3.1	3.1	3.1	1.8	(1.8)	1.5	2.2	0.3
Itinerant MIL	1.3	1.6	1.5	1.6	1.6	1.6	1.7	(1.5)	2.9	4.2	0.6
Local MIL	1.3	1.5	1.5	1.5	1.5	1.5	1.8	(2.2)	0.1	0.0	0.0
TOTAL	62.4	64.9	62.7	64.9	67.7	80.5	0.1	(3.3)	3.4	4.3	2.1
INSTRUMENT OPERATIONS											
Air Carrier	14.7	14.4	14.0	14.3	14.9	19.6	(0.6)	(2.7)	2.2	4.4	2.8
Commuter/Air Taxi	11.0	11.9	12.3	13.0	13.7	17.2	1.5	3.3	5.8	4.7	2.8
General Aviation	18.2	19.7	18.6	19.0	19.2	22.0	0.3	(5.2)	1.7	1.1	1.4
Military	3.6	3.6	3.3	3.3	3.3	3.3	(1.0)	(8.3)	0.0	0.0	0.0
TOTAL	47.4	49.6	48.2	49.6	51.0	62.1	0.2	(2.7)	2.8	2.9	2.1

Source: FY 1995-2015, FAA Data and Forecasts

TABLE I-9

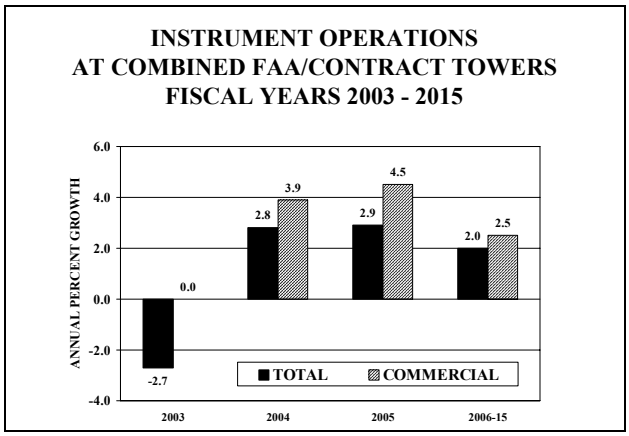
AVIATION ACTIVITY FORECASTS
FAA FACILITIES

FISCAL YEARS 2004-2015

ACTIVITY MEASURES (In Millions)	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
AIRCRAFT OPERATIONS											
Air Carrier	13.6	13.0	12.6	12.9	13.5	17.7	(0.9)	(3.0)	2.2	4.4	2.8
Commuter/Air Taxi	9.8	9.5	9.9	10.5	11.0	13.8	0.1	4.5	5.8	4.7	2.8
General Aviation	32.3	24.1	22.6	22.7	22.9	26.0	(4.4)	(6.4)	0.7	1.0	1.2
Itinerant GA	18.9	14.6	13.6	13.7	13.8	15.7	(4.1)	(6.8)	0.6	1.0	1.2
Local GA	13.4	9.5	9.0	9.0	9.1	10.4	(4.9)	(5.8)	0.7	0.9	1.2
Military	2.3	2.0	1.9	1.9	1.9	1.9	(2.2)	(4.2)	0.0	0.0	0.0
Itinerant MIL	1.2	1.1	1.1	1.1	1.1	1.1	(1.4)	(3.3)	0.0	0.0	0.0
Local MIL	1.1	0.9	0.9	0.9	0.9	0.9	(3.0)	(5.3)	0.0	0.0	0.0
TOTAL	58.0	48.6	47.0	48.0	49.3	59.4	(2.6)	(3.3)	2.1	2.7	2.0
INSTRUMENT OPERATIONS											
Air Carrier	14.6	14.3	13.9	14.2	14.8	19.4	(0.7)	(2.6)	2.2	4.4	2.8
Commuter/Air Taxi	10.8	11.6	12.0	12.7	13.3	16.7	1.3	3.4	5.8	4.7	2.8
General Aviation	18.1	19.4	18.3	18.7	18.9	21.7	0.2	(5.3)	1.7	1.1	1.4
Military	3.5	3.5	3.2	3.2	3.2	3.2	(1.2)	(8.5)	0.0	0.0	0.0
TOTAL	47.0	48.7	47.4	48.7	50.2	61.0	0.1	(2.7)	2.8	2.9	2.1
IFR AIRCRAFT HANDLED											
Air Carrier	21.0	22.8	22.7	23.4	24.5	32.1	1.0	(0.3)	3.0	4.4	2.9
Commuter/Air Taxi	6.9	8.8	9.1	9.7	10.1	12.8	3.5	3.8	5.8	4.7	2.8
General Aviation	7.8	8.2	8.0	8.2	8.3	9.7	0.3	(2.2)	2.2	1.6	1.6
Military	4.4	3.9	3.9	3.9	3.9	3.9	(1.6)	(1.7)	0.0	0.0	0.0
TOTAL	40.1	43.7	43.7	45.1	46.8	58.4	1.1	0.0	3.2	3.6	2.4
FLIGHT SERVICES											
Pilot Briefs	9.2	7.5	7.0	7.2	7.2	8.1	(3.3)	(6.0)	2.3	0.9	1.2
Flight Plans Originated	6.3	5.8	5.4	5.3	5.3	5.7	(1.9)	(6.2)	(1.5)	(0.8)	0.4
Aircraft Contacted	4.2	3.0	2.8	2.8	2.8	3.2	(5.0)	(5.4)	(1.9)	1.1	1.1
TOTAL	35.2	29.4	27.7	27.8	27.8	30.8	(3.0)	(6.0)	0.4	0.3	0.9
DUATS	11.5	16.5	17.5	18.2	18.8	22.5	5.4	6.0	4.3	2.9	2.1
TOTAL (w/DUATS)	46.7	45.9	45.1	46.0	46.6	53.3	(0.4)	(1.7)	1.9	1.3	1.4

Source: FY 1995-2015, FAA Data and Forecasts

forecast period, totaling 62.1 million operations in 2015. Instrument activity at combined FAA/contract towers is expected to return to pre-September 11th levels in 2007.

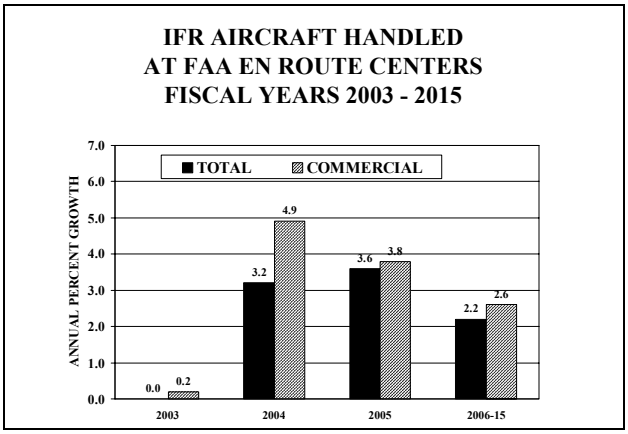


Commercial aircraft instrument operations are forecast to increase at significantly faster rates than are general aviation instrument operations, up 2.8 versus 1.4 percent over the forecast period. Military activity is expected to remain constant at its 2003 level of activity throughout the forecast period.

En Route Centers

Activity levels at FAA en route traffic control centers remained basically flat at 43.7 million in 2003, with a 0.8 percent increase in commercial activity counteracting a 2.0 percent decline in noncommercial activity. The number of aircraft handled at en route centers is forecast to increase by 3.2 percent in 2004 and 3.6 percent in 2005, largely the result of increases of 4.7 and 4.5 percent in commercial activity. En route activity increases by 2.2 percent annually over the rest of the forecast period, reaching a total of 58.4 million aircraft handled in 2015. Activity at FAA en route centers is expected to recover to pre-September 11th levels in 2005.

The number of commercial aircraft handled is projected to increase 2.9 percent annually while general aviation en route activity increases 1.6 percent a year over the 12-year forecast period. Military activity is held constant at the 2003 activity level throughout the forecast period.



The higher growth at FAA en route centers, relative to activity at FAA towered airports (2.4 versus 2.1 percent), reflects that commercial activity accounts for a much larger percentage of center activity--72.8 versus 38.6 percent at towered airports in 2003. Therefore, the projected larger increases in commercial aircraft activity have a much greater impact on total center traffic during the forecast period.

Flight Service Stations

Total flight services (non-automated) originating at traditional FAA flight service stations declined by 6.0 percent in 2003. Flight services are forecast to increase 0.4 percent in 2004, 0.3 percent in 2005, and 1.0 percent annually over the remainder of the forecast period. The number of flight plans originated is expected to decline over the first 3 years of the forecast period (down 2.5 percent), then increase at an annual rate of 0.9 percent over the rest of the forecast period to 5.7 million in 2015. The number of pilot briefs and aircraft contacted are projected to increase at annual rates of 1.2 and 1.1 percent, respectively, over the 12-year forecast period, totaling 8.1 and 3.2 million, respectively, in 2015.

TABLE I-10

FAA AVIATION FORECASTS
SELECTED AVIATION DEMAND MEASURES

CALENDAR YEAR 2004-2015

SELECTED FORECASTS	HISTORICAL			FORECAST			PERCENT AVERAGE ANNUAL GROWTH				
	1995	2002	2003	2004	2005	2015	95-03	02-03	03-04	04-05	03-15
U.S. Economy											
GDP (Bil 1996$)	7,543.8	9,439.9	9,730.2	10,162.8	10,527.8	14,376.0	3.2	3.1	4.4	3.6	3.3
Oil & Gas Deflator (1996 = 100)	94.2	109.1	128.2	120.5	112.1	135.0	3.9	17.5	(6.0)	(7.0)	0.4
Total U.S. Commercial Enplanements (Mil)											
Domestic	529.8	587.4	593.5	634.4	675.2	968.2	1.4	1.0	6.9	6.4	4.2
Large Air Carriers	474.3	493.4	483.0	506.1	533.0	743.8	0.2	(2.1)	4.8	5.3	3.7
Regionals/Commuters	55.4	94.0	110.4	128.3	142.2	224.4	9.0	17.5	16.2	10.9	6.1
International	49.7	54.1	54.7	60.1	63.9	100.1	1.2	1.0	10.0	6.3	5.2
Large Air Carriers	47.6	51.1	50.9	56.1	59.8	93.9	0.8	(0.2)	10.1	6.5	5.2
Regionals/Commuters	2.1	3.1	3.7	4.0	4.2	6.2	7.7	20.7	7.6	3.9	4.3
System	579.5	641.5	648.1	694.5	739.1	1,068.3	1.4	1.0	7.2	6.4	4.3
Total U.S. Commercial RPMs (Bil)											
Domestic	399.8	484.6	495.9	533.3	567.7	842.4	2.7	2.3	7.5	6.4	4.5
Large Air Carriers	387.8	452.3	453.9	481.9	508.8	736.0	2.0	0.3	6.2	5.6	4.1
Regionals/Commuters	12.0	32.3	42.1	51.5	58.9	106.4	17.0	30.2	22.4	14.4	8.0
International	144.6	165.5	157.0	175.2	188.1	305.6	1.0	(5.1)	11.6	7.4	5.7
Large Air Carriers	144.2	164.5	155.8	173.8	186.7	303.2	1.0	(5.3)	11.6	7.4	5.7
Regionals/Commuters	0.4	1.0	1.2	1.3	1.4	2.4	14.5	21.5	14.5	5.5	6.2
System	544.4	650.1	652.9	708.5	755.8	1,148.0	2.3	0.4	8.5	6.7	4.8
Air Cargo RTMs (Bil)											
Domestic	12.5	13.9	14.7	15.5	16.0	22.4	2.1	6.2	5.1	3.7	3.5
International	10.8	16.4	17.7	19.2	20.4	34.5	6.4	7.9	8.2	6.6	5.7
System	23.3	30.3	32.5	34.7	36.5	56.9	4.2	7.2	6.8	5.3	4.8
IFR Aircraft Handled (Mil)											
Commercial	27.9	32.0	32.1	33.6	34.9	44.3	1.7	0.2	4.9	3.8	2.7
Non-Commercial	12.1	12.1	11.9	12.1	12.2	13.6	(0.2)	(1.3)	1.1	1.1	1.1
Total Aircraft Handled	40.1	44.1	44.0	45.7	47.1	57.9	1.2	(0.2)	3.8	3.1	2.3

Source: CY 1995-2003, Economic data, OMB; Air Carrier/Regional data, DOT; FAA Workload, FAA.
CY 2004-2015, FAA Forecasts

The number of Direct User Access Terminal System (DUATS) services (up 6.0 percent in 2003) is projected to grow at an average annual rate of 2.1 percent over the forecast period, from 17.5 million in 2003 to 22.5 million in 2015. Combined FSS and DUATS services are expected to total 53.3 million in 2015, an annual increase of 1.4 percent.

FORECAST RISKS

Two words aptly describe FAA's current outlook for aviation demand and activity--"cautious optimism." Still, there remain numerous downside risks to achieving this year's forecasts. However, the probability of occurrence of these risks appears to be less than in the last several years and, for the first time in several years, there are actually some positive trends and/or factors that could cause aviation demand and activity to be higher than predicted.

Prominent in everyone's predictions of future aviation demand is the assumption that there will not be another terrorist incident aimed at the U.S. or world aviation community. Yet aviation, because of its high visibility and global reach, continues to be a target for international terrorism. However, tighter security measures have, to a large extent, restored the public's confidence in the integrity of U.S. and world aviation security systems.

Additionally, the SARS epidemic and, to some extent the war in Iraq, have amply demonstrated how sensitized global air travel has become to any form of extraordinary event. The reality is that in today's global marketplace, combined with the rapid assimilation of information/news, any extreme occurrence in one part of the world can cause ripples throughout the global community, including world travel markets.

Terrorist activity in general remains one of the greatest risks to achieving the forecasts contained herein. The continuous random acts of terrorism against U.S. and United Nation troops and/or civilians both in Iraq, neighboring countries, and around the world are a constant reminder to the flying public that no place is safe from terrorism. These terrorist acts do have a negative impact on travel to targeted areas, both immediately as well as for some period of time following the incident.

In addition, just the anticipation of the war in Iraq resulted in a spike in jet fuel prices in early 2003 (up 33.3 percent in the 1st quarter), reaching a peak of $1.05/gallon in March. Fuel prices are up 23.1 percent to date in 2003, an increase that the financially fragile U.S. airline industry can ill afford. Although, OMB and most economic forecasting services predict a fall in fuel prices over the next several years, considerably higher prices remain a distinct and real possibility.

U.S. Airways emerged from Chapter 11 bankruptcy protection in early 2003 and United Airlines is expected to emerge in mid-2004. Despite the restructuring and cost cutting that has occurred among most legacy network carriers over the past several years, these carriers' costs are still far from competitive with those of the low-cost carriers. Further rounds of cost cutting and confrontations with labor are almost a certainty. If the network carriers are unable to obtain additional concessions from labor, the alternative may be a further contraction of their route networks. This scenario could lead to more reductions in aviation services to small and medium sized communities. The demand for aviation services could be significantly impacted under such a scenario.

The commercial industry's current financial problems could conceivably lead to consolidation of the industry over the next several years. Although consolidation may improve the financial health of individual carriers and the industry, the fear is that consolidation could lessen competition in many

markets. Less competition could lead to higher fares for the flying public and lower travel demand.

One of the major drivers of the forecast in traffic demand comes from the low-cost carriers who are expected to increase their share of total traffic over the 12-year forecast period. With the exception of Southwest Airlines, however, the track record of low-cost low-fare airlines has not been that good. Although the current low-cost carriers appear to have greater financial stability and access to funding than previous start-ups, a prolonged slump in traffic and/or prolonged destructive fare wars could possibly cause one or more of these carriers to cease operations. The loss of competition could lead to increased fares and a loss of passenger demand.

Additionally, the forecast also assumes continued rapid growth among regionals/ commuters, spurred in part by large air carrier restructuring and the continued transfer of routes to their smaller partners. This has, in turn, led to a rapid buildup in the carrier's regional jet fleet, including large numbers of future orders and options for additional jets. This year's forecast assumes that the large air carrier industry returns to profitability in 2005. Once demand for air travel does return, the question then becomes whether the larger carriers will "take back" routes that were transferred to their regional partners. Should this occur, some regional carriers could find themselves saddled with excess capacity and reduced demand, the combination of which could weaken their financial viability.

Although the industry received a 4-month "tax holiday" from security fees during 2003, the taxes were reinstated in October. However, the fact remains that the gap between what the passenger pays and the revenue that airlines receive has widened over the last several years. The debate over who should pay for the cost of increased security--passengers, airlines, or government--remains unresolved.

The economic forecasts used to develop this year's aviation forecasts assume very strong economic growth in 2004 and 2005. The latest Global Insight pessimistic scenario—a rapidly declining dollar, rising oil prices, higher inflation, and rising unemployment--projects a 20 percent probability that the U.S. economy will achieve real GDP growth of only 3.4 percent in 2004 and 2.2 percent in 2005. Slower economic growth would not only slow the recovery in the demand for aviation services but would also hamper and slow the industry's return to profitability.

However, Global Insight's optimistic scenario--a capital spending boom, rapid technological progress, low inflation, and a delayed downturn in housing markets--projects an equal 20 percent probability that U.S. economic growth could exceed 5.0 percent in 2004 and 4.0 percent in 2005. Higher growth would lead to increased demand for aviation services and speed the industry's return to profitability.

Internationally, the global economy's performance has been disappointing, with 5 years of weak or uneven growth since 1998. Although the current forecast calls for a return to higher trend growth rates starting in 2004, there are numerous downside risks inherent in these forecasts. Almost all world regions appear to be counting on strong export growth to the United States as a major contributor to their recoveries. If, as predicted, the U.S. dollar continues to fall, strong U.S. economic growth may not translate into strong U.S. import growth. As such, growth in the rest of the world could remain sluggish for some time into the future.

Doubts also remain over the strength of domestic demand in both Japan and the Eurozone as these countries continue to be constrained by structural economic problems, political gridlock, institutional constraints, and the authorities' reluctance to take decisive action. Additionally, it is feared that slow economic growth in Brazil and recessions in

Venezuela and Uruguay could worsen and spread to other South American economies. Also, if the economic recovery in the U.S. is weaker than forecast, this could also negatively impact countries whose economies are dependent on export trade with the United States. The current forecasts assume strong passenger growth for travel between the United States and other world regions. Any slowing of demand could seriously inhibit the growth in world passenger demand.

Historically, international markets have been subject to a series of bilateral agreements that have, for the most part, severely restricted competition. However, current negotiations between the U.S. and the European Union, prompted by a ruling of the European Court of Appeals that voided agreements negotiated by individual countries, are focusing on wider access of U.S. carriers to London Heathrow Airport and U.S. limits on foreign ownership. If successful, additional U.S. carriers could gain access to new markets and introduce new competition in the North Atlantic market. Greater competition could lead to lower fares and higher growth in these markets.

The demand for general aviation products and services, including business jets, has declined over the past 3 years. How quickly the industry recovers depends, in large part, on a strong recovery in the market for business jets. However, some financial analysts are predicting that the business jet industry is at the beginning of what could be a multiyear cyclical downturn. How quickly this flying segment responds to the predicted economic rebound will go a long way in determining whether general aviation achieves the predicted increases in the demand for its products and services.

The current forecast assumes the introduction of the low priced Eclipse jet (or similar type aircraft) in 2006, with the market for this or similar aircraft totaling 4,600 by 2015. This is a relatively conservative assumption compared to some industry estimates. If the higher industry estimates are correct, the general aviation active jet fleet and hours flown could be considerably higher than forecast.

The current workload forecasts assume that commercial activity (air carrier and regionals/commuters) returns to pre-September levels in 2005/2006. Therefore, delays could become a critical limit to growth within this forecast period. It is critical that Government and industry planners use the next several years to develop comprehensive plans to head off certain future delays.

Although total demand at FAA facilities remains at levels considerably below those achieved prior to September 11th, these lower levels do not necessarily imply reduced workload for FAA air traffic controllers. At many U.S. large hub airports, peak period activity already exceeds that flown prior to September 11th. Based on the 2003 FAA Terminal Area Forecasts, 10 of the 35 Operational Evolution Plan (OEP) airports currently exceed pre-September 11th activity levels.[15] In addition, another six airports are expected to reach or exceed pre-September 11th levels in 2004.[16]

The mix of aircraft now operating at most large hubs is also significantly more complex than before September 11th. Smaller regional jets, that require greater separation than the larger aircraft they replaced, account for a significantly greater proportion of total flights--18.2 percent in 2003, up from 15.7 percent in 2000. This percentage is expected to increase to 19.2 percent by 2005. These complexities will make the FAA job more challenging even with less overall traffic.

The economic scenarios presented in this document call for a strong recovery beginning in 2004 and 2005 and sustained moderate

[15] Baltimore/Washington, Charlotte, Chicago Midway, Chicago O'Hare, Cincinnati, Ft. Lauderdale, Las Vegas, Memphis, Minneapolis/St. Paul, and Salt Lake City.

[16] Atlanta, Denver, Detroit, Houston Intercontinental, New York LaGuardia, and San Diego.

growth for both the U.S. and world economies. If these economic forecasts are realized, the demand for commercial and general aviation products and services should fully recover to pre-September 11th levels during the 2005/2006 time frame. Demand should also continue to expand throughout the rest of the forecast period.

CHAPTER II

ECONOMIC ENVIRONMENT

This chapter discusses the economic environment and data used in forecasting aviation demand. The data used in this chapter come from several sources. United States economic data, derived from annual and quarterly statistics, are taken from the Office of Management and Budget (OMB), Congressional Budget Office (CBO), and a private forecasting service—Global Insight, Inc. (Formerly DRI-WEFA). Quarterly data for the three series used to develop the aviation demand forecasts--Gross Domestic Product (GDP), the Consumer Price Index (CPI), and the Oil and Gas Price Index--are presented as seasonally adjusted annualized rates.

Fiscal year (FY) estimates are calculated by averaging the 4 quarters for the period October through September. Global Insight, Inc. (GII) international economic forecasts provide the basis for the international aviation forecasts. The United States economic data are presented on a fiscal year basis, while international economic data are specified on a calendar year (CY) basis, unless otherwise indicated.

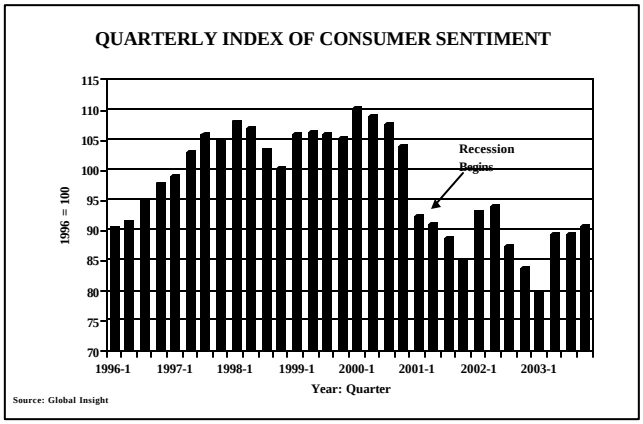
REVIEW OF 2003

The U.S. economy experienced its eighth consecutive quarter of expansion after the recession that encompassed the last 3 quarters of FY 2001 and ended shortly after the events of September 11th. Recovery from the economic downturn and terrorist attacks has proceeded in a sluggish manner being marred by the SARS epidemic and the war in Iraq. World economic growth has also suffered a slowdown over the past 3 years. However, all major regions of the world showed signs of improving economic conditions.

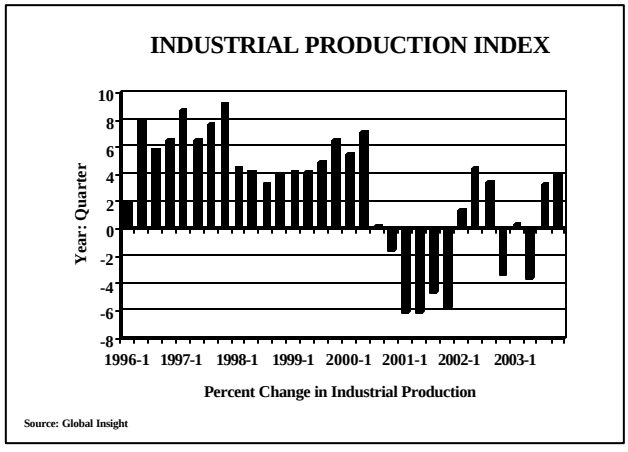
UNITED STATES

U.S. GDP continued to expand throughout 2003. The 1.4 percent annual growth in GDP in each of the first 2 quarters of 2003 represents a substantial slowdown from the 4.0 percent expansion pace of the 4th quarter of 2002. The first half of 2003 also stands in stark contrast to the rapidly expanding second half of the year when the economy expanded by 3.3 and 8.2 percent.

Consumer confidence, as measured by the University of Michigan's Index of Consumer Sentiment, fell off sharply in the last half of CY 2002 but rallied in the 2nd quarter CY 2003. The index rose substantially in the final 3 quarters of CY 2003, which bodes well for continued economic growth.



Demonstrating the weakness of the recovery and the sluggishness of the economy, the following chart shows a substantial decline in industrial production beginning in the 1st quarter CY 2001 that turned up in the 1st quarter of CY 2002 only to fall again in the 4th quarter. However, the index rose during the last two quarters of CY 2003. The up and then down nature of this recovery has created substantial uncertainty that, in itself, constrains growth.



Price inflation, measured by the consumer price index (CPI), increased modestly in 2003 with prices rising 2.3 percent, compared with a 1.6 percent increase a year earlier. Energy prices, which have a high degree of volatility, rose sharply in 2003 with the oil and gas price index rising 14.6 percent.

The unemployment rate reached 6.4 percent in June 2003 and has remained at or above 6.0 percent since April. This persistent high level of unemployment has marked this recovery as "jobless." Unemployment averaged 5.8 percent a year earlier.

The Federal Reserve Board (FED) has lowered interest rates 13 times since the beginning of 2001 as the economy has struggled its way out of the recession. The FED most recently cut in federal funds rate came on June 25, 2003 when it lowered the rate banks charge one another for overnight funds by 25 basis points, to 1.0 percent. This has brought short-term interest rates to a 45-year low. The prime-lending rate for many short-term consumer and business loans remains at 4 percent, the lowest level since 1959.

WORLD

Worldwide GDP grew by 2.5 percent in 2003, up from 2.0 percent growth in 2002 and 1.3 percent in 2001. Although much of the economic uncertainty of the past 2 years has dissipated, some world regions continue to lag. The substantial problems nagging Western Europe and Latin America threaten the world-wide recovery.

Western Europe continued its significant economic slump in 2003. Important factors contributing to Europe's problems are the continuing sluggishness of the German economy and the tight fiscal and monetary policies throughout the region. Already high unemployment rates continue to increase. In Germany unemployment has reached 10 percent.

Eastern Europe grew at 3.6 percent in 2003 a significantly faster pace than the 2.7 percent rate of a year ago. This relatively fast growing region has several factors spurring its growth including expanding exports, increased direct foreign investment, and relatively low labor costs.

The oil-based economies of the Middle East and North Africa grew by 2.8 percent in 2003. The Iraqi war and the Israeli-Palestinian conflict, along with fears of terrorism, have undermined tourism and investment in this region. The relative strength in oil export revenues has helped to maintain economic stability in the region.

Despite the outbreak of SARS, the combined GDP of Asia (including Australia and New Zealand) grew 3.6 percent in 2003, up from 2.4 percent a year earlier. Japan, Asia's largest economy, grew by 2.2 percent in 2003. Although less then the average growth in the rest of Asia, it represents a significant improvement over last year's 0.2 percent pace. Asia's export sector and fast growing high tech industries have driven this expansion.

Latin America economies continued its weak performance during 2003, with region-wide GDP expanding by only 1.3 percent. However, this growth showed a substantial improvement over last years 2.1 percent loss. The entire region suffers from high unemployment and continued political uncertainty. The countries of Brazil, Colombia, and Venezuela each have severe economic problems.

The G-7 nations—U.S., Canada, United Kingdom (U.K.), Germany, Italy, France, and Japan—reported growth rates ranging from zero in Germany to 3.0 percent in the U.S. Other European G-7 counties, France and Italy, also reported slow growth with GDP growing 0.2 and 0.5 percent, respectively. Canada, Great Britain, and Japan registered economic growth of 1.7, 2.0, and 2.2 percent, respectively.

Price inflation was modest in all the G-7 nations in 2003. The U.K. had the highest inflation rate (2.9 percent) followed by Canada and Italy with price increases of 2.8 and 2.7 percent, respectively. The U.S., France, and Germany had rates of 2.3, 2.0, and 1.0 percent, respectively. Japan experienced price deflation of 0.3 percent.

Among G-7 nations, short-term interest rates ran from a high of 3.7 percent in the U.K. to a low of zero in Japan. Germany, France and Italy had a 2.3 percent rate in line with European Union (EU) policy. The U.S had a rate of 1.0 percent while Canada reported a 2.9 percent rate. With the exception of Canada, each of the G-7 nations lowered their short-term interest rates in 2003, with EU nations lowering their rates by 100 basis points.

Six of the G-7 nations appreciated their currencies against the dollar in 2003. EU nations appreciated the most with the Euro increasing its value 19.6 percent relative to the dollar. The Canadian dollar (C$), the Japanese yen (¥), and the British pound (£) each appreciated by 12.2, 8.9, and 7.9 percent respectively. Hence, U.S. citizens' trips abroad have become more costly, while visits to the U.S. from abroad have become less expensive.

U.S. ECONOMIC OUTLOOK

The economic assumptions used in developing the FAA baseline aviation forecasts are derived from estimates provided by the Executive Office of the President, Office of Management and Budget. GDP projections are Bureau of Economic Analysis (BEA), 1996 chain-weighted estimates.[1] Forecasts

[1] The Bureau of Economic Analysis (BEA) released its revised estimates of GDP and other national income and product accounts on December 10, 2003. Quantities, or

for the Congressional Budget Office (CBO) and Global Insight Inc. (GII) are also shown.

SHORT-TERM ECONOMIC OUTLOOK

Graphics on the following page show a favorable forecast for economic growth during the next 2 years. OMB projects GDP to grow 4.0 percent during each quarter in 2004. GII predicts somewhat slower growth during the 1st quarter (up 3.5) but considerably stronger growth over the remaining 3 quarters of the year—up 4.4, 4.5, and 5.0 percent. CBO also predicts slower growth during the 1st quarter (up 3.8 percent), then stronger growth throughout the remainder of the year—up 4.5, 4.3, and 4.2 percent, respectively, over the last 3 quarters of 2004.

Moderate price inflation is expected to accompany the economic rebound in 2004 and 2005. According to OMB, prices as measured by the CPI, are projected to increase at a modest pace of 1.2 percent in the 1st quarter 2004 and to gradually pick up to 1.6 percent rate by the 4th quarter of 2005. After rising sharply in the first quarter 2004, volatile fuel prices, as measured by the oil and gas price index, are expected to decrease rapidly through the remainder of 2004 and the first half of 2005. OMB expects energy prices to climb 9.0 percent rate in the 1st quarter of 2004 and decrease in each of the next quarters at rates ranging from 16.9 percent in the 3rd quarter of 2004 to 8.6 percent in the 2nd quarter of 2005. Oil prices are forecast to rise slightly by 1.3 and 1.5 percent in the final two quarters of 2005.

"real" measures, and prices were rebased to calendar year 2000. The economic forecasts used to develop this year's FAA aviation forecasts were prepared prior to the revisions.

LONG-TERM ECONOMIC OUTLOOK

The long-term economic outlook for the U.S. economy shows real GDP growth averaging 3.3 percent over the 12-year forecast. (See graphics on page 6.) Long-term economic growth depends on growth in the factors of production—labor, capital, and technology. The relative mix of these factors combined with the state of technology determines productivity of each factor.

Labor supply depends on population growth and its composition. National savings determine capital accumulation. Technology can expand the productivity of both factors. In sum, changes in the factors of production and the state of technological development affecting those factors determine economic growth.

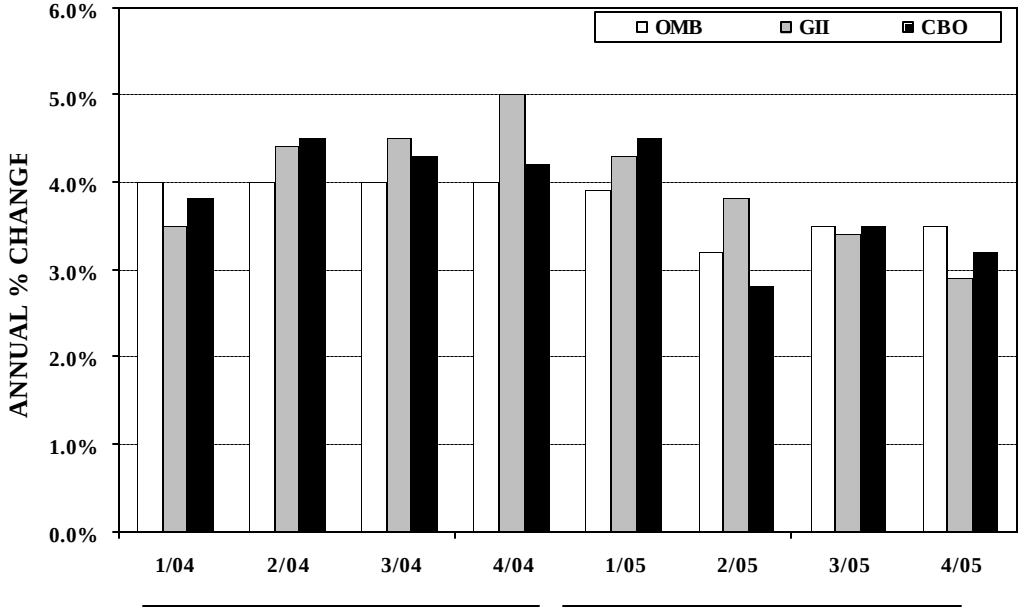
Although the economic recovery has remained sluggish until just recently, the U.S. economy finds itself poised for substantial long-term income growth. While the labor supply will expand moderately during the forecast period, other factors such as low interest rates, continued capital investment, and productivity improvements from the cyber revolution should provide a solid base for future expansion.

The U.S. population is expected to expand at 0.8 percent annually over the forecast period according to GII. Based on the growth in population and labor force participation rates, the U.S. labor force will grow at a 1.0 percent pace over the period. Employment, based on the Bureau of Labor Statistics (BLS) establishment survey, is projected to increase 1.4 percent annually, from 130.1 million in 2003 to 153.4 million in 2015. Technology and the ratio of capital to labor determine productivity.

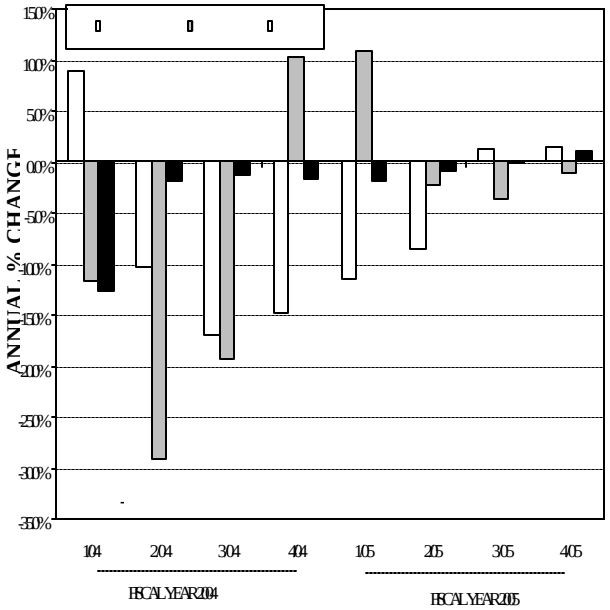
Continued growth in business investment over the forecast period implies further productivity

U.S. SHORT-TERM ECONOMIC FORECASTS

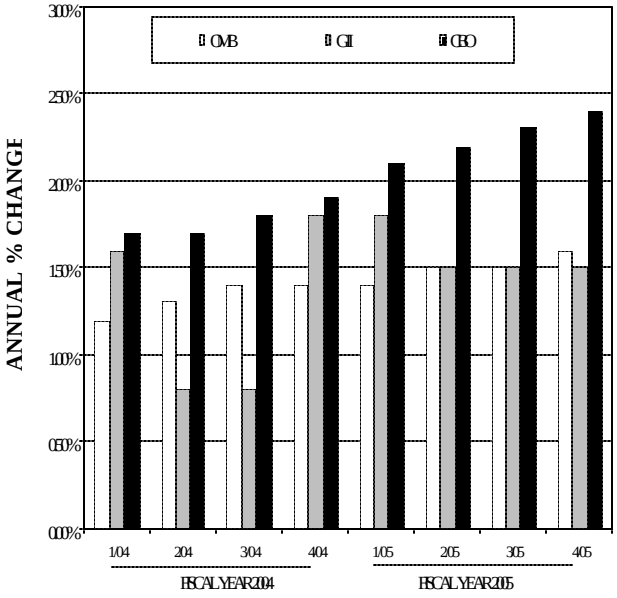
REAL GROSS DOMESTIC PRODUCT
(1996 DOLLARS, CHAIN-WEIGHTED)



OIL AND GAS PRICE INDEX
1996=100

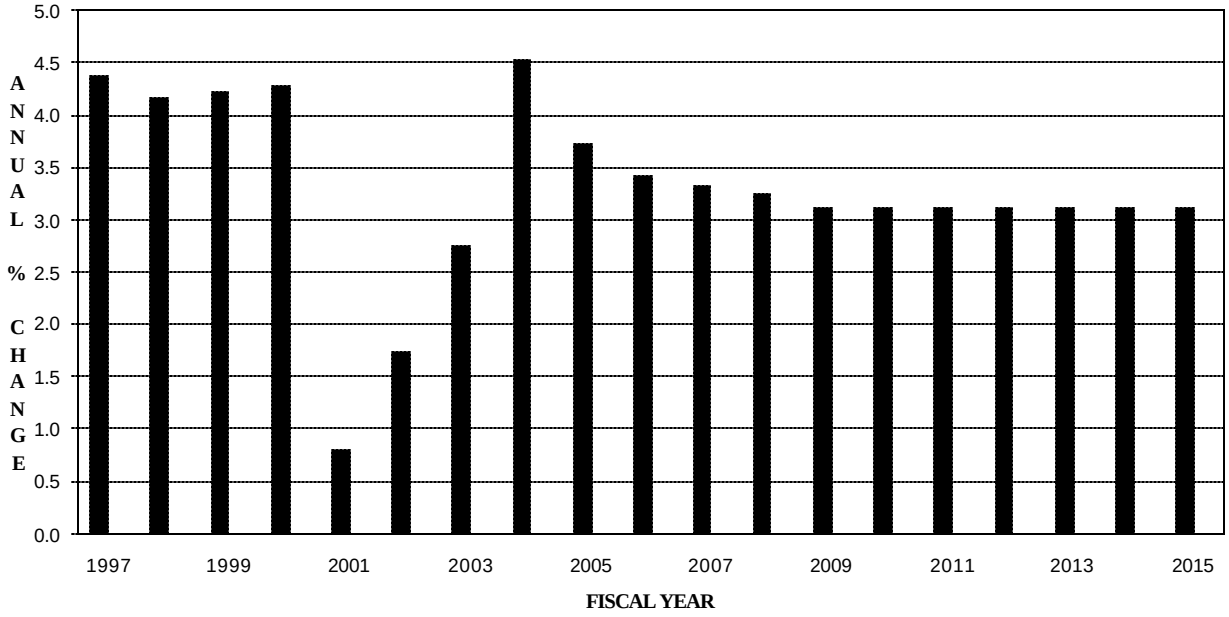


CONSUMER PRICE INDEX
(1982-84=100)

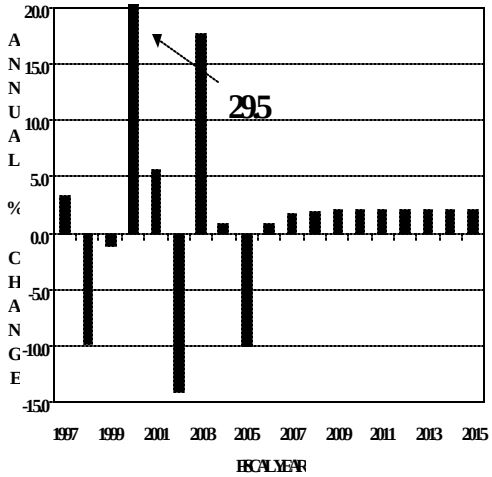


U.S. LONG-TERM ECONOMIC FORECASTS

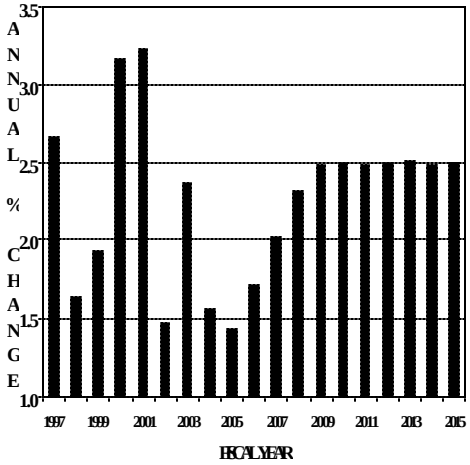
GROSS DOMESTIC PRODUCT
(1996 DOLLARS, CHAIN-WEIGHTED)



OIL AND GAS PRICE INDEX
(1996=100)

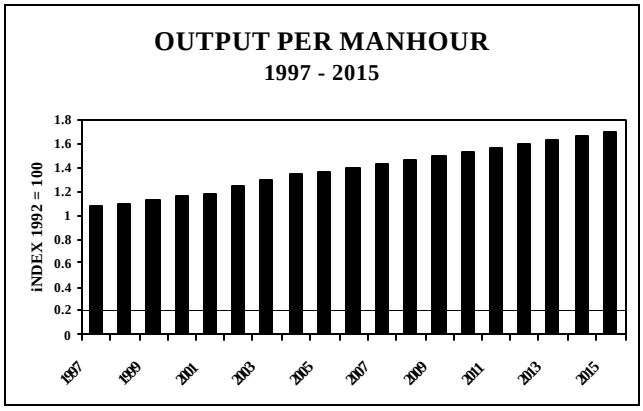


CONSUMER PRICE INDEX
(1982-84=100)



increases. Therefore, wages will continue to rise over the forecast period. U.S. companies are projected to continue capital accumulation at a pace of 4.4 percent annually.

Productivity, as measured by output per hour, is forecast to rise 2.3 percent annually over the next 12 years. The following graph presents historical and forecast output per hour between 1997 and 2015.



Inflation is expected to remain moderate during the forecast period. OMB projects a 2.2 percent annual price increase through 2015. Fuel prices are forecast to rise slightly in 2004 (up 0.7 percent), decline by 10.0 percent in 2005, and then increase at an average annual rate of 1.8 percent over the remainder of the forecast period. In real terms, oil prices are expected to decline at a 1.5 percent annual rate over the forecast period.

ALTERNATIVE FORECASTS

Alternative short-term U.S. economic forecasts are given in Chapter X, Table 1, as prepared by OMB, Global Insight (GII), and CBO; Tables 2 and 3 present their long-term forecasts. Over the 12-year forecast period, both GII and CBO forecast slower growth than OMB (up 3.3 percent)—3.2 and 3.0 percent, respectively. growth. GII and CBO both predict higher price inflation over the forecast period—up 2.3 and 2.4 percent, respectively, compared to 2.2 percent for OMB. GII and CBO predict that fuel prices will increase by 1.8 and 1.5 percent, respectively, over the 12-year forecast period. This compares to the significantly lower OMB projection of only 0.7 percent annual increase.

WORLD ECONOMIC OUTLOOK

The principal economic issues related to FAA's international traffic forecasts are discussed below. International economic data are presented in tabular form in Chapter X, Tables 4 through 6. International GDP data are presented on a calendar year basis and are expressed in 2000 U.S. dollars. GDP and exchange rates for individual countries, as well as groups of countries, are obtained from GII.

WORLD GDP

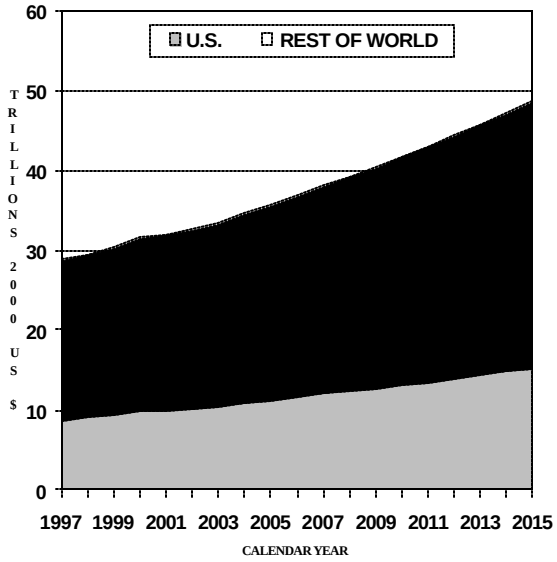
The graphics on the following page depict both the historical trend and projected GDP growth for major economic regions of the world. Worldwide GDP is projected to increase by nearly $1.2 trillion to a level of $34.5 trillion in 2004, an annual increase of 3.7 percent. Over the 12-year forecast period, world output is projected to reach $48.5 trillion, an annual growth rate of 3.2 percent.

Canada

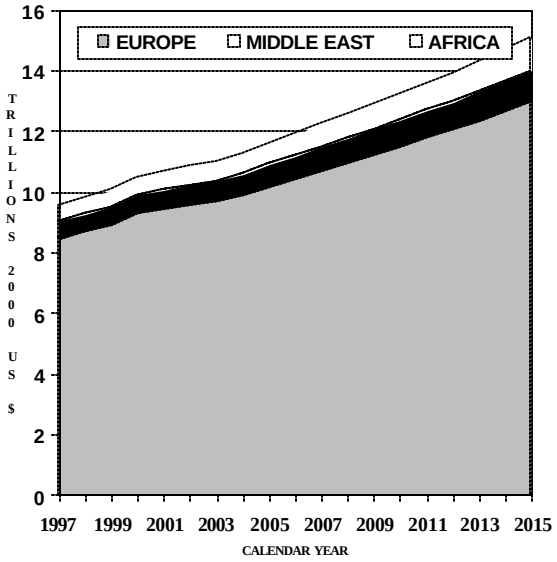
Canadian economic growth has outpaced U.S. growth from 1999 to 2002. However, this past year's growth (1.7 percent) fell below the U.S. pace. Canada's GDP is projected to increase by 3.6 percent in both 2004 and 2005. Remaining

GROSS DOMESTIC PRODUCT
BY WORLD REGION

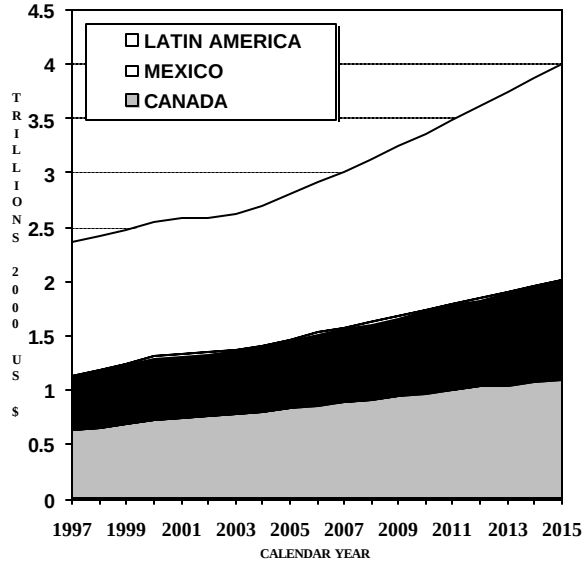
WORLD



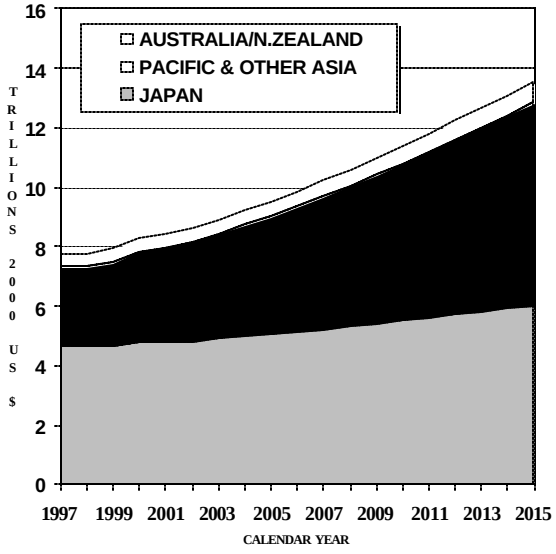
EUROPE/MIDDLE EAST/AFRICA



CANADA/MEXICO/LATIN AMERICA



JAPAN/PACIFIC & OTHER ASIA/AUSTRALIA & NEW ZEALAND



somewhat dependent on the U.S. economy, Canada's economy is projected to grow 3.0 percent a year over the forecast period. Highly dependent on U.S. trade, Canada's economy is projected to grow 3.0 percent a year over the forecast period.

Exports make up a substantial portion of Canada's economy. As a member of the North American Free Trade Area (NAFTA), Canada has fueled its growth over the past few years with trade. In 2003, a weak tourism industry and restricted exports of beef and softwood lumber lowered export performance in 2003. Tourism was impacted by a 10.8 percent appreciation of the Canadian dollar relative to the U.S. dollar and the SARS epidemic in Toronto. With the recovery of the U.S. economy, Canada remains well poised to take full advantage of its close economic and political ties with the U.S.

The Bank of Canada has left standing the 170-basis-point gap between Canadian and U.S. rates. The higher interest rates combined with an appreciating Canadian dollar provide substantial monetary tightening. Fiscal policy also remains tight. Canada continues to lower taxes with the Federal capital tax slated for reductions over the next 5 years.

Two key factors affecting the Canadian economy provide risk for the short-term forecast. First, the Canadian dollar has evaluated upward strongly over the past year. The Canadian dollar moved up 11.0 percent relative to the U.S. dollar in 2003. This has made Canadian exports more costly and, hence, reduced demand to the rest of the world for Canadian products. Second, as long as the U.S. economy continues to grow, Canadian exports to the U.S. should also continue to grow. Exports to the U.S. account for 36 percent of Canada's GDP. A weakening of the U.S. recovery would directly affect the growth in Canadian output.

Pacific/Far East

The combined economies of Asia and Oceania--including Japan, the developing Asia Pacific, China, India, and Pakistan, along with Australia and New Zealand—grew by 3.6 percent in 2003, a substantial rebound for this booming economic region after several years of sluggish growth. GII projects Asian GDP to increase by 4.0 and 3.9 percent, respectively, in 2004 and 2005. Over the forecast period, the combined Asian GDP is projected to grow 3.6 percent annually, from $8.9 to $13.6 trillion.

Asia appears to have rebounded well from the SARS crisis with tourism showing signs of recovery. Another positive side to the Asian economy is the resurrection of the technology sector. For instance, the semiconductor industry has expended rapidly during 2003. Deflation that has haunted much of Asia in the past few years has eased somewhat. However, falling prices remain a challenge in Hong Kong and Japan.

Japan's GDP, which makes up 47 percent of Asian economic output, grew by 2.2 percent in 2003 after marginal increases of 0.4 and 0.2 percent over the past 2 years. The world's second largest economy is projected to grow 2.4 percent and 2.3 percent in 2004 and 2005, respectively. Over the forecast period, GII projects that Japan's GDP will expand by 1.9 percent annually.

Japan's lingering economic slump appears to be in the past. However several factors limit Japan's potential economic growth. The country continues to support excess capacity in its heavy industries; it suffers from a long-term downtrend in capital investment; and deflation has made monetary policy ineffective. Additionally, Japan's declining population will place limits on its rate of growth.

Prices in Japan have fallen at a pace of between 1 and 2 percent a year over the past half-decade.

This deflation has fed the countries protracted economic slump. With nominal interest rates at near zero, monetary policy cannot push real interest rates down further. In this classic liquidity trap situation, Japan's central bank is unable to stimulate the economy no matter how expansive its monetary policy.

Japan, in its efforts to restructure its economy has increasingly turned to layoffs as a remedy. The much touted guaranteed "lifetime employment" has become a myth of the past as domestic and international competition has forced businesses to become more flexible. The unemployment rate, now at 5.4 percent is projected to rise to 6 percent in the next few years.

The Japanese forecast faces several risks. As the yen continues to appreciate, Japan's export industries will face weakening demand. Many Japanese have removed themselves from the labor market because of what they see as poor job prospects. This lowers the unemployment rate, but it also reduces growth potential. Perhaps more significantly, the dangers presented in the nuclear standoff with North Korea hangs over the entire north Asian region like a pall.

The economies of the Pacific and developing Asia--the Pacific Basin, China, India, and Pakistan—continue their very strong and rapid growth. This region grew at an average 6.7 percent during the 1990's. GDP for this area rose by 5.6 percent 2003 and is projected to climb 6.4 and 6.0 percent, respectively, in 2004 and 2005. Over the forecasts period, GDP is forecast to rise 5.7 percent annually.

China's output makes up approximately 30 percent of Asia's output outside of Japan. This very rapidly growing economy expanded by 8.3 percent in 2003 and is forecast to grow 7.9 and 7.2 percent over the next 2 years. Over the next 12 years, China will grow at 6.6 percent annually.

Although Asia appears to have a prosperous future, its forecast is clouded with risk. Terrorism threatens many Asia nations with the emergence of radical Islamic groups. The uncertainties related to North Korea's nuclear disarmament also provide substantial uncertainties to the forecast.

Latin America

Mexico and Latin America continue to work their way through tough economic times. The GDP of Mexico grew by 1.0 percent in 2003 after rising only 0.9 percent a year earlier. However, Mexico is expected to rebound with growth of 2.9 and 3.5 percent over the next 2 years. Over the forecast period, Mexico is forecast to grow at a 3.6 percent pace. The countries of Latin America and the Caribbean grew by 1.3 percent in 2003. However, growth is a considerable improvement over last years GDP decrease of 2.1 percent. Latin America is expected to grow by 3.8 and 3.6 percent in 2004 and 2005, respectively. Over the forecast period, this region is projected to grow at 4.0 percent annually.

Mexico, much like Canada, depends heavily on trade with the U.S. Ninety percent of Mexican exports go to the U.S. To the extent that the U.S. continues its recovery, this will assist Mexico in putting its economic doldrums behind it. The export of oil has substantially assisted in the improvement of the Mexican economy over the past year. Nevertheless, the maquiladora-manufacturing sector has lagged due in part to competition from China. GII expects Mexican manufacturing exports to improve significantly in 2004.

With many structural reforms underway in Mexico, a significant impediment to further expansion is the continued depreciation of the peso. The general weakening of the U.S. dollar should assist Mexico in this area.

As in the past, Mexico's largest risk comes from its heavy dependency on trade with the U.S. Hence, the fate of the Mexican economy lies in the performance of the U.S. economy. Another risk is the price of oil. A rapid decline in the price of oil would substantially impact Mexico's growth path.

A year has made a considerable difference for Latin America's second largest economy, Argentina. After its worst crisis in history, economic growth is finally underway. After four successive years of economic decline, cumulating in a 10.9 percent drop in 2002, Argentina grew by 6.9 percent in 2003. Growth is expected to continue with at a 3.5 percent annual rate over the forecast period.

The Argentinean peso has fallen to a very competitive value and this has created a boom in commodity exports, especially agricultural commodities. Additionally, the Kirchner administration has performed very well in keeping a lid on public sector costs, including public utility prices. A major risk facing Argentina is the potential for increased social discontent with public services.

Latin America's largest economy, Brazil, grew by a sluggish 0.4 percent in 2003, the third consecutive year of slow growth. GII projects growth to pick up this coming year, with GDP growing 3.2 and 3.3 percent in the next 2 years. The long-term growth target for Brazil is 3.9 percent.

Brazil has a mostly optimistic long-term economic outlook, however, significant risks cloud the future. Price inflation threatens to undermine Brazil's economic stability. Over the past year, inflation has risen from 6 percent to 17 percent. This very high rate of inflation is the make or break issue for the Lula administration. Needed pension and tax reforms continue to wind their way through Brazil's political system. Without this reform, the government debt will continue to grow at rates that will affect the entire Brazilian economy.

Europe/Middle East/Africa

The combined economic output of all Europe, the Middle East, and Africa grew by 1.2 percent in 2003, the third consecutive year of below average growth. This European dominated region is forecast to grow by 2.4 and 2.9 percent over the next 2 years. Over the 12-year forecast period, this region is expected to grow 2.6 percent a year.

Western Europe, responsible for 84 percent of the region's output, grew by only 0.8 percent in 2003. Western Europe is dominated by the European Union (EU) countries--Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and the United Kingdom--and is forecast to increase by 2.0 and 2.5 percent, respectively, in 2004 and 2005. Over the forecast period, Western Europe is projected to grow 2.2 percent annually.

Trade has presented the EU with a sizeable challenge. Exports have been weakened by the growing strength of the euro. A strong euro will likely maintain a drag on trade as EU policy makers work to preserve its strength to assure the euros place among world currencies. Additional pressure will come from the declining U.S. dollar.

The EU has several factors obstructing growth in the near term. Fiscal and monetary policy reaction to the downturn by the authorities has been passive. With strong deflationary pressures, EU monetary and fiscal authorities have acted too little, to late. Additionally consumer demand and business investment are weak. Consumer confidence reached a 9-year low and business investment contracted 0.7 percent in 2003.

The EU faces numerous risks in its forecast. A renewed wave of terrorist assaults would dampen growth. The dependency on trade with the U.S. means that a weakening of U.S. economic growth

would slow EU trade. A further appreciation of the euro will raise the price of EU exports and further lower demand. And, a continuation of tight monetary and fiscal policy under present conditions will lower expected GDP growth.

Emerging Europe, which includes the countries of Eastern Europe and former Soviet Republics, expanded its combined GDP by 5.0 percent in 2003. This up-and-coming region is projected to grow 4.9 percent in 2004, 4.7 percent in 2005, and expand at an annual average rate of 4.4 percent over the forecast period.

Export trade that in turn fuels its manufacturing base notably supports this region's growth. Additionally, expansionary monetary and fiscal policy throughout this region will continue to foster economic expansion. Higher oil prices have assisted growth in the former Soviet Union countries, particularly the countries of Russia, Kazakhstan, and Azerbaijan.

The oil-producing and commodity-exporting regions of the Middle East and Africa grew by 2.7 percent in 2003 and are forecasts to rise 4.2 and 4.7 percent, respectively, in 2004 and 2005. For the next 12 years, the region is expected to grow at 4.1 percent annually. This region's dependence on the production, sale, and export of oil places its fate in the hands of the volatile oil market. The price of a barrel of oil in 2003 is $25.5 and is forecast to remain in the $22 to $28 a barrel level over the next couple years and to rise slightly over the forecast period.

This region faces substantial risks. A collapse in oil prices, caused perhaps by increased production in Russia and Iraq, would appreciably decrease economic growth in this region. A rise in the current crises in Palestine and Iraq could spread and cause mass civil unrest in the region. The rise of Islamic fundamentalism could destabilize countries like Saudi Arabia causing disruptions in oil markets.

DOLLAR EXCHANGE RATE

Graphics on the following page present historical and forecast values for the U.S. trade-weighted nominal exchange rate index with selected other developed countries.[2] The trade-weighted exchange rate measures the relative purchasing power of the U.S. dollar against economically developed countries accounting for trade differences. The graph also displays the historical and projected dollar exchange rates against the Japanese yen and the euro. Table VI in Chapter X displays the historical and forecast exchange rates from 1998 to 2015 for the Canadian dollar, the British pound, the Japanese yen, and the European Union euro.

The U.S. dollar on trade-weighted terms tumbled against its major trading partners in 2003. The dollar is forecast to continue its decline against the currency of trading partners throughout the 12-year forecast period, declining 2.4 percent annually. The U.S. dollar fell against the Canadian dollar in 2003--one Canadian dollar cost $0.714 in 2003 compared with $0.637 a year earlier. The appreciation of the Canadian dollar is expected to continue with an increase to $0.784 in 2004 and to $0.861 by 2015.7.

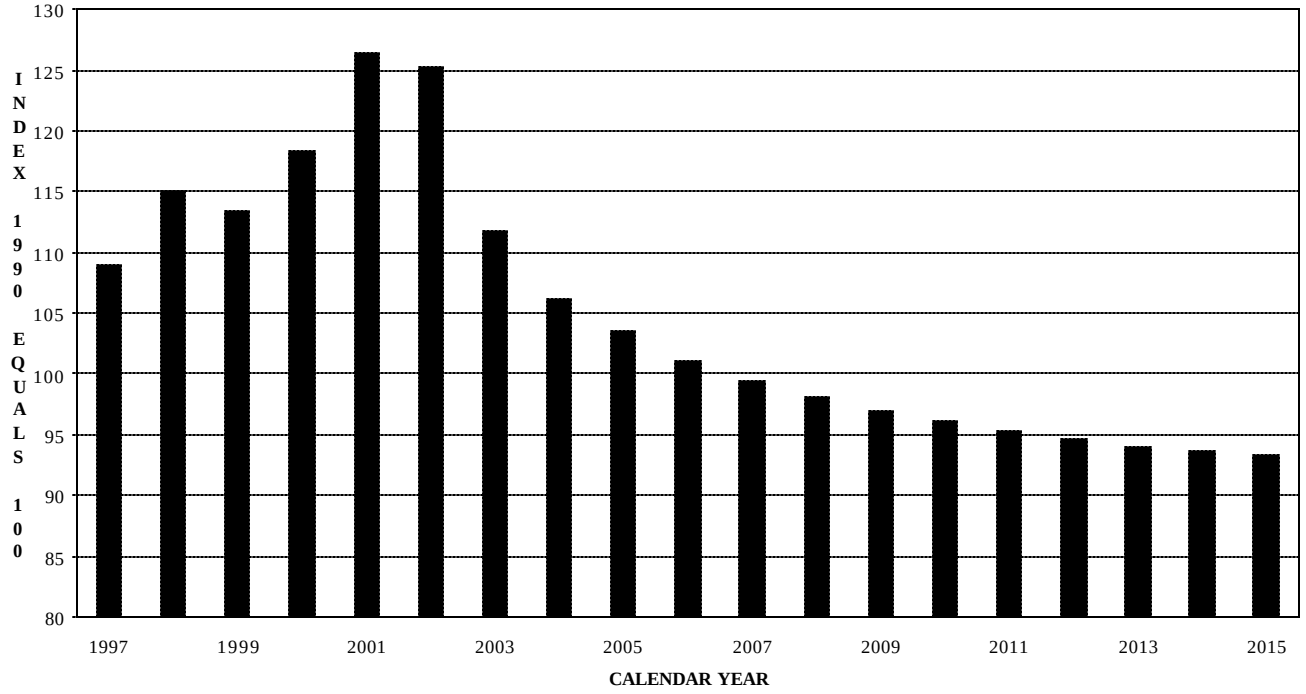
The Japanese yen also appreciated against the dollar in 2003, rising 7.9 percent to $8.61 per ¥1,000. Over the forecast period the yen is forecast to rise by an average of 2.5 percent per year, reaching $11.60 per ¥1,000 in 2015. The

[2] Note: A fall in the index implies a depreciation of the dollar against other currencies; a rise in the Euro and yen also implies a depreciation of the dollar.

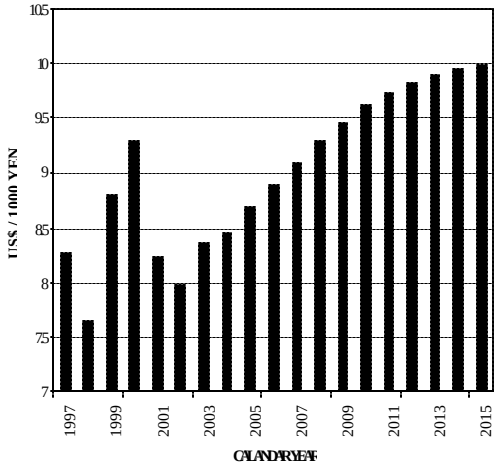
EXCHANGE RATE TRENDS AND FORECASTS

U.S. TRADE-WEIGHTED EXCHANGE RATE

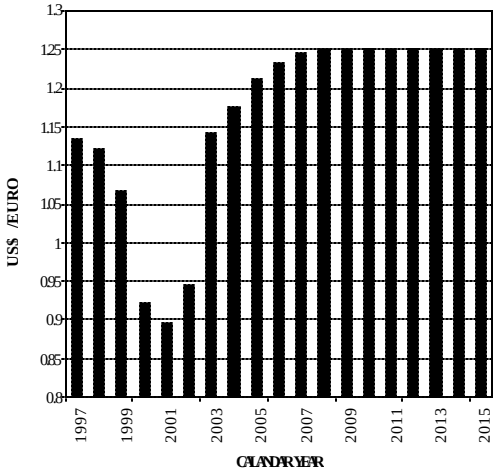
(NOMINAL RATE WITH OECD COUNTRIES)



JAPANESE YEN



EUROPEAN UNION EURO



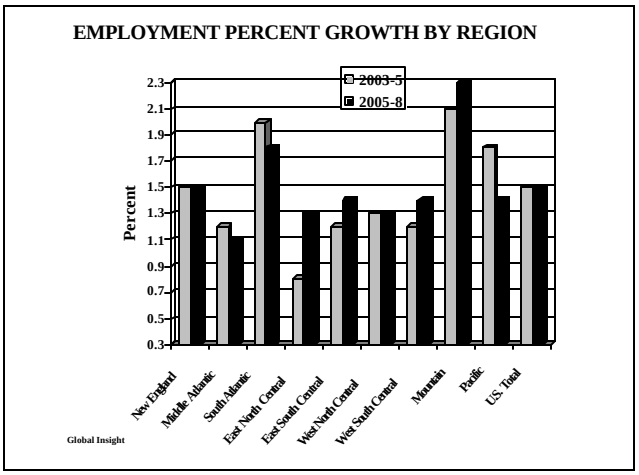
euro surged 19.6 percent against the dollar in 2003 after a 5.5 percent rise the previous year. Over the next 12 years, the euro is projected to continue to rise 1.6 percent a year to 1.36 to the dollar in 2015.

U.S. REGIONAL ECONOMIC GROWTH

In 2003, U.S. economic growth began to pick up momentum. However, the recovery varies widely by region. Three regions are clearly on the upward track: South Atlantic, Mountain, and Pacific. At the opposite end of the spectrum, the East North Central region, the manufacturing heartland, continues to contract.

The chart below shows the employment growth forecast by region for two periods: 2003 to 2005 and 2005 to 2008. Each region has its own character and faces its own challenges. The Mountain region, including Arizona, New Mexico, Colorado, Nevada, Montana, Idaho, and Utah, leads the country in employment growth. Three industry sectors, educational and health services (3.6 percent growth), financial activities (2.5 percent growth), and leisure and hospitality (1.0 percent growth) led this region's recovery.

The second fastest growing region, the South Atlantic, consists of Delaware, Florida, Georgia, Maryland, North and South Carolina, Virginia, and West Virginia. This region's growth is driven by its service and tourism industries. Also high-tech industries and new manufacturing contribute to the region's growth. For instance, the Scripps Institute, a biomedical research group, will build a large campus in Palm Beach County. Also, DaimlerChrysler plans to build a large new plant near Savannah.



The East North Central region, consisting of. Illinois, Indiana, Michigan, Ohio, and Wisconsin, makes up most of America's industrial heartland. Manufacturing accounts for 17 percent of this region's employment compared to 13 percent nationwide. The recession in heavy industries has particularly distressed this region. Automakers, for instance, continue to suffer from the burden of overcapacity and heavy pension obligations. The newspapers of this region are replete with layoff notices such as the cutbacks at DamlerChrysler, Great Lake Chemical, AvrinMeriter, Pfizer, and Lucent Technologies.

The following table shows the 10 fastest growing metropolitan areas ranked by annual employment growth from 2003 to 2004. Las Vegas continues to lead the list, having become both a leading tourist destination and retirement community in the country. All the cities on this list are in four Sunbelt states: Florida (6), Nevada (2), California (1), and South Carolina (1).

TOP 10 METROPOLITAN AREAS IN EMPLOYMENT GROWTH 2003 – 04		
Metropolitan Area	**2003 Employment (000s)**	**2003-04 Growth (%)**
Las Vegas, NV	805.8	3.9
Naples, FL	115.6	3.8
West Palm Beach, FL	540.3	3.4
Fort Myers, FL	185.2	3.2
Reno, NV	198.4	3.2
Orlando, FL	922.2	3.2
Punta Gorda, FL	58.8	3.2
Myrtle Beach, SC	102.3	3.1
San Luis Obispo, CA	120.9	3.0
Sarasota, FL	281.7	3.0

RISKS TO THE FORECAST

Although the economy appears headed for sustained growth, the large adjustments in the U.S. and world forecasts over the past few years demonstrate the potential risks in the forecasts. The chart on the following page shows U.S. and world GDP, CPI, and energy prices forecasts for the past 3 years.

The chart shows that the unexpected terrorist attacks, Iraqi war, and economic downturn pushed out projected U.S. GDP growth by about one year. The worldwide slowdown, Iraqi war, and SARS epidemic pushed the global GDP forecast out by 2 years. The price inflation forecast has also been reduced by the economic slowdown. The remarkable volatility of energy prices is demonstrated in this chart, which shows that oil prices are forecast substantially higher than previously projected.

The U.S. expansion appears to be on a firm basis. GII puts the chance of a significant drop in business and consumer confidence and an accompanying economic slowdown at 20 percent in the near term. The usual suspects for this worst-case scenario include a rapidly declining dollar and rising oil prices. A continued decline in the dollar might alarm financial markets causing substantial increases in U.S. long-term interest rates. Oil demand in China and emerging Europe could surge and the situation in Iraq could deteriorate causing a spike in oil prices affecting worldwide economic growth.

Further risks arise from an expansion in the Iraqi conflict and terrorist activity. A substantial increase in the Iraqi war may lead to political and economic turmoil in the U.S. as the cost of the conflict rises. Terrorist activity against U.S. interests in the U.S. and abroad would lead to reduced travel and lower business and consumer confidence.

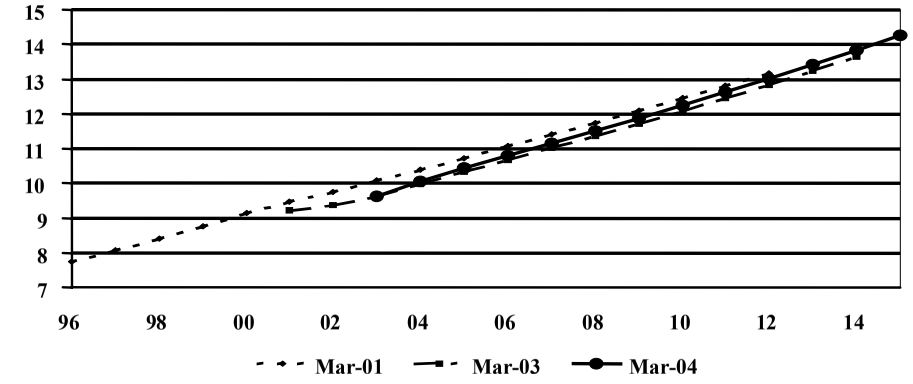
SUMMARY AND IMPACT ON AVIATION

The travel industry is beginning to climb out of its 3-year slump. Expenditures on intercity travel declined 25 percent from their peak (4th quarter 2000) to its trough (4th quarter 2001). The slump continued through the 3rd quarter 2003. The following chart shows expenditures on intercity travel in the U.S. from the 1st quarter 1996 to the projected 4th quarter 2005. Although the industry is expected to continue to recover in 2004, expenditures will only reach 1999 levels by the end of 2005.

Forecast Comparisons

U.S. Gross Domestic Product

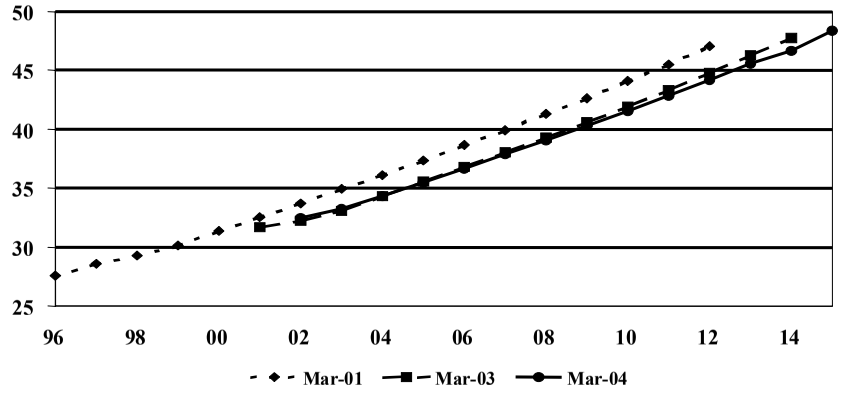
Trillions of 1996$



Source: OMB

World Gross National Product

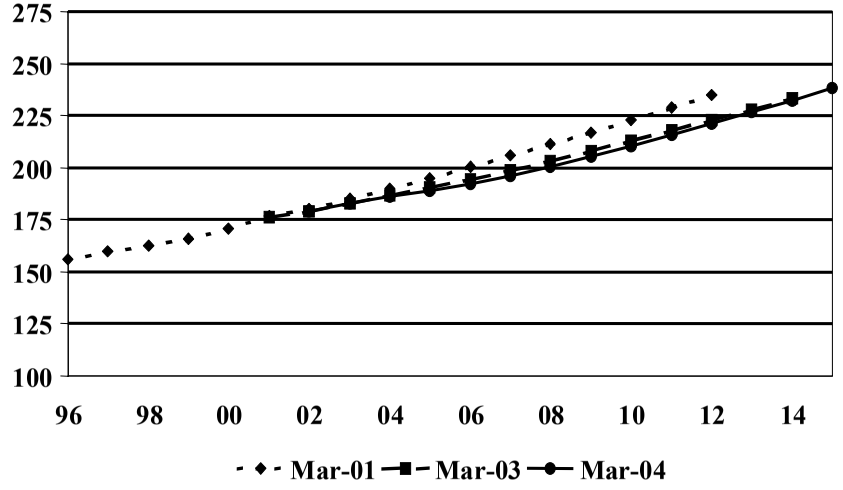
Trillions of 2000 US$



Source: Global Insight

Consumer Price Index

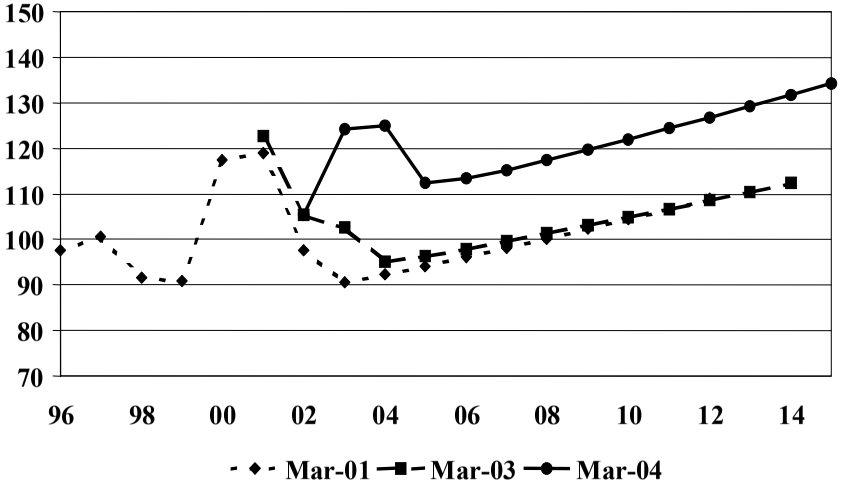
Index 1982-84 = 100



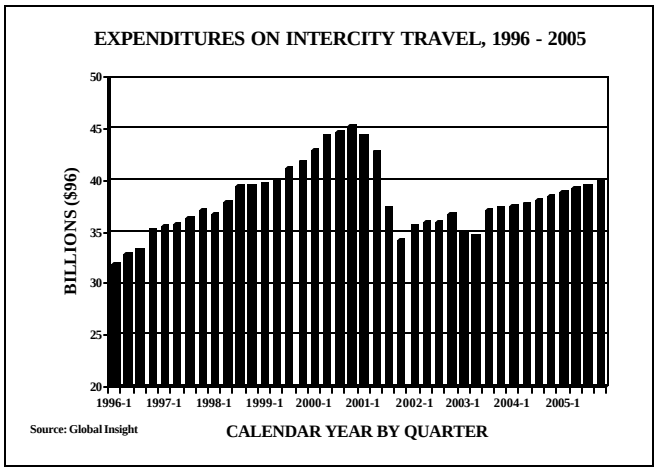
Source: OMB

Oil and Gas Deflator

Index: 1996 = 100



Source: OMB



The aviation industry continues to face risks beyond those faced by most other industries. Although the FAA expects traffic to improve substantially in the near-term, airline finances remain at risk. The legacy carriers continue to struggle toward profitability. As the low-cost carriers, which now carry about a quarter of U.S. airline passengers, continue to gain market share, profitability by the legacy carriers will remain difficult. A potential fare war looms in 2004 as carriers add capacity and fight to fill up the added seats.

CHAPTER III

COMMERCIAL AIR CARRIERS

In fiscal year 2003 there were 66 large U.S. commercial airlines (both scheduled and nonscheduled) reporting traffic and financial data to the Bureau of Transportation Statistics (BTS), U.S. Department of Transportation (DOT), on the Form 41 schedules. There were 40 passenger airlines (operating aircraft with over 70 seats) and 26 all-cargo carriers.

Thirty of the airlines provided scheduled passenger service and constitute the focus of the air carrier forecasts (both domestic and international) discussed in this chapter. Twenty-eight of the carriers provided scheduled domestic service (within the 50 States, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands), while 17 of the carriers provided scheduled international service. Of the carriers providing scheduled international service, 7 served Atlantic routes, 14 served Latin American routes, and 7 served Pacific routes.

Air carrier traffic forecasts and assumptions discussed here are presented in Chapter X (Tables 7 through 25). FAA air carrier work-load forecasts are discussed in Chapter VII and presented in Chapter X (Tables 36 through 49).

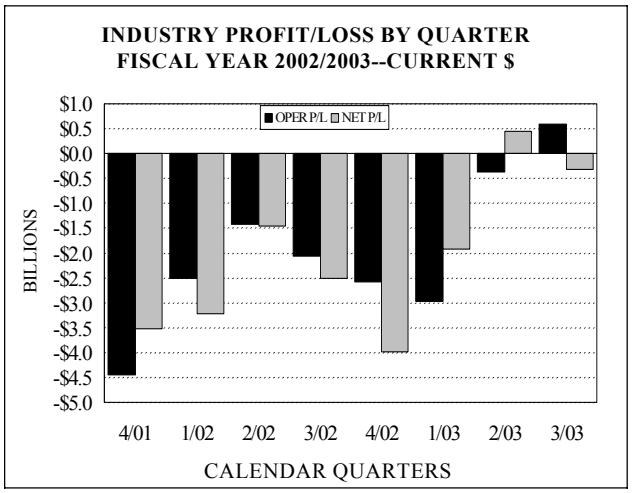
It should be noted that all specified years in the remainder of this chapter are fiscal years (October 1 through September 30), and specified quarters are fiscal year quarters, unless designated otherwise.

REVIEW OF 2003

FINANCIAL RESULTS

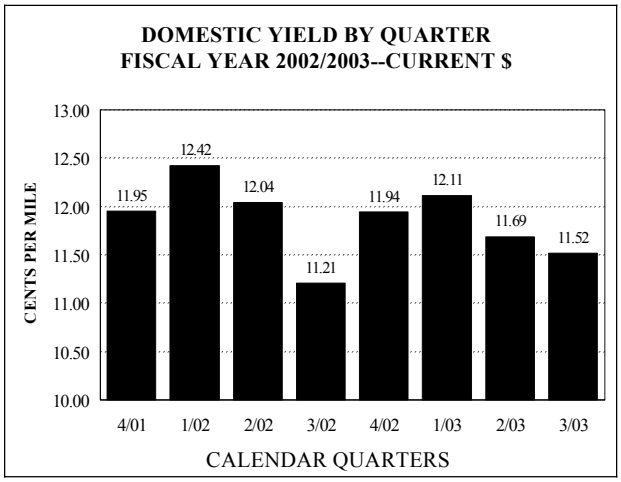
For the third consecutive year, operating expenses for large U.S. commercial airlines exceeded operating revenues. The poor financial performance in 2003 was driven by a reduction in traffic in part by the Iraq War and SARS, declining yields, escalating costs for security, insurance, and fuel prices. The operating loss for the large U.S. commercial airlines was $5.3 billion in 2003, the third largest in history. The industry posted operating losses in the first three quarters of the year and finally returned to profitability in the last quarter. For the year operating revenues increased 5.2 percent, while operating expenses increased 1.1 percent.

The modest increase in operating expenses in 2003 was largely due to a decrease in labor costs. After decreasing 18.7 percent in 2002,

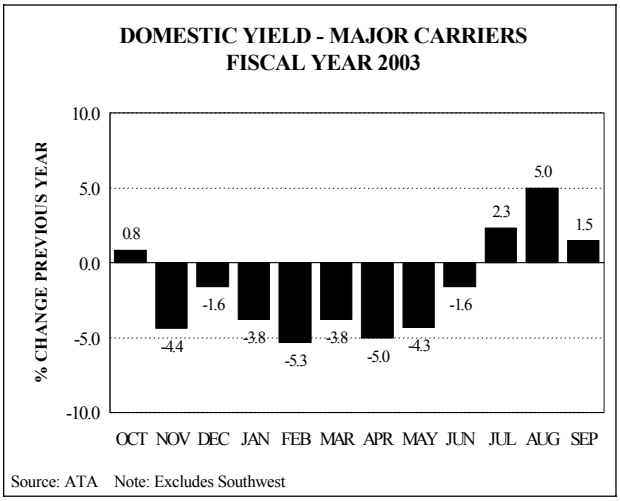


fuel prices rose 22.0 percent in 2003, increasing operating expenses by $2.7 billion. Industry labor costs, accounting for 35 percent of total operating expenses, fell 3.0 percent to $38.9 billion.

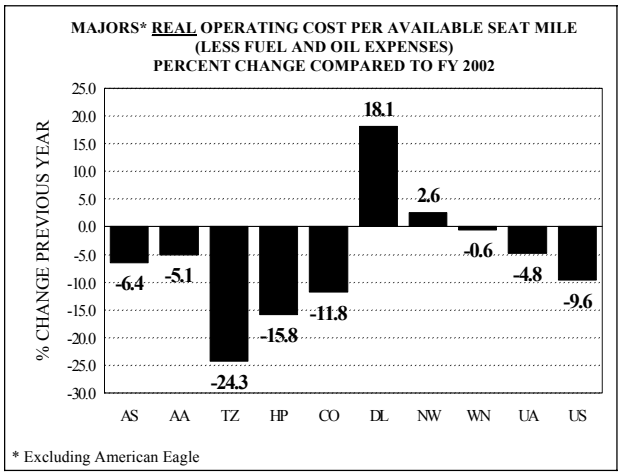
Domestic nominal yield for the large air carriers fell 0.5 percent, while yield, adjusted for inflation decreased 2.9 percent. Yield was down throughout the most of the year as carriers continued to discount fares in order to boost demand. Competition in the industry is intense as low fare carriers continue to expand their market share, and are expected to continue to increase their share in domestic markets throughout the forecast period.



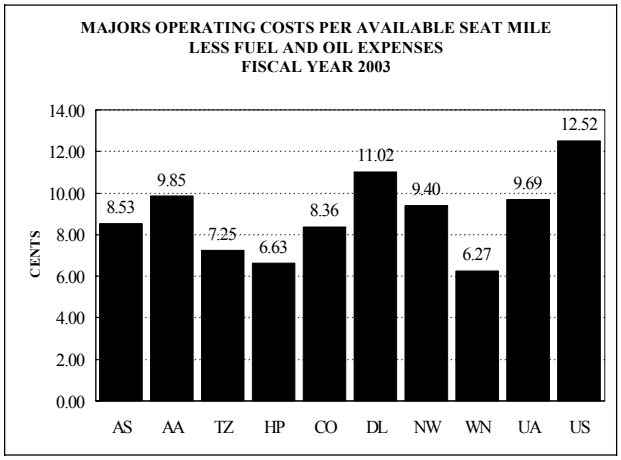
Nominal international yield increased 0.6 percent as a 2.6 percent increase in Atlantic markets offset declines in the Latin and Pacific markets. In Atlantic markets real yield increased 0.2 percent while in Latin and Pacific markets real yield decreased 3.5 and 5.1 percent, respectively. The increase in the Atlantic market was driven by tight capacity while the decline in the Pacific market yield was due primarily to the impact of SARS on demand.



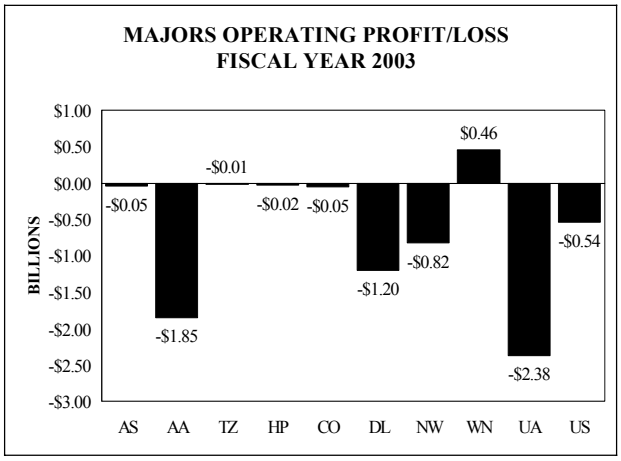
During 2003, 8 of the 10 major passenger carriers reduced their real unit costs (estimated without fuel and oil expenses). American Trans Air had the largest decline--down 24.3 percent, followed by America West with unit costs declining 15.8 percent. Delta showed the largest increase, with unit costs up 18.1 percent owing to an accounting change beginning January 2003.

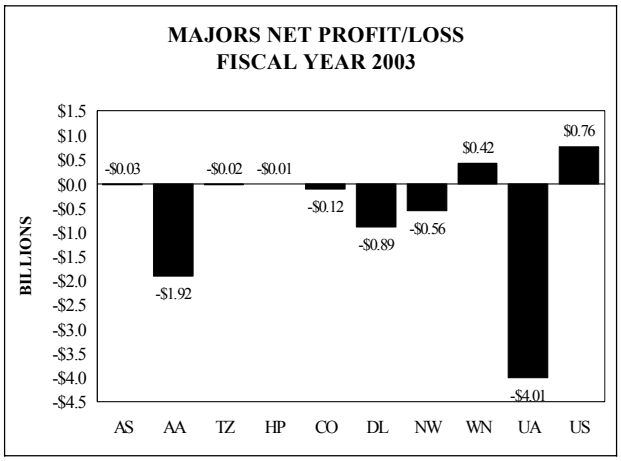


System average real operating cost per available seat mile (excluding fuel and oil) for the major passenger carriers was 9.45 cents in 2003, down 2.8 percent from 2002. System real unit costs (including fuel and oil) decreased 0.8 percent. In 2003, Southwest had the lowest operating cost (excluding fuel and oil) per available seat mile (6.27 cents). The highest unit cost among the major network carriers was US Airways with 12.52 cents.[1]



In 2003, U.S. large commercial airlines posted a net loss of $5.7 billion, an improvement of $4.9 billion versus a net loss of $10.7 billion recorded in 2002. The next two graphs show operating and net profit and loss for the 10 major passenger air carriers.[2] Of the 10 carriers, 9 had operating losses in 2003. Only Southwest reported operating profits while United recorded the largest operating and net losses of any of the major passenger carriers.





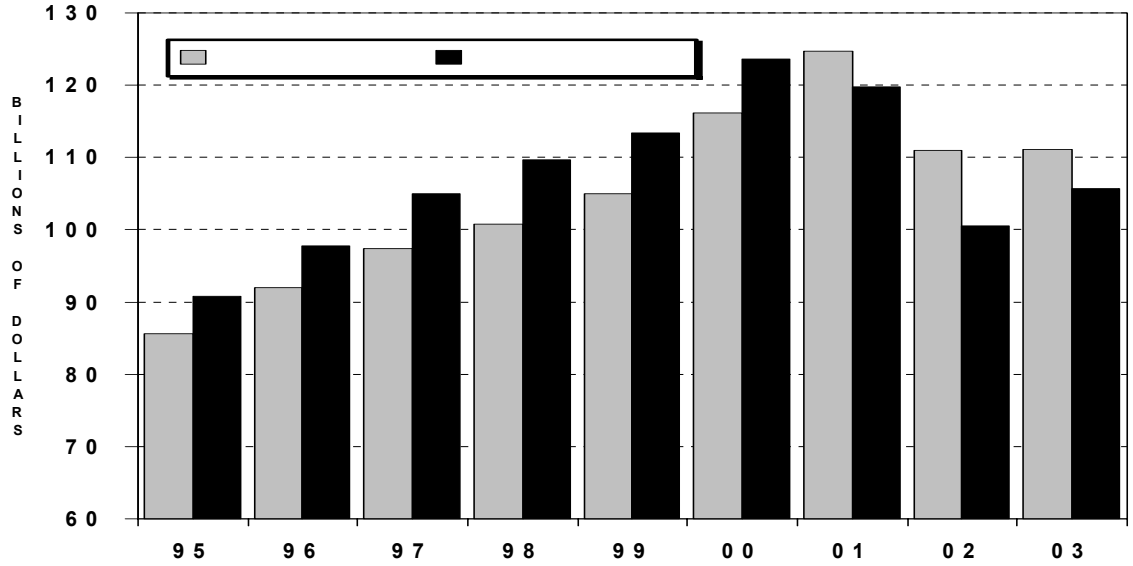
Controlling costs is key to the industry's ability to return to sustained profitability. Revenue will remain at low levels due to continued weak demand and increased competition from low fare carriers. Insurance costs, security enhancements, and fuel costs are expected to increase and further widen the gap between revenues and costs. Revenues will rise slowly in the long run through a combination of higher yields and economic growth expanding activity.

[1] Operating cost comparisons may be skewed by individual carrier accounting practices regarding the treatment of writedowns of equipment following September 11th attacks.

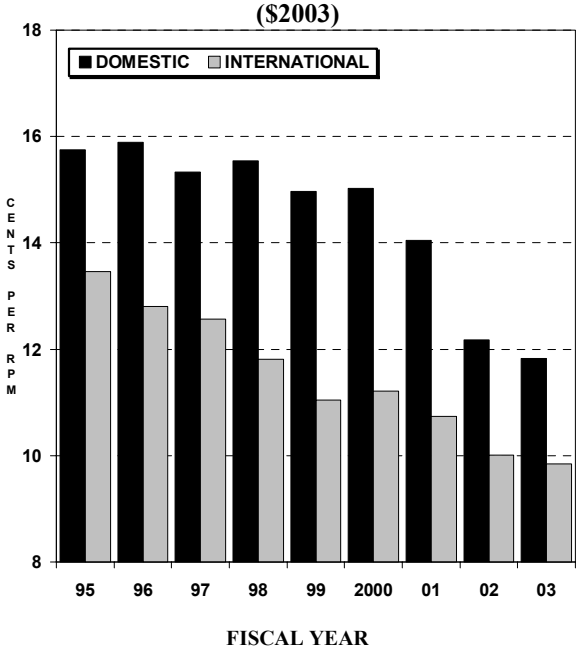
[2] A Major carrier by definition is one that has annual operating revenues in excess of $1B. American Eagle, considered a regional carrier, has been excluded from this analysis.

U.S. COMMERCIAL AIR CARRIERS: REVENUE AND COST TRENDS

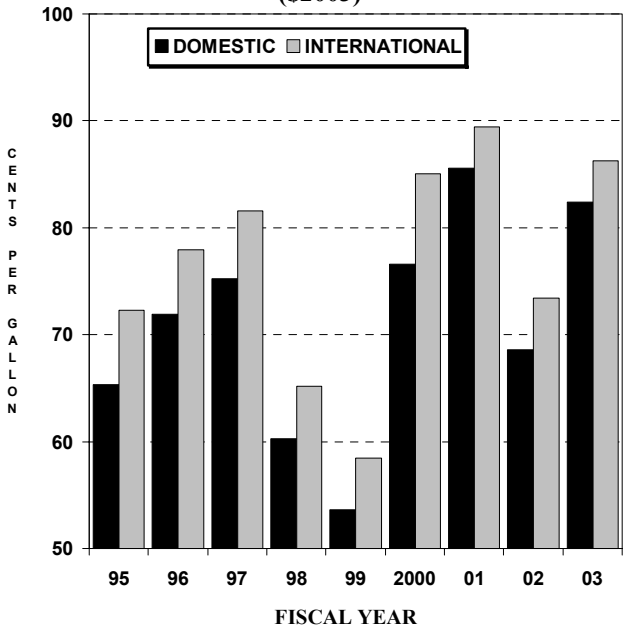
OPERATING REVENUES AND EXPENSES
(CURRENT DOLLARS)



PASSENGER YIELDS
($2003)



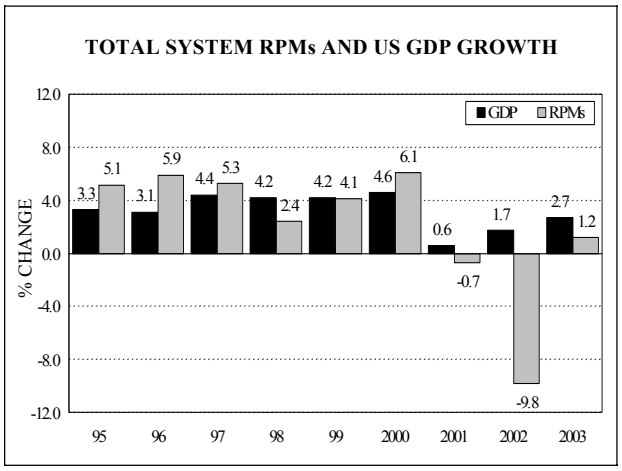
JET FUEL PRICES
($2003)



Costs will increase with higher outlays for security enhancements and infrastructure improvements. The industry will need to lower its non-security and infrastructure related costs in order to return and sustain profitability throughout the forecast period.

SCHEDULED PASSENGER TRAFFIC AND CAPACITY

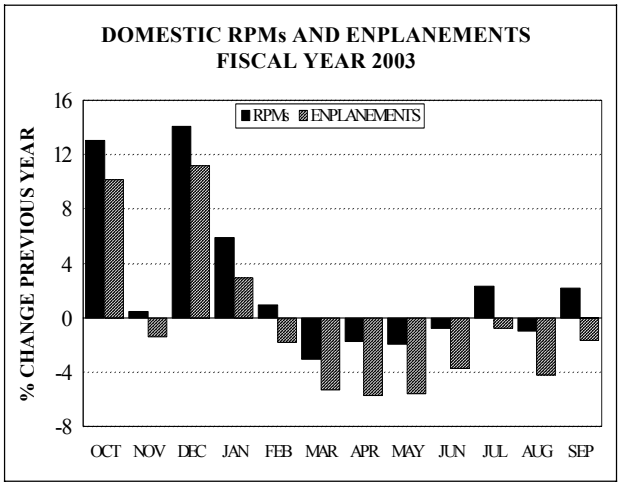
In 2003, total (domestic plus international) scheduled U.S. large carrier revenue passenger miles (RPMs) increased 1.2 percent while enplanements decreased by 0.3 percent. Since 2000, system RPMs have decreased by 9.4 percent, despite a 5.1 percent increase in real U.S. Gross Domestic Product (GDP).

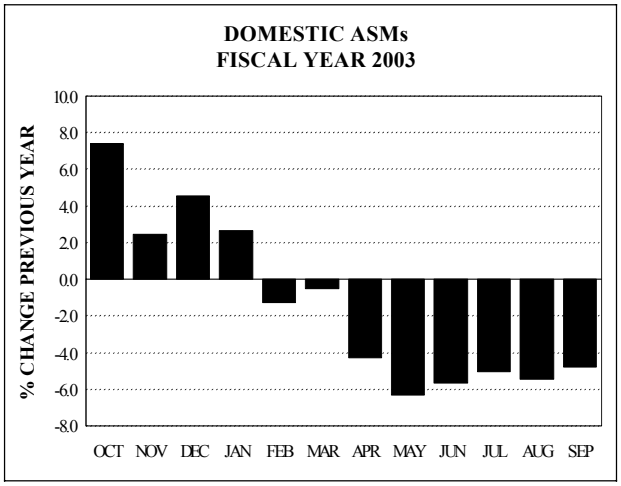


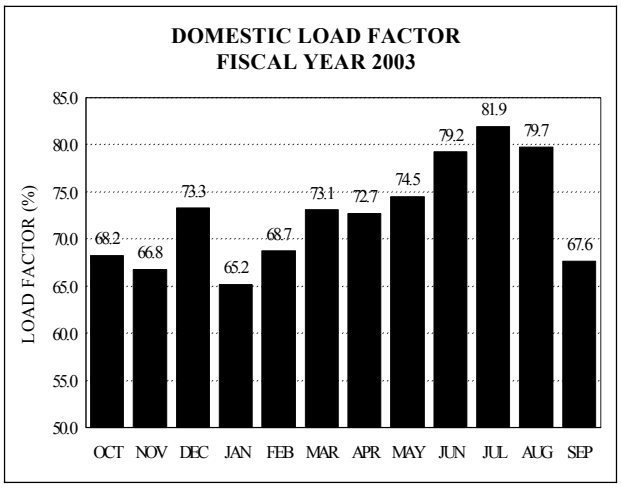
System available seat miles (ASMs) decreased for the second consecutive year in 2003, down 1.8 percent. System load factor increased 2.2 points to a record 73.4 percent.

Domestic Passenger Traffic and Capacity

In 2003, an improving economy and greater consumer confidence in flying resulted in RPMs increasing 2.2 percent. Enplanements fell 0.8 percent. Traffic was up year-over-year in the first quarter, down year-over-year in the second and third quarters, then turned positive again in the fourth quarter. Capacity fell by 1.5 percent, and the load factor rose by 2.6 points to a record 72.7 percent.

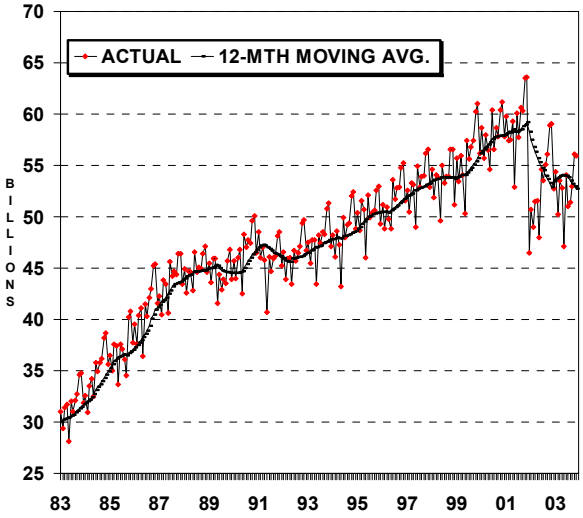






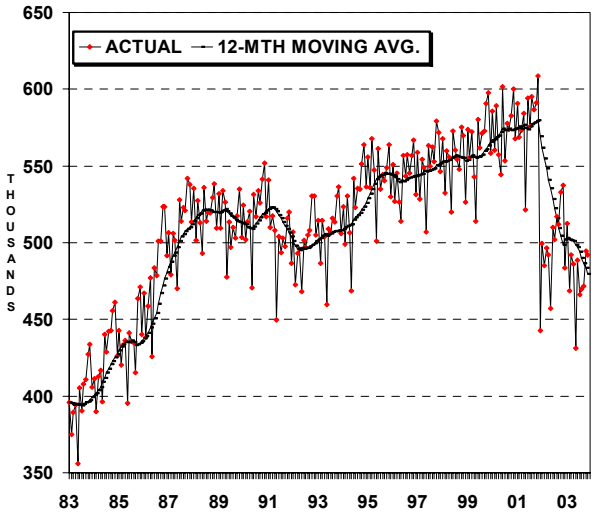
U.S. AIR CARRIER DOMESTIC TRAFFIC TRENDS
(Data through August 03)

AVAILABLE SEAT MILES



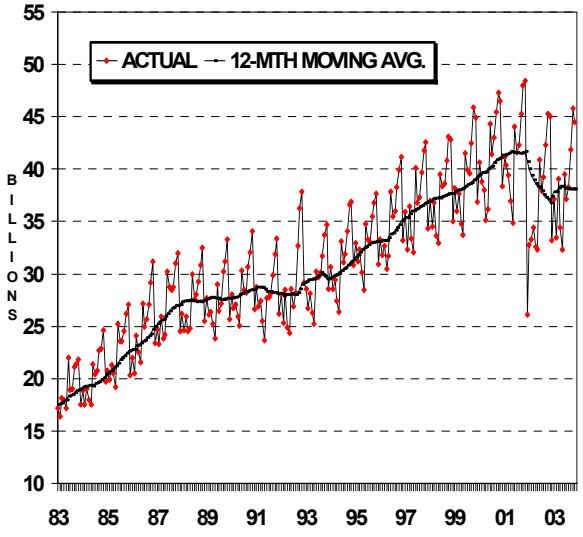
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



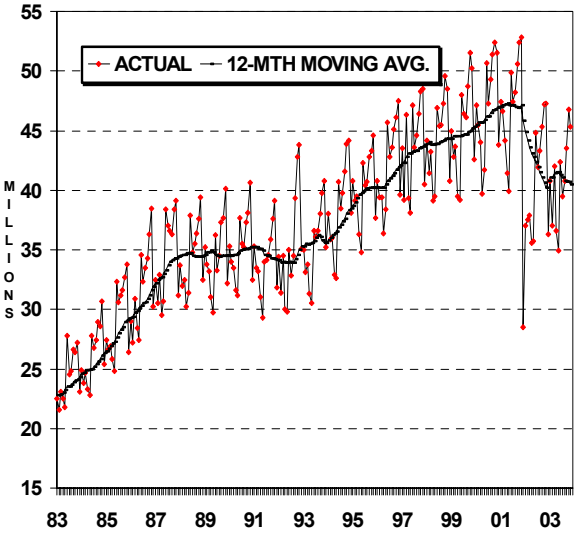
FISCAL YEAR BY MONTH

REVENUE PASSENGER MILES



FISCAL YEAR BY MONTH

ENPLANEMENTS

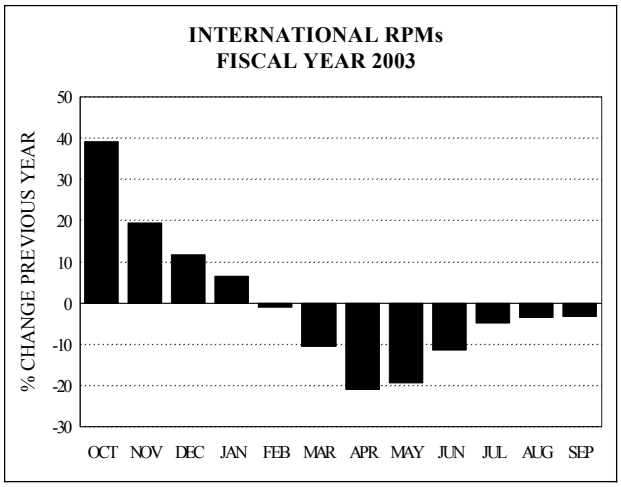


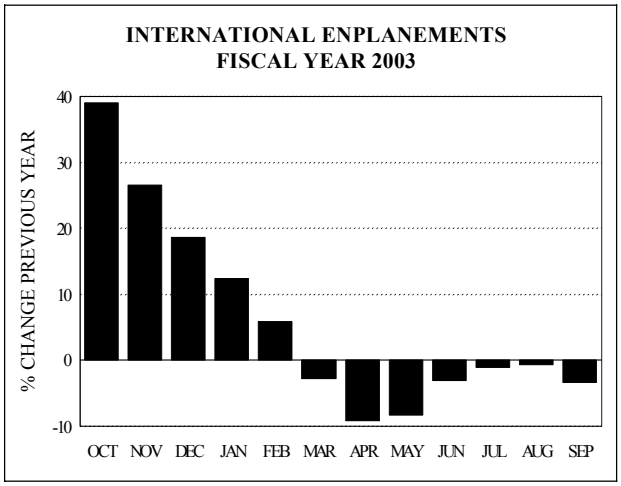
FISCAL YEAR BY MONTH

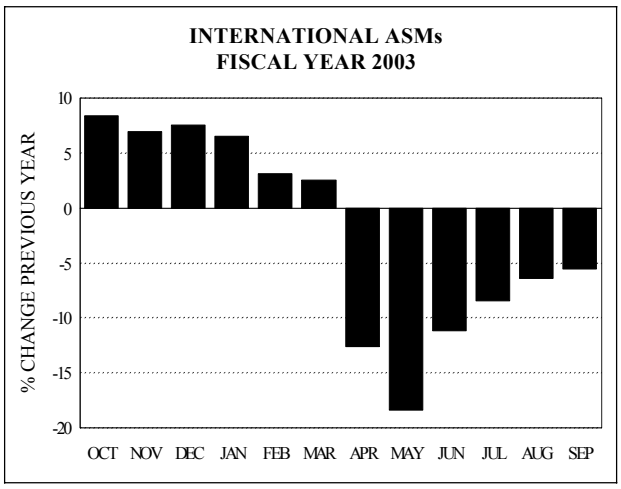
U.S. Large Air Carriers' International Passenger Traffic and Capacity

In 2003, total international RPMs decreased for a second consecutive year, falling 1.6 percent. Enplanements increased by 4.4 percent. Both RPMs and enplanements were up in the first quarter of the year but with the outbreak of SARS and beginning of the Iraq war, traffic declined and capacity was reduced. The second half of 2003 saw year-over-year declines in traffic of about 20 percent in April and May and 3 to 4 percent for the July-September period.

Total international ASMs fell 2.8 percent in 2003. Similar to the pattern of traffic, capacity was up year-over-year in the first six months of the year and then was down for the balance of the year. Through the first six months of the year, capacity was up 5.9 percent, then decreased 14.1 percent in the third quarter and fell 6.8 percent during the fourth quarter. Relative to 2000, international capacity was down 13.9 percent. Capacity declines in the Atlantic and Asia/Pacific markets were 3.4, and 4.7 percent, respectively. Capacity increased in the Latin American market by 0.9 percent.

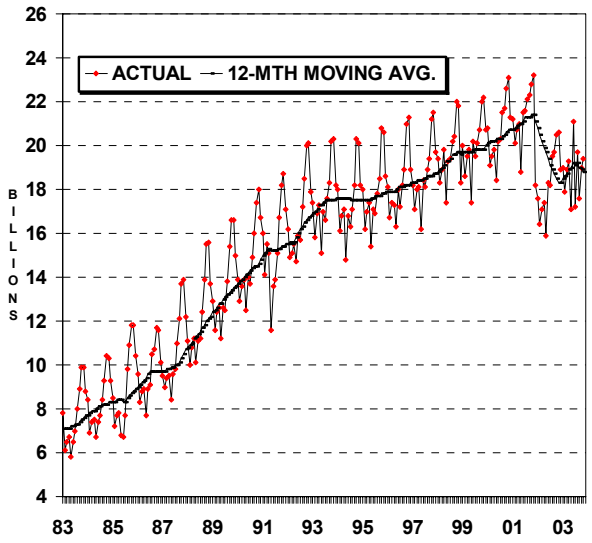






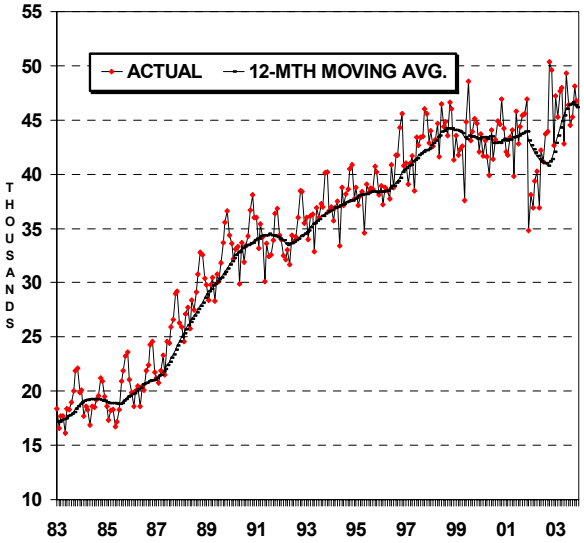
U.S. AIR CARRIER INTERNATIONAL TRAFFIC TRENDS (through August 03)

AVAILABLE SEAT MILES



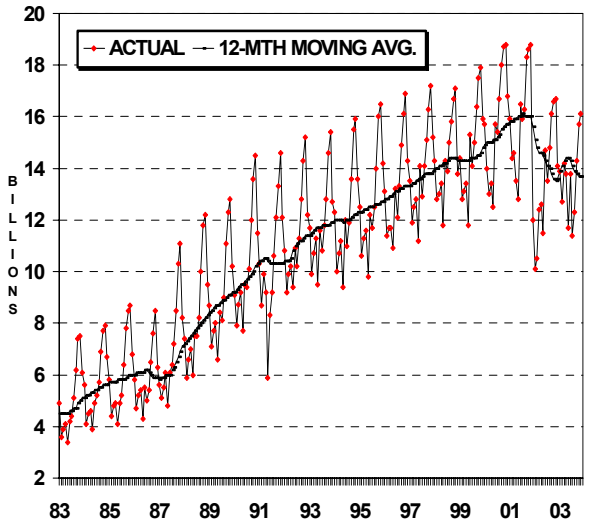
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



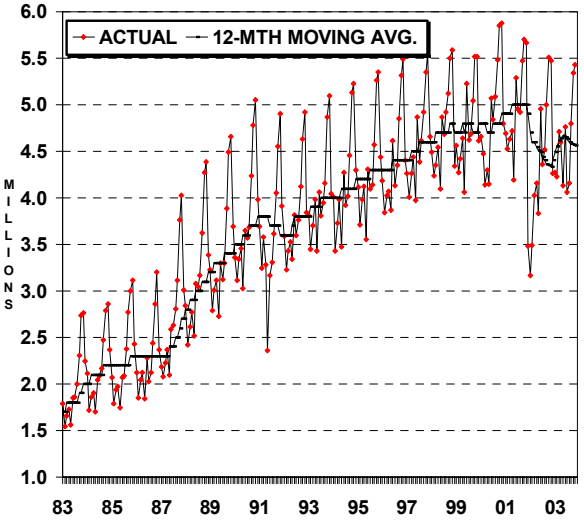
FISCAL YEAR BY MONTH

REVENUE PASSENGER MILES



FISCAL YEAR BY MONTH

ENPLANEMENTS



FISCAL YEAR BY MONTH

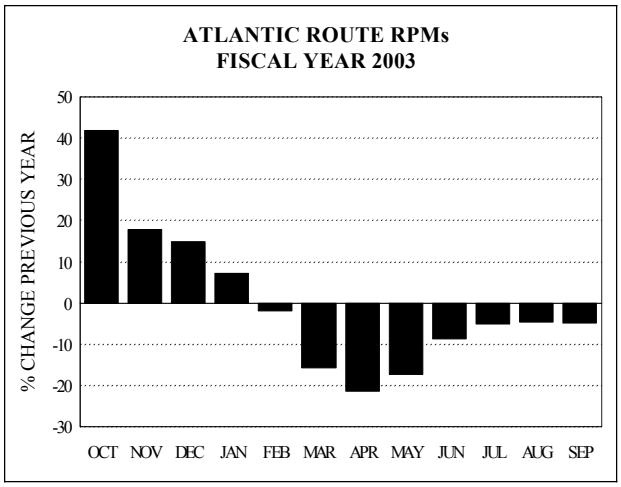
Atlantic Routes

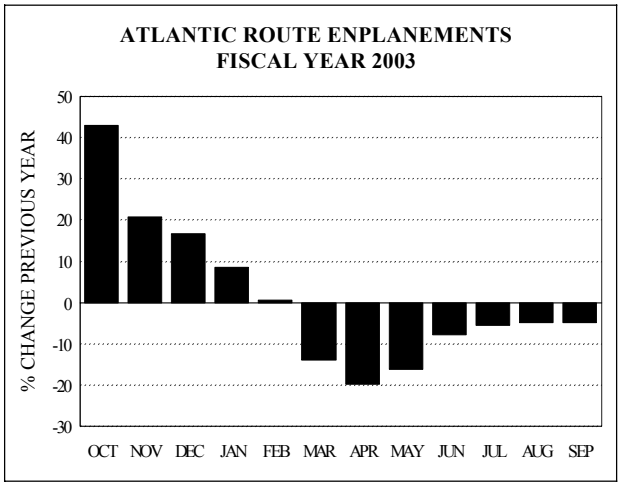
Transatlantic RPMs in 2003 declined for a third consecutive year as RPMs were down 2.0 percent from 74.7 billion to 73.2 billion. Enplanements fell slightly less, down 1.1 percent. Traffic was up year-over-year through January, and then turned negative for the balance of the year. The greatest decreases occurred in March through May, the height of the conflict with Iraq.

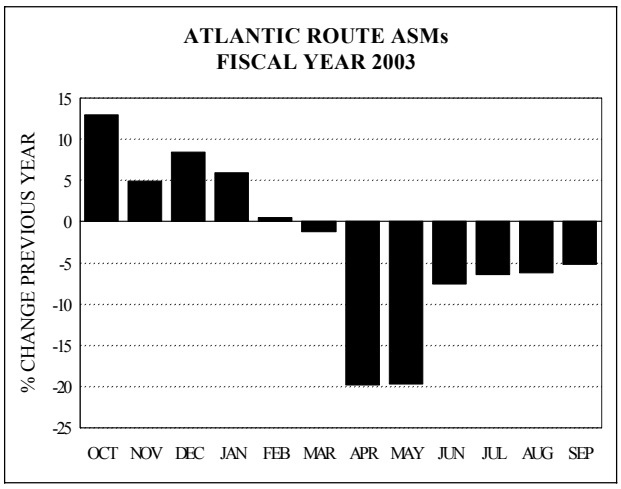
Capacity in Atlantic markets followed a similar pattern to traffic. After being up for most of the first half of the year, the onset of the Iraq war resulted in an immediate and large reduction in capacity. The largest decreases were in April and May, followed by a gradual return of flying throughout the summer season. Capacity declined 3.4 percent for the year and the load factor increased 1.1 points to 78.1 percent.

Immigration and Naturalization Service (INS) data, which is compiled by the U.S. Department of Commerce, showed in CY2002 U.S. flag carrier market share in the region was 42.1 percent. After increasing for three consecutive years, data through August 2003 indicate that U.S. flag carrier market share has fallen 2.8 points in 2003.

In 2003 the U.S. passenger carriers had an operating loss of $550.1 million on routes in the market, a $215.4 million improvement over the $765.5 million operating loss recorded in 2002. U.S. passenger carriers have recorded $1.7 billion in losses the past 3 years. Weak demand associated with the Iraq war was the primary factor behind the operating losses.

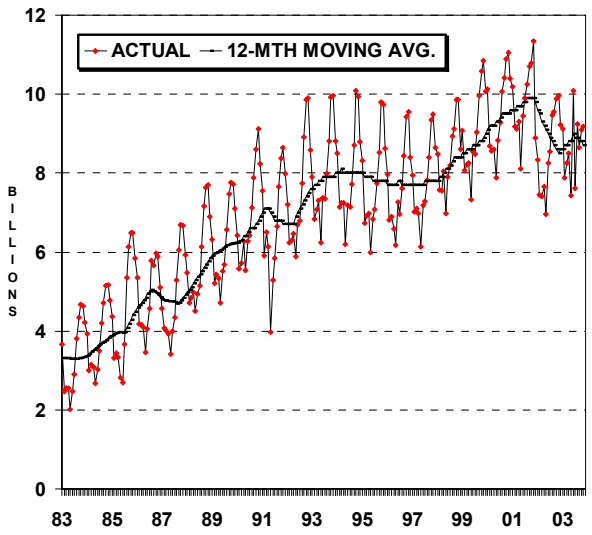






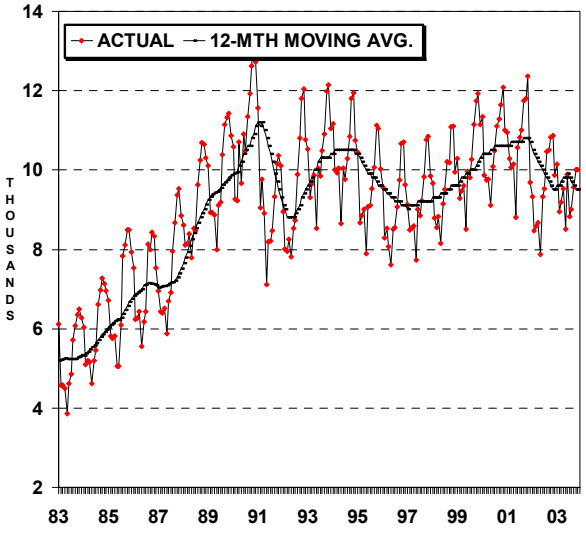
U.S. AIR CARRIER TRAFFIC TRENDS: ATLANTIC ROUTES (through August 2003)

AVAILABLE SEAT MILLES



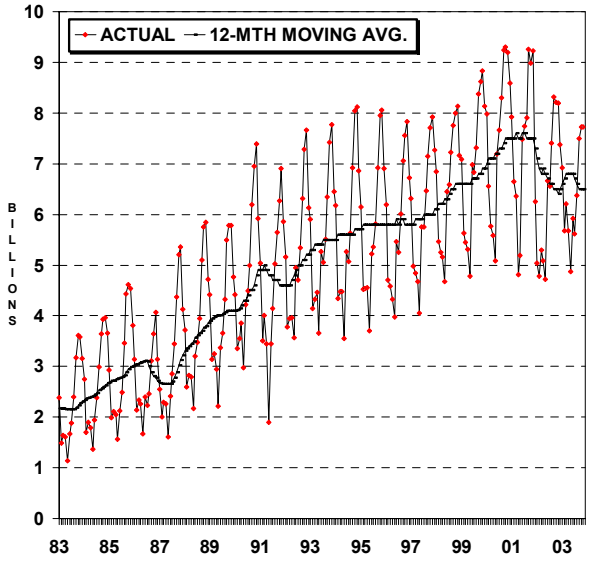
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



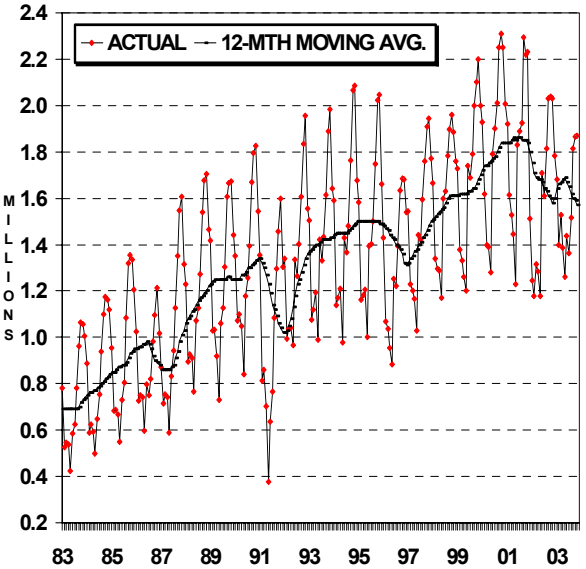
FISCAL YEAR BY MONTH

REVENUE PASSENGER MILES



FISCAL YEAR BY MONTH

ENPLANEMENTS



FISCAL YEAR BY MONTH

Latin American Routes

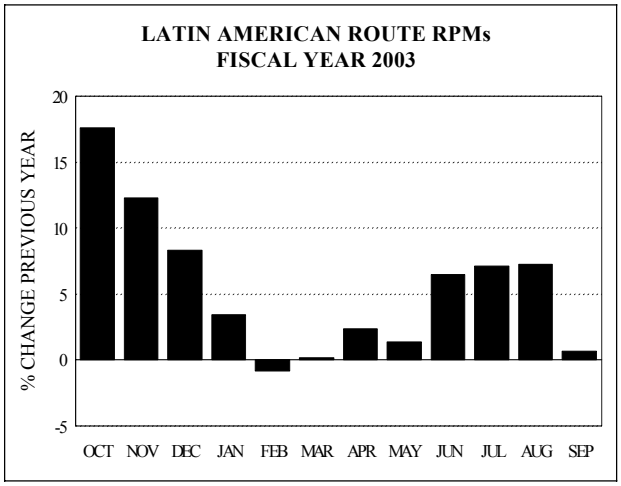
In contrast to other international markets, traffic to Latin America (destinations in South America, Central America, Mexico, and the Caribbean) rose in 2003. In 2003, RPMs and passenger enplanements were up 5.2 and 7.3 percent, respectively.

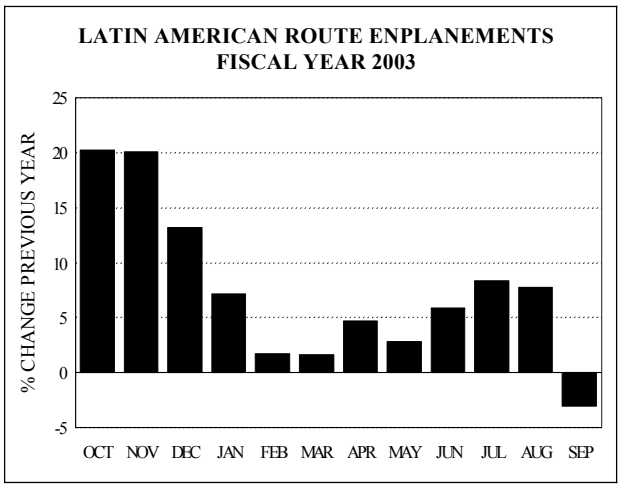
After increasing 12.1 percent in the first quarter, traffic (RPMs) growth was less than 1 percent in the second quarter before picking up to average 4.5 percent in the second half of the year. Capacity increased less than traffic in the first quarter and about the same rate as traffic in the second quarter. In the second half of the year, capacity fell 1.9 percent year-over-year resulting in load factor increases ranging from 3 to 7 points. For the year load factor increased 2.7 points to 69.3 percent.

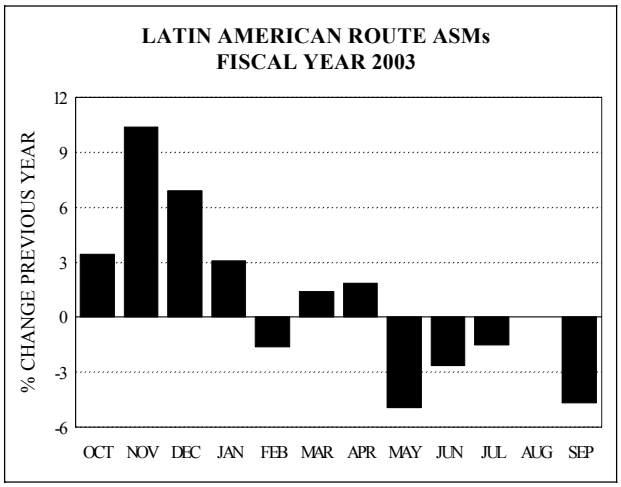
For the second consecutive year, the average trip length fell in the region. This marks the first time since 1987-88 that trip length has fallen in the region for two consecutive years. Trip length decreased 2.0 percent (31.8 miles) in 2003 to 1,590.8 miles, as carriers continued to expand service to Caribbean and Central American markets.

Despite higher traffic, U.S. passenger carriers had an operating loss of $114.3 million in Latin markets in 2003. This represented a $320.6 million improvement over the $434.9 million operating loss of 2002.

As regional demand recovers to more normal levels, efforts to restructure Latin American carriers will accelerate. These changes, along with the move towards open-skies agreements, will pose additional challenges for the U.S. carriers over the next several years.

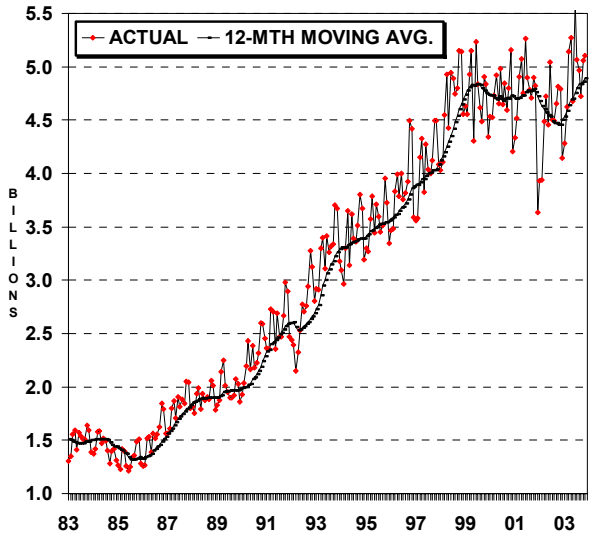






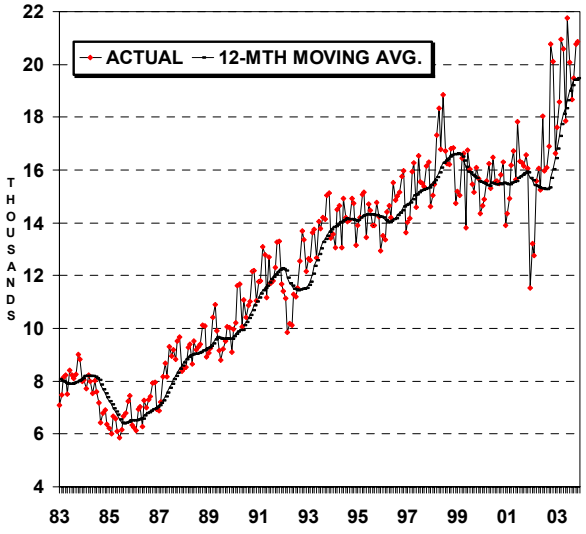
U.S. AIR CARRIER TRAFFIC TRENDS: LATIN AMERICAN ROUTES (through August 2003)

AVAILABLE SEAT MILES



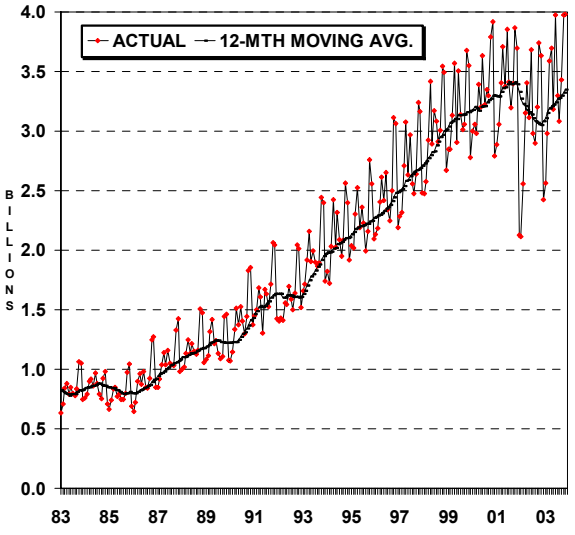
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



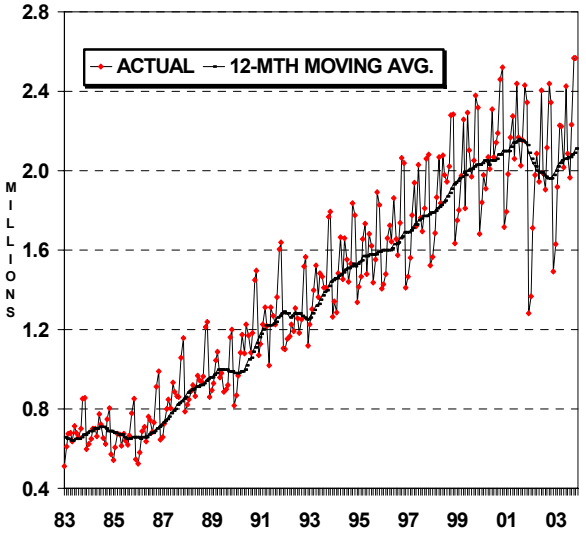
FISCAL YEAR BY MONTH

REVENUE PASSENGER MILES



FISCAL YEAR BY MONTH

ENPLANEMENTS



FISCAL YEAR BY MONTH

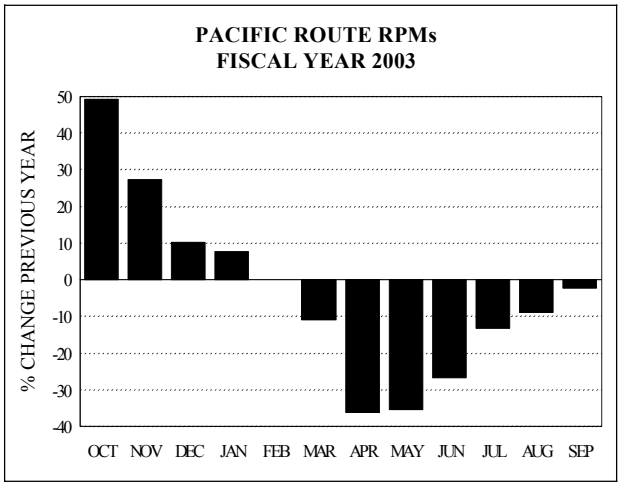
Pacific Routes

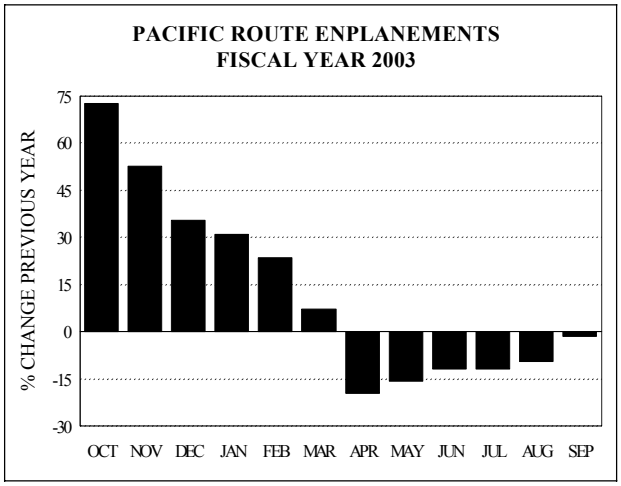
Despite a promising beginning to the year, traffic in Asia/Pacific markets fell again in 2003, with RPMs down 5.7 percent versus 2002. After increasing in the first 4 months of the year, including gains of 49.3 and 27.4 percent in October and November, traffic collapsed with the outbreak of the SARS epidemic and the beginning of the Iraq war. For the March- September period, RPMs were down 18.8 percent on a year-over-year basis with a peak decline of 36.1 percent in April. Enplanements, as reported by DOT, followed a similar pattern to RPMs, ended the year up 8.6 percent[3].

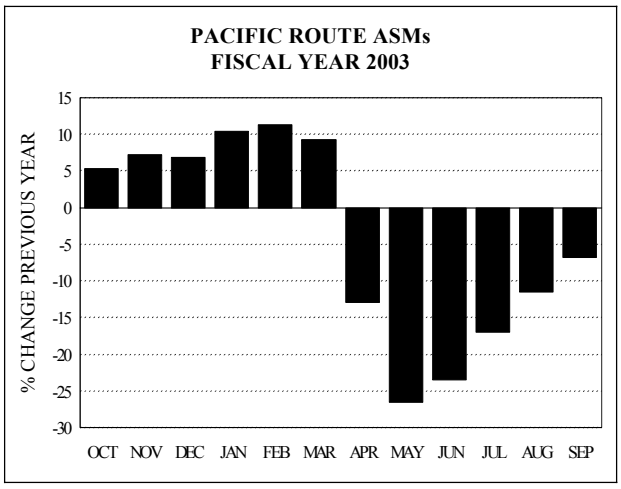
After increases ranging between 5 to 11 percent in the first half of the year, U.S. flag carrier ASMs were down by at least by 10 percent versus 2002 for the remaining months except September as carriers cut capacity to the region with the SARS outbreak and the Iraq war. Load factor for the region fell 0.8 points to 76.6 percent. Load factor was up sharply in October and November, down sharply from March to May, then turned positive again from July to September.

Large declines in traffic resulted in large operating losses for U.S. passenger carriers in the Pacific market for the third consecutive year. Following an operating loss of $733.5 million in 2002, U.S. passenger carriers recorded an operating loss of $869.0 million in 2003 in the market.

Restructuring of the Pacific market continues as carriers consolidate routes and rationalize fleets. Over the long-term the survivors of the market changes should benefit from the open-skies agreements and liberal bilateral agreements with the countries of the region. These agreements will stimulate aviation growth by providing travelers with service to more cities and lower fares.



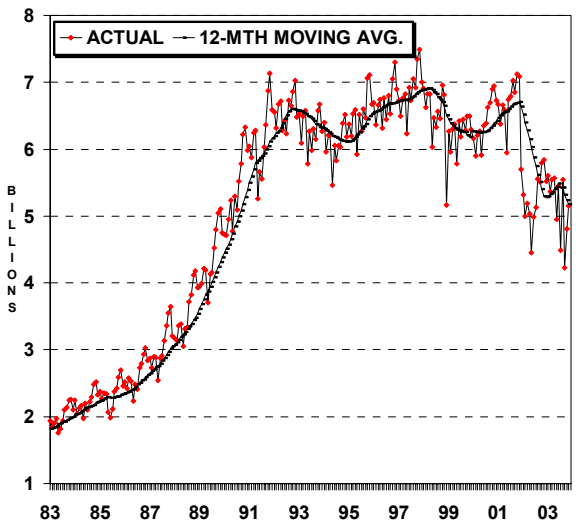




[3] Beginning in July 2002 enplaned passengers reported by the DOT show large year-over-year increases. FAA believes there are problems in the data reported by DOT. Regional passenger total reported by the Air Transport Association (ATA) show a 1.9 percent decline in FY 2003.

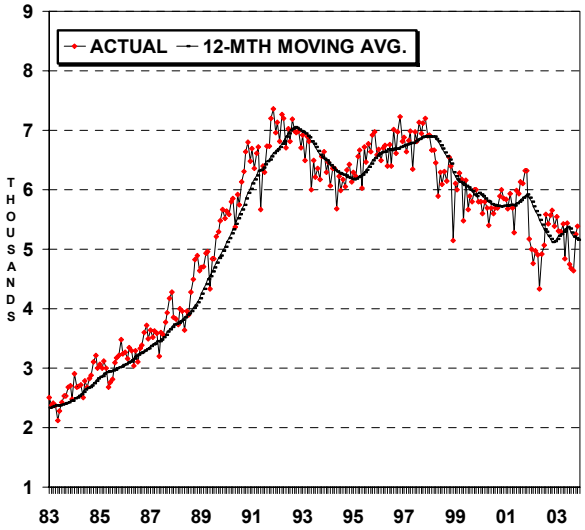
U.S. AIR CARRIER TRAFFIC TRENDS: PACIFIC ROUTES (through August 2003)

AVAILABLE SEAT MILES



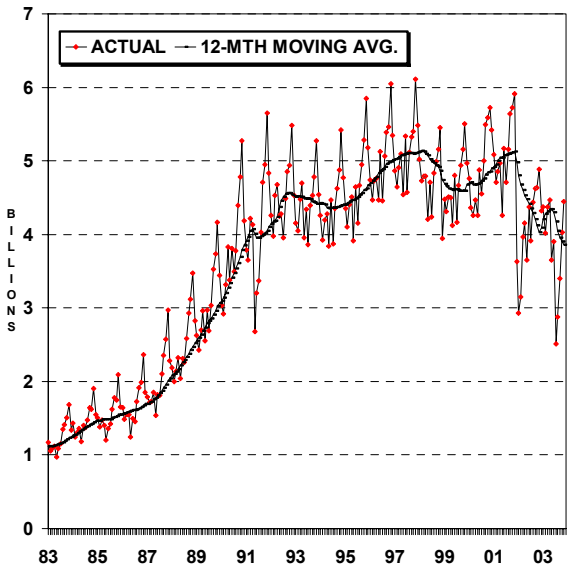
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



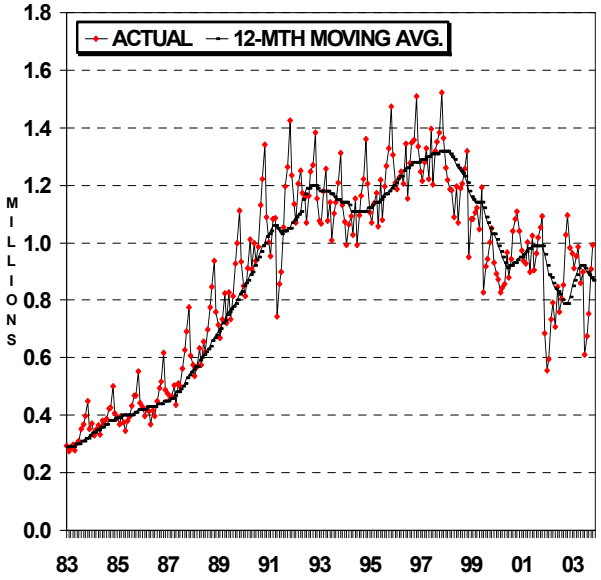
FISCAL YEAR BY MONTH

REVENUE PASSENGER MILES



FISCAL YEAR BY MONTH

ENPLANEMENTS



FISCAL YEAR BY MONTH

NONSCHEDULED TRAFFIC AND CAPACITY

The number of nonscheduled (charter) passengers flying on U.S. commercial air carriers fell an estimated 6.7 percent in 2003, to a total of 7.4 million. Domestic enplanements declined 18.3 percent, while international enplanements increased 5.2 percent. Nonscheduled RPMs increased 8.9 percent while ASMs increased 11.0 percent, which resulted in a decline in the load factor from 61.7 to 60.5 percent.

AIR CARGO TRAFFIC

U.S. air carriers flew 32.9 billion revenue ton-miles (RTMs) in 2003. This figure (which represents an 18.5 percent increase from 2002) includes changes in reporting requirements and is therefore not directly comparable to the reported level for 2002. Domestic cargo RTMs (including the addition of Airborne Express in 2003) were 14.7 billion. International RTMs (including the addition of contract service by U.S. carriers for foreign flag carriers in 2003) were 18.2 billion. The increase in total cargo RTMs reflects domestic and worldwide economic growth as well as the reporting requirement changes. Air cargo RTMs flown by
all-cargo carriers were 68.0 percent of total RTMs in 2003; passenger carriers flew the remainder, or 32.0 percent of the total.

INDUSTRY STRUCTURE AND RISK

The present forecasts (2004 to 2015) are based upon a set of assumptions concerning changes in the economy, structural changes in the air carrier industry, and changes in the market for air transportation. The probability of achieving these forecasts depends on realizing the economic projections discussed in Chapter II and industry assumptions discussed in the following section.

STRUCTURAL CHANGES

Significant structural changes in both domestic and international markets were underway well throughout the later part of the 1990's and have continued following the September 11th attacks. The changes resulted in intensified competition and moved carriers to increase efficiency and productivity, reduce operating costs, and lower fares. As the industry continues to recover from the impact of the September 11th attacks, the pieces are in place for the most significant structural change in the industry since deregulation.

Encouraged by their own financial success, large profit margins on many routes, and the weakened financial condition of the larger network carriers, low-cost carriers are expanding rapidly in the domestic market. The benefits to the American consumer brought about by low-cost, low-fare airlines have been substantial and are well documented. Low-cost, low-fare carriers such as Southwest, JetBlue, Airtran, American Trans Air, America West, and Frontier continued to add routes and planes in FY 2003, even while the larger network carriers cut routes and shrank their fleets. What is striking about the expansion is that it is taking place in longer-haul markets that had previously been the domain of the network carriers. In 2003, the low-cost carriers increased their capacity in markets over 750 miles by 22.7 percent, compared to an increase of 14.6 percent overall. Passenger growth was similar with markets over 750 miles in length growing by 20.2 percent compared to overall

domestic growth for these carriers of 9.5 percent. Since 1998 low-cost carriers have increased their capacity in markets over 750 miles by 138 percent, compared to an increase of 76.4 percent overall.

The expansion of the low-cost carriers will accelerate in the near term as Southwest is set to begin service to Philadelphia in May 2004 and JetBlue begins service in Boston in January 2004. As the low-cost carriers continue to expand their networks, it is increasingly likely that not only will they compete against the network carriers, but also they will begin to compete among themselves. Indeed, the threat of a low-cost competitor has been cited by a number of analysts as a reason for Southwest moving into Philadelphia. The expansion of these low-cost, low-fare carriers will help to ensure that competitive forces remain strong in the industry.

With net losses of $6.7 billion in FY 2003, network carriers remain under intense pressure to reduce their unit costs and narrow the gap between themselves and the low-cost carriers. Since September 11th, the network carriers have laid off more than 135,000 employees, negotiated significant wage reductions, eliminated unprofitable routes and transferred others to aligned commuter carriers, negotiated work rule changes, deferred aircraft deliveries, and adjusted schedules at key hubs to smooth out the flow of departures and arrivals. Despite these measures there remains an enormous cost gap between the network carriers and the low-cost carriers. A recent report by Goldman Sachs estimated the unit cost gap to be 40 percent in 2003 and 33 percent in 2004.[4] Already, two of the network carriers, United and US Airways, have filed Chapter 11 bankruptcy, while a third, American, narrowly avoided bankruptcy. Other carriers such as Continental and Northwest, while in better shape than their network brethren, are still looking for ways to reduce their costs in order to stay competitive. Much attention has been given to Delta's Song and also to United's newly announced subsidiary Ted as a way to address the cost gap. Both Delta and United expect the unit costs of their subsidiaries to be competitive with the low-cost carriers primarily through higher utilization and flexibility in work rules. However it remains to be seen if such a strategy will pay off. As Gerard Arpey, chairman and CEO of American Airlines, wryly noted "You can't fix a 750-jet airplane problem with a subsidiary of 25 or 50 low-cost units."[5]

While the network carriers seek ways to reduce their unit costs, many obstacles exist which will make their task more difficult. Labor costs, which constitute the largest share of operating expenses, continue to be the prime target for airline management cost reduction plans. Despite cost reductions at US Airways, United, and American (the former two being in bankruptcy at the time the concessions were achieved), organized labor appears to be reluctant to give up pay and benefits at the other network carriers (Continental, Delta, and Northwest). However, it seems inevitable that these carriers will reduce their labor costs in order to stay competitive. An additional complicating factor has been the improvement in the financial results at some of these carriers. Both Continental and Northwest were profitable during the July-September quarter of 2003, making it more difficult to convince employees of the need for concessions. Even Delta, which has not become profitable, has had a difficult time in convincing its employees of the need for pay concessions.

Another obstacle the network carriers face to lowering their costs is the massive amount of debt they have incurred since the events of September 11th in order to survive. On June 30, 2001, the six legacy carriers[6] had a total of

[4] Goldman Sachs report issued Oct 2, 2003

[5] USA Today, November 7, 2003

[6] American, Continental, Delta, Northwest, United, US Airways

$31.2 billion in debt outstanding. As of September 30, 2003, that figure had risen to $48.5 billion, an increase of 55.2 percent. Thus, despite falling interest rates, the increase in the volume of debt has resulted in higher interest payments for these carriers. Not only do the carriers face higher interest payments in the future, but they will need to divert resources in the future to servicing the higher level of debt, resources that could have been used instead for new equipment (both aircraft and machines) that could have lowered unit costs.

Network carriers continue to transfer routes to their regional affiliates. The continued low level of demand more than two years after the September 11th attacks has spurred efforts by the network carriers to make these changes and has weakened resistance of labor groups (particularly pilots) to such plans. In the wake of the downsizing following the September 11th attacks, network carriers were rapidly transferring routes to regional affiliates. Some carriers though were bumping up against limits on the number of regional aircraft that can be substituted for mainline aircraft. Indeed, a key component of the labor cost reductions at US Airways and American was the relaxing of such limits. Furthermore, once demand recovers, it remains to be seen if the network carriers will seek to reverse these route transfers. For now, the transferring of routes continues to occur at a rapid pace. During the past year, US Airways, Delta, Northwest, American, and United have announced the shifting of numerous routes from the mainline carrier to their regional affiliates.

Network carriers have also expanded their domestic code-share alliances in an attempt to increase revenues. During the past two years, the U.S. Department of Transportation has approved domestic code share agreements for Continental/Delta/Northwest and for United-US Airways. By agreeing to code share, the carriers hope to increase revenues by gaining access to new passengers through the network of their code share partner(s). Measured in terms of RPMs, the code-share agreements involve carriers that have approximately 55 percent of the domestic large carrier market.

With discussions underway between the U.S. and the European Union, the possibility exists for the most significant change in international markets since the sale of the Pan Am and TWA Atlantic route networks in the late 1980's. Historically, international markets have been subject to a series of bilateral agreements. Such agreements, which started back in the 1940s, have severely restricted competition. History has demonstrated that competition improves efficiency, productivity, and worldwide economic growth. The current negotiations were prompted by a ruling by the European Court of Appeals that essentially voided the open skies agreements that had been negotiated with individual countries within the European Union. The talks are focusing on wider access for U.S. carriers to London's Heathrow airport and U.S. limits on foreign airline ownership. If an agreement is reached, carriers such as Continental, Delta, or Northwest could gain access to new markets and introduce new competition. The expansion of "open skies" agreements over the next several years could significantly increase the level of activity of the more efficient U.S. carriers vis-à-vis foreign flag carriers.

The industry is expected to continue toward globalization, through the use of code-sharing agreements and alliances. Four large alliances have formed and continue to seek members and add network connections. The four are SkyTeam (Delta-Air France), Star Alliance (United-Lufthansa), Oneworld (American-British Airways), and Northwest-KLM. The alliances have been able to reduce costs through economies of scale. They have also increased revenues and passenger traffic by expanding the reach of the networks and providing seamless travel for their passengers.

To summarize, the industry continues to be dynamic, in the face of uncertainty following the September 11th attacks and the bankruptcy of

United and US Airways. Some trends that were taking place prior to September 11th have been accelerated, while others will not proceed as rapidly as before. The outcome will fundamentally alter the structure of the industry. Although some of these changes could result in decreased short-term demand, in the long run the net effect will be and reduced unit costs and fares, increased air carrier efficiency, and increased demand for air travel.

MARKET CHANGES

As the U.S. airline industry continues to recover from the devastating effects of the events of September 11, 2001, a number of important trends have emerged. Among these are: 1) the more widespread use of simplified fare structures that reduce the ability of air carriers to more closely adjust the number of discounted seats to maximize revenues and profits; 2) the continued growth of competition by low-cost carriers in long-haul markets; 3) increased numbers of routes being transferred from mainline to regional operators; 4) increased efficiency and productivity; and 5) declining real fares. In the near-term, the increased time and cost of new security measures will offset some of the benefits of the trends mentioned above. In addition, the reduced propensity to fly by both business and leisure passengers will diminish some of the benefits. In the long run we see the cost of business travel falling, thereby increasing the volume of business travelers. It is anticipated that short-haul markets will see a rebound in traffic with improvements in security processing times. It is also expected that consumers will continue to prefer pleasure travel by air versus other modes and a long-term expansion of the economy.

Business demand for air travel has become more price elastic for three reasons. First is the increase in the availability of substitutes. Not only has new technology, such as videoconferencing, expanded rapidly and become more widely accepted but also the development of more productive and efficient corporate aircraft (fractional ownership for example) has given business travelers more choices than previously. Second, concerns over security have reduced the propensity of business travel, especially over shorter distances. Since the September 11th attacks, the advantages of air travel versus other modes of transport for short-haul travel has been reduced due to concerns about the increased processing time. For shorter haul trips this processing time is a significant percentage of the total travel time and as this percentage increases, more business travelers will use substitutes. It remains to be seen whether this becomes a long run trend or dissipates. Third, airline pricing has become more transparent with the increased use of Internet search engines. For business travelers, the costs associated with finding low fares have come down dramatically with the improvement in Internet search engines. The increasing use of simplified fare structures should reinforce this trend. With successful cost restructuring and the resulting lower cost structures, carriers will be able to offer lower business fares.

The demand for leisure travel increased during the 1990s because of increasing consumer preference for air travel, increasing disposable income, expanding personal wealth, and lower relative fares. Recent surveys indicate that leisure demand is rebounding following the downturn after the events of September 11th. According to American Express, the amount of vacationers planning to fly increased to 55 percent in 2003 from 42 percent in 2002.[7] Despite the events of September 11th, the trends mentioned above are expected to lead to a continued increase in the demand for leisure travel.

[7] American Express Leisure Travel Index, October 22, 2003

It was clear that in the immediate aftermath of the events of September 11th, the public's propensity to fly was reduced. Despite the fact that more than 2 years have passed, it is too soon to tell if the reduction has become permanent. It is also evident that demand has not rebounded in the way that many analysts thought. However, it remains to be seen whether the modest recovery in demand forecast is indeed due to a permanent shift in the propensity to fly, or some other reason. If the reduction is indeed permanent, then the future growth in demand may not approach historic levels even with vigorous economic growth.

While the relative price of flying has decreased consistently since deregulation, the airline industry has, for the most part, been profitable, albeit marginally until 2001. However, the events of September 11th and the ensuing financial turmoil have resulted in fewer airlines, and record losses. Adding to carrier woes, the increase in the amount of taxes and fees added to the ticket price in the past few years has widened the gap between what customers pay and the revenue the airlines receive. The industry lobbied very hard for tax relief in FY 2003 and scored a success as it did receive a waiver of the security fee for the last 4 months of the year as well as $2.5 billion in compensation from the government for prior security expenditures. In addition, the threat of higher cash pension outlays in the future may rob the industry of funds needed to shore up heavily leveraged balance sheets and continue to acquire the equipment needed to sustain capacity growth and productivity gains. It is not clear that future increases in productivity, capacity growth, and competition will be sufficient to keep relative fares declining. These market conditions would make it difficult for the industry to achieve acceptable rates of return on capital.

GLOBAL RISKS AND UNCERTAINTIES

The forecasts of scheduled commercial air carrier demand are based on a specific set of assumptions concerning economic growth in the United States and abroad, the political environment in which they will take place, Government tax policy, and changes in industry structure. The uncertainties surrounding these assumptions are large and could cause outcomes to be significantly different from those forecast. Developments that could alter the forecasts include:

- additional terrorist attacks utilizing commercial aircraft in the U.S. or abroad;
- the impact of regional jets;
- the impact of additional security measures on costs and travel convenience;
- the continued recovery of consumer confidence in flying commercial airlines;
- the strength and speed that the United States and world economies emerge from recession;
- the number of business cycles that occur over the forecast period;
- the movement of future oil prices;
- the degree of competition in both the domestic and international markets;
- the potential for consolidation within the industry;
- how far carriers can reduce unit costs;
- how fast yields decline due to increased competition and cost reductions.

In addition, the network of bilateral pacts that the United States currently has in place in Europe, the Far East, and South America could significantly inhibit the expansion plans of air carriers operating in these international regions and restrain traffic growth. On the other hand, the move towards deregulation, privatization of national carriers, and expansion of open-skies agreements could result in significantly greater traffic growth.

DOMESTIC TRAFFIC: ASSUMPTIONS, MODELS AND FORECASTS

During the past several years the FAA has adopted a decision-theoretic forecasting system. The approach is generally accomplished in two stages. Initially, projections are made with the use of econometric and time series models. The model equations and outcomes are then adjusted based upon "expert industry opinion" to arrive at subsequent forecasts for use in the decision-making process. As was done last year, the forecast for 2004 has been developed utilizing a set of assumptions regarding capacity and expert judgment as to the degree and timing of the industry recovery from the events of September 11th. Forecasts for the years 2005 and beyond were based on results derived from the models described below.

In developing the short-run demand forecasts it was assumed that: 1) no new terror attacks against U.S. airlines will occur; and 2) U.S. large carriers will not reach pre-September 11th levels of capacity until 2005. The key assumption of the long-run demand forecasts is that the historic relationship between demand and economic growth has not been permanently impacted by the events of September 11th and will resume by 2006. In addition, it was assumed for the long-run demand forecasts that: 1) industry improvements in efficiency and productivity continue but at less than historical rates; 2) taxes and fees on airline tickets remain at current levels; 3) competitive forces remain strong; and 4) capacity is continuously adjusted so that demand and supply are in equilibrium.

Since models are relatively simple descriptions of very complex systems, they cannot account for all the political, social, psychological, and economic factors and their interactions that will lead to a particular set of outcomes. Therefore, it is essential to use judgment to account for the complexities of the operating environment. This can be accomplished by adjusting the exogenous variables, adjusting the model outputs, or revising the models initial parameter estimates.

FAA periodically reviews and adjusts its projections based on forecasts and discussions with analysts outside FAA. Some important outside sources for adjusting FAA's projections are forecasts developed by: 1) the International Civil Aviation Organization's (ICAO) Asia/Pacific Area Traffic Forecasting Group (May 2003); 2) ICAO's North Atlantic Traffic Forecasting Group (March 2003); and 3) the National Academy of Sciences' Transportation Research Board Future Aviation Activities International Workshop (September 2002).

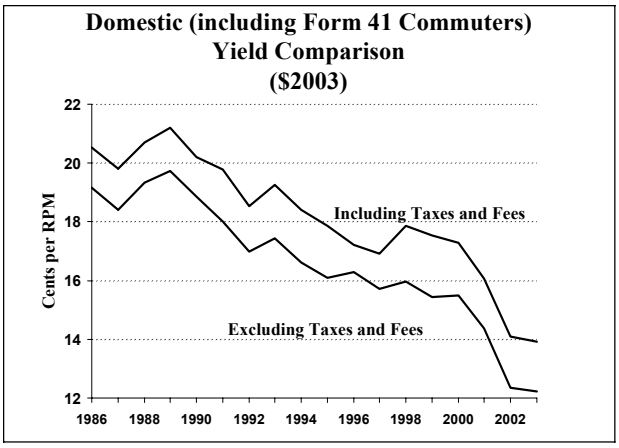
MODELING DOMESTIC RPMS AND ENPLANEMENTS

The model used to develop the FAA's domestic commercial air carrier forecasts relies upon a system of statistical and deterministic equations. The pivotal equations of the system relate RPMs and enplanements to two primary independent variables--GDP and yield--both adjusted for inflation. This analytical framework for forecasting enplanements ties the domestic

forecast model closer to projected changes in economic activity and reduces the number of subjective inputs. This approach is expected to reduce the standard errors of the forecasts.

Market forces quickly took hold following deregulation of the industry in 1978. To adjust for the jointly dependent variables in the demand and supply equations, three-stage least squares is used to estimate the demand equations.

In recent years the amount of excise taxes and fees added on to the base price of a ticket has increased significantly and may influence the modal choice of travelers. In addition, as more and more consumers have access to low base fares, the percentage of the average ticket price that taxes and fees account for is increasing. For example, the $200 round trip ticket to Florida may actually cost the customer $250-$260 after all the taxes and fees are levied. If airline demand is becoming increasingly leisure oriented and price sensitive, ignoring the tax impacts on behavior may lead to an overestimation of the level of demand in the future. The traditional definition of yield does not include the amount of taxes that the consumer paid and may represent a misspecification of the price variable that should be used in models estimating aviation demand. In order to address this problem, the FAA has constructed a measure of yield that incorporates the tax and fees paid by consumers. Both yield series move in similar fashion over time but in recent years the gap between the two series has widened.



Although it is aggregate demand that we forecast, it would be preferable to use different models to estimate the two distinct components of each market--business and personal travel. A further refinement would distinguish the long-haul from the short-haul market. This approach would provide important information for developing public policy and would most likely improve the accuracy of the forecasts. Clearly, these markets are affected by different sets of variables, and adjust at different rates to them.

For example, most experts in the industry would agree that the price elasticity of demand for business travel differs from the price elasticity of demand for pleasure travel. Furthermore, theory would suggest that business profits are a factor in determining business travel, and that some measure of personal or family income is an important variable affecting pleasure travel.

At this time, however, the lack of an adequate historical database subdivided into these four components precludes the development of forecasts for each market at the national level. Additional research and data collection is necessary to advance this approach.

U.S. LARGE AIR CARRIER YIELD AND OPERATIONAL VARIABLES

Domestic Capacity

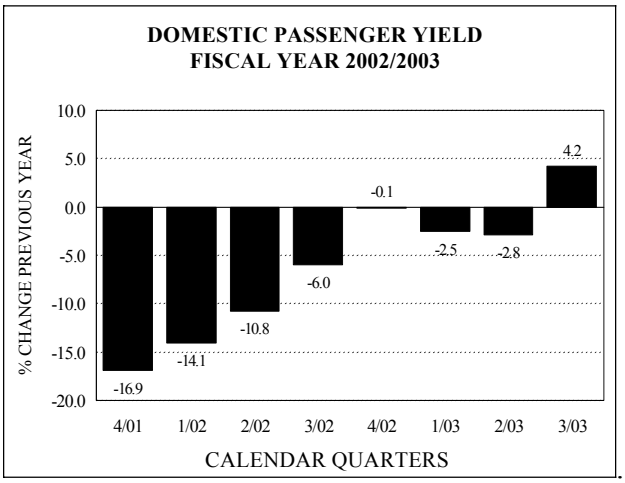
Between 1978 and 1990, domestic capacity grew an average of 5.5 percent annually, matching the growth of traffic during the same period. From 1991 through 1997, capacity grew 2.4 percent annually. During this period, the carriers developed the capability to rapidly adjust capacity to changing conditions in domestic demand while pushing up load factors. Following a capacity increase of almost 9.4 percent between 1998 and 2001, capacity shrank 8.5 percent in 2002, and fell another 1.6 percent in 2003. Capacity was up in the first quarter by 4.8 percent and up just 0.3 percent in the second quarter. As the Iraq war began, carriers reduced schedules in anticipation of lower demand and capacity fell 5.5 percent in the third quarter. During the fourth quarter, capacity was down 5.1 percent as the combination of Hurricane Isabel and caution on the part of carriers kept capacity constrained.

In 2004, capacity is forecast to increase 4.6 percent, as large capacity increases by the low-cost carriers fueled by aircraft deliveries are coupled with the first increase in capacity by the network carriers in 3 years. The capacity increase by the network carriers is a result of higher utilization of their existing fleets. For the balance of the forecast, domestic capacity is forecast to grow 3.5 percent a year. Over the 12-year forecast period, the average annual increase in domestic ASMs is forecast to be 3.8 percent, with domestic ASMs totaling 971.3 billion in 2015.

Passenger Yield

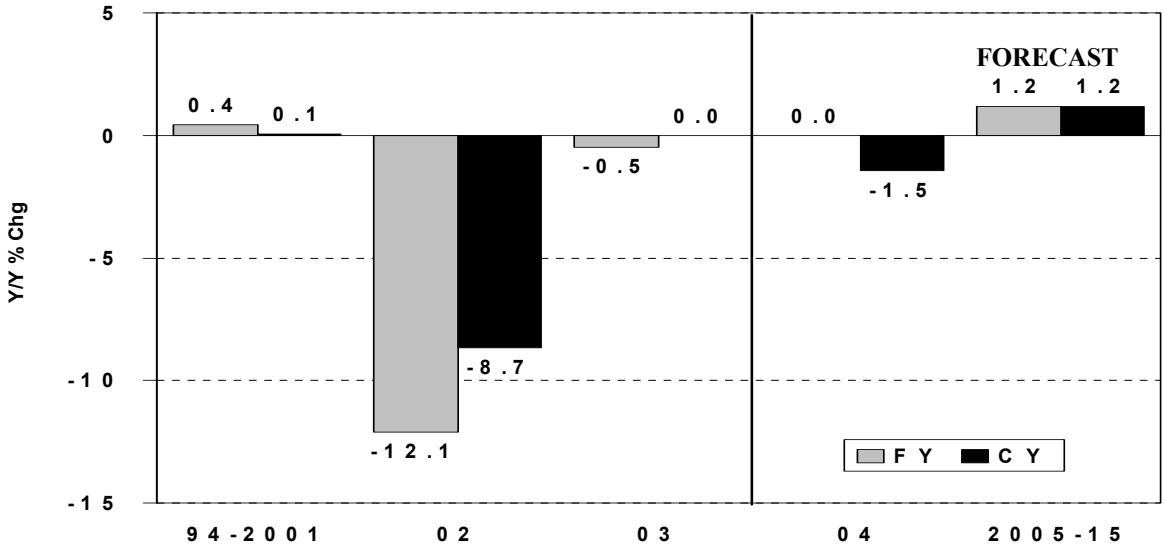
Between 1978 (when the industry was deregulated) and 2001, domestic real yield declined an average of 2.2 percent per year. In the 1980s the decline resulted from the airlines adjusting to deregulation by rationalizing their route structures and increasing labor productivity. In the 1990's, financial weakness in the early part of the decade along with excess capacity, and the growth of low-cost carriers into new markets increased fare competition. Increased competition led to restructuring of the high-cost carriers resulting in higher productivity and lower unit costs.

In 2002 nominal yield was down in all quarters as the fall in demand following the September 11th attacks and a weak economy forced carriers to heavily discount fares in order to attract traffic. Real yield fell 13.4 percent for the year, the largest decline in the modern era. Nominal yield declined during the first three quarters of 2003 as increased competition from low-cost carriers and discounting by the network carriers to attract traffic in the wake of the Iraq war prevented fares from rising. In the fourth quarter of 2003, nominal yield finally rose year-over-year for the first time since the second quarter of 2001 as surging demand coupled with tight capacity led to higher fares.

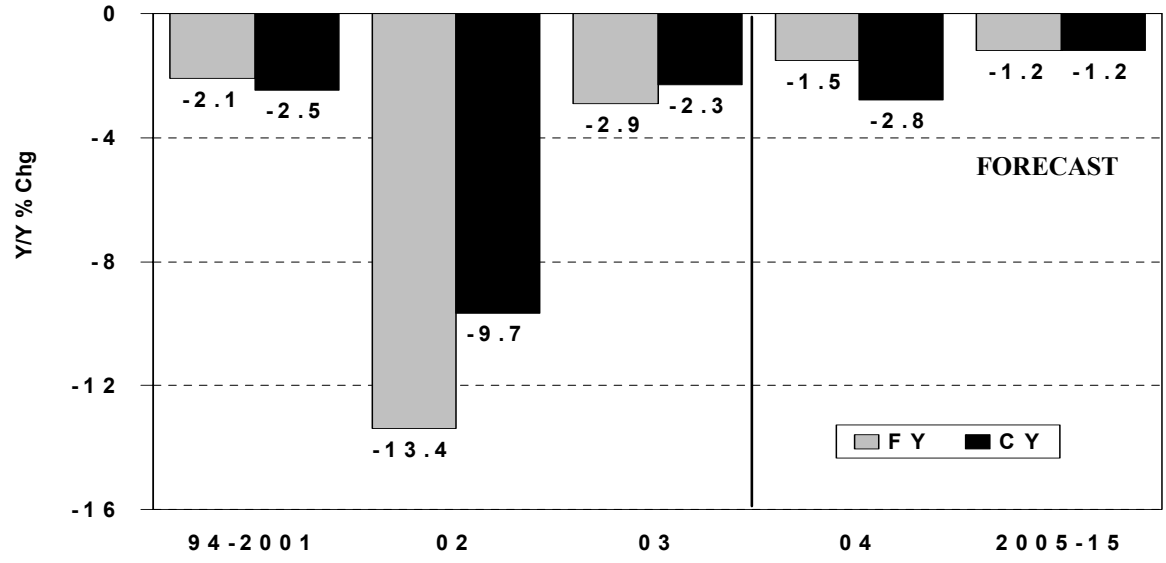


U.S. COMMERCIAL LARGE AIR CARRIERS: DOMESTIC PASSENGER YIELD

CURRENT DOLLARS



2003 DOLLARS

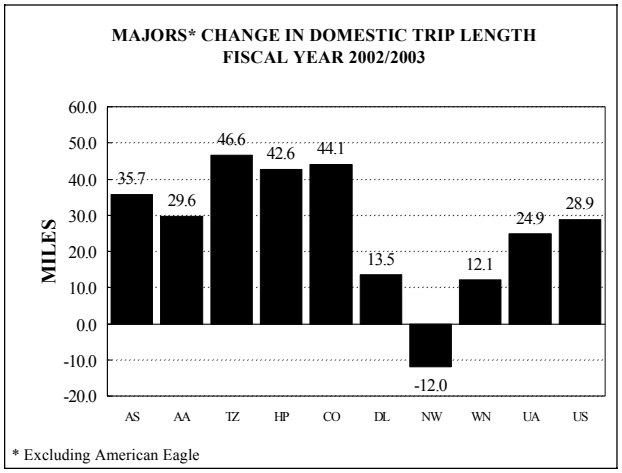


Nominal yield is forecast to remain flat in 2004 as the expansion of low-cost carrier networks and the growth of the network carriers low fare subsidiaries keeps prices in check. Yield will be up modestly versus 2003 for the first half of the year but turns negative for the balance of the year.

In the long run, the effects of continued competition (especially from low-cost carriers), productivity increases, and expanding capacity more than offset higher jet fuel and security costs. It is also assumed that the air carriers will optimally adjust their capacity to meet future demand. During the period 2005 through 2015, nominal yield increases 1.2 percent a year, while real yield declines 1.2 percent annually. Over the 12-year forecast period, nominal yield increases from 11.82 cents in 2003 to 13.78 cents in 2015, with real yield decreasing 0.9 percent a year.

Passenger Trip Length

In 2003 the average domestic passenger trip length for large U.S. carriers increased 27 miles. This was due largely to the continued turning over of medium and short-haul routes to code-sharing regional partners and the expansion of Southwest and other low-cost carriers into longer-haul markets.



The rapid integration of new state-of-the-art aircraft into the regional/commuter fleet--especially regional jets with ranges of up to 1,500 miles—has significantly altered the route system of the industry. These new aircraft are enabling regional/commuters to greatly expand the number and types of markets they serve.

In 2004, the turnover of short-haul markets by the network carriers to their code-sharing regional partners will continue as they try to reduce costs and expansion of capacity in transcontinental and Florida markets will result in domestic trip length increasing by 8.1 miles. During the period from 2005 to 2015, expansion of low-cost carriers into longer-haul markets, restructuring of the regional/commuter fleets, and expansion of point-to-point service, are expected to increase the domestic trip length modestly. For the entire forecast period, the average trip length increases 3.8 miles per year, increasing from 939.1 miles in 2003 to 984.4 miles in 2015.

Average Aircraft Size

After rising by 1.4 seats in 2002, average seats per aircraft for the large domestic Form 41 carriers rose another 0.5 seats in 2003. The modest increase was the result of rapid growth of the low-cost carriers that typically fly smaller aircraft than the network carriers partially offsetting increases in average seats per aircraft at American and Continental. In addition, seats per aircraft at Delta, Northwest, and United fell as they retired some of their older wide-body aircraft.

Current fleet plans by the large air carriers show that the average seats per aircraft is increasing. However, most network carriers have deferred taking delivery of new aircraft until 2005 at the earliest. Thus increases in aircraft size will be very small in the near term. Those aircraft that will enter the fleet are larger than those in the

existing fleet. The result will be a modest increase in the average seats per aircraft throughout the forecast period.

The seating capacity for domestic large air carriers is forecast to increase, on average, 0.5 seats per year, with no increase forecast for 2004. For the balance of the forecast, average seats per aircraft will increase an average of 0.5 seats per year. In 2015, the average seats per aircraft will be 154.0 seats, up from 148.5 seats in 2003.

Passenger Load Factor

From 1993 through 2000, domestic load factor increased 9.8 percentage points, expanding from 61.4 percent to 71.2 percent. During this period carriers developed the capability to rapidly adjust capacity to changing conditions in both the domestic and international markets to meet demand while pushing up load factors. However during the past few years, load factor had remained relatively stagnant and declined in the aftermath of the events of September 11th.

In 2003, domestic load factor rose by 2.6 points from 2002 and set an all-time record at 72.7 percent. Year-over-year load factor was up in every quarter, ranging between 0.4 points in the second quarter to 4.7 points in the fourth quarter. While an increase in traffic was responsible for the increase in load factor during the first half of the year, significant capacity reductions (in excess of 5 percent year-over-year) coupled with flat to slightly falling traffic were the main reasons for the higher load factor during the second half of the year.

Although capacity is projected to increase in 2004 (the first time since 2001), traffic is projected to increase faster resulting in an increase in domestic load factor of 0.3 points to 73.0 percent. Year-over-year improvement is projected for the first half of the year, with modest declines (less than 0.8 points year-over-year) forecast for the balance of the year as the full extent of the anticipated capacity increases do not occur until the second half of the year.

Load factor is projected to increase modestly for the remainder of the forecast period as the industry returns to a more stable operating environment, resulting in a load factor of 74.8 percent by 2015.

FORECASTS

Revenue Passenger Miles

During the economic expansion of the 1990's, domestic RPMs grew an average of 4.0 percent per year over the 10-year period. In the 2 years following their peak in 2000, scheduled domestic RPMs for U.S. large carriers declined 9.6 percent. In 2003 domestic RPMs returned to a growth mode, up 2.2 percent versus 2002. Traffic increased 5.0 percent during the first half of the year but then fell 0.2 percent in the second half of the year as demand fell in the wake of the Iraq war. Traffic declined in the third quarter by 1.5 percent but was up 1.1 percent in the fourth quarter, despite a 5.1 percent reduction in capacity.

Large carrier domestic RPMs are forecast to be up 5.1 percent in 2004 with the fastest growth occurring after the first quarter. Both network carriers and low-cost carriers are projected to see positive growth. As the economy returns to its long-term trend growth after 2005, traffic increases average 3.8 percent a year for the remainder of the forecast period. The average annual increase in domestic RPMs over the 12-year planning horizon is forecast to be 4.0 percent, with domestic RPMs for the large carriers reaching 726.9 billion in 2015.

Passenger Enplanements

For the third year in a row, U.S. scheduled domestic large air carriers enplaned fewer passengers. A total of 482.2 million passengers were enplaned in 2003, down 0.8 percent from 2002. Similar to RPMs, domestic enplanements were up during the first part of the year with the largest increases in the first quarter. Enplanements were down 3.6 percent on a year-over-year basis in the second half of the year as demand fell with the conflict in Iraq and subsequent capacity reductions. Enplanements are forecast to increase 4.2 percent in 2004 with faster growth in the second half of the year. Network carriers are projected to have growth in passengers for the first time since 2000. For the remainder of the forecast period, enplanements increase 3.4 percent a year. The growth in enplanements is projected to average 3.6 percent annually during the 12-year forecast period, with the number of large carrier domestic enplanements reaching 738.4 million in 2015.

INTERNATIONAL PASSENGERS: METHODOLOGY AND FORECASTS

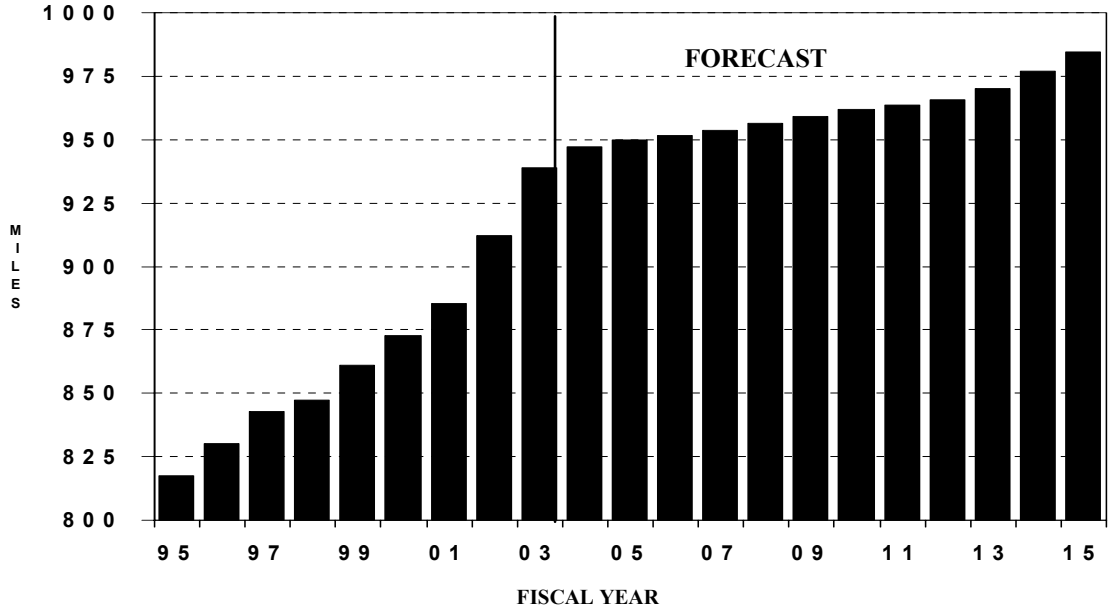
MODELING INTERNATIONAL RPMS AND ENPLANEMENTS

Similar to the forecasts of domestic traffic, forecasts for U.S. flag carriers' international RPMs and enplanements for the three world regions--Atlantic, Pacific, and Latin America, are a combination of near-term expert judgment forecasts coupled with longer term forecasts based on the forecast methodology described below. Forecasts for 2004 were developed utilizing assumptions about capacity and the recovery in demand. Forecasts for 2005 and beyond were developed by initially estimating total passengers (U.S. and foreign flag carriers) for each world region based on the economic activity in both the region and in the U.S. These forecasts coupled with assumptions concerning U.S. market share in each region, are used to forecast U.S. flag carrier international enplanements. Models relating U.S. flag carrier RPMs to enplanements are use to derive U.S. flag carrier international RPM projections. This approach ties U.S. flag carrier activity in the international regions to total demand and should, over the long-term, increase the accuracy of the FAA facility workload and trust fund revenue projections.

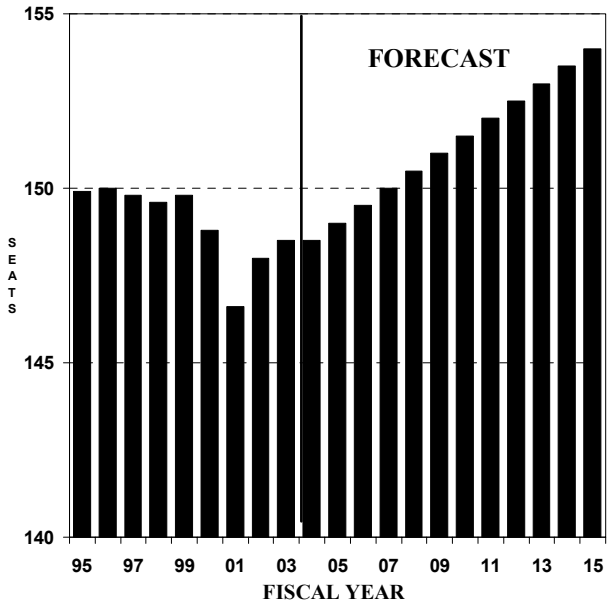
Although economic theory suggests that fares, exchange rates, and relative country consumer prices should be important arguments in an international demand equation, the analyses clearly demonstrate that aggregate economic activity explains a large percentage of the variability in demand and is sufficient to develop accurate macro international forecasts. However, these aggregate results may differ significantly from micro analyses of individual markets categorized by distance, type of flying, and level of competition.

U.S. COMMERCIAL LARGE AIR CARRIERS: DOMESTIC OPERATIONAL VARIABLES

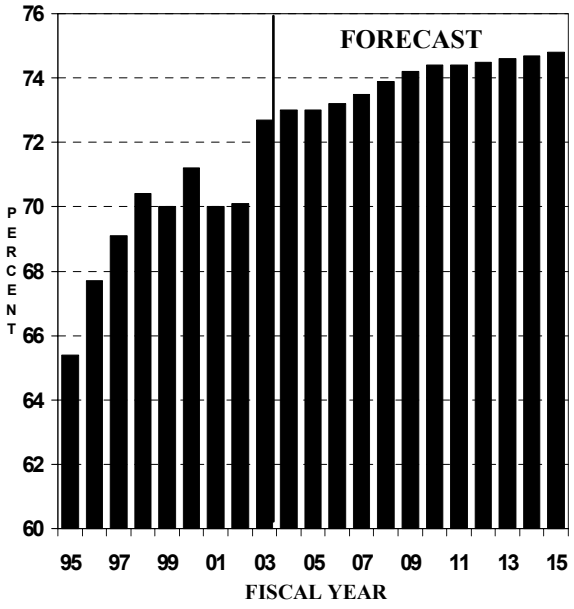
PASSENGER TRIP LENGTH



SEATS PER AIRCRAFT

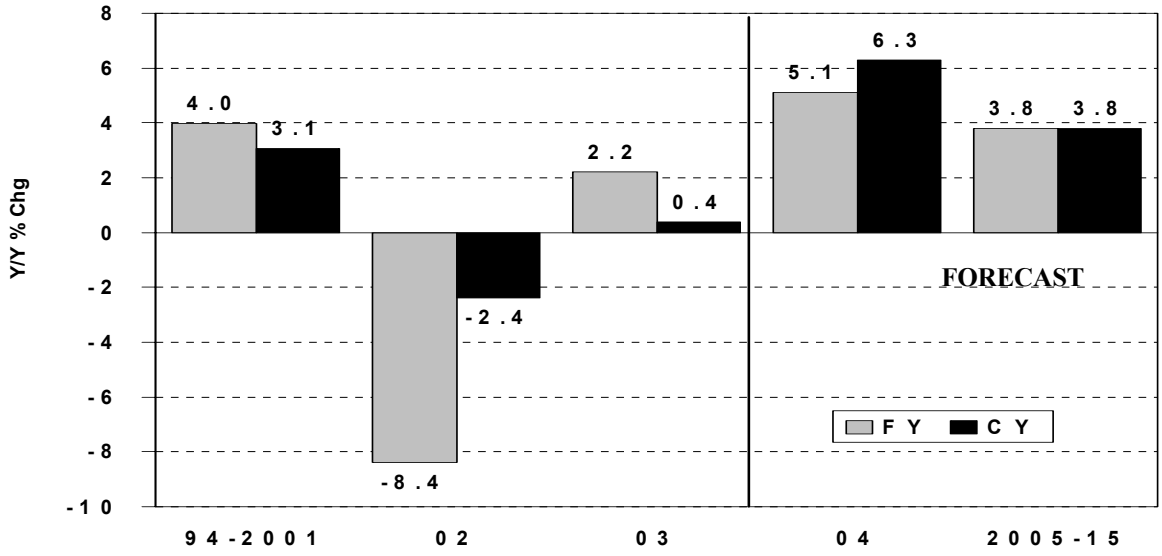


LOAD FACTOR

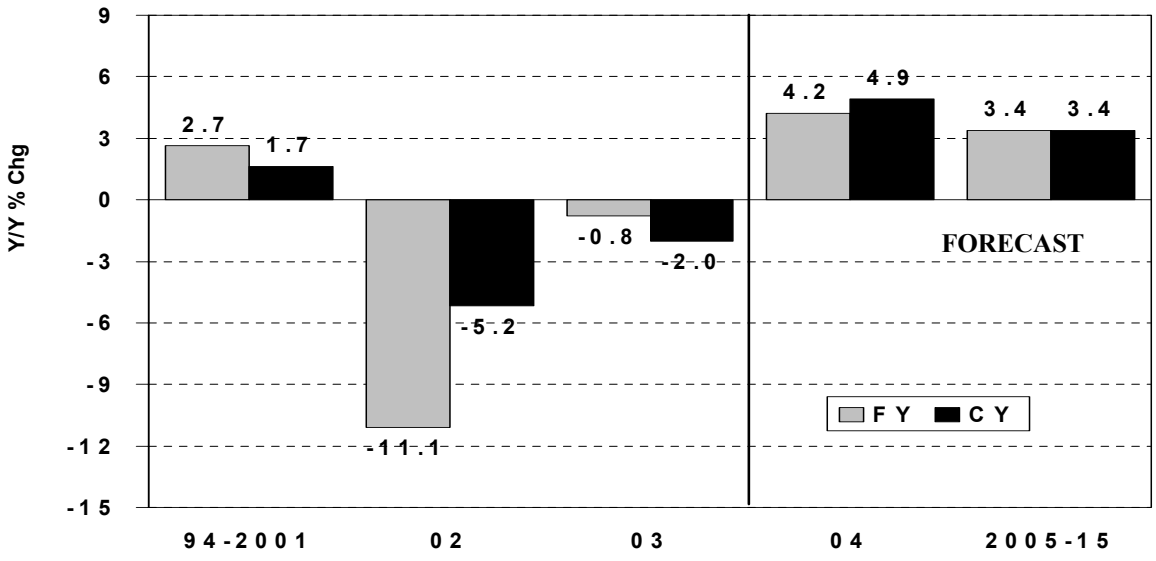


U.S. COMMERCIAL LARGE AIR CARRIERS: DOMESTIC FORECASTS

SCHEDULED REVENUE PASSENGER MILES



SCHEDULED PASSENGER ENPLANEMENTS



ATLANTIC MARKET

U.S. Large Air Carrier Yield and Operational Variables

Capacity

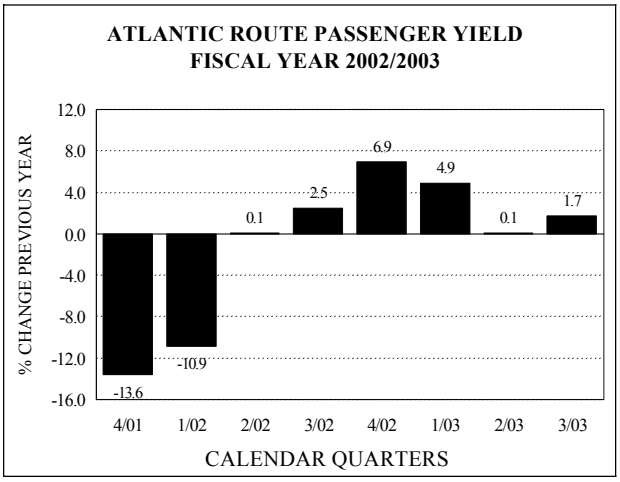
After falling 14.1 percent in 2002, U.S. carrier capacity in Atlantic markets was down 3.4 percent in 2003. Year-over-year capacity was up through February and then fell for the balance of the year with the largest decreases occurring in April and May at the height of the Iraq conflict. Based on published OAG schedules and discussions with carriers, capacity increases in 2004 are expected to be modest considering the reductions in the second half of 2003. In 2004, capacity is projected to increase 7.8 percent with capacity growth still negative in the first quarter then turning positive. By the summer, U.S. carrier capacity in Atlantic markets is projected to be roughly 12 percent up from the summer of 2003.

For the period 2005 through 2015, forecast capacity growth averages 4.6 percent per year with the rates of growth diminishing over the course of the forecast. The average annual growth over the 12-year forecast period is 5.0 percent with Atlantic ASMs totaling 168.8 billion in 2015.

Passenger Yield

In 2003 current dollar yield (9.53 cents) increased 2.6 percent, while real yield in the market rose 0.8 percent. This followed a drop in real yield in 2002 of 5.8 percent. Yield was up in every quarter with the largest gains occurring in the first half of 2003. In the second half of the year, yield gains were more modest as carriers resorted to more discounting to attract customers following the Iraq war. In 2004, yield is forecast to be flat on a year-over-year basis as increasing capacity will dampen price increases. For all of 2004, yield in Atlantic markets is forecast to remain unchanged in nominal terms, but fall 1.5 percent in real terms.

For the balance of the forecast period, real yield is projected to decline 0.6 percent a year, while nominal yield is expected to increase at an annual rate of 1.8 percent. For the period 2003 through 2015, nominal yield increases from 9.53 to 11.43 cents.



Passenger Trip Length

In 2003 the average passenger trip length in the Atlantic market decreased 38.1 miles, the second consecutive drop in trip length and just the fifth time in the last 20 years. Decreases in trip length occurred at Continental, Northwest, United, and US Airways with United recording the largest decrease. Despite the declines of the past 2 years, since 1993, average trip length in the Atlantic market has increased from 3,908.7 miles to 4,109.3 miles--up 200.6 miles. The increase in average passenger trip length

since 1993 has been primarily due to more direct flights from non-East Coast U.S. gateways and expanded service into Central and Eastern Europe. In the future we expect that trip length will increase with continued expansion of service from non-East Coast U.S. gateways.

The average trip length is forecast to increase 75.1 miles in 2004 as capacity additions by the industry (mostly returning to markets abandoned or frequency reductions in the wake of the Iraq War) will lead to a greater share of the traffic flying on longer haul routes. Increases in passenger trip length are then projected to moderate and increase an average 7.7 miles annually during the forecast period. For the period 2003 through 2015, trip length in Atlantic markets increases from 4,109.3 miles to 4,257.8 miles--up 148.5 miles.

Average Aircraft Size

The average seats per aircraft in the Atlantic market continuously increased during the 1970s and early 1980s as the widebody DC-10s/ L-1011s and B-747s dominated the market, peaking at 332.0 seats in 1985. Since the mid 1980s, the advent of the B-767 and other aircraft flying Extended-Range Twin-Engine Operations (ETOPS), has resulted in the average seat per aircraft steadily declining. In 2003 the average seats per aircraft fell 2.6 seats to 231.2 seats—100.8 seats below the 1985 peak. Over the 12-year forecast period, the average seats per aircraft in the Atlantic market gradually increases as the major carriers expand the number of non-stop city-pair services and use of larger two-engine widebody aircraft. Average seats per aircraft in the Atlantic market increases 0.8 seats per year to 240.7 seats by 2015.

Passenger Load Factor

In 2003, the Atlantic market load factor rose 1.1 points to 78.1 percent as capacity fell 3.4 percent while RPMs declined by 2.0 percent. Year-over-year load factor was up 9.5 points in the first quarter of the year but then was down 4.7 points year-over-year in the second quarter as traffic slowed during the run-up to the Iraq War. For the balance of the year, load factor gains were modest (up 0.1 points and 1.0 point respectively) as carriers cut capacity to meet the lower level of demand.

Despite the capacity increase forecast for the Atlantic market, load factor in Atlantic market is forecast to rise 3 points in 2004 as traffic increases faster than capacity. Year-over-year increases in load factor are greatest in the first half of the year and then are forecast to be slightly up for the balance of the year. Following the peak in 2004, load factor decreases gradually to 80 percent by 2007 as traffic increases, driven by economic growth and falling real yields, are outpaced by capacity increases. For the balance of the forecast, load factor remains at 80 percent as the market achieves equilibrium.

Forecasts

Total Passengers: U.S. and Foreign Flag Carriers

Based on Immigration and Naturalization Service (INS) data, which is compiled by the Department of Commerce, passengers in the Atlantic market decreased 9.6 percent in CY 2002 (the latest full year for which data is available), following a 10.5 percent decline in

CY 2001. Data for the first half of 2003 indicate that the fall in traffic has bottomed out.[8]

U.S. air carrier market share for the Atlantic region steadily declined between 1988 and 1999, but then reversed course and increased from 38.6 percent to 42.1 percent in 2002. Preliminary data through August 2003 indicate that the increase in U.S. flag carrier share has dramatically reversed. Based on the available data, U.S. carrier market share is projected to fall to 39.1 percent, the second lowest level since 1980.

Total passengers traveling in the Atlantic market are forecast to grow faster than the rate of U.S. flag carriers for CY 2004. In CY 2004, passengers are forecast to increase 9.0 percent with the highest rates of growth occurring after the first quarter. For the remainder of the forecast period, total passengers increase an average of 4.3 percent per year. Over the entire forecast period, total passengers increase an average of 5.0 percent per year, from 43.2 million in 2003 to 77.5 million in 2015.

The International Civil Aviation Organization (ICAO) North Atlantic Traffic Forecasting Group (Canada, U.S., U.K., and Portugal) was formed with the primary objective of developing forecasts of air traffic over the North Atlantic and between North American and the Caribbean. Annual forecasts are provided for both total passengers and aircraft movements to support air navigation systems planning activity for ICAO and its member states.

The Group met in May 2002 and updated its forecasts to incorporate the effects of the September 11th attacks. Copies of the 2002 report entitled, "*North Atlantic Air Traffic Forecasts for the Years 2000-2005, 2010 and 2015,"* can be obtained from the FAA's Statistics and Forecast Branch, Office of Aviation Policy and Plans, phone (202) 267-3355.

U.S. Large Carrier Passenger Enplanements

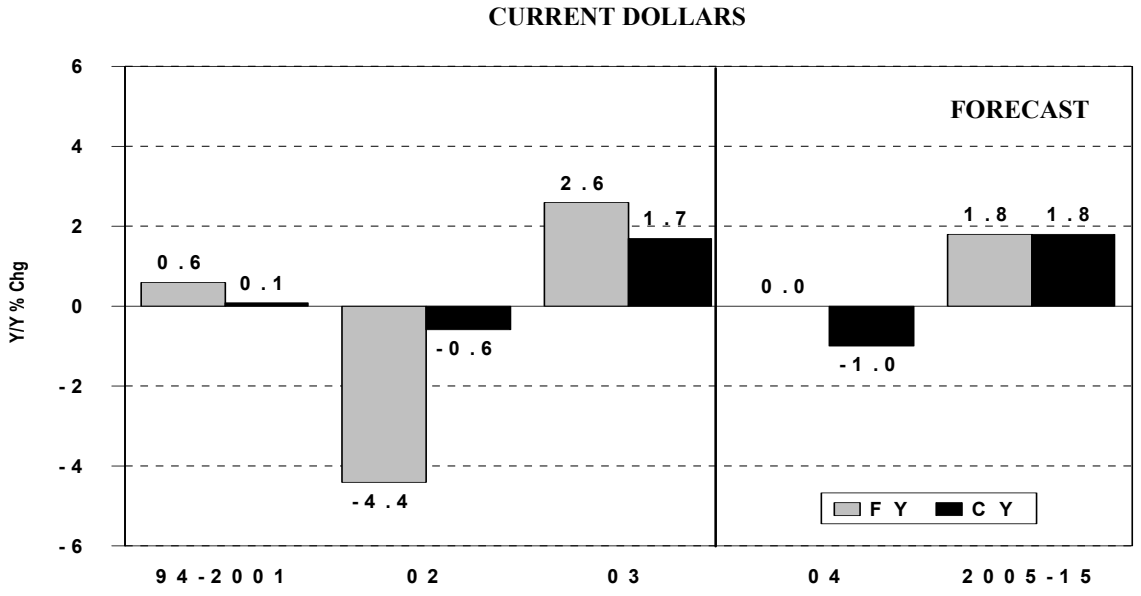
U.S. scheduled air carriers in the Atlantic market enplaned a total of 17.8 million passengers in 2003, down 1.1 percent. Enplanement growth was positive every month through February, then turned negative in March and remained down year-over-year for the balance of the year. Atlantic passenger enplanements are forecast to rebound in 2004, with the largest year-over-year increases occurring in the second half of the year. For the year, enplanements are forecast to increase 9.9 percent. During the period 2005 through 2015, enplanements are forecast to increase 4.3 percent per year on average, stimulated by economic growth and falling real yields. For the entire 12-year forecast period, enplanements increase on average 4.9 percent annually. The number of Atlantic market enplanements reaches 31.7 million in 2015—78.2 percent higher than in 2003.

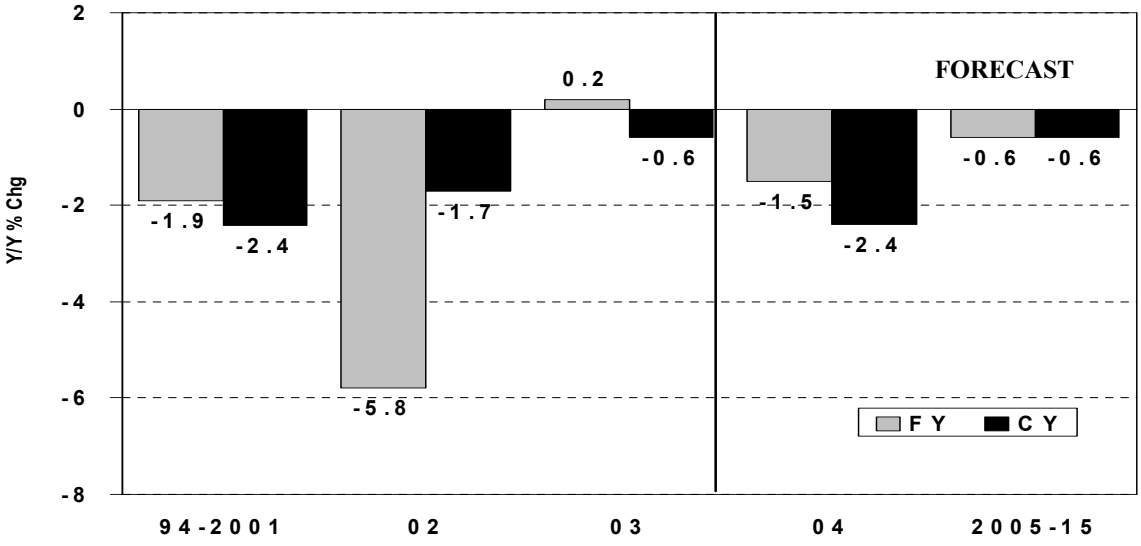
U.S. Large Carrier Revenue Passenger Miles

During the 1990's, Atlantic market RPMs continuously increased at a rate of 7.1 percent per year, due to strong, steady economic growth in the U.S. and Europe and declining real yields. However the first decade of the 21st century has been a different story. For the third consecutive year, Atlantic market RPMs fell, totaling 73.2 billion in 2003. After being up 24.7 percent in the first quarter, traffic was down on a year-over-year basis for the remainder of the year as demand waned in the buildup to the Iraq war and capacity reductions

[8] CY 2003 data is available through August. Estimates for the remainder of the year are based on ATA (thru Nov) and AEA (thru Oct) data.

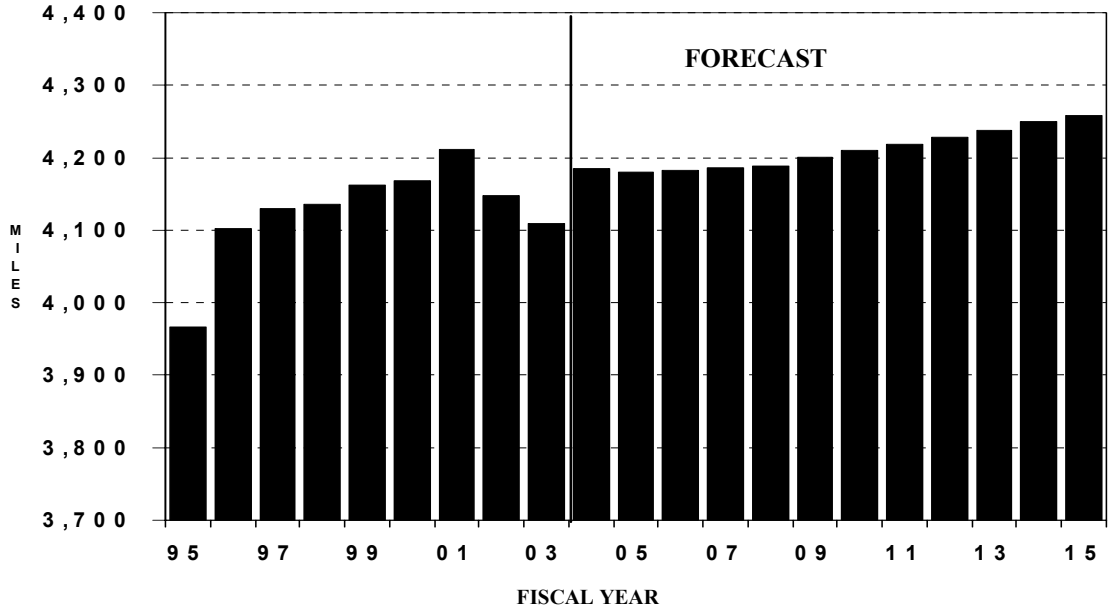
U.S. COMMERCIAL LARGE AIR CARRIERS: ATLANTIC PASSENGER YIELD



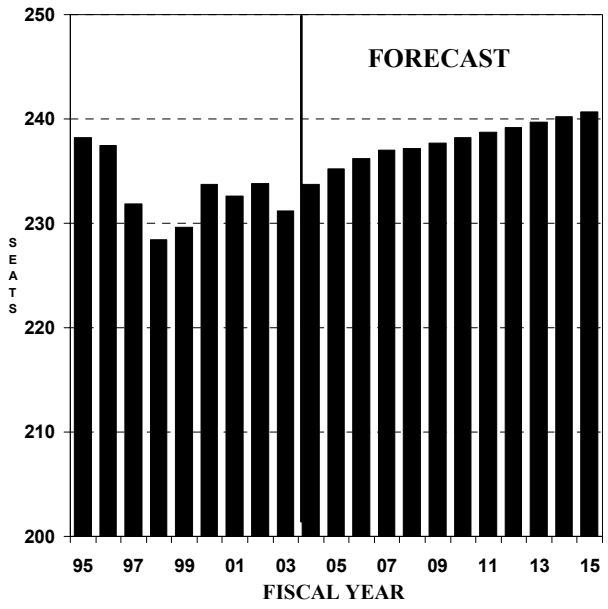


U.S. COMMERCIAL LARGE AIR CARRIERS: ATLANTIC OPERATIONAL VARIABLES

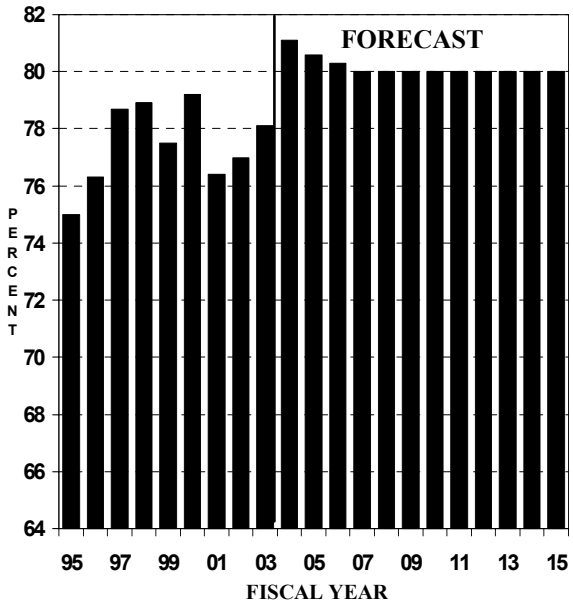
PASSENGER TRIP LENGTH



SEATS PER AIRCRAFT



LOAD FACTOR



limited a rebound in demand following the conclusion of major fighting.

Traffic is projected to increase 12.0 percent in 2004 driven by economic recovery in the U.S. and Europe. The highest rates of growth are projected to occur in the later half of the year. Beyond 2004 for the balance of the forecast period, RPMs are projected to grow 4.5 percent per year on average. The average annual increase in RPMs over the 12-year forecast horizon is 5.2 percent, reaching 135.1 billion in 2015.

LATIN AMERICAN MARKET

U.S. Large Air Carrier Yield and Operational Variables

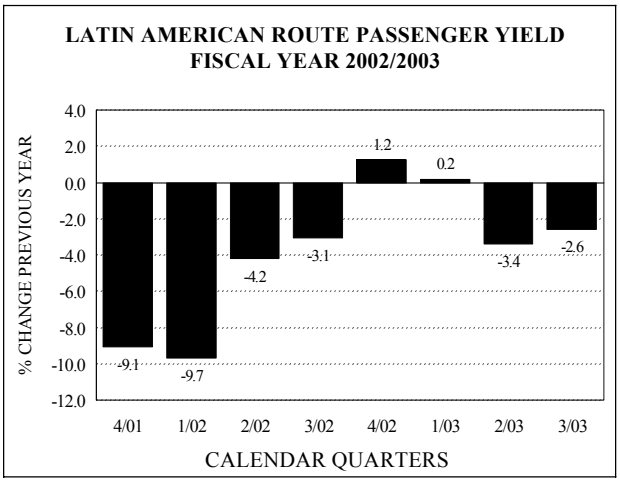
Capacity

In 2003, regional capacity increased just 0.9 percent, following a decrease of 4.5 percent in 2002. Capacity was up 3.8 percent year-over-year during the first 6 months of the year, but then was down 1.9 percent in the last half of the year as carriers (especially Delta and United) reduced capacity in the region.

Based on OAG schedules and discussions with carriers, capacity growth in the Latin American market will be higher than in other international markets. Capacity is projected to increase about 7 percent on a year-over-year basis in the first half of FY 2004 then accelerate to about 13 percent during the second half of the year. For the year as a whole, capacity is projected to increase 9.6 percent. For the period 2005 through 2015, capacity in the region is forecast to grow an average of 5.8 percent per year. The average annual growth over the 12-year forecast period is 6.2 percent with Latin American ASMs totaling 105.5 billion in 2015.

Passenger Yield

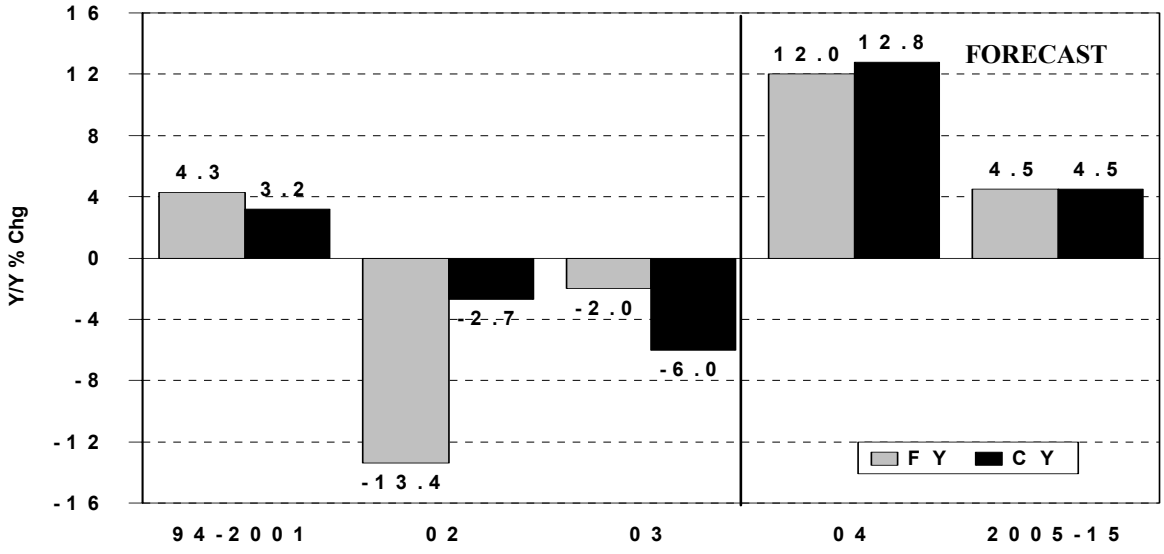
In 2003 Latin American yield (12.34 cents) decreased 1.2 percent while real yield declined 3.5 percent. This followed declines in 2002 of 6.6 and 8.0 percent for nominal and real yield, respectively. Since 1998, real yield in the market has declined 19.0 percent.



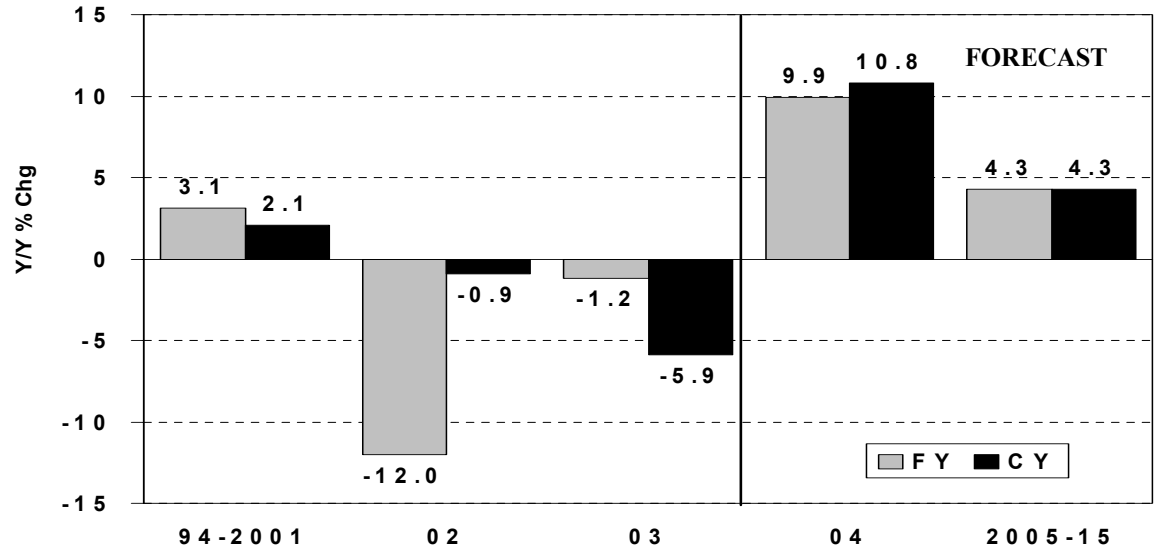
In 2004 real yield is forecast to fall another 2 percent as competition in Caribbean and Central American markets pushes fares lower. From 2005 through the remainder of the forecast period, real yield continues its historic decline, falling at a rate of 0.5 percent a year, driven by increasing demand in longer-haul, lower yield markets like Argentina and Brazil. During the 12-year forecast period, real yield declines at a rate of 0.6 percent a year, while nominal yield increases at an annual rate of 1.6 percent, reaching 14.88 cents in 2015.

U.S. COMMERCIAL LARGE AIR CARRIERS: ATLANTIC FORECASTS

SCHEDULED REVENUE PASSENGER MILES



SCHEDULED PASSENGER ENPLANEMENTS



Passenger Trip Length

For the second year in a row, passenger trip length in Latin America declined, falling 31.8 miles to 1,590.8 miles. Carriers continued to redeploy capacity from longer haul destinations in South America to relatively shorter haul destinations in the Caribbean and Mexico. With the recent declines in 2002 and 2003, the average trip length in the region is now just 4.0 miles higher than the 1998 level.

From 1990 to 2001, the average trip length in the region increased by 453 miles. The primary reason for the increase in trip length during the 1990's was the continued expansion of U.S. carriers into deep South America--Argentina, Brazil and Chile--and the expansion of routes from the Northeast to the Caribbean. This trend is expected to resume over the forecast period. The average trip length is forecast to increase 18.7 miles in 2004 as carriers increase capacity to the longer haul destinations in the Caribbean and Central America and begin to return capacity to the longer haul destinations in South America. Beginning in 2005, capacity growth to the longer haul destinations of the region (South America) will be faster than that to the Caribbean and Central America leading to an increase in trip length of 24.4 miles. For the balance of the forecast period--2005 through 2015--trip length increases average 16.1 miles a year. During this time, Latin American market trip length expands from 1,633.9 to 1,794.7 miles.

Average Aircraft Size

The average seats per aircraft in the Latin American market increased during the 1970s and early 1980s as widebody aircraft dominated the market, peaking at 220.2 seats in 1986. With the advent of the B-757 and other 2-engine aircraft flying ETOPS since the mid 1980s, average seats per aircraft has steadily declined. In 2003 the decline continued as average seats per aircraft was just 171.8 seats--a decline of 48.3 seats from 1986, and the lowest figure since 1974.

Average seats per aircraft is projected to decrease to 170.8 seats in 2004, as the continued increase in Caribbean and Central American capacity with smaller narrow body aircraft results in a lower average seats per aircraft for the region. For the balance of the forecast, the average seats per aircraft in the Latin American market is expected to gradually increase as the major carriers expand the number of non-stop city-pair services into deep South America, and their use of larger two-engine widebody aircraft. The average seats per aircraft are forecast to increase approximately 0.5 seats per year to 176.3 seats by 2015.

Passenger Load Factor

In 2003, load factor increased by 2.8 points to an all-time high of 69.3 percent, as gains in RPMs were greater then the modest increase in capacity. Year-over-year load factor increases of 3 to 5 points were recorded throughout the year except in the second quarter where load factor remained flat with the prior year. While the gains in the first quarter were driven by strong traffic growth, the gains in the later half of the year were a result of a modest growth in traffic coupled with a modest decline in capacity.

Load factor is forecast to increase 1.5 points to 70.8 percent in 2004 with the largest increases in the early part of the year. During the period 2005 to 2007, load factor is forecast to decline gradually to 70 percent by 2007. For the duration of the forecast the load factor remains at 70 percent as the market reaches equilibrium.

Forecasts

Total Passengers: U.S. and Foreign Flag Carriers

Based on INS data, total passengers in the Latin American market (South America, Central America/Mexico, and the Caribbean) fell 5.0 percent in CY 2002. The largest decrease in 2002 occurred in the South America region, which was down 13.6 percent. The Central America/Mexico region decreased 3.1 percent, while the Caribbean region decreased 2.0 percent. During the period 1991-2001 the South American region had been the fastest growing with passengers increasing 6.2 percent annually. At the same time, the Central America/Mexico market increased 4.6 percent per annum, while the Caribbean market increased only 2.2 percent a year, reflecting the impact made by cruise traffic in the region.

Continuing the trend of the past 5 years, U.S. air carrier market share increased by 0.5 points to 65.6 percent in 2002. U.S. carriers increased market share in Central America/Mexico, and South America with 60.3 and 64.5 percent, respectively, while their share remained unchanged in the Caribbean at 73.3 percent.

Throughout most of the 1990's the percentage of total passengers that were U.S. citizens traveling in the Latin American market decreased steadily from 67.3 percent in 1990 to 63.4 percent by 1998. Beginning in 1999 the trend reversed itself and the ratio had increased to 65.2 percent in 2001. However in 2002, the U.S. citizen ratio fell by 1.8 points to 63.5 percent as decreases in U.S. citizen ratio in both the Caribbean and Central America/Mexico regions offset an increase in the South America region.

Preliminary data for 2003 on total passengers traveling in the Latin America market indicates that the decline in passengers that began following the September 11th attacks has stopped. Total passengers in the Latin America market are forecast to increase just 0.1 percent in 2003. For 2004, it is assumed that growth in the total market will be lower than the growth of U.S. flag carriers. In 2004, passengers are projected to grow 11.5 percent with growth higher in the first half of the year. For the period 2005 – 2015, total passengers traveling in the Latin market are projected to increase at an average annual rate of 5.0 percent. Over the entire forecast period, total passengers in the Latin America market increase 5.7 percent per year, from 36.9 million in 2003 to 71.6 million in 2015.

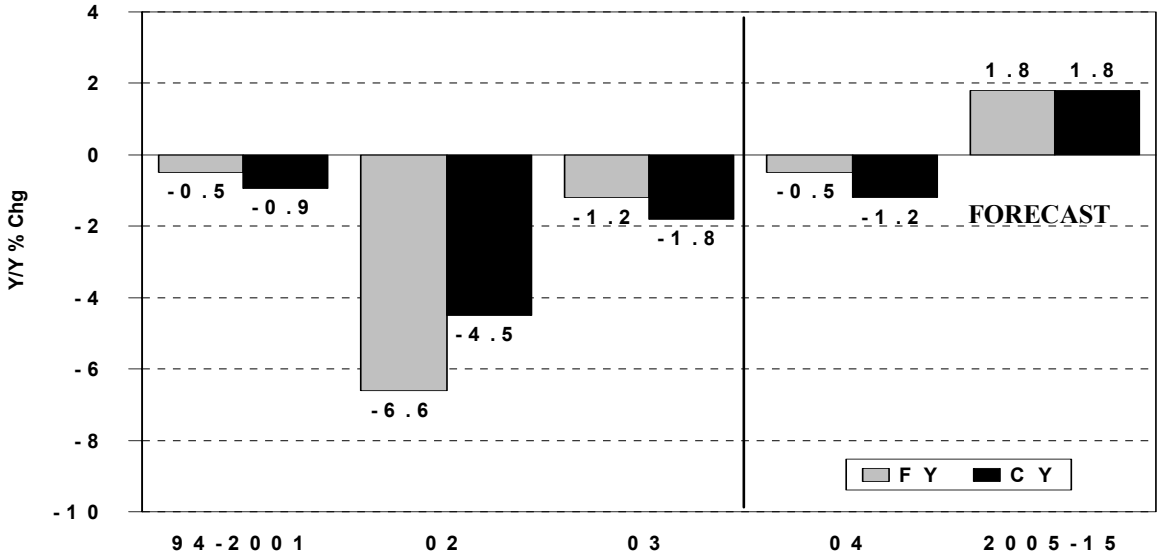
U.S. Large Carrier Passenger Enplanements

U.S. scheduled large air carriers in the Latin American market enplaned a total of 22.2 million passengers in 2003, up 7.3 percent from 2002. Year-over-year increases occurred in each quarter with the first quarter recording the highest increase at 17.4 percent. For the remaining quarters, year-over-year increases in passengers ranged between 3.5 to 5.5 percent.

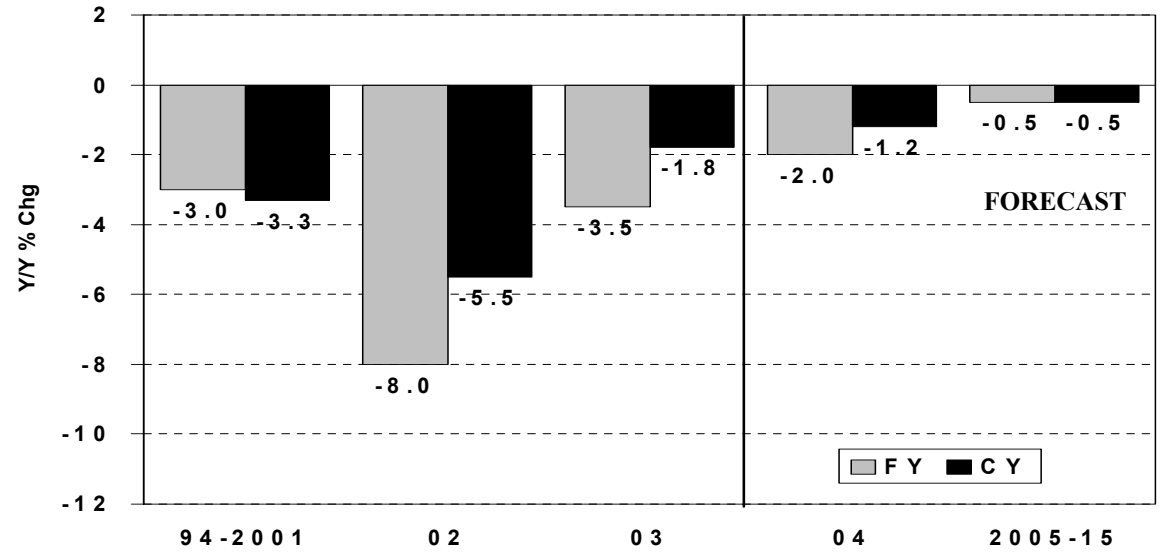
In 2004, passengers are forecast to increase 10.5 percent with the largest increases occurring in the second half of the year. For the remainder of the forecast, economic growth in both the U.S. and in Latin America propel enplanements upward at a rate of 4.7 percent per year. The growth in enplanements is projected to average 5.3 percent annually during the 12-year forecast period, with the number of Latin American market enplanements reaching 41.2 million in 2015.

U.S. COMMERCIAL LARGE AIR CARRIERS: LATIN AMERICAN PASSENGER YIELD

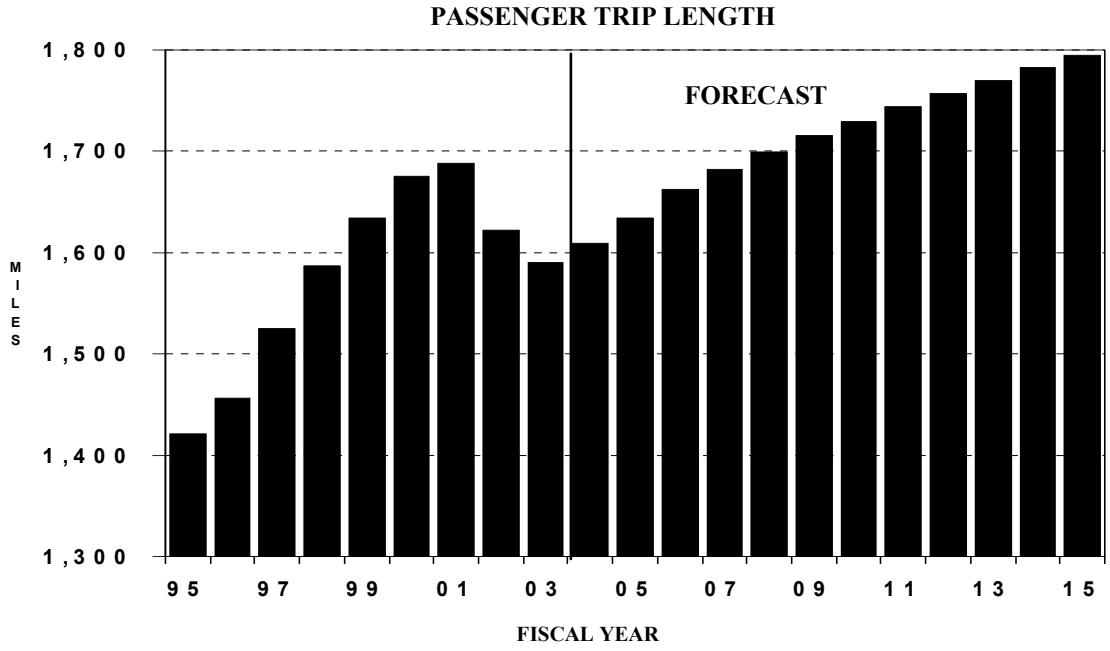
CURRENT DOLLARS

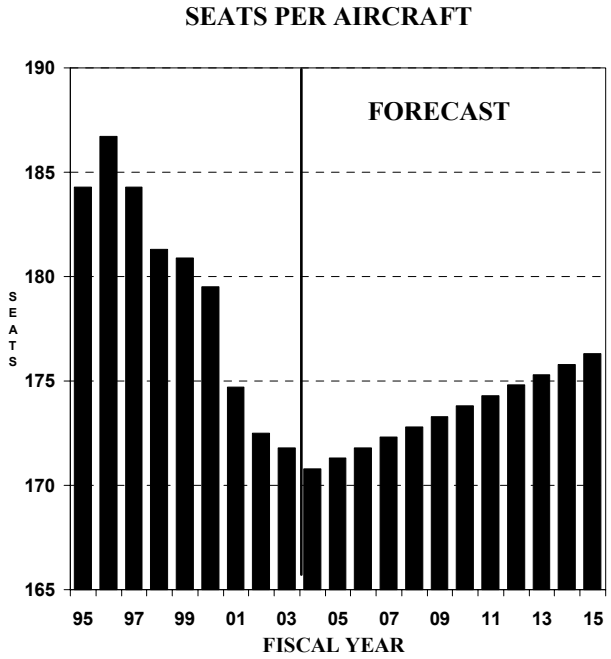


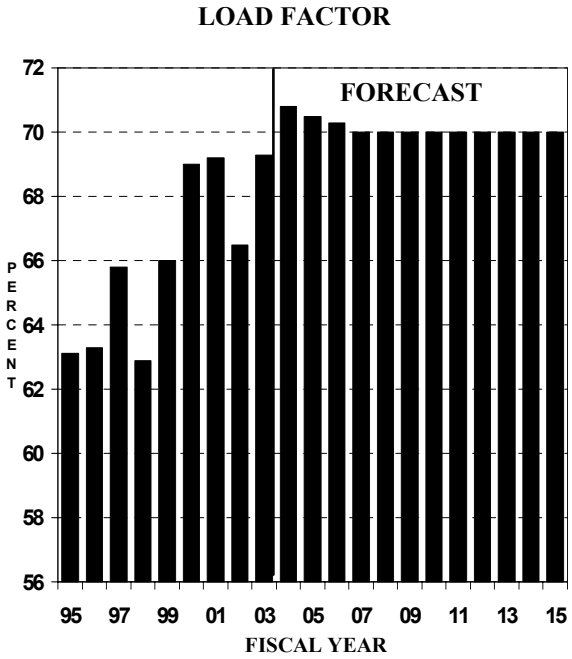
2003 DOLLARS



U.S. COMMERCIAL LARGE AIR CARRIERS: LATIN AMERICAN OPERATIONAL VARIABLES







U.S. Large Carrier Revenue Passenger Miles

After falling in 2002, Latin American market RPMs for U.S. large carriers returned to growth in 2003. For the year, Latin American market RPMs increased 5.2 percent, totaling 35.4 billion with year-over-year increases recorded in every quarter. The largest increase was in the first quarter when the prior year totals were impacted by the September 11th attacks.

RPMs are forecast to increase 11.8 percent in 2004 with the strongest growth in the second half of the year. For the balance of the forecast period RPMs are forecast to grow faster than enplanements, at 5.7 percent per year, as it is anticipated that demand in the deep South America markets will increase faster than in the Caribbean or Central American markets. The average annual increase in RPMs over the 12-year forecast horizon is 6.3 percent, reaching 73.9 billion in 2015.

PACIFIC MARKET

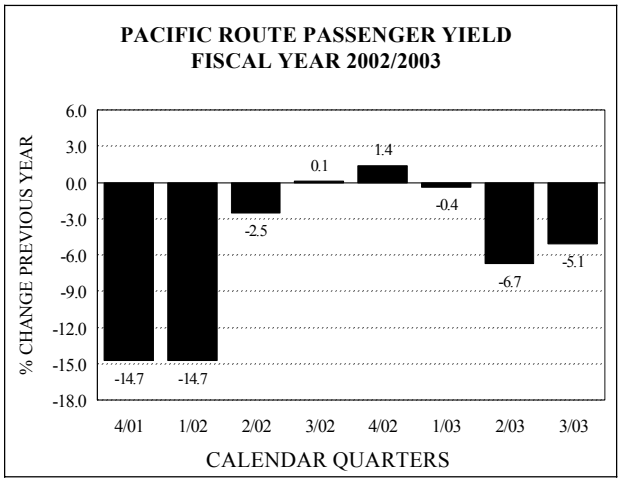
U.S. Large Air Carrier Yield and Operational Variables

Capacity

Following a 20 percent decline in capacity in 2002, U.S. large carriers ASMs in Pacific markets were down again in 2003, falling another 4.7 percent. Since peaking in 1997, U.S. carrier capacity in the region has shrunk by 26.7 percent. Capacity was up in the first half of the year as carriers brought back capacity that had been removed following the September 11th attacks. However the onset of the Iraq war and the SARS epidemic led to a dramatic reduction in capacity during the third quarter that was only gradually added back during the summer. In 2004, capacity remains down in the first half of the year, then increases significantly as capacity is restored during the spring and summer months. For the year as a whole, capacity increases 4.1 percent. For the balance of the forecast period, capacity is projected to increase an average of 5.2 percent per year. For the 12 year forecast period, average annual capacity growth is forecast to be 5.7 percent with ASMs in Pacific markets totaling 117.3 billion in 2015.

Passenger Yield

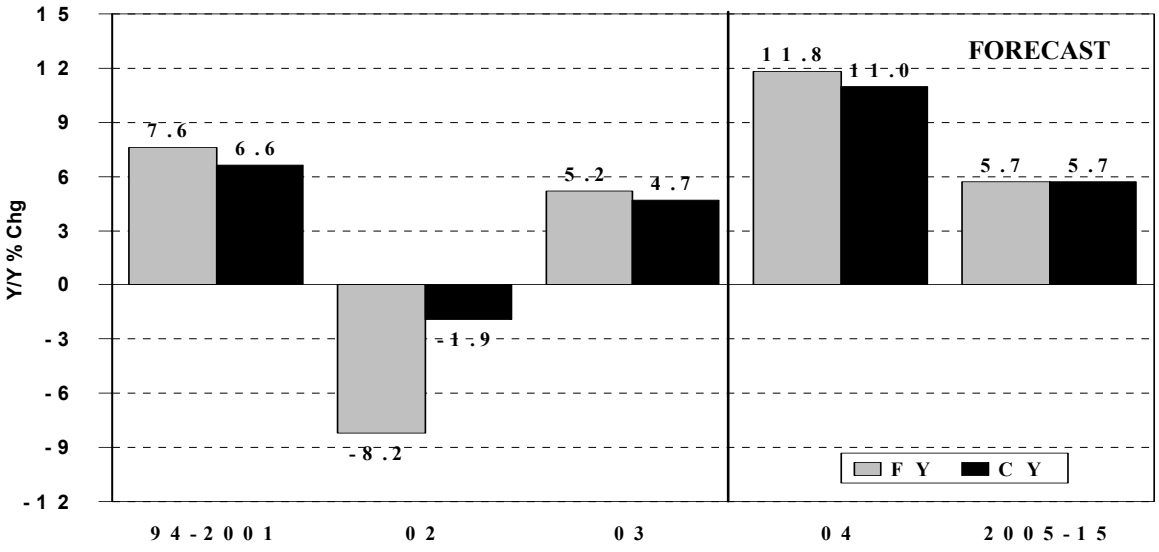
Weakness in demand with the onset of the Iraq war and the SARS epidemic led to a nominal yield decline in the Pacific market of 2.9 percent in 2003. Real yield in 2003 fell 5.1 percent following two consecutive yearly declines of 9.0 percent. After being up 0.6 percent in the first half of the year yield fell by 6.7 percent in the third quarter and 5.1 percent in the fourth quarter as traffic disappeared in the wake of the Iraq war and SARS.



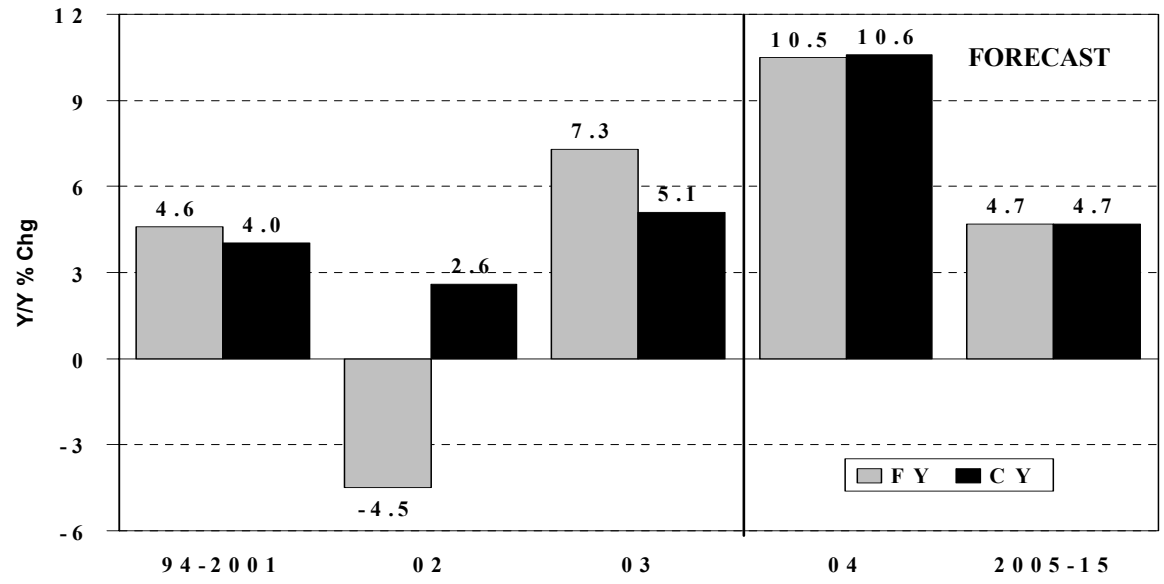
Nominal yield is projected to increase 5 percent in 2004 (3.4 percent in real terms) driven by higher demand and a weaker dollar. The largest increases are projected to occur in the second and third quarters.

U.S. COMMERCIAL LARGE AIR CARRIERS: LATIN AMERICAN FORECASTS

SCHEDULED REVENUE PASSENGER MILES



SCHEDULED PASSENGER ENPLANEMENTS



For the period 2005 to 2015, real yield declines averaging one percent per year are projected. Nominal yield reaches 10.19 cents by 2015--an increase of 1.3 percent a year.

Passenger Trip Length

After falling 151.3 miles in 2002, passenger trip length in Pacific markets fell another 668.5 miles in 2003 to 4,409.1 miles. The primary reason for the fall was a significant increase in the enplaned passengers reported by DOT beginning in July 2002[9] that impacted the FY 2002 figure and the values for the first 9 months of FY 2003 without a corresponding increase in RPMs. In 2004 as capacity is added back to the region following pullbacks resulting from the Iraq war and the SARS outbreak, the average trip length is forecast to increase 68.7 miles. For the remainder of the planning period—2005 through 2015--modest increases in trip length are projected with the trip length increasing an average of 8.3 miles per year, primarily due to more direct flights from non-coastal gateways and expanded service into the Asia/Pacific region. For the 12-year forecast period, the Pacific market trip length increases 167.8 miles from 4,409.1 to 4,576.9 miles.

Average Aircraft Size

For the third consecutive year, the average seats per aircraft in the Pacific market declined. The 2003 figure of 286.6 is the lowest since 1987. The primary cause of the decline in seats per aircraft was the reduction in capacity by both United and Northwest due to the onset of the Iraq war and the outbreak of SARS.

Based on OAG schedules, average seats per aircraft are projected to decline in 2004. In addition there is a good possibility for further reductions in B-747 capacity as United attempts to reorganize and emerge from bankruptcy. Average seats per aircraft in 2004 is forecast to decrease by 5.0 seats to 281.6 seats and then grow slowly for the balance of the forecast. By 2015 average seats per aircraft is forecast to be 287.6 seats, up 1.0 seat from the 2003 figure.

Passenger Load Factor

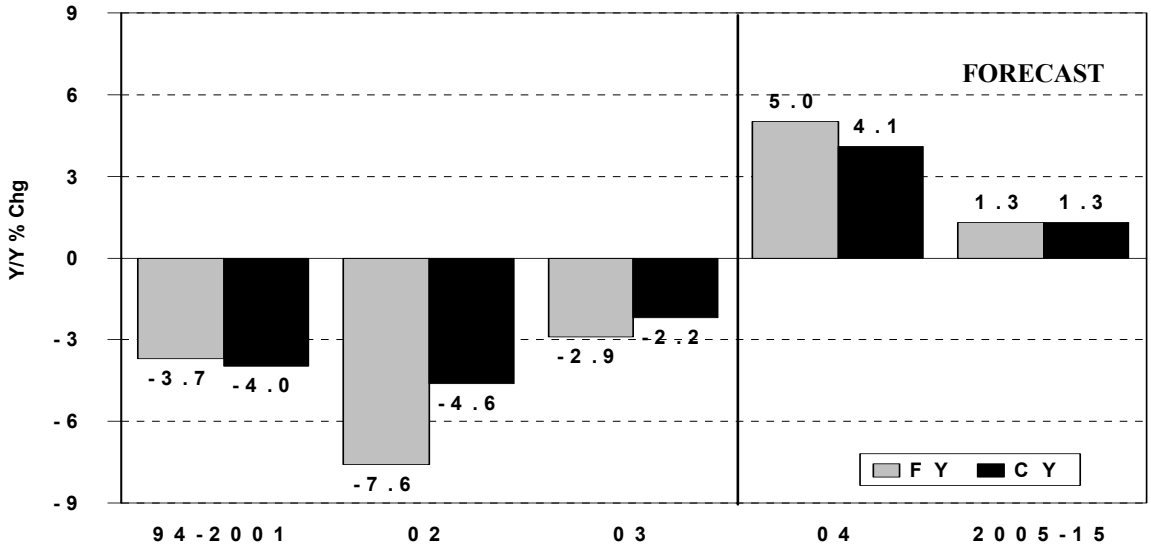
In 2003 load factor in the Pacific market fell 0.8 points to 76.6 percent as traffic decreased 5.7 percent while capacity decreased 4.7 percent. Following a year-over-year increase in load factor of 12.6 points in the first quarter, year-over-year load factor was down 8.8 points in the second quarter and 11.7 points in the third quarter as traffic collapsed following the outbreak of SARS and the beginning of the Iraq war. Year-over-year load factor turned positive in the fourth quarter as the decline in traffic was exceeded by the decline in capacity.

Load factor is forecast to increase sharply to 81.6 percent in 2004 as traffic rebounds from the depressed 2003 levels faster than capacity is added back in the region. Year-over-year load factor increases are projected for all quarters except the last quarter of the year. As traffic growth slows from its peak in 2004, load factor is projected to decrease to 78.5 percent by 2006, and remain at that level for the balance of the forecast as ASMs and RPMs expand at the same rate.

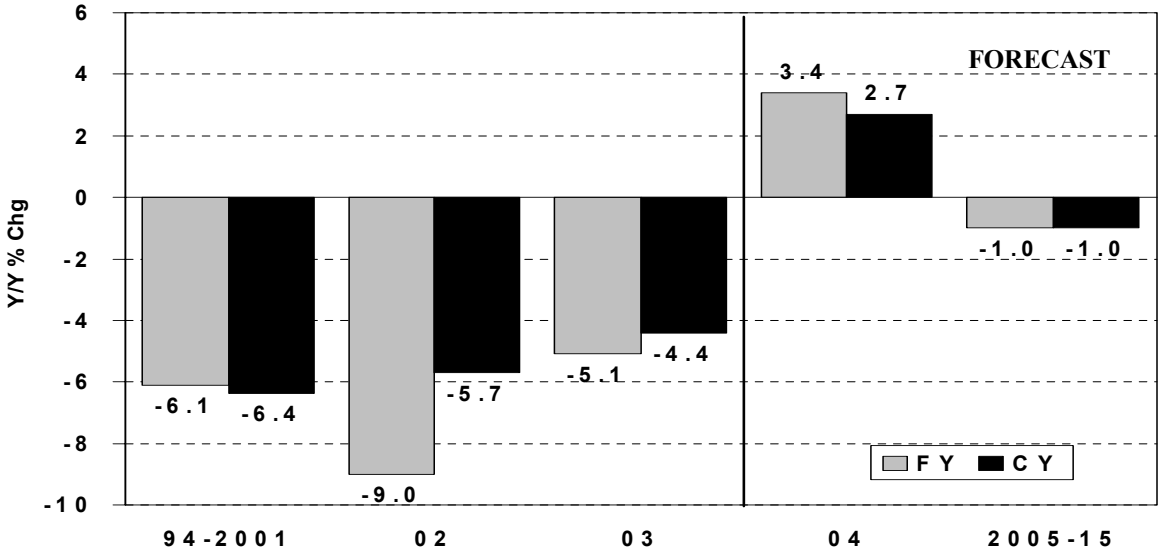
[9] Passenger totals reported by DOT appear low beginning April 1999 through June 2002. Data reported by the ATA do not exhibit the same pattern and show a 1.9 percent drop in passengers and a 164.5mile decline in trip length for FY 2003.

U.S. COMMERCIAL LARGE AIR CARRIERS: PACIFIC PASSENGER YIELD

CURRENT DOLLARS



2003 DOLLARS



Forecasts

Total Passengers: U.S. and Foreign Flag Carriers

Based on INS data, total passengers in the Pacific market decreased 3.2 percent in CY 2002 following a decrease of 11.4 percent in 2001. U.S. carrier market share dropped 3.1 points from 39.7 percent to 36.6 percent.

Preliminary data for 2003 indicate that both traffic and U.S. carrier share are declining. Passengers are projected to fall 12.3 percent during the year with the U.S. carrier share sliding another 1.1 points to 35.5 percent. In CY 2004 it is assumed that passenger growth of the U.S. flag carriers will slightly exceed that of the Pacific market. Passengers are forecast to increase 12 percent in 2004 with the largest increase occurring in the second quarter.

For the period 2005 to 2015, passengers are forecast to increase an average of 4.9 percent per year fueled by strong economic growth in the Pacific region. Total passengers increase from 19.5 million in 2003 to 37.8 million in 2015, an average annual rate of 5.7 percent per year.

U.S. Large Carrier Passenger Enplanements[10]

U.S. scheduled large air carriers in the Pacific market enplaned a total of 10.5 million passengers in 2003, up 8.6 percent following a 15.1 percent decline in 2002. Year-over-year enplanements were up 52.2 percent in the first quarter and 20 percent in the second quarter before falling an average of 10 percent in the last half of the year as the outbreak of SARS and the Iraq war curtailed demand. In 2004 passengers are forecast to be up 9.1 percent. Year-over-year passengers are projected to be slightly up in the first quarter, and then show more substantial growth for the balance of the year with the largest increase forecast for the third quarter. For the period 2005 to 2015, passenger growth is projected to average of 4.9 percent annually. Enplanement growth is projected to average 5.6 percent annually during the 12-year forecast period, with Pacific market enplanements reaching 20.1 million in 2015.

U.S. Large Carrier Revenue Passenger Miles

Traffic in the Pacific market decreased 5.7 percent in 2003, following a 17.6 percent decrease in 2002. After being up 27 percent in the first quarter, year-over-year traffic was down the remaining three quarters, highlighted by a 32.5 percent decline in the third quarter. Growth is projected to return in 2004 with RPMs up 10.8 percent spurred by large increases in the second half of the year. Pacific market RPMs are forecast to increase an average of 5.1 percent per year from 2005 to 2015 as the economies of the region return to their long-term historical growth. The average annual increase in RPMs over the 12-year forecast is 5.9 percent, with RPMs totaling 92.0 billion in 2015.

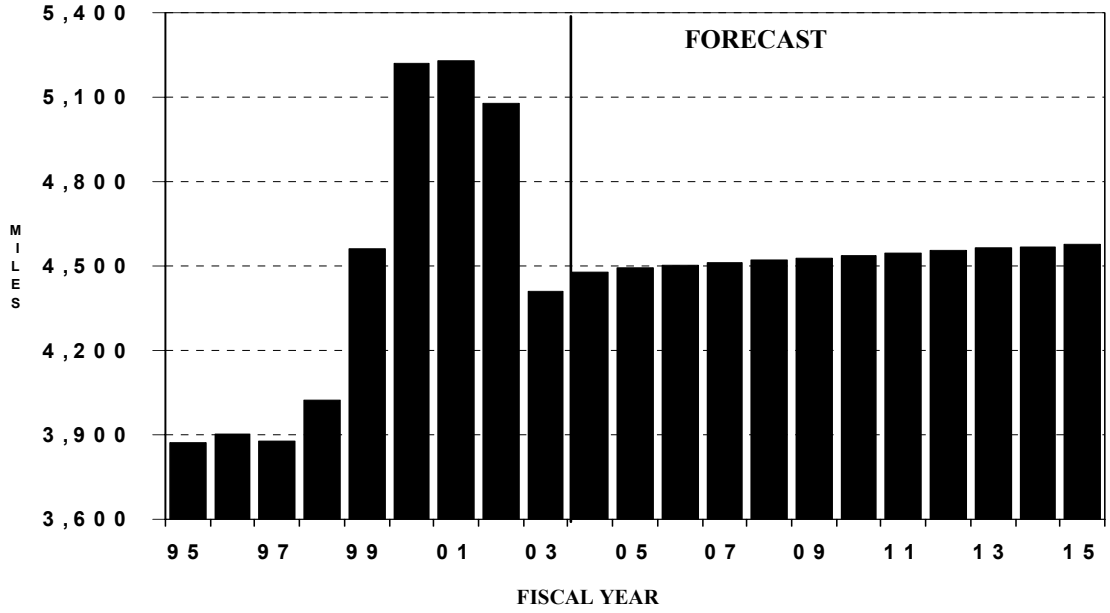
U.S./CANADA TRANSBORDER TRAFFIC

The transborder forecasts shown in this document (Chapter X, Table 7) were developed in conjunction with Transport Canada and FAA's projections of expected growth in this market.

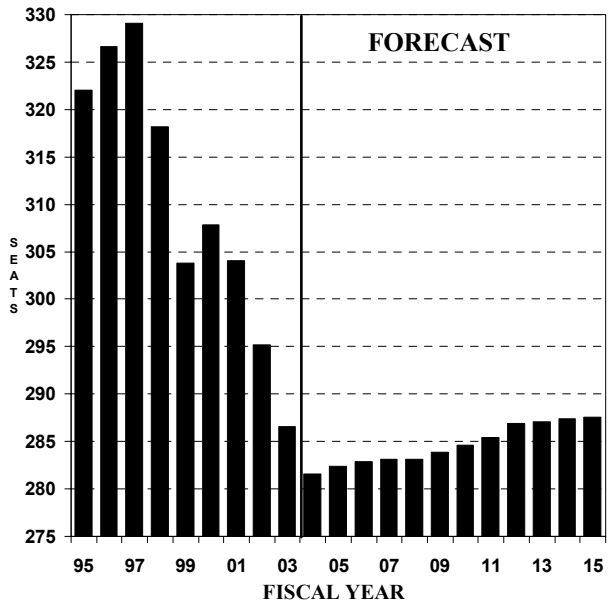
[10] As noted earlier, there appears to be a problem with the data reported by DOT in FY 1999 – FY 2002.

U.S. COMMERCIAL LARGE AIR CARRIERS: PACIFIC OPERATIONAL VARIABLES

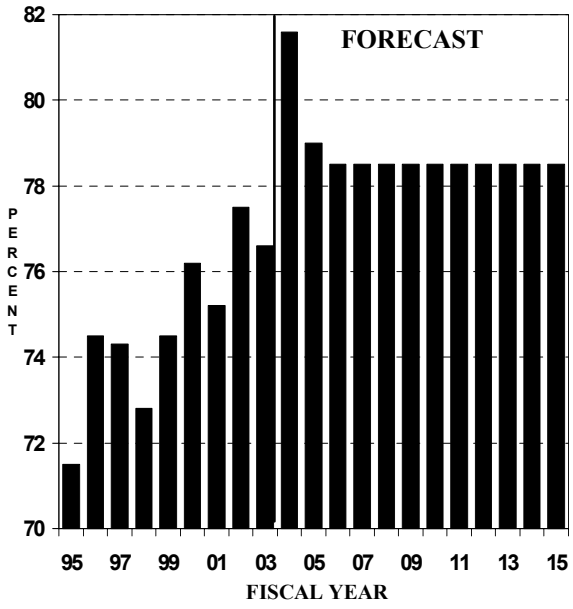
PASSENGER TRIP LENGTH



SEATS PER AIRCRAFT



LOAD FACTOR



In CY 2003, transborder traffic is estimated to have fallen for the third consecutive year, after six years of growth between 1995 and 2000. Despite being up 3.8 percent in the first quarter, passengers are estimated to have dropped 5.4 percent in 2003, as demand fell with the Iraq war and concerns about SARS in Canada. The 2003 decline followed a 6.5 percent fall in passengers in 2002. Passenger growth returns in 2004 with passengers up a modest 4.5 percent spurred by a double-digit increase in the second quarter. For the 12-year forecast period transborder traffic increases an average of 3.3 percent a year, totaling 25.5 million by 2015.

AIR CARGO

Air cargo traffic is comprised of domestic and international revenue freight/express and mail. The demand for air cargo transportation is a derived demand resulting from economic activity. Cargo is moved in the bellies of passenger aircraft and in dedicated all-cargo aircraft, on both scheduled and nonscheduled service.

In 2003[11], the total number of domestic and international air cargo RTMs flown by U.S. commercial air carriers was 32.2 billion. The top five carriers accounted for nearly two-thirds of this total. The top five carriers in terms of RTMs and their percentage shares were: FedEx (29.0 percent), United Parcel Service (14.2 percent), Atlas Air (9.1 percent), Northwest Airlines (6.8 percent), and United Airlines (6.7 percent).

[11] 12 months ending June 2003.

REVENUE TON MILES

Historic data and forecasts are presented for domestic and international cargo RTMs. In addition, within each of these two components trends and forecasts are presented for all-cargo carriers and passenger carriers. Passenger carriers transport cargo predominantly in the bellies of their aircraft.

The forecast of cargo RTMs could not be further disaggregated into freight/express and mail components due to a continuing reporting problem in the historic data. FedEx is reporting their activity under a contract with the U.S. Postal Service as freight/express, rather than as mail. This reporting, which began in August 2001, affects the consistency of the historic distribution between freight/express and mail RTMs.

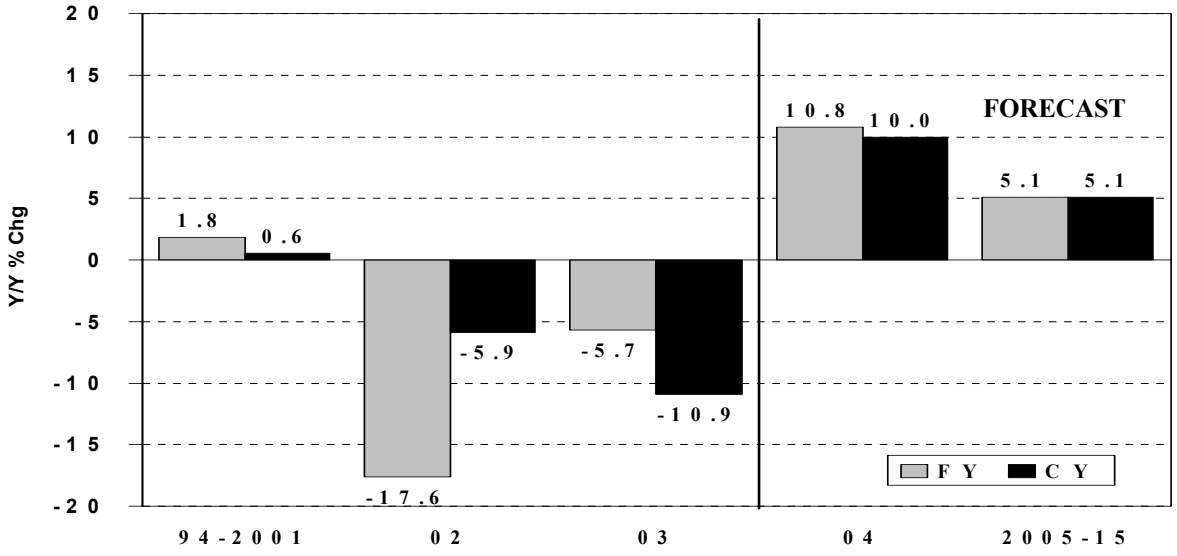
In 2003 there were changes in the reporting requirements for cargo activity. The two most significant changes that affect the comparability with reported RTM figures before 2003 were: 1) the inclusion of contract service by U.S. carriers for foreign flag carriers and 2) the inclusion of activity by Airborne Express. The first change affects the consistency of international RTMs by all-cargo carriers and the second change affects the consistency of domestic RTMs by all-cargo carriers.

Industry Structure and Market Assumptions

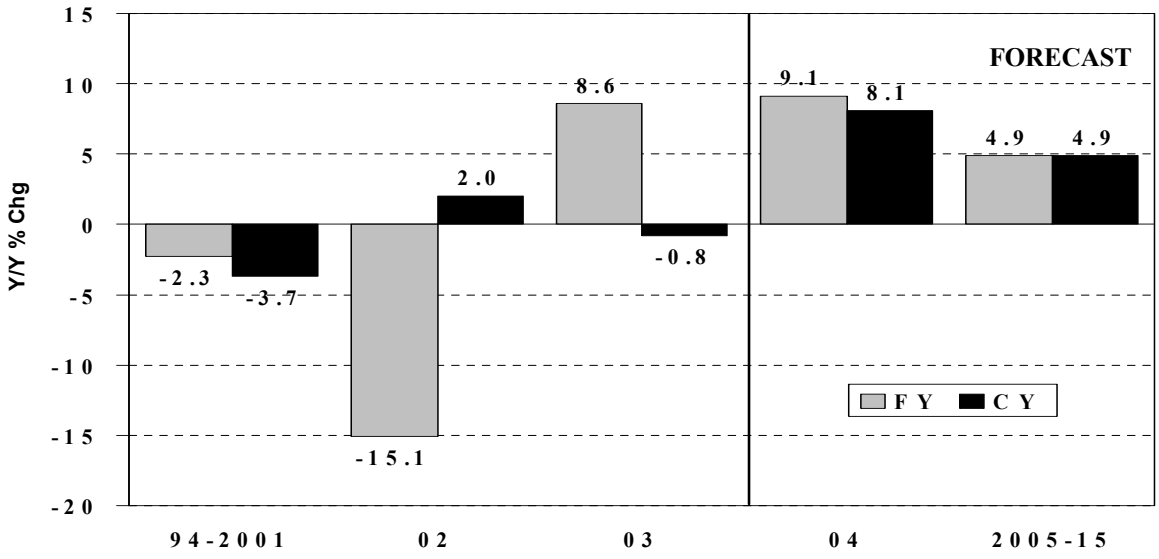
Historically, air cargo activity has been highly correlated with GDP. Additional factors that have affected the growth in air cargo traffic include declining real yields, improved productivity, and globalization. Ongoing trends that could potentially stimulate demand for air cargo include increased market opportunities from open skies agreements, decreased costs

U.S. COMMERCIAL LARGE AIR CARRIERS: PACIFIC FORECASTS

SCHEDULED REVENUE PASSENGER MILES



SCHEDULED PASSENGER ENPLANEMENTS



from global airline alliances, and increased business volumes attributable to e-commerce. Ongoing trends that could potentially limit growth include increased use of e-mail, decreased costs of sending documents via facsimile, and the increased costs to airlines in meeting environmental and security restrictions.

Significant structural changes have occurred in the air cargo industry. Among these changes are the following:

- *FAA security directives*
  In October, 2001 the FAA issued a new security directive under 14 CFR Part 108 to strengthen security standards for transporting cargo on passenger flights. This directive, which exempts all-cargo flights, was in response to the September terrorist attacks. This significantly impacted air cargo activity in 2002, including a shift from passenger carriers to all-cargo carriers.

  The Transportation Security Administration issued additional security directives in November, 2003. These directives, which require the carriers to conduct random inspections of cargo, will impact the transportation of cargo on both passenger and all-cargo flights.

- *Increased use of mail substitutes*
  The use of substitutes (e.g., e-mail) affects mail volume. Residual fear of mail because of terrorism has also been a factor in the use of substitutes.

- *Modal shift from air to other modes (especially truck)*
  This shift, which results from improved service and economics of alternative modes, may be accelerated by additional security costs associated with air service. The modal shift is occurring for the integrated carriers (e.g., FedEx and United Parcel Service) and for the U.S. Postal Service.

- *Increased use of all-cargo carriers (e.g., FedEx) by the U.S. Postal Service to transport mail*
  This initially resulted from the need to improve control over delivery. The U.S. Postal Service has also implemented contracts with passenger carriers that are based on performance.

The forecasts of RTMs are predicated on several basic assumptions. These assumptions include the following: 1) security restrictions concerning air cargo transportation will remain in place; 2) there will be no additional terrorist attacks in the U.S. and confidence in flying will return; 3) there will be continued domestic and international economic recovery in 2004; 4) in the near-term modal shifts from air to ground and from passenger carriers to all-cargo carriers will continue; and 5) in the long-term cargo activity will be tied to economic growth. Specific factors and assumptions affecting the domestic and international components of air cargo activity are noted in the following section.

The forecasts of cargo RTMs were prepared by considering the changes in industry structure and market assumptions discussed above. The near-term forecasts were also based, in part, on a consideration of economic conditions and discussions with industry representatives. These discussions included talks with cargo carriers and cargo consultants. The long-term forecasts of RTMs were based primarily on regressions with GDP. Forecasts of domestic cargo RTMs were developed from a regression equation using real U.S. GDP as the independent variable. Projections of international cargo RTMs were derived from an equation based on world GDP, adjusted for inflation. The distribution of RTMs between passenger carriers and all-cargo carriers was forecast based on an analysis of historic trends in shares; the changes in industry structure and market assumptions; and discussions with industry representatives.

From 1995 to 2002, total cargo flown on U.S. commercial air carriers increased from 23.2 billion to 27.8 billion RTMs. Reported cargo RTMs (including changes in reporting requirements) increased 18.5 percent in 2003, to 32.9 billion RTMs.

Growth in domestic cargo RTMs has been dominated by all-cargo carriers. These carriers have significantly increased their market share, accounting for approximately three-quarters of domestic cargo RTMs in 2003. FedEx and United Parcel Service are the two largest domestic all-cargo carriers. Both of these carriers are integrated carriers who provide door-to-door service using intermodal systems.

Revenue Ton Miles Forecast

The total number of air cargo RTMs flown by U.S. commercial air carriers was 32.9 billion in 2003. According to ATA figures (which do not represent changes in reporting requirements), air cargo RTMs increased 3.9 percent in 2003. This increase reflects the growth in domestic and worldwide economic activity. Furthermore, cargo activity is a leading economic indicator and thus reflects the economic recovery projected for 2004.

Total RTMs are forecast to increase 3.6 percent in 2004 and 5.5 percent in 2005. Over the 10-year period from 2006 to 2015, total RTMs are forecast to increase at an average annual rate of 4.5 percent, based primarily on economic growth. The forecast level of 56.0 billion RTMs in 2015 represents an average annual increase of 4.5 percent over the entire forecast period.

Domestic Revenue Ton Miles[12]

Reported domestic cargo RTMs flown by U.S. commercial air carriers (including the addition of Airborne Express) were 14.7 billion in 2003. The increase in domestic cargo RTMs in 2003 (excluding Airborne Express) was 7.7 percent. This increase was due to economic growth in the U.S. Domestic cargo RTMs are forecast to increase 4.2 percent in 2004, 3.9 percent in 2005, and 3.6 percent in 2006 based on strong economic activity and a continuation of the modal shift from air to other modes (e.g., truck). Over the 10-year period from 2006 to 2015, domestic cargo RTMs are forecast to increase at an average annual rate of 3.4 percent, based on projected growth in U.S. GDP. The forecast level of 22.2 billion RTMs in 2015 represents an average annual increase of 3.5 percent over the entire forecast period.

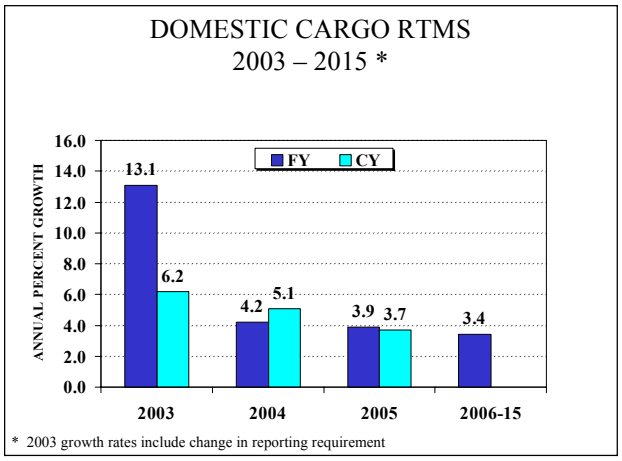
Both the freight/express and mail components of domestic cargo will continue to be impacted in the near term by the intermodal shift from air to ground transportation. For both components, this has resulted from the ability of carriers to provide ground transportation at a relatively lower price for distances up to 1,000 miles. In addition, this relative cost of providing transportation is likely to be impacted by increased air transportation costs to meet FAA security directives.

The freight/express component of domestic air cargo is highly correlated with capital spending. Consequently, the growth of this component in the future will be tied to improvements in the economy. The mail component of domestic air cargo will be affected by overall mail volume, which is related to the economy. This component will also be impacted by the

[12] For the 12 months ending July 2001, domestic cargo RTMs were comprised of 83.6 percent freight/express and 16.4 percent mail. Therefore, the domestic cargo RTM forecast discussed below is driven largely by factors that impact domestic freight/express.

increased use of substitutes (e.g., e-mail) and possible residual fear related to terrorism.

Historically all-cargo carriers have increased their share of domestic cargo RTMs flown, from 62.5 percent in 1995 to 74.8 percent in 2003.[13] This has resulted from the significant growth of express service by FedEx and United Parcel Service and the lack of growth of domestic freight/express business for passenger carriers. In addition, recent factors which account for the relative growth of the all-cargo sector include the October, 2001 FAA security directive for passenger carriers; the U.S. Postal Service use of all-cargo carriers as a means to improve control over mail delivery; and the inclusion of Airborne Express. The all-cargo share is forecast to increase to 78.7 percent by 2015 based on the advantages of the integrated carriers.



International Revenue Ton Miles[14]

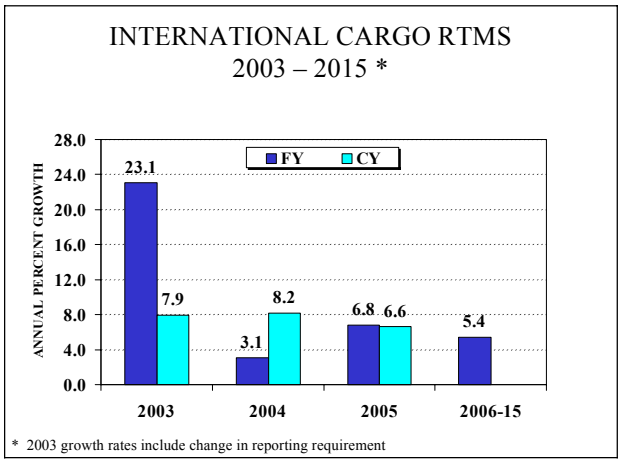
Reported international cargo RTMs flown by U.S. commercial air carriers (including the change in reporting of contract service for foreign flag carriers) were 18.2 billion in 2003. According to ATA statistics (which do not represent changes in reporting requirements) international cargo RTMs increased 4.1 percent in 2003. This increase was due to the economic growth of world GDP. Increases in reported international cargo activity for 2003 also reflect increased activity from the Iraq War. International cargo RTMs are forecast to increase modestly at 3.1 percent in 2004 due to improvements in the world economy and growth from the relatively high base in 2003 resulting from the Iraq War. The growth may vary by world region depending on regional economic activity and the predominance of individual carriers. International cargo RTMs are forecast to increase 6.8 percent in 2005 and 6.6 percent in 2006 based primarily on economic growth. Over the 10-year period from 2006 to 2015, international cargo RTMs are forecast to increase at an average annual rate of 5.4 percent based on projected growth in world GDP. The forecast level of 33.9 billion RTMs in 2015 represents an average annual increase of 5.3 percent over the entire forecast period.

Both the freight/express and mail components of international cargo will be affected by economic growth. The mail component will also be affected by some residual fear of terrorism as well as improvements in mail delivery services.

All-cargo carriers increased their share of international cargo RTMs flown from 49.3 percent in 1995 to 55.4 percent in 2002. The all-cargo share increased to 62.6 percent in 2003 due in part to the change in the reporting requirements for contract service. The all-cargo share is forecast to increase to 66.0 percent by 2015 due to increased demand for expedited service and expanded capacity.

[13] The 2003 percentage includes Airborne Express.

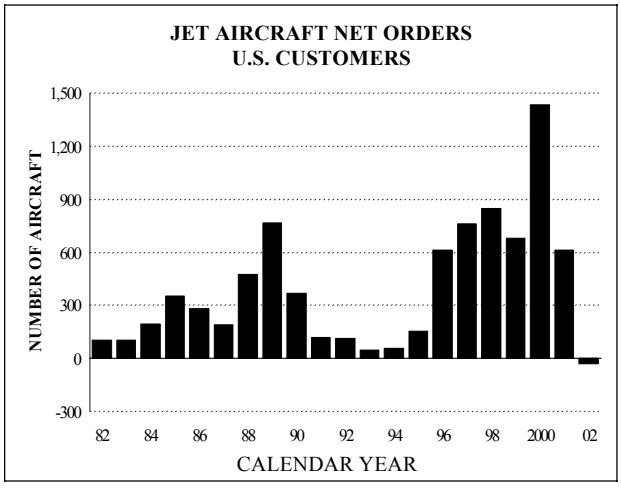
[14] For the 12 months ending July 2001, international cargo RTMs were comprised of 96.5 percent freight/express and 3.5 percent mail. Consequently, the international cargo RTM forecast discussed below is overwhelmingly driven by factors that impact international freight/express.



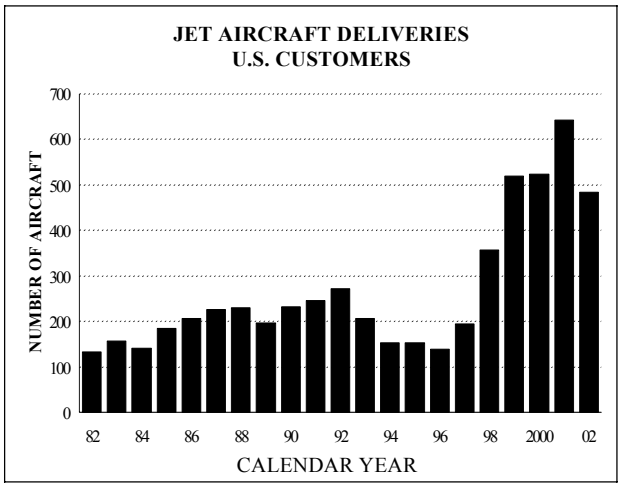
AIR CARRIER FLEET

In CY 2002, for the first time in history, jet aircraft order cancellations by U.S. air carriers exceeded orders placed as the impact of the attacks of September 11th, 2001 curtailed demand for air travel and the desire for additional aircraft.

In 2002, cancellations by U.S. carriers exceeded orders by 28. Regional jet (CRJs, EMBs, and Fairchild/Dornier) cancellations exceeded orders by 64 while net orders for narrow-body two-engine aircraft (A-318/319/320/321 and B-717/737/757) totaled 36. Cancellations exceeded orders for two-engine (A-300/330 and B-767/777) wide-body aircraft by 10 while there were 10 orders for the A380.



Aircraft manufacturers delivered 484 jet aircraft to U.S. customers in CY 2002—a 24.6 percent decline from the record total in 2001. Of this total, 184 (38.0 percent) were two-engine narrow-body aircraft, 34 (7.0 percent) were for two-engine wide-body aircraft, and 260 were for regional jets (53.7 percent).



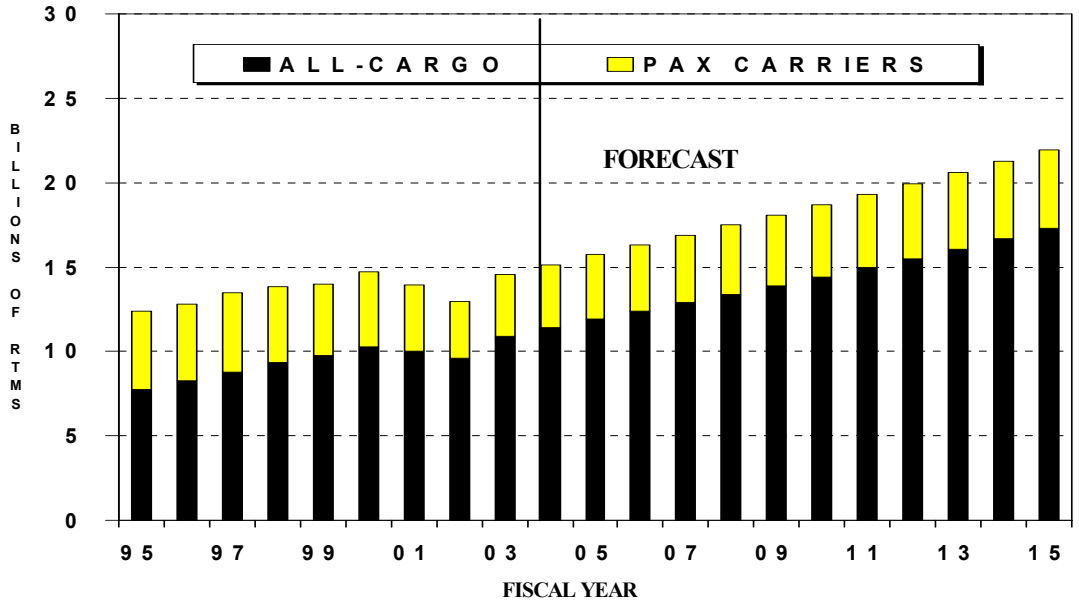
Passenger Jet Aircraft

In CY 2003, the fleet of passenger jet aircraft for U.S. large air carriers decreased by an estimated 120 aircraft. This marks the third consecutive annual decline in the passenger jet aircraft fleet of the large air carriers. Since peaking in CY 2000 (4,495 aircraft), the U.S. large air carrier passenger jet fleet has shrunk by 405 aircraft, or 9.1 percent, to 4,090 aircraft. All categories except regional jets had net decreases with the largest decreases in the three-engine narrow-body aircraft (down 44 or 30.3 percent), and the two-engine narrow-body aircraft (down 36 or 1.1 percent). The regional jet fleet for U.S. large air carriers increased by 8 aircraft to 9.

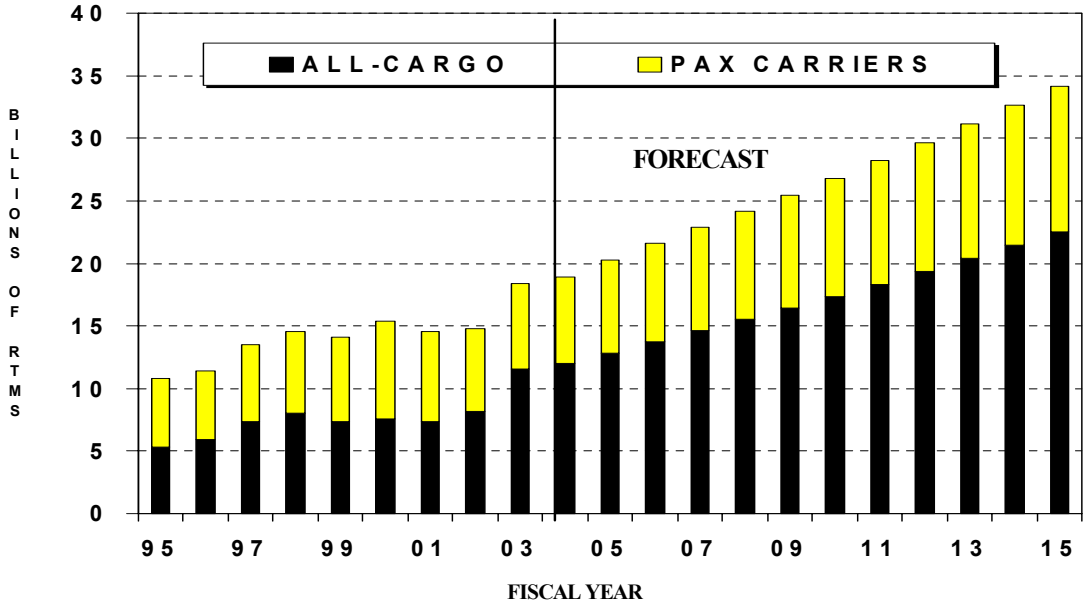
Based on the backlog of aircraft orders and the projections of air carrier traffic, seat capacity, load factors, fleet requirements, and aircraft productivity, the U.S. large commercial air carrier passenger fleet is projected to increase

U.S. COMMERCIAL AIR CARRIERS: CARGO REVENUE TON MILES *

DOMESTIC



INTERNATIONAL



* 2003 and forecast includes changes in reporting requirements

from an inventory of 4,090 aircraft in 2003 to 5,732 aircraft by 2015. This involves a net addition to the fleet (after retirements of obsolete aircraft) of approximately 137 aircraft annually.

The two-engine narrow-body fleet is projected to grow by an average of 113 aircraft annually, spurred on by a large increase in the low cost carrier fleet. By 2015, two-engine narrow-body aircraft are expected to account for 82.3 percent of the fleet. The number of three-engine narrow-body (B-727) aircraft declines from 101 aircraft (2.5 percent of fleet) in 2003 to 94 (1.6 percent of fleet) by 2015. The number of four-engine narrow-body aircraft was zero in 2003 and remains at that level throughout the balance of the forecast.

The fleet of two-engine wide-body aircraft (A-300/310/330 and B-767/777) is the fastest growing of the wide-body group. This group is expected to increase by an average of 15 aircraft per year (2.6 percent), expanding from 480 aircraft in 2003 to 654 aircraft in 2015. The three-engine wide-body fleet (MD-11, DC-10, and L-1011) is projected to shrink at an average annual rate of 5.1 percent, from 56 aircraft in 2003 to 30 aircraft in 2015.

Four-engine wide-body (B-747 and A-340) aircraft are forecast to decline from 74 aircraft in 2003 to 64 aircraft in 2015, an annual average decrease of 1.2 percent.

The regional jet fleet for the large air carriers consisting of aircraft ranging in size from 35 to 70 seats, is forecast to expand from 9 aircraft in 2003 to 169 aircraft in 2015, an increase of 27.7 percent a year. By 2015 the regional fleet will account for 2.9 percent of the large carrier passenger jet fleet; in 2003 the regional jet fleet accounted for only 0.2 percent of the fleet.

Cargo Jet Aircraft

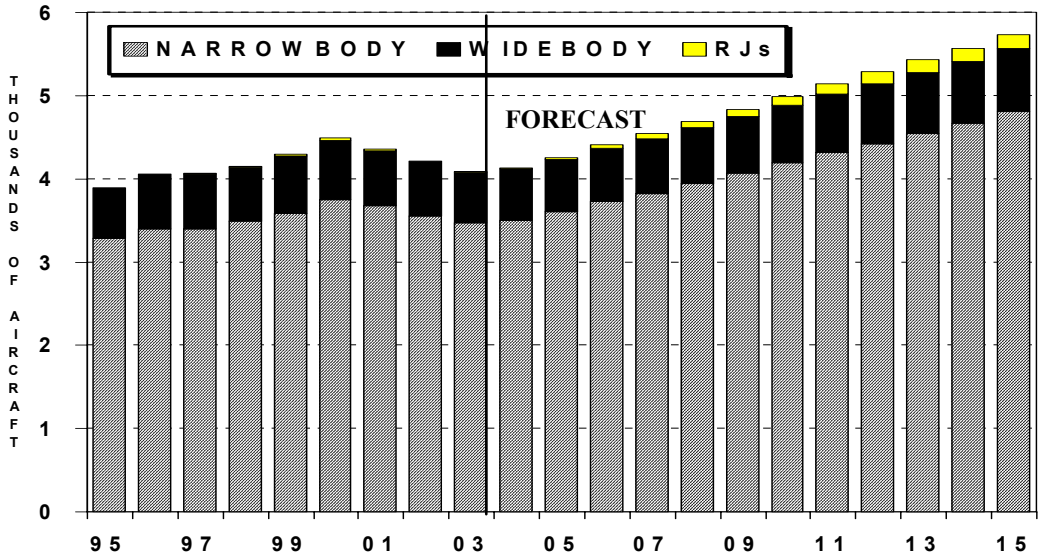
In CY 2003, the jet fleet of U.S. air carrier cargo aircraft decreased by 2.4 percent to 942 aircraft. Based on the backlog of aircraft orders and the projections of air cargo demand, the U.S. commercial cargo fleet is projected to increase to 1,332 aircraft by CY 2015. This involves an average net addition to the fleet (after retirements of obsolete aircraft) of 33 aircraft annually or 2.9 percent per year.

Narrow-body aircraft, which accounted for 56.5 percent of the cargo fleet in 2003, are projected to account for 39.6 percent in 2015. Narrow-body two-engine aircraft total 159 in 2003 and remain at that level throughout the forecast, while narrow-body four-engine aircraft total 126 in 2003 and 132 in 2015.

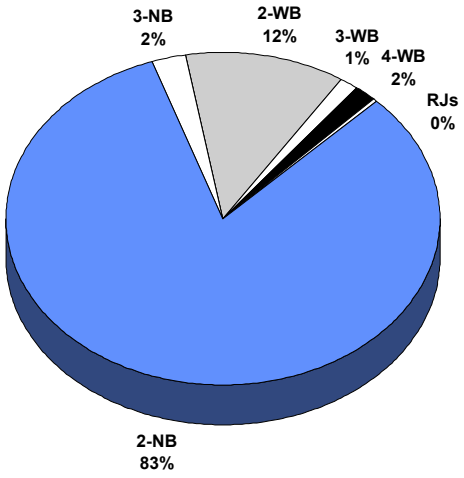
The number of three-engine narrow-body aircraft decreases during the forecast period. Narrow-body three-engine aircraft decrease from 247 aircraft in 2003 to 237 aircraft in 2015.

Wide-body aircraft accounted for 43.5 percent of the cargo fleet in 2003. The fleet of wide-body aircraft is forecast to increase to 60.4 percent of the cargo fleet in 2015. The largest increase in the number of wide-body aircraft is projected to occur in the two-engine wide-body category. This category grows an average of 23 aircraft per year (7.6 percent annually), expanding from 197 aircraft in 2003 to 472 aircraft in 2015.

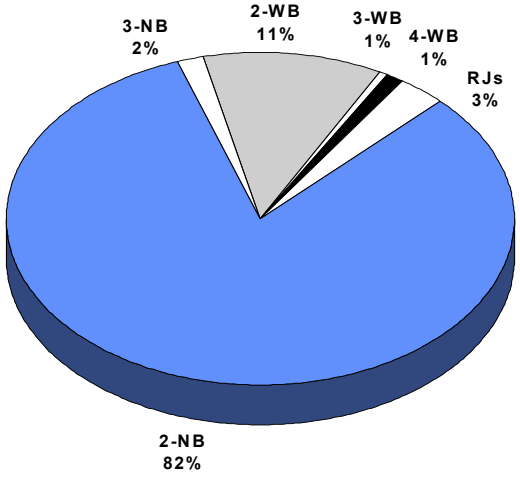
U.S. LARGE COMMERCIAL AIR CARRIERS: PASSENGER JET AIRCRAFT



PERCENT BY AIRCRAFT TYPE

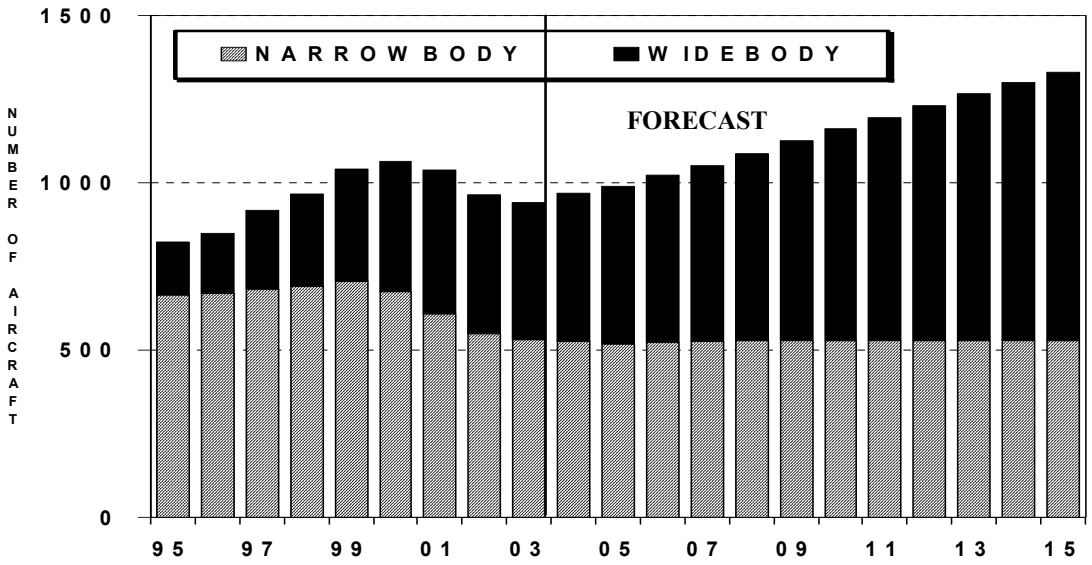


2003

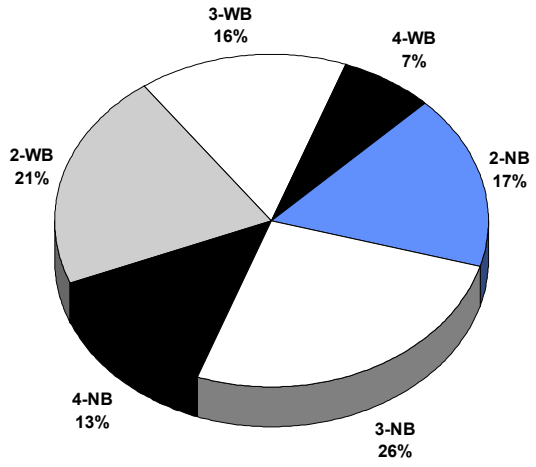


2015

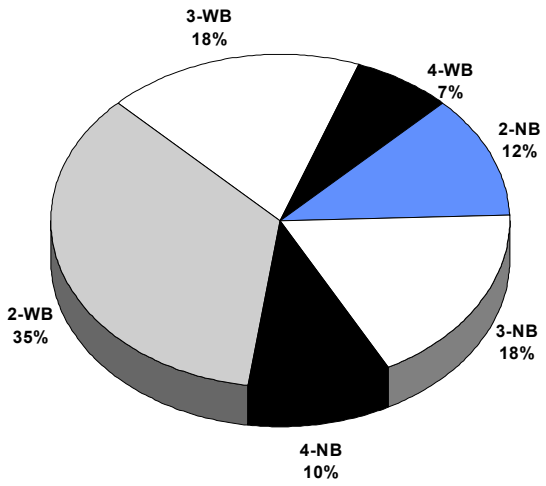
U.S. COMMERCIAL AIR CARRIERS: CARGO JET AIRCRAFT



PERCENT BY AIRCRAFT TYPE



2003



2015

The three-engine wide-body fleet is projected to increase an average of 8 aircraft, or 4.0 percent, over the forecast period from 148 aircraft in 2003 to 238 aircraft in 2015. Conversions of DC-10 passenger aircraft to MD-10's and new MD-11F orders drive the growth in this category. The four-engine wide-body aircraft fleet increases an average of 3.1 percent per year, from 65 aircraft in 2003 to 94 aircraft in 2015. Similar to last year's forecast, the current forecast does assume a number of A380's entering the U.S. fleet beginning in 2008.

AIRBORNE HOURS

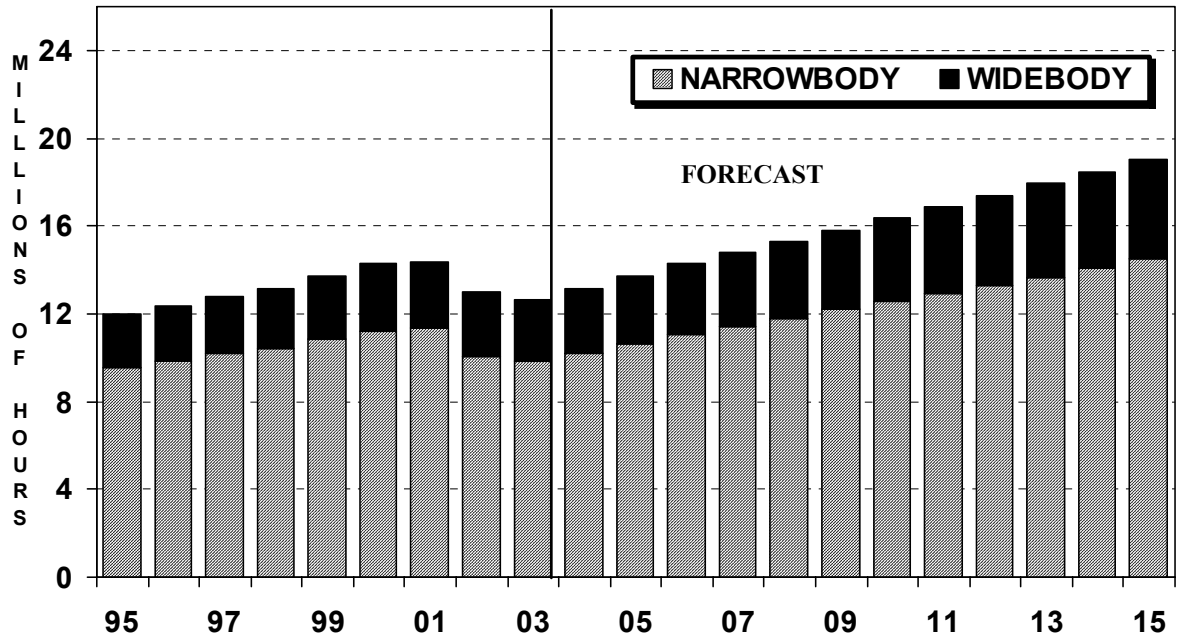
U.S. large commercial air carriers (passenger and cargo but excluding regional jets) flew an estimated total of 12.6 million hours in 2003, down from 12.9 million hours in 2001. The decrease in hours was driven by decreases in activity leading up to and following the war in Iraq. More than 90 percent of total airborne hours were accounted for in two aircraft categories: two-engine narrow-body (75.4 percent), and two-engine wide-body (15.3 percent).

In 2015, the total number of hours is forecast to expand to 19.0 million, an average annual increase of 3.5 percent. Airborne hours are projected to increase 4.3 percent in 2004 to 13.2 million, and then increase 4.5 percent in 2005, to 13.8 million.

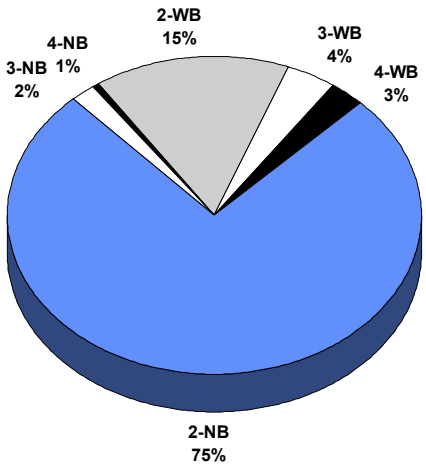
Two-engine aircraft (both narrow-body and wide-body) are expected to account for 92.8 percent of all airborne hours flown in 2015. Narrow-body two-engine aircraft hours, which make up 74.7 percent of total hours in 2015, increase, on average, 3.4 percent per year. Wide-body two-engine aircraft hours, which account for 18.2 percent of total hours in 2015, increase 5.0 percent per year. Four-engine wide-body aircraft hours flown are forecast to increase at an average annual rate of 1.3 percent.

The number of hours flown by three-engine aircraft is projected to increase modestly through 2015. Three-engine wide-body hours flown are forecast to increase 2.6 percent a year, as the fleet of three engine wide-body aircraft is forecast to increase. Three-engine narrow-body aircraft hours are forecast to fall 1.4 percent annually, reflecting the retirement of B-727 aircraft and the increasing proportion of cargo aircraft in this fleet. The share of total hours flown by three-engine aircraft will decrease from 5.7 percent in 2003 to 4.5 percent in 2015. Hours for the four-engine narrow-body fleet, made up primarily of DC-8 cargo aircraft, increase at a rate of 0.4 percent a year, reflecting the relatively constant share of these aircraft in the fleet.

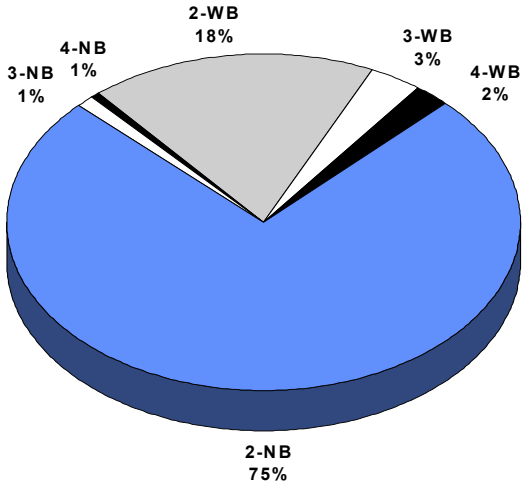
U.S. LARGE COMMERCIAL AIR CARRIERS: AIRBORNE HOURS 1/



PERCENT BY AIRCRAFT TYPE



2003



2015

1/Includes both passenger (excluding regional jets) and cargo aircraft.

CHAPTER IV

REGIONALS/COMMUTERS

For purposes of the Federal Aviation Administration (FAA) forecasts, air carriers that are included as part of the regional/commuter airline industry meet three criteria. First, a regional/commuter carrier flies a majority of their available seat miles (ASMs) using aircraft having 70 seats or less. Secondly, the service provided by these carriers is primarily regularly scheduled passenger service. Thirdly, the primary mission of the carrier is to provide connecting service for its code-share partners.

During 2003, 75 reporting regional/commuter airlines met this definition. Monthly traffic data for 10 of these carriers was compiled from the Department of Transportation's (DOT) Form 41 and T-100 filings. Traffic for the remaining 65 carriers was compiled solely from T-100 filings. Prior to fiscal year 2003, 10 regionals/commuters[1] reported on DOT Form 41 while 65 smaller certificated and commuter carriers filed traffic data on Form 298C. These 65 carriers continue to file financial data using Form 298C.

REVIEW OF 2003[2]

The results for the regional/commuter industry for 2003 reflect the continuation of a trend that started with the events of September 11th and have been drawn out by the Iraq War and Severe Acute Respiratory Syndrome (SARS). These "shocks" to the system have led to the large air carriers posting losses in passengers for 3 years running. The losses often reflect diversions in traffic to the regional/commuter carriers. These carriers recorded double-digit growth in both capacity and traffic for the second time in as many years. History has demonstrated that the regional/commuter industry endures periods of uncertainty better than the larger air carriers. During the oil embargo of 1973, the recession in 1990, and the Gulf War in 1991, the regional/commuter industry consistently outperformed the larger air carriers. It appears that history will again repeat itself, in view of the fact that the regional/commuter industry seems to be weathering the negative impacts of the Iraq War and SARS better than the larger air carriers.

[1]Air Wisconsin, American Eagle, Atlantic Southeast, Chicago Express, Comair, Executive, ExpressJet (formerly Continental Express), Horizon, Mesaba, and Trans States.

[2]All specified years in this chapter are fiscal year (October 1 through September 30) unless designated otherwise.

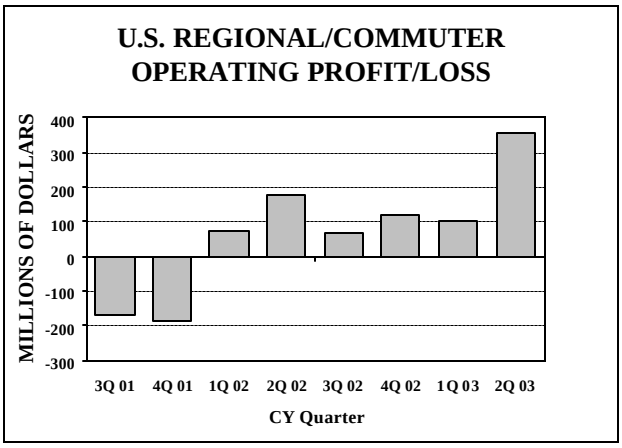
In order to survive during downturns in the demand for aviation services, large air carriers shed capacity to reduce costs. Code-sharing agreements (or equity ownership of one partner in another) allow large air carriers to get feeder traffic from the regionals/commuters on routes that cannot support the use of larger aircraft. Regionals traditionally responded to large carrier cuts in capacity by providing aircraft sizes that more closely match demand. In past periods of reduced demand, regionals primarily acquired thin, short-haul markets. While this trend continued during 2003, the regionals also expanded their reach by taking over many medium- to longer-haul routes as well as offering point-to-point service in new markets.

According to the Official Airline Guide (OAG) regional/commuter carriers flew 466 non-stop city pairs during calendar year 2003 that had not been served by either regionals or large air carriers since at least 2001. This trend is expected to continue as the number of 50-, 70-, and 90-seat regional jet aircraft continue to swell the fleet. Delivery of these type aircraft will result in the regional/commuter fleet almost doubling in size between 2002 and 2006.

FINANCIAL RESULTS

For the 12 months ended June 2003, the regional/commuter industry posted an operating profit of $644.7 million. The majority of the profits occurred during the April-June quarter where the carriers posted operating profits totaling $357.8 million, nearly triple the operating profits of $126.8 million posted for all of fiscal year 2002.

The regionals/commuters have reported operating profits for six consecutive quarters (January 2002 through June 2003). Prior to January 2002, the regionals/commuters reported four straight quarters of operating losses. Preliminary data indicates that the third and fourth quarters of CY 2003 are likely to be profitable as well.



Operating revenues for the 12 months ended June 2003 were $10.0 billion, a 15.4 percent increase over the previous year. Operating expenses during the same period were $9.4 billion, an increase of 6.7 percent over the previous year.

Nominal yield for the industry during the 12-month period ending March 2003 was 27.1 cents. This is a decline of 3.6 percent from a yield of 28.4 cents during the previous 12-month period.

SCHEDULED CAPACITY AND TRAFFIC

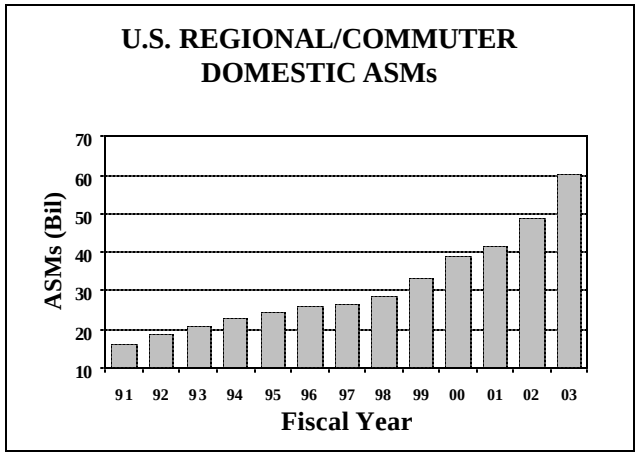
During 2003, system available seat miles (ASMs) increased 24.0 percent to 62.2 billion, while RPMs rose 31.0 percent to 40.2 billion. This resulted in the system load factor increasing by 3.4 points to 64.7 percent. System regional/commuter passengers were 108.7 million in 2003, 18.9 percent over 2002 levels. These carriers accounted for 18.0 percent of domestic commercial enplanements in 2003, up from 11.9 percent in 2000 and 8.6 percent in 1991.

Domestic Capacity and Traffic

The domestic regional/commuter database includes activity for all U.S. regionals/commuters operating in the 48 contiguous states, Alaska, Hawaii, Puerto Rico, and the U.S. Virgin Islands. It also includes transborder traffic into Canada.

Available Seat Miles

Domestic scheduled U.S. regional/commuter ASMs are up 54.8 percent over the last 3 years, and up 24.0 percent in 2003 alone. During the 9-year period prior to 2001, domestic ASMs increased at an average annual rate of 10.3 percent.

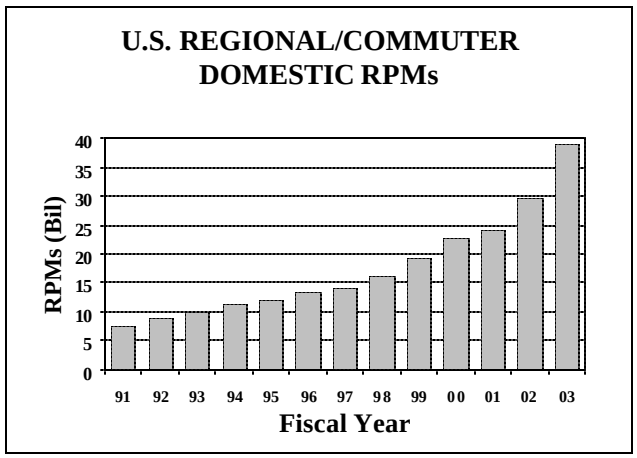


The large increase in domestic ASMs during 2003 is due, in large part, to the transfer of mainline carrier routes to their regional affiliates and code-share partners. This progression of route transfers may be partially attributed to two unanticipated events that postponed the recovery of demand for large air carrier transportation services—the Iraq War and SARS. After posting strong gains in traffic during the first 4 months of fiscal 2003, mainline carriers were forced to implement capacity cuts in response to weakening demand resulting from the initiation of military activity in Iraq. The regionals/commuters were again the beneficiary of these schedule reductions, acquiring additional route transfers from their larger code-share partners. As such, the regionals/commuters continued to post strong traffic growth during a period of relatively weak demand, demonstrating once again that downturns in the large air carrier industry are often met by an upswing in the results for the regionals/commuters.

Revenue Passenger Miles

Domestic RPMs are up 71.4 percent over the last 3 years, and up 31.3 percent in 2003, totaling just over 39.1 billion. This compares to an average annual increase of 16.1 percent during the 9 years prior to 2001. The large growth in RPMs results from the same factors as ASM growth, but is also partially due to the number of larger (50-70-90 seat) regional jet aircraft that have entered the fleet and the longer-haul routes that are being served by these aircraft.

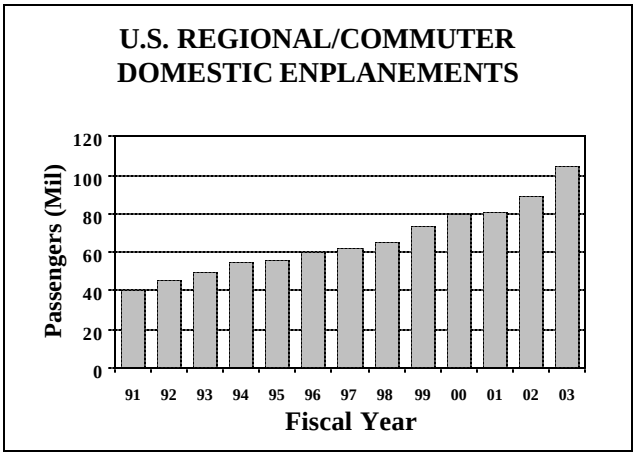
The higher growth in RPMs relative to ASMs (31.3 percent vs. 24.0 percent) increased the domestic load factor 3.6 points to 64.9 percent in 2003. Since 1991, the regional/commuter load factor has increased 18.2 points, from 46.7 percent to the current all-time record high.



Passenger Enplanements

From 1991-2000, domestic enplanements increased at an average annual rate of 9.0 percent.

In 2003, domestic enplanements increased at over twice this rate--18.6 percent--to 105.1 million. Regional/commuter carriers accounted for 18.0 percent of total domestic enplanements in 2003, up from its share of 12.4 percent in 2000.



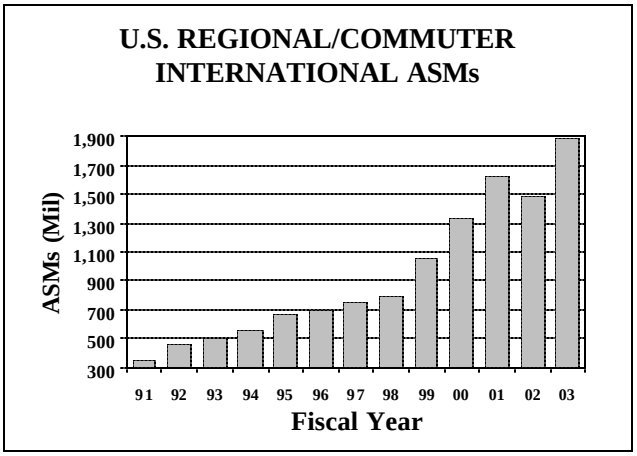
The slower growth in passengers relative to RPMs for 2003 (18.6 versus 31.3 percent) is largely due to the fact that the average passenger trip length increased 35.9 miles. This, in part, reflects the longer stage length of the routes being transferred from the larger code-sharing partners, as well as the addition of point-to-point routes that had not been previously served by regionals/commuters or mainline carriers. Since 2000, the average passenger trip length has increased 85.8 miles. The passenger trip length has almost doubled since 1991, increasing from 185.9 miles to the current 372.3 miles.

International Capacity and Traffic

The international regional/commuter database includes activity between the United States or its territories, and the Caribbean and Mexico.

Available Seat Miles

Regional/commuter international capacity accounts for only 3.0 percent of the total capacity flown by these carriers in 2003. For the year, scheduled international ASMs totaled 1.9 billion, an increase of 26.8 percent over 2002. This large increase comes off of a year where capacity cutbacks in the Caribbean by American Eagle and Executive Airlines were implemented in order to comply with scope clauses that limited the amount of flying that could be done on the American code. Since 2000, the international ASMs flown by the regional/commuter carriers is up 41.4 percent. During the 9 years prior to 2001, the average annual growth in international ASMs was 15.9 percent. The OAG indicates that almost 60.0 percent of the regional/commuter international ASMs are flown to Caribbean destinations.

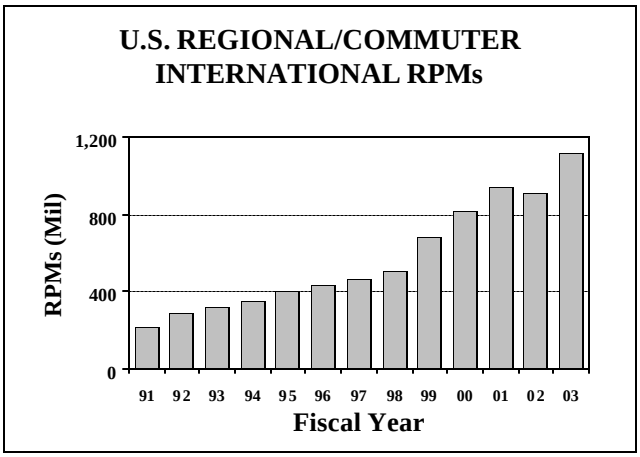


Revenue Passenger Miles

International RPMs for 2003 were up 23.1 percent to 1.1 billion. This compares to an average annual growth rate of 16.3 percent for the period 1991 through 2000. RPMs in the regional/commuter market have increased 37.8 percent since 2000.

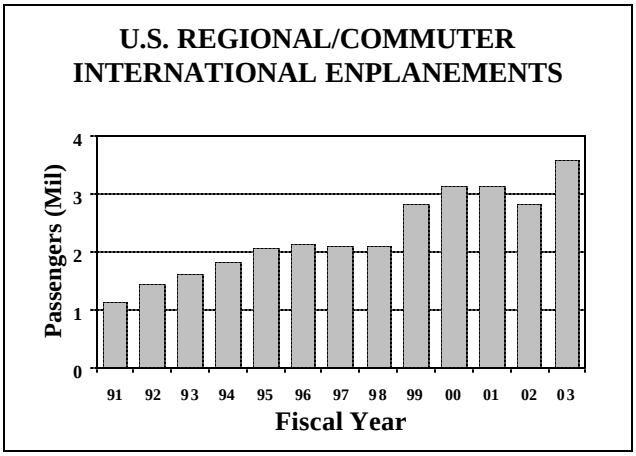
The load factor in 2003 was 59.3 percent, down from a load factor of 60.8 percent posted in

2000. The highest load factor in the 9 years prior to 2001 occurred in 1997 (64.7 percent), and the lowest load factor occurred in 1995 (59.2 percent).



Passenger Enplanements

International enplanements totaled 3.6 million in 2003, up 26.9 percent from the previous year. The average annual growth rate in international regional/commuter passengers for the period 1991-2000 was 11.2 percent. Between the end of 2000 and 2003, international passenger enplanements increased 15.3 percent.



THE ADVANCE OF THE REGIONAL/COMMUTER INDUSTRY

The fundamental character of the regional/commuter industry has changed significantly since the mid-1980s. These changes include the relative size and sophistication of airline operations, the carriers involved (especially the dominant industry operators), the aircraft fleet mix, and the industry's relationship with the large commercial air carriers.

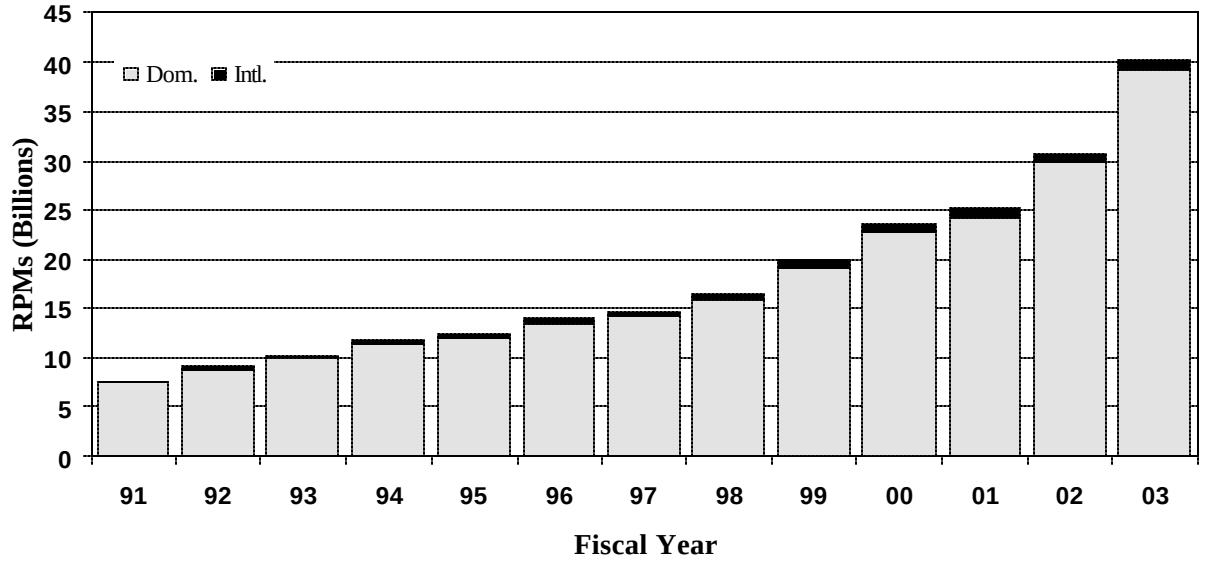
While the overall number of regional/commuter airlines declined by over two-thirds between 1981 and 2003 (from 250 carriers to 75), two carriers started reporting traffic to the DOT for the first time during the year--Arizona Express and Caribbean Sun Airlines.[3] It remains to be seen if the coming years will produce more start-up regional/commuter carriers that can fill the void left by the larger regional carriers as they abandoned shorter-haul markets in pursuit of longer-haul ones.

The large decline in the number of carriers over the past 2 decades was the result of several factors. First, the dramatic growth in the number of code-sharing agreements with the major air carriers (see Table IV-1 for a current listing of code-sharing agreements) has made it difficult for carriers without such agreements to effectively compete. Secondly, the air carrier acquisitions of or purchases of equity interest in their regional/commuter code-sharing partners has led to a reduction in the number of independent operators. Also, it is believed that the expense required for some regional/commuter carriers to comply with the "one level

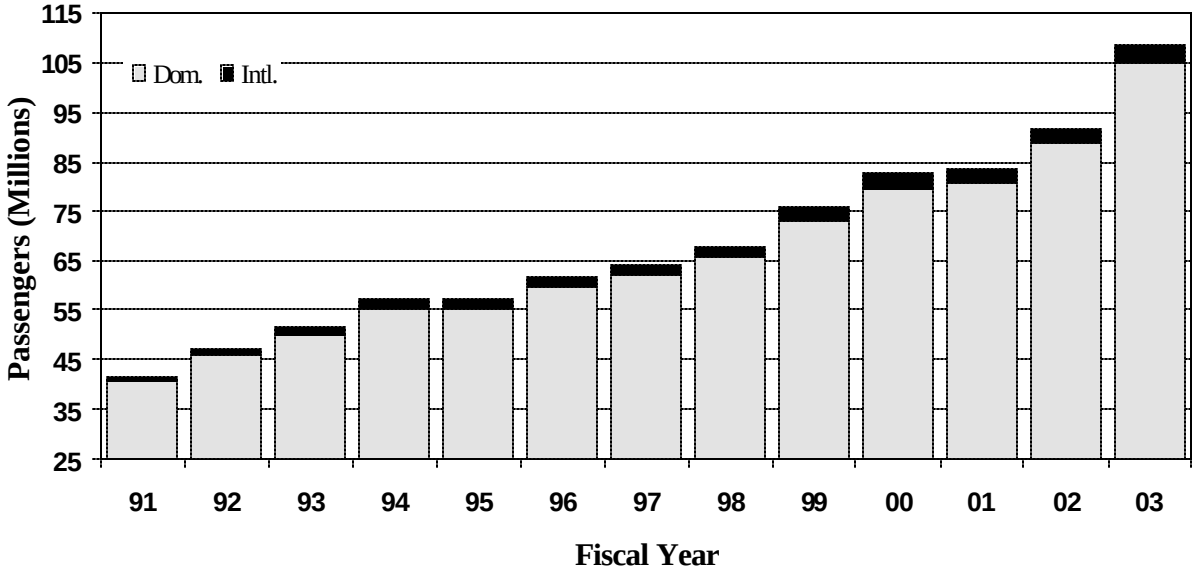
[3]Arizona Express currently flies from Phoenix, Arizona, to Show Low and Sierra Vista, Arizona. Caribbean Sun Airlines is based in San Juan, Puerto Rico, and flies to Antigua, St. Maarten, St. Kitts, and Tortolla.

U.S. REGIONALS/COMMUTERS TRAFFIC TRENDS

Scheduled Revenue Passenger Miles



Scheduled Passenger Enplanements



of safety" commuter rule may have caused some regional/commuter carriers to cease operations.

The regional carriers consolidation phase continued during the past year. In October of 2002, Mesaba's holding company, MAIR Holdings Inc., acquired Montana-based Big Sky Airlines. In December of 2003 it was announced that the pilots union for Comair and Atlantic Southeast had requested Delta to merge the two subsidiaries. The unions suggest that combining the two carriers would allow Delta to eliminate duplicate positions, resulting in cost savings and improved efficiencies.

Corresponding to the shrinking number of regional/commuter carriers in the industry is the increasing share of traffic being flown by the dominant industry carriers. In 1981, the top five regional/commuter carriers accounted for only 20 percent of the passengers flown. By 1991, this percentage increased to 30 percent. In 2003 the top five carriers were responsible for flying over 49 percent of the passengers, a 3.0 percentage point increase over 2002.

Today a large number of regionals are owned, totally or in part, by their larger code-sharing partners, and still others are owned by other regionals. In 2003, 12 regionals were owned totally or in part by 8 of the larger commercial air carriers, and 2 others were owned by 2 other regionals. As well, in November 2003, Northwest Airlines spun off its subsidiary, Pinnacle Airlines.

A better picture of the present composition of the regional/commuter airline industry is presented in Table IV-3. This table lists the top 20 corporate structures and their percentage share of 2003 industry enplanements, and more accurately reflects the level of industry consolidation and integration with the larger air carriers. In 2003, the top 5 corporate groups accounted for 59.0 percent of industry enplanements, the top 10 for 84.4 percent, and the top 20 for 98.1 percent.

The introduction of the regional jet into the dynamics of the demand for air transportation services has significantly expanded the role and market presence of the regional/commuter industry. The success operating carriers have experienced in markets where the aircraft is deployed has led to its operators moving beyond the boundaries of traditional regional/commuter markets. The regional jets' range and speed has opened up new opportunities, allowing regional/ commuter carriers to serve longer-haul markets and to by-pass congested hub airports by providing point-to-point service.

Moving forward, it appears that there is a blending of the regional/commuter and the mainline carrier fleets taking place. This is due largely to the relaxation of scope clauses (e.g. US Airways agreement to purchase 170 50- and 70-seat regional jets with options for 380 more aircraft to be flown by their subsidiaries and code-share partners), and business decisions by some larger air carriers to operate "smaller" jet aircraft (JetBlue's agreement to purchase 100 of the 100-seat Embraer 190s, with options for 100 more).

Prior to the events of September 11th, scope clauses prevented many of the regional/commuter carriers from operating anything larger than the 50-seat regional jet, thus this size of aircraft was poised to be the mainstay of the fleet. However, with the relaxation of scope, the path was laid for more and larger regional jet aircraft to enter the fleet. OAG analysis indicates that three carriers began operating the 70-seat regional jet in 2002 (American Eagle, Mesa, and Atlantic Southeast). In 2003 an additional four carriers started operating the larger jet (Horizon, Freedom Air, Comair, and Air Wisconsin). Also in 2003, Freedom Air was the first (and only) regional/commuter carrier to operate a 90-seat regional jet. It is anticipated that most of the regional jets entering the fleet over the next few years will be in the 70-seat range.

TABLE IV-1

AIR CARRIER/COMMUTER AIRLINES
CODE-SHARING AGREEMENTS

AS OF DECEMBER 2003

Air Carrier/Program Name	Designated Commuter Carrier	Primary Hubs Served
1. AirTran Airways	Air Wisconsin	Atlanta
2. Alaska Airlines	Big Sky	Seattle
	ERA Aviation	Anchorage
	Horizon Air	Portland, Boise, Spokane, Eugene
	Peninsula Airways	Anchorage
3. Aloha Airlines	Aloha Island Air	Honolulu
4. America West Express	Air Midwest	Phoenix
	Big Sky Airlines	Billings
	Freedom Airlines	Phoenix
	Mesa Airlines	Phoenix
5. American Airlines	American Eagle	Dallas/Fort Worth, Boston, Los Angeles, La Guardia
	Executive	Miami, San Juan
6. American Connection	Chautauqua	St. Louis
	Trans States	St. Louis
7. American Trans Air	Chicago Express	Chicago Midway
8. Continental Airlines	ExpressJet	Cleveland, Houston Intercontinental, New York/Newark,
9. Continental Connection	Cape Air	Tampa
	CommutAir	Albany, Cleveland
	Gulfstream International	Fort Lauderdale, Miami
	SkyWest	Houston Intercontinental

TABLE IV-1 (Continued)

AIR CARRIER/COMMUTER AIRLINES
CODE-SHARING AGREEMENTS

AS OF DECEMBER 2003

Air Carrier/Program Name	Designated Commuter Carrier	Primary Hubs Served
10. Delta Connection	American Eagle	Los Angeles
	Atlantic Coast Airlines	Boston, Cincinnati
	Atlantic Southeast Airlines	Atlanta, Dallas/Fort Worth
	Chautauqua Airlines	Dallas/Fort Worth, Columbus
	Comair	Cincinnati, Atlanta, New York/LGA
	SkyWest	Salt Lake City, Dallas/Fort Worth
11. Frontier Airlines	Great Lakes Aviation	Denver
	Mesa Airlines	Denver
12. Midwest Express	Air Midwest	Kansas City
	American Eagle	Boston, Dallas/Fort Worth Los Angeles
	Skyway Airlines	Milwaukee, Kansas City
13. Northwest Airlines	American Eagle	Los Angeles
	Big Sky Airlines	Billings, Bismarck
	Continental Express	Cleveland, Houston Intercontinental New York/Newark
	Gulfstream International	Key West
	Horizon Airlines	Portland, Seattle
	Mesaba	Detroit Metro, Minneapolis/St. Paul, Memphis

TABLE IV-1 (Continued)

AIR CARRIER/COMMUTER AIRLINES
CODE-SHARING AGREEMENTS

AS OF DECEMBER 2003

Air Carrier/Program Name	Air Carrier/Program Name	Air Carrier/Program Name
13. Northwest Airlines (con't)	Pinnacle Airlines	Detroit Metro, Minneapolis/St. Paul, Memphis
14. United Express	Air Wisconsin	Washington Dulles, Chicago O'Hare
	Atlantic Coast Airlines	Washington Dulles, Chicago O'Hare
	Great Lakes Aviation	Denver
	Gulfstream International	Miami
	Mesa Airlines	Denver
	SkyWest Airlines	Denver, Los Angeles, San Francisco
15. US Airways Express	Air Midwest	Charlotte, Kansas City, Pittsburgh, Tampa
	Allegheny Airlines	New York/La Guardia, Philadelphia, Pittsburgh
	Chautauqua	New York/La Guardia, Philadelphia, Pittsburgh
	Colgan Air, Inc.	New York/La Guardia, Boston, Pittsburgh
	Mesa	Charlotte, Philadelphia
	Piedmont	Charlotte, Philadelphia, Washington National
	PSA	Pittsburgh, Philadelphia, Washington
	Shuttle America	Pittsburgh
	Trans States	Pittsburgh

TABLE IV-2

TOP 50
REGIONAL/COMMUTER AIRLINES
RANKED BY TOTAL PASSENGER ENPLANEMENTS

FISCAL YEAR 2003

Carrier	Enplanements	Carrier	Enplanements
1. American Eagle	12,360,998	26. Freedom Air	331,733
2. SkyWest Aviation	10,842,059	27. ERA Aviation	269,024
3. ExpressJet	10,820,263	28. CommutAir	241,280
4. Comair	10,264,165	29. Corporate Express	181,628
5. Atlantic Southeast	9,125,218	30. Seaborne Aviation	157,284
6. Atlantic Coast	8,373,145	31. Eagle Canyon	157,035
7. Mesaba	5,658,256	32. Peninsula Airways	141,558
8. Air Wisconsin	5,347,890	33. Big Sky	134,928
9. Horizon	4,866,086	34. Hageland Aviation	117,701
10. Mesa	4,847,207	35. Aloha Island Air	97,448
11. Chautauqua	4,063,078	36. Pacific Island Aviation	66,044
12. Pinnacle	3,942,356	37. Frontier Flying Service	62,803
13. Executive	2,838,937	38. Chalks International	60,584
14. Piedmont	2,656,964	39. Grant Aviation	60,348
15. Trans States	2,455,465	40. Great Plains	54,806
16. Allegheny	2,070,577	41. Bering Air	51,594
17. PSA	1,179,994	42. Warbelow's Air Venture	32,495
18. Chicago Express	1,113,787	43. Wings of Alaska	29,862
19. Cape Air	786,476	44. Promech Air	25,498
20. Air Midwest	679,760	45. Air Sunshine	21,524
21. Skyway/Astral	620,511	46. Vintage Props and Jets	20,259
22. Gulfstream International	601,555	47. Caribbean Sun Airlines I	20,097
23. Great Lakes Aviation	564,492	48. Wright Air Service	16,911
24. Colgan Air	480,366	49. Cape Smythe	16,409
25. Shuttle America	457,730	50. Boston/Maine Airways	15,695
Top 25: % of Total Regional/ Commuter Enplanements	**97.7%**	**Top 50: % of Total Regional/ Commuter Enplanements**	**99.9%**

Source: DOT Form 41 and FAA Estimates

TABLE IV-3

TOP 20 CORPORATE STRUCTURES

FISCAL YEAR 2003

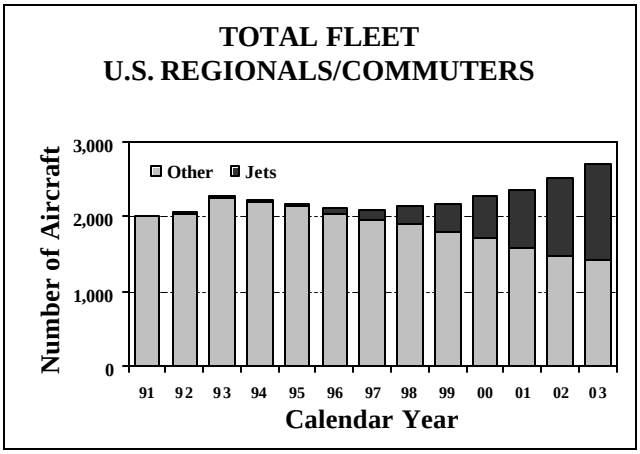
Carrier/ Carrier Group	Industry Enplanements (%)	Carrier/ Carrier Group	Industry Enplanements (%)
1. Delta	17.7	11. Chautauqua Airlines	3.7
2. American Eagle	13.9	12. Pinnacle	3.6
3. SkyWest	9.9	13. Trans States	2.2
4. ExpressJet	9.9	14. Chicago Express	1.0
5. Atlantic Coast	7.6	15. Cape Air	0.7
Top 5: % of Total Regional/ Commuter Enplanements	**59.0%**	**Top 15: % of Total Regional/ Commuter Enplanements**	**95.6%**
6. US Airways Express	5.4	16. Skyway/Astral	0.6
7. Mesaba	5.3	17. Gulfstream International	0.5
8. Mesa Air Group	5.3	18. Great Lakes	0.5
9. Air Wisconsin	4.9	19. Colgan Air	0.4
10. Horizon	4.4	20. Shuttle America	0.4
Top 10: % of Total Regional/ Commuter Enplanements	**84.4%**	**Top 20: % of Total Regional/ Commuter Enplanements**	**98.1%**

Source: DOT Form 41 and FAA Estimates

In last year's forecast document, the FAA analyzed 12 years (1991-2002) of schedules from the OAG to assess the growing impact of regional jets on the industry. This analysis has been updated to include data for 2003.

Fleet Composition

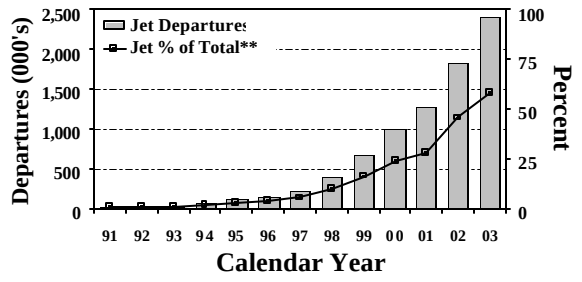
In 1991, three regional/commuter air carriers operated a total of 20 jets, accounting for 1.0 percent of the total fleet and 4.0 percent of seats offered for sale. It was not until 1997 that the introduction of the regional jets started to accelerate, increasing by over 100 aircraft annually (286 aircraft in 2003) over the next 6 years.



Activity and Operational Measures

The number of scheduled regional/commuter jet departures in the 48 contiguous states has grown from just under 9,100 in 1991 to over 2.4 million in 2003. In 2003, jet departures by regionals/commuters accounted for 57.8 percent of the industry departures, up from just 0.2 percent in 1991. In 2003 alone, regional jet departures increased 31.9 percent from 1.8 million to 2.4 million.

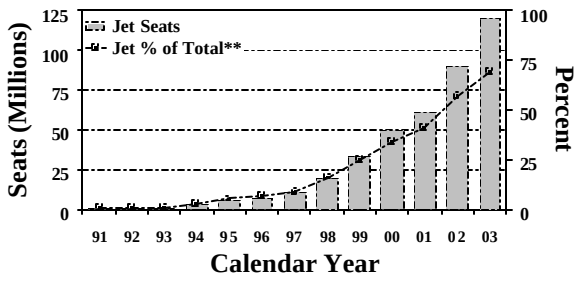
U.S. DEPARTURES BY JET AIRCRAFT*



*48 contiguous states.
**Total scheduled commercial passenger departures by aircraft with 70 or less seats.
Source: Official Airline Guide

Regional jets accounted for 69.3 percent of regional/commuter seats in 2003. Seat capacity provided by these type of aircraft increased 34.5 percent from 2002, for an additional 31.1 million seats.

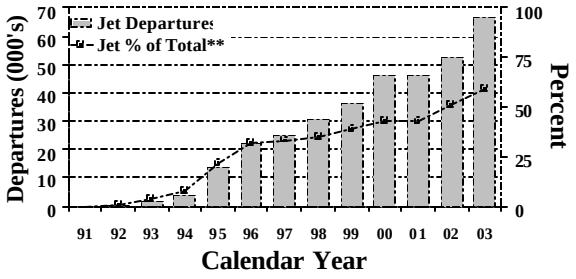
TOTAL SEATS ON JET AIRCRAFT*



*48 contiguous states.
**Total seats on scheduled commercial passenger departures using aircraft with 70 seats or less.
Source: Official Airline Guide

Jet aircraft have also penetrated the transborder markets. In 1992, less than 1.0 percent of all regional/commuter flights between the United States and Canada were flown with jet aircraft. In 2003, jets flew 59.3 percent of regional/commuter flights between the two countries. These 67,041 flights provided 3.3 million seats, over 69.5 percent of regional/commuter seat capacity between the United States and Canada. Since 2002, jet flights and seats in this market increased 27.0 and 29.1 percent respectively.

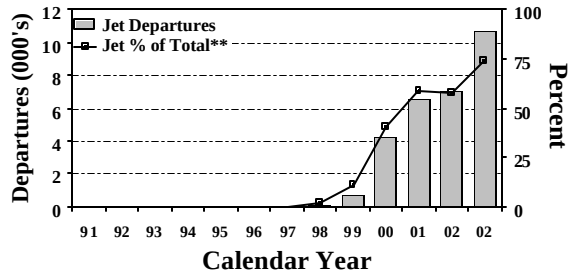
JET AIRCRAFT DEPARTURES* UNITED STATES TO CANADA



*48 contiguous states.
**Total U.S. departures to Canada by scheduled commercial passenger aircraft with 70 or less seats.
Source: Official Airline Guide

The newest international market for regional/commuter aircraft departing from the United States is Mexico. In 2003, only 6 years after the introduction of jet service, regional/commuter carriers flew over 10,660 jet flights between Mexico and the United States, 73.4 percent of all regional/commuter flights in these markets. In addition, during 2003 jet seat capacity increased by just over 185,500 seats. By year-end, 82.6 percent of regional/commuter seat capacity between the United States and Mexico was flown by jet aircraft.

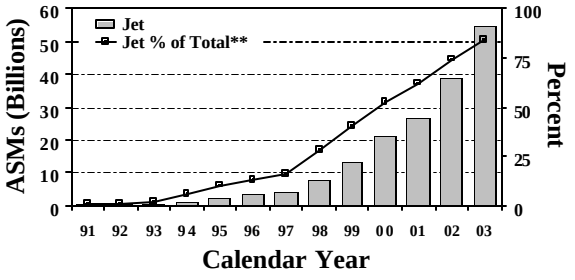
JET AIRCRAFT DEPARTURES*
UNITED STATES TO MEXICO



*48 contiguous states.
**Total U.S. departures to Mexico by scheduled commercial passenger aircraft with 70 or less seats.
Source: Official Airline Guide

With their higher cruise speed and longer range capabilities, the ASMs flown by jet aircraft are also increasing rapidly, from just 0.9 percent of total industry ASMs flown in 1991 to 83.9 percent in 2003. Between 2002 and 2003, the ASMs flown by jet aircraft increased 40.4 percent.

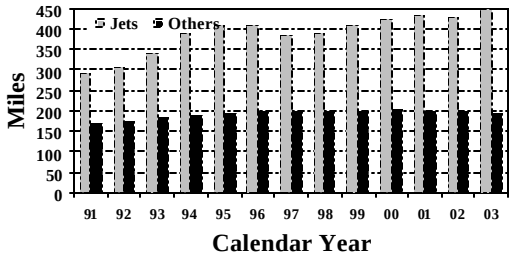
AVAILABLE SEAT MILES
FLOWN BY JET AIRCRAFT*



*48 contiguous states
**Miles flown by scheduled commercial passenger aircraft with 70 or less seats
Source: Official Airline Guide

The growth in ASMs flown is indicative of the fact that regional jets are being operated on routes significantly longer, on average, than "traditional" regional/commuter routes. Between 1994 and 1999, following the introduction of the 50-seat regional jet, the average stage length flown by regional jets hovered around 400 miles. Between 2000 and 2003, the stage length has steadily increased to 447.9 miles. By comparison, the average stage length for all other regional/commuter aircraft has remained at around 200 miles.

AVERAGE STAGE LENGTH
REGIONAL/COMMUTER DEPARTURES*



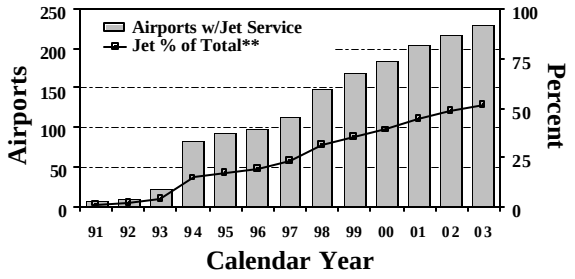
*Departures from the 48 contiguous U.S. on scheduled commercial passenger aircraft with 70 or less seats.
Source: Official Airline Guide

Markets/Routes Served

Regional jets provide the flying public with significantly more travel options to choose from in making their travel plans. As Bombardier and Embraer regional jets continue to enter the fleet, more small- and medium-sized hubs are receiving jet service. Consequently, the number of airports and city-pairs benefiting from jet service are at an all-time high.

The number of U.S. airports receiving regional/commuter jet service increased from only 6 in 1991 to 231 in 2003. During 2003, the number of U.S. airports receiving regional jet service increased by 13 airports. In 2003, 51.7 percent of the airports served by regional/commuter carriers received jet service—up from 1.1 percent of the airports in 1991. At present, only two states--Hawaii and Alaska—are not served by regional jets.

U.S. AIRPORTS SERVED BY JET AIRCRAFT*

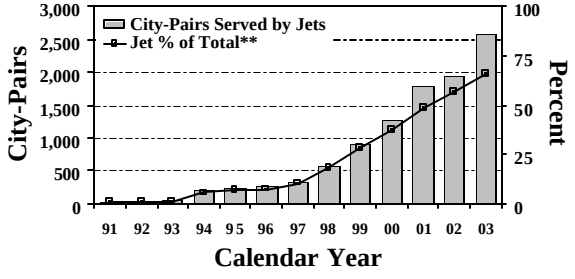


*48 contiguous states.
**Total airports with scheduled commercial passenger service by aircraft with 70 or less seats.
Source: Official Airline Guide

The number of airports in Canada and Mexico served by regional jets continued to increase in 2003. In 2003, regional/commuter jet aircraft flew to 11 Canadian airports from the United States, up from just 2 airports in 1992. In Mexico, there are 19 airports with regional/commuter service; up from only one airport in 1998.

The number of city-pairs originating from airports in the U.S. has also increased significantly. Regional/commuter city-pairs with jet service grew from 10 in 1991 to 2,574 in 2003. In 2003 alone, an additional 632 city-pairs received regional/commuter jet service, raising the percentage of regional/commuter city-pairs with jet service to over 65.9 percent.

CITY-PAIRS SERVED BY JET AIRCRAFT



*48 contiguous states.
**Total city-pairs with scheduled commercial passenger service by aircraft with 70 seats or less.
Source: Official Airline Guide

Of the 2,574 city-pairs served by regional jets in 2003, 92 were flown in transborder service. Between the United States and Canada, regional jets served 68 of 112 regional/commuter city-pairs. Between the United States and Mexico, 24 of the 32 city-pairs were served by regional jets.

Top 10 Regional/Commuter Airports

The top ranked airport in 2003 with respect to regional jet departures was Cincinnati/Northern Kentucky International (CVG). Scheduled jet departures at CVG totaled 158,762 in 2003, 97.0 percent of all regional/commuter departures (jet and turboprop) and 71.5 percent of all commercial departures (large air carrier and regional/commuter) at the airport.

Chicago O'Hare International (ORD), ranked second to CVG in 2003, with a total of 156,580 regional jet departures. Atlanta Hartsfield (108,353), Dallas/Fort Worth (108,184), and Houston Intercontinental (82,377) round out the list of the top five airports with scheduled jet service from regional/commuter carriers. Detroit Metro Wayne increased from 27,731 scheduled regional jet departures in 2002 to 47,938 departures in 2003, moving up from its ranking of 17th in 2002.

Regional jet departures at the top 10 ranked regional/commuter airports accounted for 84.2 percent of total regional/commuter departures and 34.7 percent of total commercial departures at these 10 airports. In the 48 contiguous states, commuter jet departures accounted for 57.8 percent of all regional/ commuter departures and 25.3 percent of all commercial departures during 2003.

TABLE IV-4

TOP 10 AIRPORTS
RANKED BY COMMUTER JET DEPARTURES

CALENDAR YEAR 2003

ID	Airport	Departures			Regional Jet Departures as a % of Total Commuter Departures	Regional Jet Departures as a % of Total Commercial Departures
		Commuter*		Commercial*		
		Jet	Total	Total		
1. CVG	Cincin./N. Kentucky. Int'l.	158,762	163,651	222,195	97.0	71.5
2. ORD	Chicago O'Hare Int'l.	156,580	156,919	448,582	99.8	34.9
3. ATL	William B. Hartsfield Int'l.	108,353	133,915	433,984	80.9	25.0
4. DFW	Dallas/Fort Worth Int'l.	108,184	147,085	368,159	73.6	29.4
5. IAH	Houston Intercontinental	82,377	86,540	219,506	95.2	37.5
6. EWR	Newark Int'l.	64,482	65,527	186,505	98.4	34.6
7. CLE	Cleveland-Hopkins Int'l.	60,437	73,216	110,210	82.5	54.8
8. LGA	New York La Guardia	54,032	84,843	187,649	63.7	28.8
9. BOS	Boston Logan Int'l.	51,821	73,217	166,871	70.8	31.1
10. DTW	Detroit Metro Wayne	47,938	76,004	233,382	63.1	20.5
	Departures – Top 10	892,966	1,060,917	2,577,043	84.2	34.7
	Total Departures – 48 U.S.	2,407,928	4,169,564	9,522,098	57.8	25.3

*Scheduled Commercial Passenger Aircraft with seat size >=3 and <71
**Scheduled Commercial Passenger Aircraft with seat size >=3
Source: Official Airline Guide published November 2003

Industry Impact

The past several years have witnessed the rapid development of routes utilizing regional jets, much to the increasing satisfaction of most of the traveling public. However, even with the high traffic growth experienced by the regional/commuter industry, there is still an erosion in the number of city-pairs receiving non-stop regional/commuter service in the shorter-haul markets.

The decrease in service in shorter-haul markets may be the result of two factors. First, in 1995 an initiative was enacted to bring all air carriers operating aircraft with a capacity between 10 and 30 seats under the same operating rules as those carriers with large aircraft. The initiative called for "one level of safety" and placed stringent safety standards on regional/commuter carriers. The additional costs required to meet the increased safety standards made some smaller aircraft uneconomical to operate. In March of 1997, the initiative became law and is now known as the "commuter rule."

One year after the implementation of the commuter rule (1998), the number of city pairs served by the regional/commuter carriers fell to its lowest level of the decade. Although the trend reversed in 1999 as more regional jets entered the fleet, the number of short-haul markets served (200 miles or less) continues to decline. According to the OAG, in 2003, 336 city-pairs in the 0-200 mile range, and

184 city pairs in the 200-500 mile range lost nonstop regional/commuter service (air carrier service is not offered either). While there have been additional new city-pairs offered in these ranges (152 pairs in the 0-200 mile range, and 1,262 pairs in the 200-500 mile range), the overall impact is a net loss of 184 and 58 city-pairs, respectively.

The second factor affecting service in short-haul markets is that it is more economical for regional jet aircraft to operate in denser passenger markets. As more regional jet aircraft enter the fleet, the average stage length will rise as carriers pursue markets that are more suitable for the regional jet aircraft to operate in.

Again, analysis of the OAG for the years 2001 and 2003 demonstrates this effect. In 2001, the regionals were flying 612 city-pairs with mileage over 500 miles, with 308 of these pairs served exclusively by regionals/commuters. By 2003, the number of city-pairs served by regional/commuter carriers grew two-fold--to 1,136 city pairs--with 612 city-pairs served exclusively by regionals/commuters. Also, it is interesting to note that 188 of these markets were recipients of point-to-point service that had not previously been served by either regionals/commuters or large air carriers. (See Table IV-5 for a comparison of city-pairs served by regional/commuter and large air carriers.)

Presently, there are 5,736 city-pairs being flown non-stop in the 48 contiguous states by regionals/commuters and/or large air carriers, 78 more pairs than were available in 2001. Of these 5,736 city-pairs, 812 were new (not available since at least 2001). Additionally, 796 city-pairs have lost non-stop service altogether since 2001.

The changing mix of the regional/commuter aircraft fleet is also affecting service on longer-haul routes. From 2001 to 2003 the number of city-pairs being flown in the range above 1,000 miles increased dramatically. In 2001, only 20 city-pairs posted stage lengths greater than 1000 miles---the longest distance measuring 1,148 miles (Des Moines/Phoenix). By 2003, there were an additional 100 city-pairs flying beyond 1,000 miles with the top distance registering 1,468 miles (Dallas/Fort Worth/Oakland). It is anticipated that as more of the larger regional jets enter the fleet, stage lengths will continue to rise.

To corroborate the major shift in the stage lengths being flown by the regional/commuter carriers, one year prior to the "one level of safety" initiative (1994), 3,794 city-pairs were being flown. Out of these 3,794 city-pairs, 82 percent of them measured distances less than 300 miles. The year the "commuter rule" was enacted (1997), shorter-haul city-pairs represented only 77 percent of the pairs flown. Six years later, at the end of 2003, only 47 percent of the city-pairs being flown by regionals/commuters are less than 300 miles, a 30 percentage point drop from the number of city-pairs flown during 1997.

RISKS AND UNCERTAINTIES

The air carrier industry is currently undergoing major changes, perhaps unlike any other period during the history of commercial passenger service, including deregulation. As the regional/commuter carriers continue on a path of carrying a larger share of the passengers in the system, it is confronted with old issues as well as new. Maintaining cost structure, operating within the confines of scope clauses, managing airspace and airport congestion, and security, continue to be concerns.

The ability of regional carriers to maintain their cost structure is fundamental for their appeal to the larger air carriers. The goal of network carriers is to gain feed from the regionals while providing seamless service to their customers. Network carriers

TABLE IV-5

CITY PAIR ANALYSIS BY AIRCRAFT CATEGORY*

CALENDAR YEARS 2001 AND 2003

City Pairs** With Non-Stop Service -- by Aircraft Category

Stage Length (Miles)	0-200	200-500	500 plus	Total Pairs
2001				
Regionals/Commuters	1,260	1,374	612	3,246
Large Air Carriers	286	942	2,164	3,392
System	1,340	1,846	2,472	5,658
2003				
Regionals/Commuters	1,100	1,500	1,136	3,736
Large Air Carriers	216	818	2,274	3,308
System	1,130	1,782	2,824	5,736
Difference between 2001 and 2003				
Regionals/Commuters	(160)	126	524	490
Large Air Carriers	(70)	(124)	110	(84)
System	(210)	(64)	352	78

City Pairs Served Exclusively by Regionals/Commuters or Large Air Carriers

Stage Length (Miles)	0-200	200-500	500 plus	Total Pairs
2001				
Regionals/Commuters	1,054	902	308	2,264
Large Air Carriers	80	472	1,860	2,412
Jointly Served	206	470	304	980
2003				
Regionals/Commuters	912	962	548	2,422
Large Air Carriers	30	282	1,688	2,000
Jointly Served	186	536	586	1,308
Difference between 2001 and 2003				
Regionals/Commuters	(142)	60	240	158
Large Air Carriers	(50)	(190)	(172)	(412)
Jointly Served	(20)	66	282	328

Change in City Pairs Served by Commercial Air Carriers Between 2001 and 2003

Stage Length (Miles)	0-200	200-500	500 plus	Total Pairs
City Pairs Gained/Lost (not served by either category since '01)				
Gained-Regional/Commuter City Pairs	152	126	188	466
Gained – Large Air Carrier City Pairs	2	30	314	346
Lost - Regional/Commuter City Pairs	336	184	64	584
Lost – Large Air Carrier City Pairs	38	46	128	212
Net Change in City Pairs				
Gained	154	156	502	812
Lost	374	230	192	796
Net Gain/(Loss)	(220)	(74)	310	16

Source: Official Airline Guide

*Regionals/Commuters: flights operated using aircraft with 70 or less seats.
Large Air Carriers: flights operated using aircraft with more than 70 seats.

**For example, LAX/ORD counts as two city pairs.

provide seamless service through outsourcing and code-sharing. The cost environment that the regionals operate in further advances arrangements that are beneficial to both the regionals/commuters and the network carriers.

Scope clauses define routes and services that mainline airlines may subcontract to the regionals. They can place limits on the size and number of aircraft operated by regional airlines, and/or the number of ASMs flown by a regional carrier. The events of September 11th accelerated the relaxation of these clauses; however, scope still impacts the ability of carriers to match the right-sized aircraft to market demand.

While the terrorist attacks of September 11th, the Iraq War, and SARS have temporarily sidelined the issue of airport congestion, it is expected to reappear as demand returns to pre-September 11, 2001, levels (expected to occur by 2005/2006). As demand returns, some aviation professionals are concerned that the increasing number of regional jets and smaller mainline equipment operating in the U.S. will contribute to airport and airspace congestion. Unlike turboprop aircraft that operate most efficiently at altitudes half that of the regional jets, regional jet aircraft operate most efficiently and economically in airspace shared with the larger jet aircraft. Consequently, the replacement of turboprop aircraft by regional jet aircraft increases congestion in airspace previously used only by large jet aircraft. It is believed that technology and scheduling improvements will help alleviate some part of any congestion that may arise.

Security has impacted all air travelers since September 11th. However, passengers flying in shorter-haul markets are the ones most likely to have altered their travel behavior. As consumer confidence in flying returned after the terrorist attacks, passengers endured long lines at airport security checkpoints. The increased time required to pass through these checkpoints significantly impacted passengers flying in short-haul markets. Short-haul passengers resorted to other modes of travel and/or alternative methods of conducting business as the perceived cost of air travel became greater than the benefit. Some of the alternatives for short-haul air travel are intercity rail, the automobile, and audio and video conferencing. The Transportation Security Administration (TSA) has been able to standardize and streamline processes for security screening at airports throughout the U.S., alleviating much of the "hassle factor" that initially plagued airports shortly after September 11th.

FORECAST METHODOLOGY

In normal times, regional/commuter demand is modeled using economic assumptions as inputs. However, the impacts of September 11th, the Iraq War, and SARS have expanded the role of the regional/commuter carriers in the national transportation system, thus making economic models misleading, at least in the short-term. Currently models underestimate the amount of traffic being carried by the regional/commuter carriers and fail to capture the anticipated growth in capacity expected to occur during the early years of the forecast period.

The starting point for developing regional/ commuter capacity for 2004 was the flight schedules published in the January 2004 OAG. The year-over-year change in the scheduled capacity for the first 10 months of 2004 was assumed to carry through the entire fiscal year. To prepare traffic forecasts, insight gained from discussions held with individual carriers, trade associations, manufacturers, and industry analysts from the Transportation Research Board (TRB) Regional/Commuter Subcommittee meetings were taken under consideration, along with emerging

trends in average trip lengths and load factors. Using this information, forecasts for RPMs and passengers were developed.

These preliminary estimates of supply and demand were compared with actual capacity and traffic data from trade publications and carrier web sites and adjusted as necessary. Although the forecasts for 2004 contain numerous assumptions developed from expert opinion and analyst expertise, it is believed that the forecasts are reasonable in terms of capturing the anticipated course of events.

To combat the failure of economic models to capture the effects of the large number of regional jets projected to enter the fleet, an alternative method for forecasting traffic was pursued. Forecasts for the period beyond 2004 are a blend of economic models, assumptions regarding capacity, and traditional beliefs regarding average passenger trip length.

For the period 2005 through 2015, initial estimates for RPMs were based on an economic model that assigned Gross Domestic Product (GDP) as the independent variable. Load factor assumptions were then used to derive a forecast for capacity. These two forecasts were labeled the "base case". As expected, based on published information for orders and options of regional jet aircraft, the "base case" model appeared to underestimate the capacity increases expected to occur during the early years of the forecast. Therefore, projected orders and options for regional jet aircraft were used to forecast capacity for the regional/commuter carriers. To complete the forecasts for the 2005-2015 period, conventional assumptions regarding load factor, average trip length and seat size were used to estimate passengers and miles flown.

FORECAST ASSUMPTIONS

In previous years, the regional/commuter database combined carriers reporting traffic using Form 298C with a select group of Form 41 carriers operating both large aircraft over 60 seats and smaller regional/commuter aircraft. As a result, traffic reported by the Form 41 carriers operating both large and small equipment were included in the regional/commuter databases as well as in the large air carrier databases. For clarity, the level of duplicated traffic (enplanements and RPMs) would be presented in the technical notes of the FAA Aviation Forecasts.

The new definition for the regional/commuter industry resulted from revisions to DOT reporting requirements and the delivery of new regional commuter aircraft larger than 60 seats. The revised FAA definition places individual air carriers into one of two categories: regional/commuter *or* large air carrier, with the regionals defined as those carriers flying most of their ASMs using aircraft having 70 seats or less. The division of carriers into specific categories eliminates the duplication of traffic, capacity, and financial statistics between the regional/commuter and the large air carrier databases.

Stemming from the change in reporting requirements, the regional/commuter forecasts discontinued distinguishing those carriers reporting on Form 298C from those reporting on Form 41, starting with the forecasts prepared for 2003. At present, separate capacity and traffic forecasts are prepared based on type of travel--domestic or international. Domestic forecasts include travel between the United States, its territories and Canada. International forecasts are based on travel between the United States and its territories and Mexico and the Caribbean.

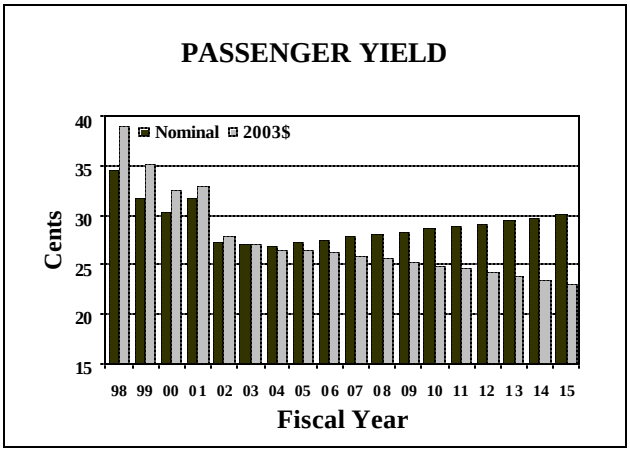
The development of the regional/commuter international database required several sources including: DOT Form's 298C (Table 11A), 41, and T100 as well as the Official Airline Guide. Since prior to fiscal year 2003, 298C carriers only reported RPMs and enplanements on Table 11A, the Official Airline Guide was used to backfill history for ASMs, miles flown, seats, and departures for these carriers. Also, of the five Form 41 carriers that offer international service, three do not report domestic traffic separately from international on Form 41. For these carriers, DOT T100 data was used to obtain international traffic counts. This international traffic was subtracted from the system traffic reported by each of the three carriers to arrive at "pure" domestic traffic.

The baseline assumptions for passenger yield, average aircraft seat size, passenger trip length, and load factor are presented in tabular form in Chapter X, Table 28.

PASSENGER YIELD

The nominal passenger yield for the reporting regional/commuter air carriers was 27.11 cents in 2003, down 0.4 percent from 2002. Although yield for the regional/commuter carriers stayed in the 30 cent range prior to September 11th, these carriers still post yields that are more than double that of the larger air carriers (11.32 cents in 2003).

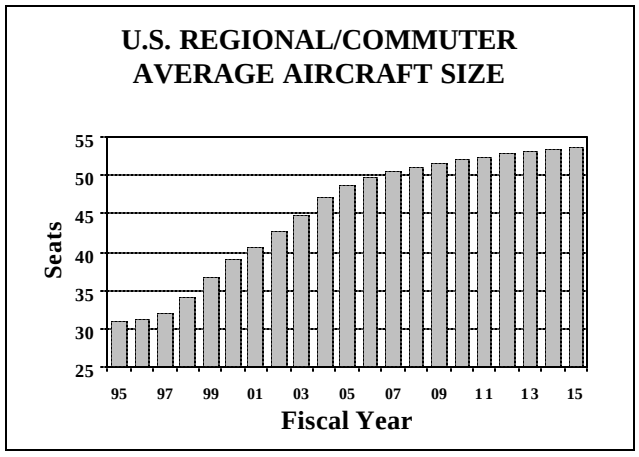
Several factors are responsible for the drop in nominal yield since September 11th. In 2003, the Iraq War and SARS dampened the demand for travel services. Many corporations continued actions implemented after September 11th, including reduction in travel budgets and/or seeking less expensive methods to conduct business. As a result, purchases of higher-fare tickets declined, cutting into revenues made by carriers that were not operating on a contract-flying basis. Also, contributing to the reduction in yields is the increased utilization of regional jets. The regional jets operate at higher load factors and longer passenger trip lengths, both contributing factors to stable or declining yields.

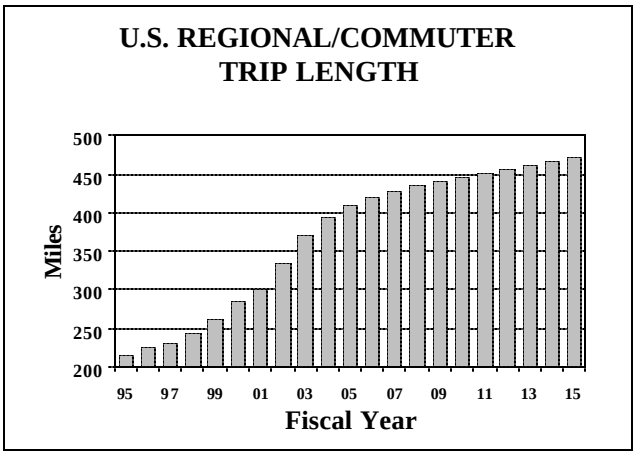


The nominal yield is expected to decline 0.4 percent in 2004, then increase by 1.0 percent in both 2005 and 2006. For the remaining years of the forecast, nominal yield will rise at an average annual rate of 1.0 percent to 30.12 cents in 2015. The real yield is projected to decline by 1.9 percent in 2004, 0.4 percent in 2005, and 0.7 percent in 2006. For the remaining years of the forecast, the real yield is projected to decline at an average annual rate of 1.4 percent, falling to 23.17 cents in 2015.

AVERAGE AIRCRAFT SIZE

The most significant change in fleet composition will result from the integration of large numbers of regional jet aircraft into the fleet, most of which occurs in the 50- to 70-seat category. These aircraft have already increased public acceptance of regional airline service, and offer the greatest potential for replacement service on selected jet routes.





The regional/commuter aircraft fleet is expected to continue to grow rapidly during the first several years of the forecast period. Average seats per aircraft is expected to increase by 2.4 seats in 2004, 1.6 seats in 2005, and 1.1 seats in 2006. For the period 2007-2012, seats per aircraft are projected to increase at an average rate of 0.5 seats annually, to 53.6 seats in 2015. Most of the growth in seat size is expected to come from those carriers operating the larger regional jets.

PASSENGER TRIP LENGTH

The impact of the regional jet is reflected in the growth in the average passenger trip length. The introduction of regional jets in large numbers beginning in 1997 coincides with the significantly higher growth in the average passenger trip length.

Over the next 3 years of the forecast, the average trip length is expected to increase almost 50 miles (25.1 miles in 2004, 14.8 miles in 2005, and 9.9 miles in 2006) then slow to an increase of 6.0 miles annually over the remainder of the forecast period. Over the 12-year forecast period the average trip length is projected to increase from 370.2 miles in 2003 to 470.2 miles in 2015.

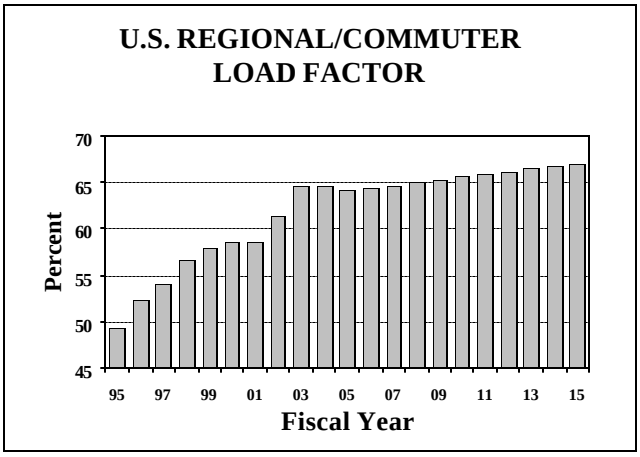
The domestic trip length is forecast to increase 25 miles between 2004 and 2006, and then increase an additional 50 miles over the remainder of the forecast period, reaching 472.4 miles in 2015. The international trip length is expected to increase 34.2 miles during the first 3 years of the forecast, and then an additional 5 miles per year thereafter, going from 310.8 miles in 2003 to 390 miles in 2015.

PASSENGER LOAD FACTOR

The average industry load factor is projected to remain steady at 64.7 percent during the first year of the forecast, decline slightly in 2005, and then increase gradually to 64.5 percent in 2006. For the remainder of the period, the load factor increases at a rate of 0.3 points per year, for a load factor of 67.1 in 2015. Load factors in 2004 and 2005 reflect the large increases in capacity due to 549 regional jet aircraft entering the fleet in those years. Increases in load factors over the latter years of the forecast period are due to regional jet aircraft deliveries tapering between 2007 and 2015. It is also assumed the regional/commuter industry will continue to emphasize frequency of service and this should keep regional/commuter load factors from reaching the level of the network carriers.

The load factor for domestic travel is forecast to decrease from 64.9 percent in 2003 to

64.6 percent in 2006, and then grow at a rate of 0.3 points per year for the remainder of the forecast period--to 67.1 percent in 2015. The international load factor is forecast to grow 1.7 points between 2003 and 2006, from 59.3 percent to 61.0 percent. For the remaining 9 years, the load factor increases 0.5 points annually, for a load factor of 65.5 percent in 2015.



REGIONALS/COMMUTERS FORECASTS

The increasing number of aircraft, especially regional jets with ranges beyond 1,000 miles, is creating new opportunities for growth in nontraditional regional/commuter markets. However, the primary role of the regional industry will remain that of feeding traffic to the legacy and low-cost carriers, even as they expand into new markets with longer route segments.

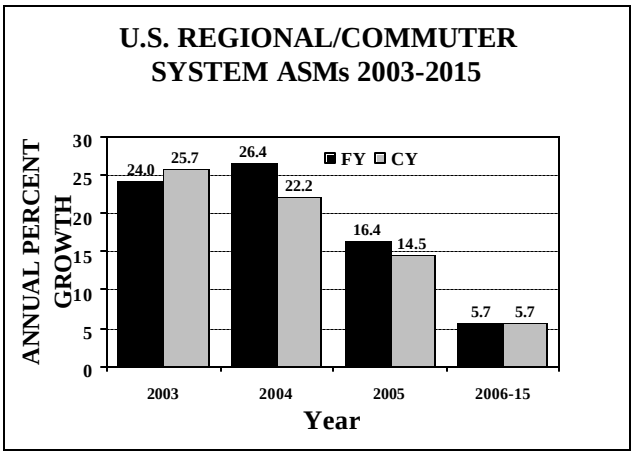
For the large air carriers, use of their regional partners is an effective way to maintain a market presence when forced to reduce excess capacity in selected markets. Regional partners can backfill with regional jets and provide service in comparable comfort and speed at a lower cost. The events of September 11th heightened the need for the larger commercial air carriers to reduce overall costs and capacity and resulted in the transfer of a large number of markets and routes to their regional partners. This expansion of nontraditional regional/commuter markets is expected to be one of the major drivers of growth during the early years of the forecast.

While the transfer of selected routes is expected to accelerate during the early years of the forecast period, this phenomenon should diminish considerably during the mid to latter years. Consequently, the rate of growth in traffic will be lower than that experienced in the past.

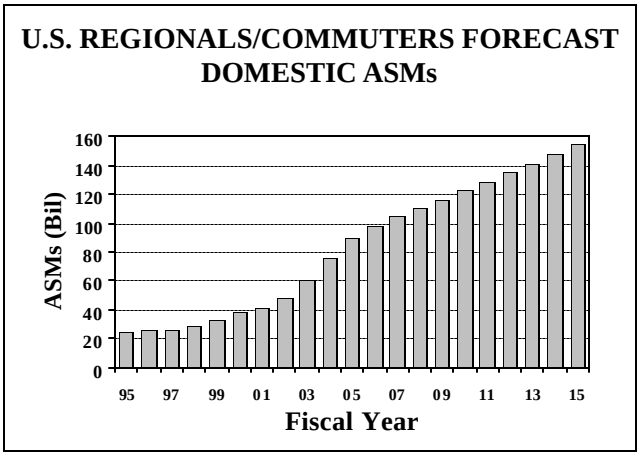
Regional/commuter forecasts of enplanements, ASMs, RPMs, fleet, and hours flown are presented in tabular form in Chapter X, Tables 26 through 30.

AVAILABLE SEAT MILES

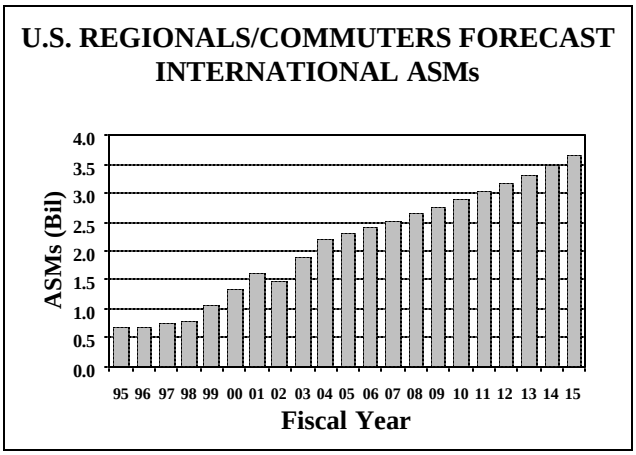
In 2004, the year-over-year percentage change in system ASMs is expected to be 26.4 percent, for a total of 78.6 billion. Again, this rate primarily reflects routes being transferred by the network carriers along with the delivery of large numbers of regional jet aircraft in the 50-70 seat range. System ASMs are forecast to increase 16.4 percent in 2005 and 9.5 percent in 2006, reaching a total of 100.2 billion in the latter year. From 2007 through 2015 regional ASMs will increase at an average rate of 5.2 percent for a total of 158.6 billion in 2015. Over the 12-year forecast period, ASMs are forecast to increase at an average annual rate of 8.1 percent.



Domestic ASMs are forecast to increase 62.1 percent during the first 3 years of the forecast and total 97.8 billion in 2006. For the period 2007-2015, period, ASMs are expected to increase at an annual rate of 5.3 percent, totaling 155.0 billion in 2015.

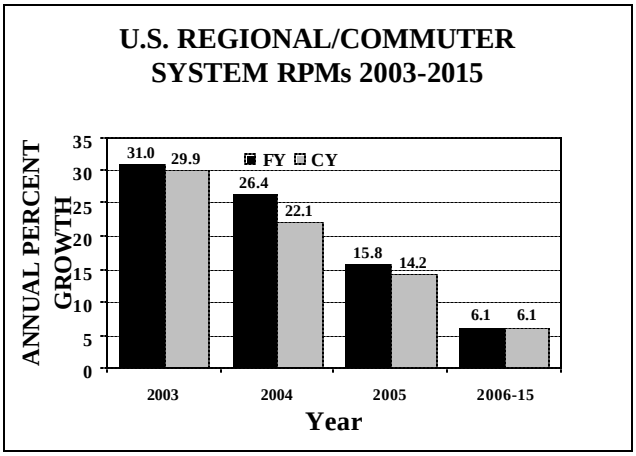


International ASMs are projected to increase 28.1 percent for the first 3 years of the period, for a total of 2.4 billion ASMs in 2006. During the final 9 years of the forecast period, these carriers' ASMs are expected to grow at an average annual rate of 4.7 percent and total 3.7 billion in 2015.



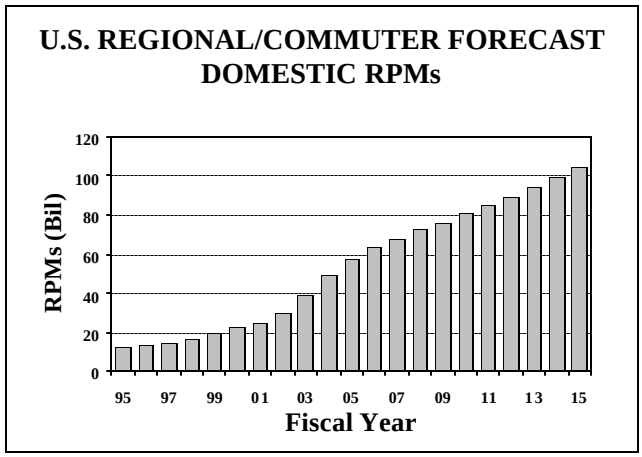
REVENUE PASSENGER MILES

Regional/commuter RPMs are expected to increase 26.4 percent in 2004 (to 50.9 billion), 15.8 percent in 2005 (to 58.9 billion), and 9.8 percent in 2006 (to 64.7 billion). The high growth rates reflect the longer stage lengths being flown by the large numbers of regional jets entering the fleet during these years. From 2007 through 2015 regional RPMs will increase at an average annual rate of 5.7 percent. Over the 12-year forecast period, the average annual rate of growth in RPMs is 8.4 percent for a total of 106.4 billion in 2015.

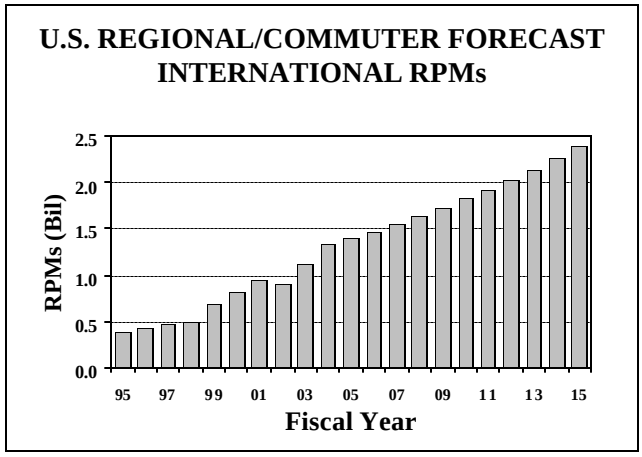


Domestic passenger miles are forecast to be 63.2 billion in 2006, a 63.2 percent increase from 2003 levels. Over the latter years of the forecast (2007 through 2015), the average annual growth rate is projected to be 5.7 percent. The average

annual increase in RPMs for the 12-year forecast period is 6.1 percent, totaling 104.0 billion 2015.



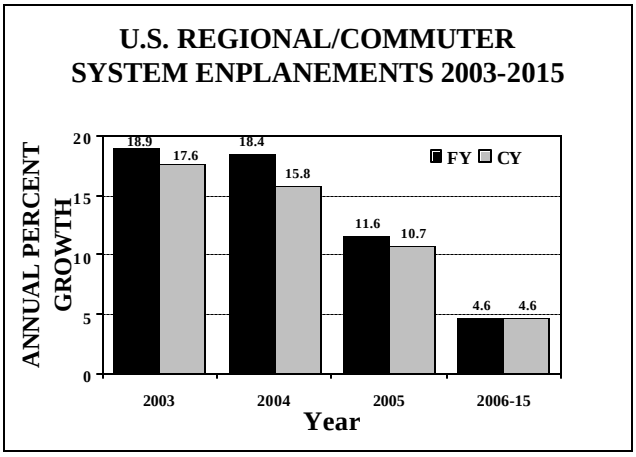
International passenger miles are projected to increase 31.8 percent between 2003 and 2006--to 1.5 billion. During the final 9 years of the forecast period, international RPMs are expected to grow at an average annual rate of 5.5 percent for a total 2.4 billion in 2015.



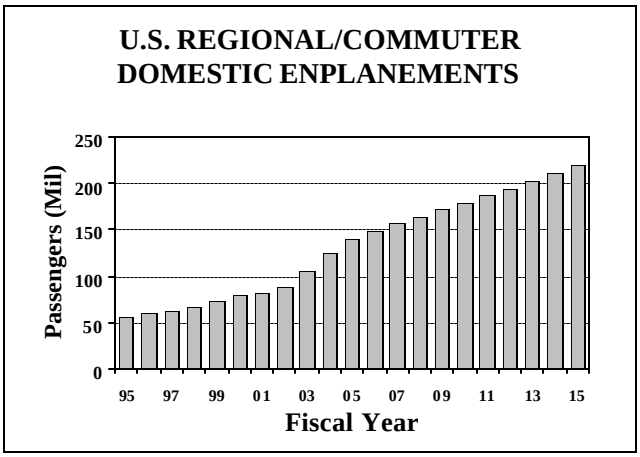
REVENUE PASSENGER ENPLANEMENTS

Regional/commuter passenger enplanements are projected to increase by 18.4 percent in 2004 (to 128.7 million), 11.6 percent in 2005 (to 143.6 million), and 7.2 percent in 2006 (to 153.9 million). Between 2007 and 2015 enplanements will grow at an average rate of 4.4 percent annually for a total of 226.2 million in 2015. Over the entire 12-year forecast period, system enplanements are forecast to grow 6.3 percent annually. By 2015, regional/ commuter carriers are expected to account for 21.4 percent of all commercial air carrier enplanements.

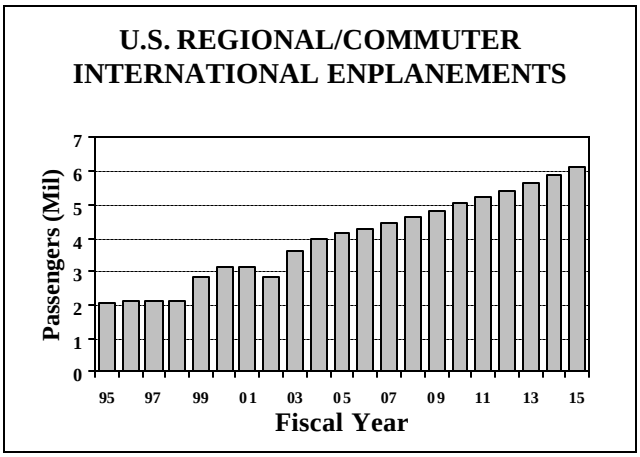
Enplanements are expected to increase at a slower rate than RPMs over the forecast period due to the fact that the average passenger trip increases at an average rate of 8.3 miles per year over the 12-year forecast period.



Domestic enplanements are projected to increase 42.4 percent during the first 3 years of the forecast, totaling 149.7 million passengers at the end of this period. Between 2007 and 2015, domestic enplanements will increase at an average annual rate of 4.4 percent. Over the entire 12-year forecast period, enplanements are forecast to increase at an average of 6.4 percent annually, totaling 220.0 million in 2015—23.0 percent of all domestic enplanements.



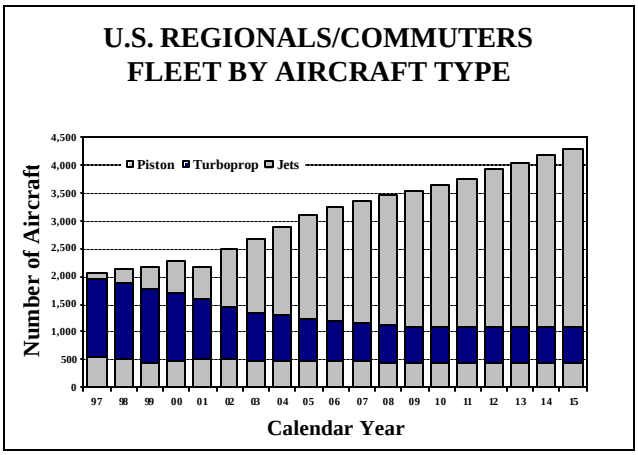
International enplanements are projected to increase 18.7 percent by 2006 (to 4.3 million). For the period 2007-2015, international enplanements are projected to increase at an average annual rate of 4.1 percent, totaling 6.1 million in 2015.



REGIONALS/COMMUTERS PASSENGER FLEET

The regional/commuter fleet, once composed primarily of piston and turboprop aircraft, is rapidly moving toward a fleet predominantly made up of regional jet aircraft. Before September 11th, regional/commuter carriers deployed regional jet aircraft for the purpose of entering new markets and for supplementing and/or replacing turboprop routes. Post September 11th, the regional/commuter carriers are deploying assets on routes traditionally served by mainline carriers in response to the restructuring and downsizing taking place among the larger regional partners. As regional/commuter carriers began flying more long-haul routes using jet aircraft, many of the shorter-haul routes conventionally flown by turboprop aircraft were discontinued.

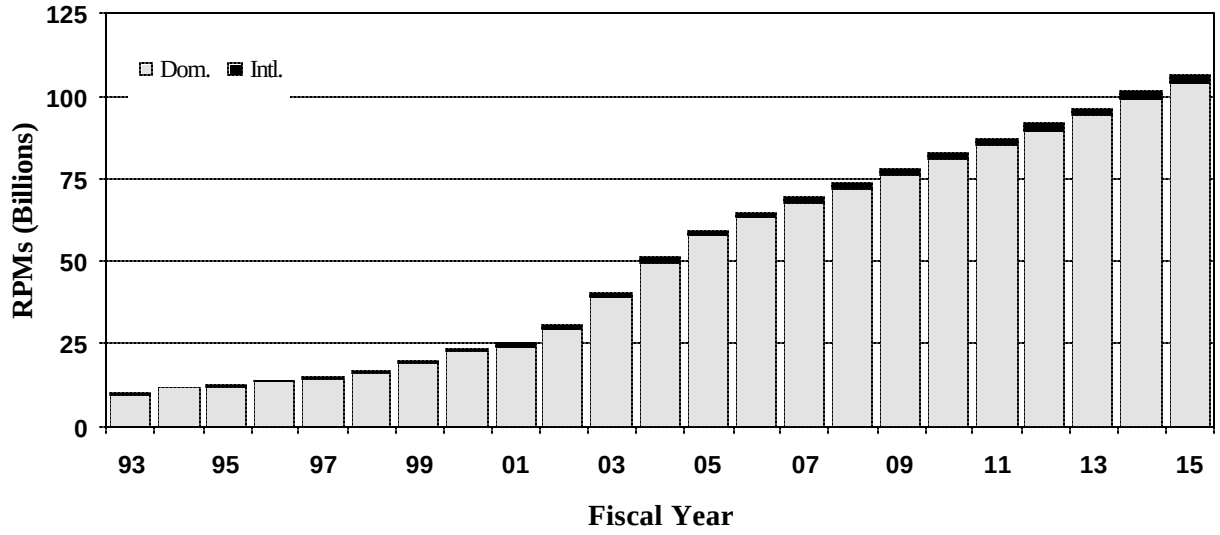
Over the 12-year forecast period, the regional/commuter passenger fleet is projected to net an average annual increase of 136 aircraft, going from 2,672 aircraft in 2003 to 4,303 aircraft in 2015. During the same period, the overall fleet of turboprop aircraft will decrease by 240 aircraft. For the first 3 years of the forecast 5.4 regional jet aircraft will enter the fleet for every turboprop aircraft retired.



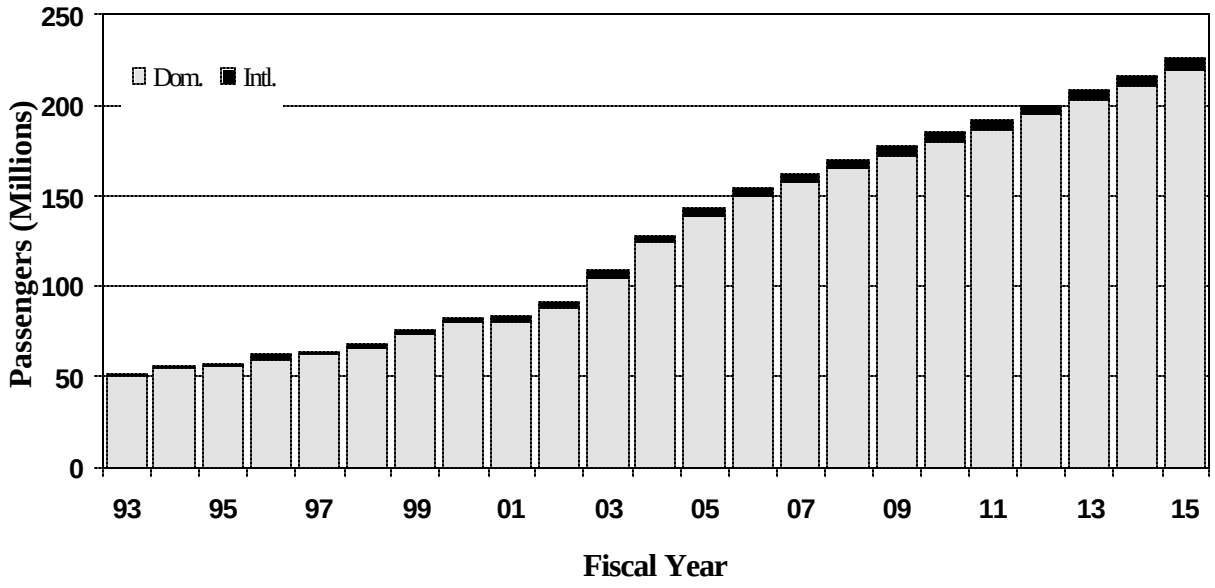
Most of the aircraft in the "less than 10 seats" category are operated by Alaskan regional carriers. Regional aircraft in this category once made up the bulk of the fleet--60.9 percent in 1980. In 2003, this category totaled 485 aircraft and accounted for only 18.2 percent of the total regional fleet. Between 2004 and 2015, the number of aircraft in this category is expected to drop to 455 aircraft and account for only 10.6 percent of the fleet in the final year of the forecast. It is assumed that the decline in this category will occur almost entirely among regional airlines operating within the 48 contiguous states.

U.S. REGIONALS/COMMUTERS TRAFFIC FORECASTS

Scheduled Revenue Passenger Miles



Scheduled Passenger Enplanements



In 2003, the turboprop aircraft in the 10-40 seat range totaled 749 and accounted for 28.0 percent of the fleet. By 2015, these aircraft are expected to represent 12.3 percent of the fleet and total 530 aircraft. The average net decrease in the fleet is 18 aircraft per year. At present, many of the short-haul markets serviced by the turboprop aircraft have disappeared due, in part, to the increased processing times required for ticketing and clearing security checkpoints. It is anticipated that as demand returns, these routes will once again be economically viable for the regionals/commuters to operate on.

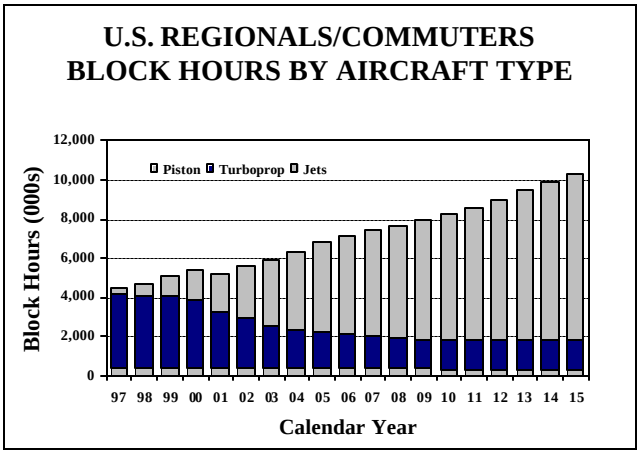
The fleet of turboprop aircraft in the over 40 seats category totaled 117 in 2003. Over the 12-year forecast period, this portion of the fleet is expected to decrease by 21 aircraft and total 96 aircraft in 2015. It is anticipated that some of the regional/commuter carriers will retire many of their ATR aircraft during the early years of the forecast. There are also expected to be deliveries of the Bombardier Q400 during this period as well. It is believed that scope clause limitations on regional jets will result in many of the larger turboprops remaining in the fleet. In 2003, turboprop aircraft in the over 40-seat category were 4.4 percent of the fleet. In 2015, these aircraft are forecast to be only 2.2 percent of the fleet

No increase is expected in the 30-40 seat regional jet category over the forecast period. It is anticipated that regional/commuter carriers will opt for the larger regional jet aircraft. In 2003, this category of aircraft made up 4.8 percent of the fleet. By the end of the forecast period, regional jet aircraft in this seat category will account for only 3.0 percent of the fleet.

The majority of the increase in the regional/commuter fleet will be from regional jet aircraft in the over 40 seats category. In 2003, there were 1,192 aircraft that made up 44.6 percent of the fleet. By 2015, it is expected that there will be an additional 1,901 of these aircraft in the fleet, for an average annual increase of 158 aircraft per year. Of the 1,901 aircraft that are forecast to enter the fleet over the 12-year period, 60.4 percent are expected to be delivered by the end of 2009. At the end of the forecast period, this category of aircraft are expected to account for 71.9 percent of the total regional/commuter fleet.

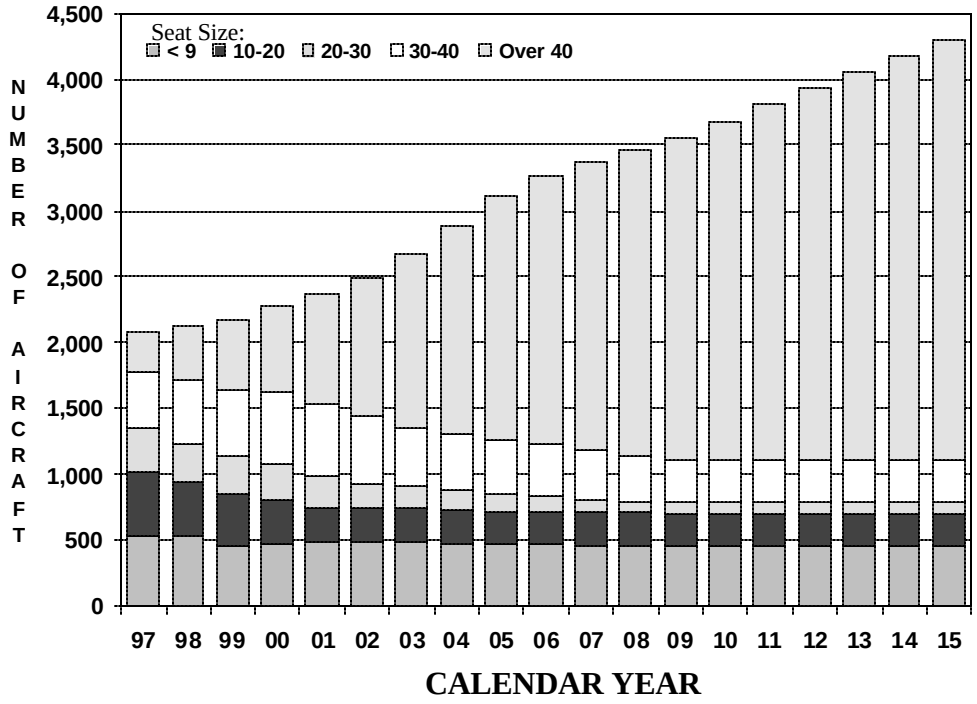
BLOCK HOURS

Regional/commuter block hours for 2003 are estimated at 5.9 million, an increase of 5.6 percent over 2002. During the forecast period, hours are expected to increase to 6.4 million in 2004 (up 8.2 percent), 6.9 million in 2005 (up 8.1 percent), and 7.2 million (up 4.7 percent) in 2005. During the 12-year forecast period, flight hours are forecast to increase at an average annual rate of 4.7 percent, totaling 10.2 million hours in 2015.

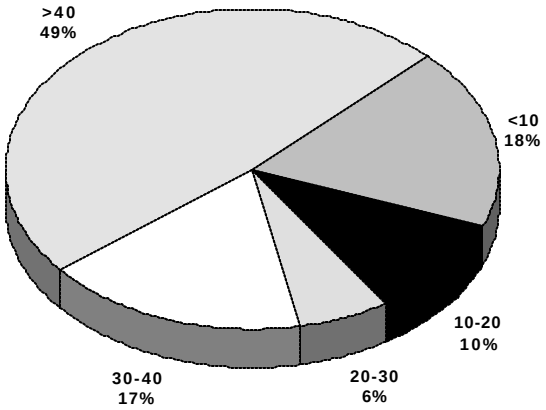


Block hours flown by piston aircraft are forecast to decline from 0.36 million hours in 2003 to 0.32 million hours in 2015, for an average decrease of 1.0 percent annually. In 2015, piston aircraft are forecast to account for 3.2 percent of the block hours flown by the regionals/commuters, down from 6.2 percent in 2003.

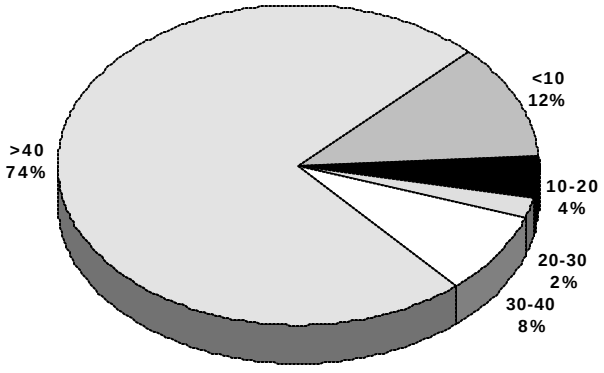
U.S. REGIONALS/COMMUTERS PASSENGER AIRCRAFT



PERCENT OF FLEET BY SEAT SIZE



2003



2015

Block hours flown by turboprop aircraft totaled just under 2.2 million in 2003. Hours for this category of aircraft are expected to total 1.5 million in 2015, for an average annual decrease of 3.3 percent per year. The decline in hours during the early part of the forecast period is due to the retirement of turboprop aircraft. In 2003, turboprop aircraft accounted for 37.4 percent of all hours flown by the industry. By 2015, total hours flown by turboprop aircraft is forecast to drop to 14.4 percent.

Block hours for regional jet commuter aircraft totaled 3.3 million in 2003 and were 56.3 percent of the hours flown. By 2015, block hours flown by this category of aircraft are forecast to total 8.4 million and account for 82.4 percent of the hours flown. Regional jet aircraft block hours are expected to increase at an average annual rate of 8.1 percent, but grow at a faster pace during the early years of the forecast due to the larger number of aircraft entering the fleet during this period.

CHAPTER V

GENERAL AVIATION

The term "general aviation" is used to describe a diverse range of aviation activities and includes all segments of the aviation industry except commercial air carriers (including commuter/ regional airlines) and military. Its activities include training of new pilots and pilots interested in additional ratings or certification, sightseeing, movement of large heavy loads by helicopter, flying for personal or business/corporate reasons, and emergency medical services. Its aircraft range from the one-seat single-engine piston aircraft to the long-range corporate jet, and also include gliders and amateur-built aircraft.

General aviation is an important part of both the aviation industry and our national economy. It provides on-the-spot efficient and direct aviation services to many medium and small sized communities that commercial aviation cannot or will not provide. In addition, the production and sale of general aviation aircraft, avionics, and other equipment, along with the provision of support services such as maintenance and repair, flight schools, fixed base operators, finance, and insurance, make the general aviation industry an important contributor to our nation's economy.

According to a study[1] published in 2002, general aviation made the following contributions to the U.S. economy in 2000:

- General aviation directly generated $13.7 billion in GDP and 178,000 jobs.
- General aviation's total impact (including indirect and induced impact) is $40.7 million in GDP (0.4 percent of total GDP) and 511,000 jobs.

REVIEW OF 2002/2003

It has been 9 years since the passage of the General Aviation Revitalization Act of 1994 (GARA) and all indications are that the Act is accomplishing its purpose. The industry, hurt by rising product liability costs, had gone from producing a high of almost 18,000 aircraft in 1978 down to only 928 aircraft in 1994. The decline in production had also resulted in the loss of 100,000 jobs in the industry. The success of GARA can be measured by resurgence in the demand of general aviation products and services witnessed since its passage.

However, the last 3 years have proved to be difficult ones for general aviation. The steep rise in the price of aviation fuels and the general weakness of the U.S. economic recovery have combined to reduce the demand for the general aviation products and services, in particular, the high end business jets. In addition, some the

[1] *The National Economic Impact of Civil Aviation, July 2002, DRI-WEFA, A Global Insight Company*

adverse affects of the events of September 11th also continue to impact the industry, most notably, the restriction of general aviation aircraft at Washington National Airport.

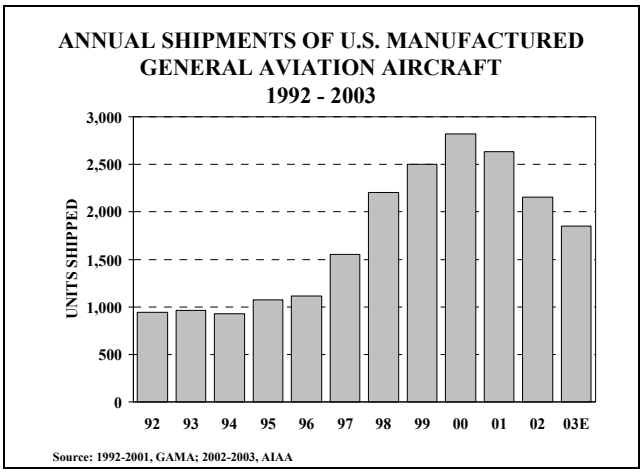
However, promise in the future is evidenced by the general aviation industry's development, production, and introduction of new general aviation products and services. Much of the improved demand for general aviation products prior to September 11th was for aircraft at the higher priced end of the general aviation fleet--turbine powered aircraft--and is due, in large part, to the rapid growth experienced by fractional ownership companies. Dollars spent on research and development is advancing avionics and computer technology. These advances are not only expected to improve general aviation safety, but are intended to make it easier to learn how to fly. Of course, without pilots to fly the planes there would be no industry. To stimulate growth in the pilot population, the industry is heavily promoting flying with "learn to fly" programs. Industry programs also assist teachers in bringing aviation into the classroom with the hope of encouraging students to pursue careers in aviation.

What follows is a review of the industry's performance during 2002 and 2003. This period began with indicators moving in a negative direction, owing in large part to the 2001 U.S. economic recession and slow recovery thereafter, as well as from the lingering effects of the events of September 11th. However, general aviation's performance has not been entirely negative, there are some segments of the industry and/or statistics that still point to positive results. The hope is that those segments experiencing positive results will create a foundation on which the entire general aviation industry can plan and build on for the foreseeable future.

AIRCRAFT SHIPMENTS AND BILLINGS

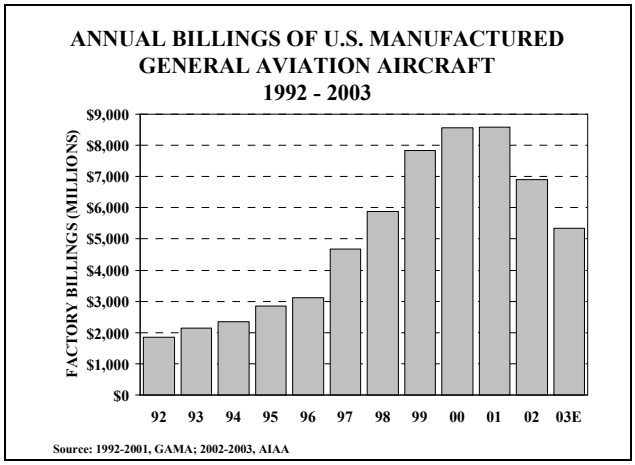
According to statistics released by the General Aviation Manufacturers Association (GAMA) shipments of general aviation aircraft are declining for a third consecutive year in 2003**.** General aviation shipments by U.S. manufacturers totaled 1,395 units during the first 3 quarters of the year, a decrease of 8.7 percent over the same period in 2002**.** Shipments declined for two of the three aircraft categories: turboprops, from 118 to 103 (down 12.7 percent) and business jets, from 379 to 259 (down 31.7 percent). Shipments of piston aircraft remained level--1,031 in 2002 and 1,033 (up 0.2%) in 2003. The resilience of the piston aircraft market provides some hope that new aircraft models are generating interest in the low end of the market for general aviation aircraft.

Sales of general aviation aircraft manufactured outside the United States did not fare much better in 2003. Foreign manufacturers delivered a total of 207 aircraft during the first 9 months of the year, a decline of 13.4 percent over the same period in 2002.



According to GAMA reports, billings for U.S. manufactured general aviation aircraft totaled $4.23 billion for the first 9 months of 2003, a decline of 21.6 percent from the corresponding 2002 figure. Foreign manufacturer's billings totaled $2.2 billion during the same period, a decline of 29.2 percent from 2002.

In its year-end review and forecast[2], the Aerospace Industries Association (AIA) estimates that general aviation aircraft shipments will total 1,853 for the full year 2003, a decline of 15.9 percent from 2002 shipments. In addition, AIA estimates that the value of these aircraft will total $5.4 billion, a decline of 27.2 percent from 2002. If this prediction holds, this will mark the third consecutive yearly decline in billings.



A number of new product offerings could stimulate the market in future years. Among these is the advent of light sport aircraft.

PILOT POPULATION

At the end of 2003, the pilot population totaled 625,011, a decline of almost 8,000 (down 1.2 percent) from 2002. The three strictly general aviation groupings (Student, Private, Commercial) totaled 452,331 (down 1.1 percent) and accounted for 72.4 percent of all certificated pilots.

The number of active student pilots for 2003 is 87,296, an increase of 1.5 percent over 2002 and the first recorded increase in this pilot category since 1999.[3] The general aviation industry continues to promote a number of on-going initiatives aimed at increasing the number of student pilots since they are seen as the future of general aviation. The industry's efforts to sustain and increase the market for its products and services will, in large part, depend on how successful its programs are in attracting new pilots. An increase in student pilots may not only be generated by those seeking private pilot certificates for personal enjoyment, but also for those seeking careers in aviation.

The number of private pilots totaled 241,045 (down 1.7 percent) in 2003 while the number of commercial pilots totaled 123,990 (down 1.5 percent). The number of airline transport pilots (143,504) declined 0.8 percent in 2003, the first recorded decline in this pilot category in 46 years.

The number of helicopter pilots (those holding helicopter certificates only) increased 1.9 percent in 2003 to 7,916. The number of glider (only) pilots and recreational pilots totaled 20,950 and 310, respectively, in 2003.

The number of instrument-rated pilots (315,413) decreased 0.6 percent in 2003. Instrument-rated pilots are currently 58.7 percent of total active pilots (excluding student and recreational pilots), up from 58.1 percent in 2002.

ACTIVITY AT FAA AIR TRAFFIC FACILITIES

General aviation activity at combined FAA and contract towered airports declined by 5.3 percent in fiscal year 2003. This decline was fairly evenly distributed between itinerant and local operations. General aviation operations at FAA towers eclined 6.3 percent, while operations at contract towers decreased 4.3 percent.

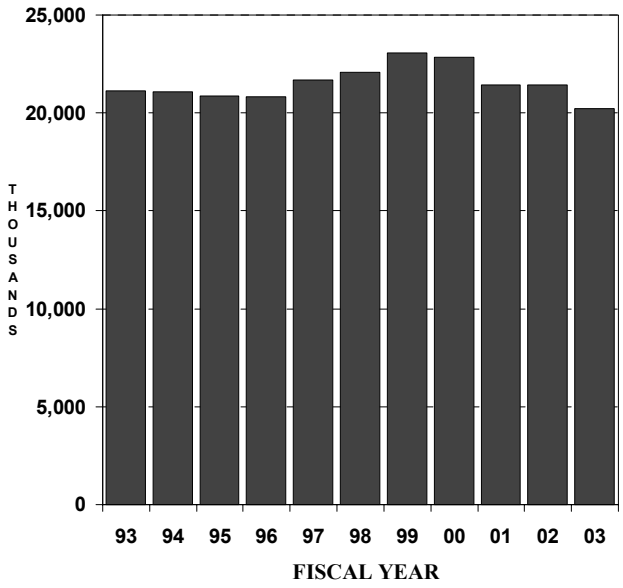
In fiscal year 2003, operations at the top 10 general aviation airports totaled 3.3 million, a

[2] 2003 Year-End Review and 2004 Forecast, December 2003, Aerospace Industries Association of America

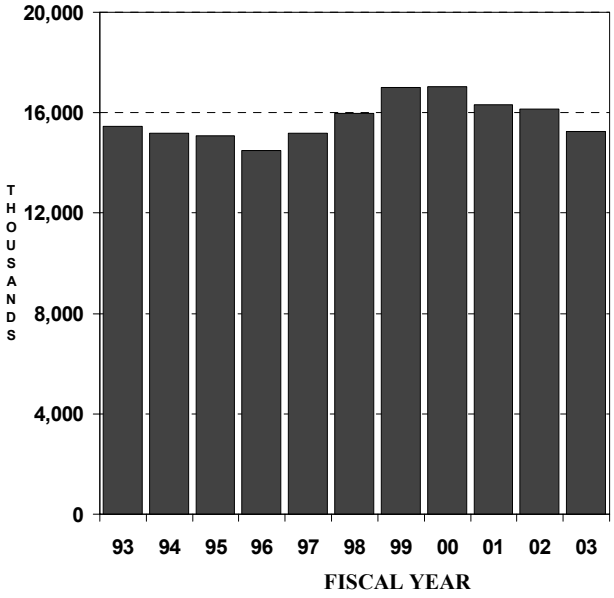
[3] Student Pilot numbers for the years 1999-2001 represent estimates discussed and approved by the Light General Aviation Panel at the 12th FAA/TRB International Workshop on Future Aviation Activities (September 2002).

GENERAL AVIATION ACTIVITY

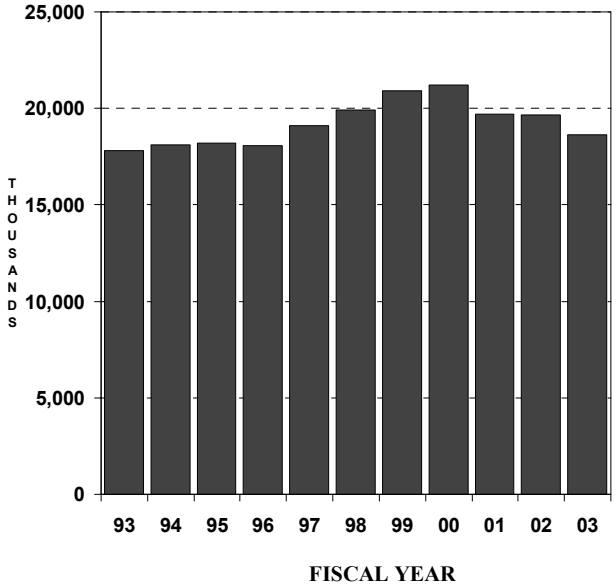
ITINERANT AIRCRAFT OPERATIONS (FAA AND CONTRACT TOWERS)



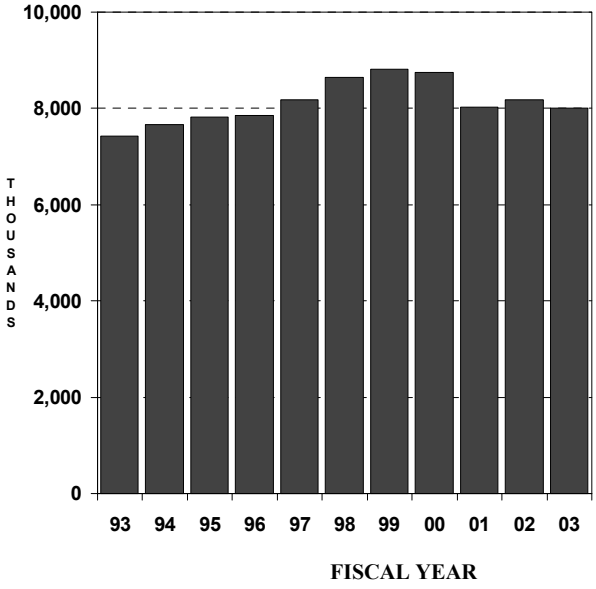
LOCAL AIRCRAFT OPERATIONS (FAA AND CONTRACT TOWERS)



INSTRUMENT OPERATIONS (FAA AND CONTRACT TOWERS)



IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS



decline of 4.9 percent from 2002. These 10 airports, as ranked by total general aviation operations, accounted for 9.4 percent of general aviation activity at the 484 combined FAA/contract towers, and 5.2 percent of total aircraft activity at FAA towered airports. Of the top 10 airports, three are in Arizona, two are in California, two are in Florida, and Colorado, Oklahoma and North Dakota each have one. Only two of the top 10 airports experienced an increase in operations in 2003.

The 10 fastest growing general aviation airports, as ranked by the percentage increase over fiscal year 2002, grew from a combined total of 211,941 general aviation operations in 2002 to 374,238 in 2003, an increase of 76.6 percent. The three airports with the largest percentage increase in 2003 were Victorville in California, (up 158.4 percent), Jacksonville/Cecil Field in Florida (up 149.4 percent), and Stillwater Municipal in Oklahoma (up 138.8 percent).

TABLE V-1

FASTEST GROWING GENERAL AVIATION AIRPORTS RANKED BY % CHANGE IN OPERATIONS FISCAL YEAR 2002-2003

Fac. Id.	City/Airport	2003	2002	% Ch. 02-03
VCV	Victorvillle	40,772	15,781	158.4
VQC	Jacksonville/Cecil Field	27,151	10,886	149.4
SWO	Stillwater Municipal	58,614	24542	138.8
CWF	Lake Charles/Chennault	24,838	10,548	135.5
FCA	Kalispell	34,219	19,514	75.4
CNW	Waco James Connally	48,609	31,839	52.7
IDA	Idaho Falls/Fanning Field	34,459	23,820	42.3
OXC	Waterbury-Oxford	54,352	38,199	30.3
ENA	Kenai Municipal	32,968	23,685	39.2
STX	Christiansted (St. Croix)	18,256	13,127	39.1

None of the fastest growing airports made the list of top 100 general aviation airports as ranked by operations. The highest ranking was Stillwater Municipal at 222nd.

General aviation instrument operations at combined FAA and contract tower airports totaled 19.7 million (down 5.2 percent), the third consecutive year of declining activity. Prior to 2001, general aviation instrument operations had recorded increased activity levels in 6 of 7 years, with activity gains totaling 19.2 percent over the period.

The number of general aviation aircraft handled at en route centers (8.0 million) was down 2.2 percent in 2002. Despite the overall decline in recorded en route activity, there are some positive indicators for general aviation. Oceanic departures and over flights were up 10.9 and 5.7 percent, respectively, in 2003. These statistics lend some credibility to those in the industry that contend that international business travelers are increasingly turning from commercial aircraft to business/corporate jets for security reasons.

2002 GENERAL AVIATION AND AIR TAXI ACTIVITY SURVEY

The historical general aviation active fleet and hours flown discussed in this and Chapter VI (Helicopters) are derived from the General Aviation and Air Taxi Activity (and Avionics) Survey (hereafter referred to as the GA Survey). This survey is conducted annually by the FAA's Office of Aviation Policy and Plans, Statistics and Forecast Branch. The fleet data are estimated using a stratified sample from the FAA's Aircraft Registry. The results of the 2002 survey for active fleet and hours flown, by aircraft type for the period 1997 to 2002, are detailed in Tables V-2 and V-3 which appear later in this chapter.

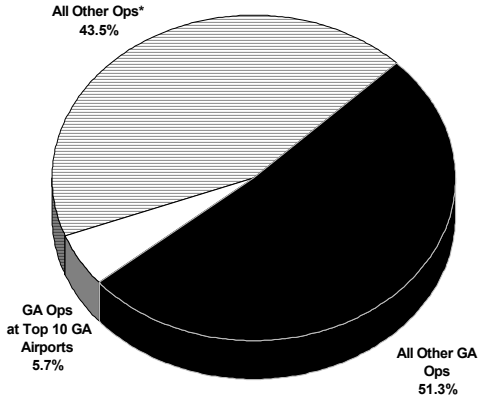
The 2002 survey results for active general aviation aircraft, collected during 2002, are reported as of December 31, 2002. The 2002 survey results for hours flown, collected during 2002, are reported as calendar year (CY) 2002.

As in any sample survey, variability could be caused by traditional sampling error and by nonsampling errors. With small groups (such as rotorcraft, turbojets, etc.), the estimates are

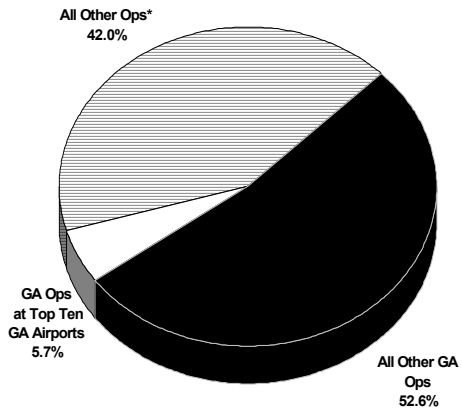
LARGEST GENERAL AVIATION AIRPORTS RANKED BY FY 2003 AIRCRAFT OPERATIONS

Facility ID	City/Airport	2003	2002
VNY	Van Nuys	457,691	482,960
DVT	Phoenix-Deer Valley Municipal	377,915	390,287
SFB	Orlando/Sanford	370,523	372,144
DAB	Daytona Beach International	329,636	349,210
APA	Denver/Centennial	325,529	381,256
PRC	Prescott/E A Love Field	307,484	334,053
LGB	Long Beach/Daugherty Field	303,238	328,952
RVS	Tulsa/Riverside	298,399	323,551
GFK	Grand Forks International	277,348	270,596
FFZ	Mesa/Falcon Field	272,312	259,091
	Operations -- Top 10 GA Airports	3,320,075	3,492,100
	Total GA Operations	35,475,337	37,653,133

PERCENT OF AIRCRAFT OPERATIONS BY TYPE OF AIRCRAFT OPERATIONS



2003



2002

*Includes air carrier, air taxi/commuter, and military operations.

heavily influenced not only by the number of respondents, but also by who responds. For example, if a large operator with high utilization rates for a particular aircraft type responds to the survey in one year but not the next, the effect would be to reduce the activity estimates for that particular aircraft type. This would happen even if that operator had no change in activity for that particular year.

To improve the response rate, the survey is accompanied by a letter with the logos of eight general aviation associations indicating that they value the results and endorse the survey. The survey packet also states that that the "responses are completely confidential and will be used for statistical tabulation only." This is thought to have improved the quality of the responses, i.e., respondents were more likely to report their true activity rather than reporting that the aircraft did not fly during the past year. The usable response rate has remained above 50 percent although in recent years the number of postmaster returns, due to incorrect addresses in the Aircraft Registry, has reduced the response rate. However, a separate project has been undertaken to reduce the number of postmaster returns.

Several changes have been made to the survey over the years and these changes have resulted in some discontinuities in the historical series. For a description and discussion of changes to the surveys conducted prior to 2001, please refer to previous year's forecast publications.

It has also been necessary to revise the estimates for hours flown for the years 1999 to 2001 to correct for data processing errors. These adjustments are reflected in Table V-3 and the forecasts contained in Table 32 (Chapter X).

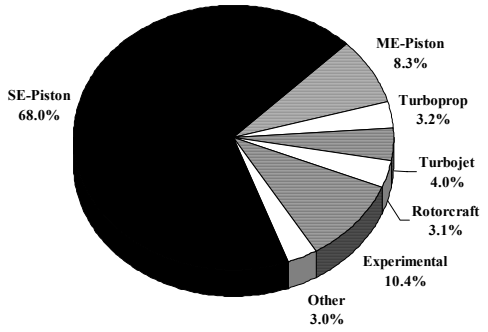
Since one of the most critical uses of the GA Survey results is in the estimation of General aviation aircraft utilization--annual hours flown per aircraft--the 2000-01 GA Survey samples were allocated so as to improve the precision of the hours flown estimates, i.e., to minimize the variability in the estimates of hours flown.

ACTIVE AIRCRAFT

Based on the results of the 2002 GA Survey, there are an estimated 211,244 active general aviation aircraft[4], a decrease of 203 active aircraft compared to 2001. The 2002 estimate represents the third consecutive year of recorded decline following 5 consecutive years of growth. However, the 2002 figure is still 9.8 percent higher than the 1997 figure of 192,414 active aircraft.

Single-engine piston aircraft continue to dominate the fleet in 2002, accounting for 67.9 percent of the total active fleet. The next largest groups are experimental aircraft (10.4 percent) and multi-engine piston (8.3 percent). Turbojets, turboprops and rotorcraft make up relatively small shares of the active fleet, accounting for 4.0, 3.2, and 3.1 percent, respectively.

ACTIVE GENERAL AVIATION AIRCRAFT PERCENT BY AIRCRAFT TYPE IN 2000



The 2002 GA Survey results for individual aircraft categories are as follows:

- The number of active fixed-wing piston aircraft totaled 161,087, down 1.4 percent;
  - single-engine pistons decreased from 145,034 to 143,503, down 1.1 percent; and
  - multi-engine pistons decreased from 18,281 to 17,584, down 3.8 percent.

[4] An active aircraft is an aircraft flown at least one hour during the survey calendar year – i.e., one hour in 2002.

- The number of active fixed-wing turbine aircraft totaled 15,196, up 5.7 percent;
  - turboprops increased from 6,596 to 6,841, up 3.7 percent; and
  - turbojets increased from 7,787 to 8,355, up 7.3 percent.

- The active rotorcraft fleet totaled 6,648, down 2.0 percent;
  - turbine-powered rotorcraft decreased from 4,491 to 4,297, down 4.3 percent; and
  - piston-powered rotorcraft increased from 2,292 to 2,351, up 2.6 percent.

- Active experimental aircraft totaled 21,936, up 7.4 percent;
  - Amateur-builts increased from 16,736 to 18,168, up 7.9 percent,
  - exhibition aircraft increased from 2,052 to 2,190, up 6.3 percent, and
  - other experimental aircraft decreased from 1,633 to 1,578, down 3.5 percent.

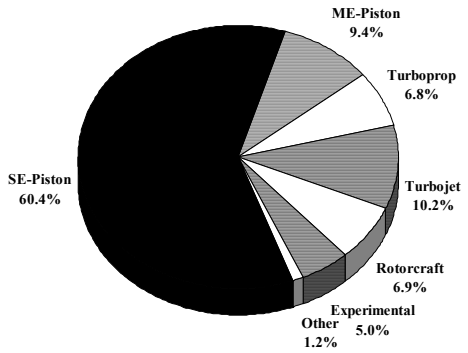
- The "other aircraft" category decreased from 6,545 to 6,377, down 2.6 percent;
  - gliders increased from 1,904 to 1,951, up 2.4 percent, and
  - lighter-than-air aircraft decreased from 4,641 to 4,426, down 4.9 percent.

HOURS FLOWN

Based on the results of the 2002 GA Survey, the hours flown by general aviation aircraft totaled 27.3 million, basically flat compared to the adjusted flight hours for 2001.

The combined flight hours of three aircraft categories—turboprops, turbojets, and rotorcraft--account for nearly 23.9 percent of total hours flown, but only 10.3 percent of the active fleet. This disproportionate share is largely due to higher utilization rates among these aircraft types.

ACTIVE GENERAL AVIATION AIRCRAFT PERCENT HOURS FLOWN 2002



The 2002 Survey results for the individual aircraft categories are as follows:

- Hours flown by fixed-wing piston aircraft (70.0 percent of total hours flown) totaled 18.9 million, a decrease of 1.6 percent;
  - single-engine piston hours (16.3 million) were down 1.4 percent, and
  - multi-engine piston hours (2.6 million) decreased by 3.0 percent.

- Hours flown by fixed-wing turbine aircraft totaled 4.6 million hours, an increase of 3.8 percent;
  - hours flown by turboprops were up 4.3 percent, and
  - hours flown by turbojets were up 3.4 percent.

- Rotorcraft hours flown (1.9 million) were down 3.9 percent from 2001;
  - turbine-powered rotorcraft flew 1.4 million hours (down 3.9 percent), and
  - piston-powered rotorcraft flew 0.5 million hours (down 4.2 percent).

- The number hours flown by experimental aircraft (1.3 million) increased by 16.2 percent in 2002.

ACTUAL USE OF AIRCRAFT

In recent years, a number of new use categories have been added to the Survey, and have resulted in some discontinuities in the historical use series. A public use category was added to the Survey in 1996. The 1999 Survey added a new use category—Air Medical Services—and eliminated the catchall "Other" category.

Personal (11.0 million hours) and instructional flying (4.2 million) were the two largest uses of general aviation activity in 2002, accounting for 56.2 percent of all hours flown by actual use.

Business (3.3 million) and corporate (3.3 million) flying were the third and fourth largest uses for general aviation in 2002, accounting for 23.9 percent of total hours flown.

Hours flown by other use categories in 2002 include: aerial observation (1.4 million); air taxi (1.4 million); and aerial application (1.2 million). External load, other work, sightseeing and air tours accounted for a combined 2.8 percent of total hours while the recently added Air Medical Services category (441,000 hours) accounted for 1.6 percent of general aviation activity.

GENERAL AVIATION AS AN INDUSTRY

General aviation continues to be a vital part of aviation in the United States. At year-end 2003, there were 19,576 civil and joint use airports/heliports/seaplane bases in operation, with 5, 286 available for public use. Of these 510 airports were classified as commercial service (also used by general aviation). This leaves a total of 19, 066 airports/heliport (97.4 percent) used almost exclusively by general aviation aircraft, with 4,776 available for public use.

In addition, general aviation accounts for the largest number of civil aircraft in the United States and accounts for the majority of operations handled by towered and non-towered U.S. airports, as well as for the majority of certificated pilots in the U.S.

In 2002, there were over 218,915 active civil aircraft in the United States. This includes 211,244 active general aviation aircraft (over 96.5 percent of the active fleet), nearly 5,175 large passenger and cargo jet aircraft, and over 2,496 regional/commuter aircraft (including regional jets).

Of the 625,011 active certificated pilots at the end of 2003, private pilots accounted for 38.6 percent of the total. In addition, it is estimated that general aviation itinerant and local operations totaled 88.8 million in fiscal year 2002, 72.6 percent of the total 122.3 million operations at towered and nontowered U.S. airports.[5]

REALISM IN THE INDUSTRY

August of 2003 marked the 9th year since the passage of the General Aviation Revitalization Act (GARA). Despite the recent downturn, general aviation shipments have more than doubled while billings have more than tripled during this period. The General Aviation Manufacturers Association (GAMA) estimates that more than 25,000 manufacturing jobs had been created in the general aviation industry as a result of GARA. However, the 2001 economic recession, combined with the lingering effects of the events of September 11th, resulted in the loss of some jobs in general aviation manufacturing.

The strength of general aviation's recovery and the positive outlook throughout the industry has been seriously challenged by the U.S. economic recession and relatively weak recovery. Whether GARA, which brought product liability reform to the industry, and the introduction of new aircraft models will be enough to see the industry through these uncertain times is difficult to predict at this time.

[5] FAA Terminal Area Forecasts

TABLE V-2

GENERAL AVIATION ACTIVE AIRCRAFT BY AIRCRAFT TYPE

(In Thousands)

AIRCRAFT TYPE	2002	2001	2000	1999	1998	1997
Fixed Wing - Total	**176.3**	**177.7**	**183.3**	**184.7**	**175.2**	**166.8**
Piston -- Total	**161.1**	**163.3**	**170.5**	**171.9**	**163.0**	**156.1**
One Engine	143.5	145.0	149.4	150.9	144.2	140.0
Two Engine	17.5	18.2	21.0	20.9	18.7	15.9
Other Piston	0.1	0.1	0.1	0.1	0.1	0.1
Turboprop -- Total	**6.8**	**6.6**	**5.8**	**5.7**	**6.2**	**5.6**
Single Engine	1.1	1.0	0.7	1.0	1.0	0.7
Two Engine	5.7	5.6	5.0	4.6	5.1	4.9
Other Turboprop	0.0	0.0	0.0	0.0	0.1	0.0
Turbojet -- Total	**8.4**	**7.8**	**7.0**	**7.1**	**6.1**	**5.2**
Two Engine	7.7	7.0	6.2	6.4	5.5	4.6
Other Turbojet	0.7	0.8	0.8	0.7	0.6	0.5
Rotorcraft -- Total	**6.6**	**6.8**	**7.2**	**7.4**	**7.4**	**6.8**
Piston	2.4	2.3	2.7	2.6	2.5	2.3
Turbine	4.3	4.5	4.5	4.9	4.9	4.5
Single Engine	3.6	3.6	3.8	4.0	4.0	3.8
Multi-engine	0.6	0.8	0.7	0.8	0.8	0.8
Other -- Total	**6.4**	**6.5**	**6.7**	**6.8**	**5.6**	**4.1**
Experimental -- Total	**21.9**	**20.4**	**20.4**	**20.5**	**16.5**	**14.7**
Total All Aircraft	**211.2**	**211.4**	**217.5**	**219.4**	**204.7**	**192.4**

SOURCE: 1996 - 2001 General Aviation Activity and Avionics Surveys.

1/ Estimates have been revised to reflect changes in edit and estimation procedures,

TABLE V-3

TOTAL GENERAL AVIATION HOURS FLOWN BY AIRCRAFT TYPE

(In Thousands)

AIRCRAFT TYPE	2002	2001*	2000	1999	1998	1997
Fixed Wing - Total	**23,486**	**23,620**	**26,986**	**27,444**	**24,392**	**24,111**
Piston -- Total	**18,891**	**19,194**	**22,199**	**22,895**	**20,402**	**20,743**
One Engine	16,325	16,549	18,798	19,325	16,823	18,345
Two Engine	2,548	2,634	3,372	3,551	3,567	2,380
Other Piston	18	10	28	18	11	19
Turboprop -- Total	**1,850**	**1,913**	**2,031**	**1,811**	**1,765**	**1,655**
Single Engine	419	299	278	357	289	321
Two Engine	1,427	1,457	1,727	1,450	1,459	1,326
Other Turboprop	37	17	26	4	17	9
Turbojet -- Total	**2,745**	**2,654**	**2,755**	**2,738**	**2,226**	**1,713**
Two Engine	2,551	2,368	2,338	2,435	1,995	1,557
Other Turbojet	194	286	417	303	231	155
Rotorcraft -- Total	**1,876**	**1,953**	**2,308**	**2,744**	**2,342**	**2,084**
Piston	454	474	531	556	430	344
Turbine	1,422	1,479	1,777	2,188	1,912	1,740
Single Engine	1,113	1,156	1,424	1,744	1,415	1,311
Multi-engine	310	323	353	443	497	429
Other -- Total	**333**	**287**	**374**	**318**	**295**	**192**
Experimental -- Total	**1,345**	**1,157**	**1,307**	**1,247**	**1,071**	**1,327**
Total All Aircraft	**27,040**	**27,017**	**30,975**	**31,754**	**28,100**	**27,713**

SOURCE: 1996 - 2001 General Aviation Activity and Avionics Surveys.

Optimism is fostered by the continued entry of commercial manufacturers into the general aviation aircraft market, and the fact that some kit builders are becoming production companies at the entry level. In addition, despite soft business jet demand, Cessna has sold more than 100 Sovereigns in the midsize cabin segment.[6]

Since their start in the 1980s, fractional ownership providers have steadily increased their customer base. According to data from Aviation Data Service (ADS), at the end of 2003 there were 4,331 shares involved in fractional ownership of more than 767 aircraft. Despite this growth (4.9 percent increase over 2002 and 41.3 increase over 2000) it is believed only a small percentage of this market has been developed. Based on ADS estimates, the corporate fleet numbers 14,800 and includes almost 9,500 flight departments. ADS statistics indicate that the corporate aircraft fleet and number of business flight departments grew at annual rates of 5.6 and 4.6 percent, respectively, between 1993 and 2003.

Fractional ownership providers offer the customer a more efficient use of time by providing faster point-to-point travel and the ability to conduct business while in transit. In addition, shareholders of fractional ownerships find the minimum startup concerns and easier exiting options of great benefit.

The business aviation community was initially concerned that the success of fractional ownership programs would result in a shut down of corporate flight departments. These concerns have not come to fruition. Fractional ownership providers generally find their business base to be first-time users of corporate aircraft services, users that traditionally utilized commercial air transportation services. Once introduced to the benefits of corporate flying, some users of fractional programs have found it more cost beneficial to start their own flight departments, instead of incurring the costs of a larger share in a fractional ownership program. As such, the fractional ownership community may be partially responsible for the increase in traditional flight departments since 1993.

In a potentially extremely important step for general aviation, the President signed into law a comprehensive tax bill that would boost the bonus depreciation to 50 percent from 30 percent for property acquired and delivered after May 5, 2003 but before January 1, 2005. This may well spur people/businesses to purchase aircraft sooner than they might have and more expensive aircraft than they might have planned.

The number of amateur-built experimental aircraft in the general aviation fleet has increased consistently for more than a quarter of a century, from 2,100 in 1970 to over 30,000 today. It is estimated that approximately 60 percent of these are active aircraft.

The popularity of the amateur-built aircraft results from several factors, including affordability and performance. Amateur-built experimental aircraft represent a test-bed for new technologies that will eventually be introduced in the development and manufacture of the next generation of light general aviation production aircraft. The success of the kit aircraft market demonstrates that demand still exists for affordable aircraft.

FAA/Government Programs/Initiatives

The partnership between the FAA and the general aviation community is a continuous joint effort aimed at fostering industry improvements and aviation safety.

FAA Administrator Marion Blakey has indicated that the agency will continue to support safety improvements in general aviation. To this end, a safety program called "Safer Skies" has been

[6] Aviation Week & Space Technology, January 20, 2003, page 42

established and continues. Together with industry, the FAA will use the latest technology to analyze U.S. and global data to find the root causes of accidents so as to determine the best actions for breaking the chain of events that lead to accidents. For general aviation, this means the FAA will embark on major data improvements, including quality, collection, and analysis.

As part of the "Safer Skies" effort, the General Aviation Joint Steering Committee (GA JSC) chartered a joint government/industry group called the General Aviation Data Improvement Team (GADIT). The GADIT was established to develop strategies to "increase detail about factors that have contributed to or caused general aviation accidents and incidents;" to "improve the quality and timeliness of estimates of general aviation activity;" and to "suggest alternative and innovative ways to measure the effectiveness of Safer Skies interventions for general aviation." The GADIT has been organized to address four areas: activity data, accident data, incident data, and metrics.

The accident data task team has produced an interim paper on "GADIT Accident Data Needs," an analysis of data needs arranged into high, medium, and low categories. Items may be added to the list as necessary. This is the first stage in the accident data activity. The next step is to develop solutions for evaluating and gathering/collecting accident data.

The FAA, the National Aeronautics and Space Administration (NASA), industry, and other government agencies and universities, are working together to improve the safety and efficiency in our transportation system. To this end, NASA and FAA have implemented the Small Aircraft Transportation System (SATS). The National General Aviation Roadmap is a 25-year strategy for developing SATS. It is believed that the SATS can satisfy 21st century transportation demand by relieving pressure on existing ground and air systems, and by creating access to more communities in less time.

One of the goals of FAA's Safer Skies initiative is to improve weather and other flight information. The Flight Information Service (FIS) program plans to put real time weather information in the cockpit. The industry program "Highway in the Sky" project has a goal of putting 21st Century instrumentation into the cockpit--including GPS position and weather displays. Affordable computers will provide an "intuitive pictorial of situational awareness," allowing display a "highway" to a preprogrammed destination.

The FAA is also committed to improving navigation through satellite-based systems such as the Global Positioning System (GPS) for airport precision approach. Most IFR aircraft are expected to have GPS/WAAS (Wide Area Augmentation System) by 2005. The expected increase in the number of general aviation aircraft equipped with GPS/WAAS and other avionics and communications gear such as Automatic Dependent Surveillance–Broadcast (ADS-B) and 8.33 kHz (radio) channel spacing should be evidenced in avionics tables included in the GA Survey over the next few years.

The expected introduction of Light Sport Aircraft (LSA) is expected to increase the number of aviation pilots and interest in flying. The rule is currently undergoing review at the Office of Management and Budget. If the rule encounters no impediments, the first LSAs may be expected in 2004.

Manufacturer and Industry Programs/Initiatives

The fractional ownership industry was started just over 15 years ago and since that time has provided corporate flying services to companies that could not otherwise justify year the costs associated with operating a separate flight department. During this time, fractional owner-ship providers have operated under Federal Aviation Regulation (FAR) Part 91, which governs general aviation. The FAA established a formal rulemaking committee, consisting of

members from aircraft manufacturers, corporate flight departments, charter operators, fractional owner providers and their customers, and business aircraft management companies. The committee reviewed current Federal Aviation Regulations regarding fractional ownership activity and drafted a proposal that would require fractional ownership aircraft to operate under subpart K of Part 91.

It was submitted to the FAA and analyzed to assess the economic impact of the proposed rule. The notice of proposed rulemaking was issued during the middle of 2001. The FAA is in the process of developing the final rule and planning for its implementation.

Over the past several years, the general aviation industry has launched a series of programs and initiatives whose main goals are to promote and assure future growth within the industry. These include the "No Plane, No Gain" program sponsored jointly by GAMA and the NBAA; "Project Pilot" sponsored by the Aircraft Owners and Pilots Association (AOPA); the "Flying Start" program sponsored by EAA; and "BE A PILOT."

"No Plane, No Gain" is an advocacy program created in 1992 by GAMA and NBAA to promote acceptance and increased use of business aviation. The program promotes business aviation as a cost-effective tool for increasing the efficiency, productivity, and profitability of companies.

AOPA's "Project Pilot" promotes the training of new pilots in order to increase and maintain the size of the pilot population. AOPA believes students that have mentors offering advice and help as training progresses are more likely to complete their training than students who don't have mentors.

The "BE A PILOT" program is jointly sponsored and supported by more than 100 industry organizations. The program, which started in 1996, has a multi-faceted approach: (1) create an influx of new pilots; (2) generate flight training leads; (3) encourage improvement in flight school marketing; and (4) secure additional funding to expand the effort. "BE A PILOT" started issuing "introductory flight certificates" to interested respondents in May 1997. Most probably, the program will have to expand to address public concerns about flight training and aviation security.

The program has been supported by general aviation manufacturers and other aviation businesses and organizations. In the latter part of 2001, the "BE A PILOT" moved the program to higher level of activity and effort by hiring a full-time president and chief executive.

Industry organizations have developed programs and outreach efforts to attract young people through the Internet to peak their interest in the world of aviation. The NBAA sponsors "AvKids," a program designed to educate elementary school students about the benefits of business aviation to the community, and career opportunities available to them in business aviation. GAMA offers publications, awards, and scholarships to bring education into the nation's classrooms.

GENERAL AVIATION FORECASTS

The general aviation forecasts discussed in the following paragraphs are based on a set of economic assumptions that includes a strong recovery starting during the latter half of 2003 and continuing through 2005, with moderate sustained growth thereafter. The decline in general aviation activity that started in late 2001 and continued through 2003 is due to a combination of a relatively weak economic recovery in 2002 and early 2003, as well as to the lingering effects of the events of September 11th, including restrictions on general aviation aircraft operations at Washington National Airport.

General aviation activity is expected to continue to experience slow growth in 2004, then return to more normal growth patterns beginning in 2005 as the U.S. economy reaches the peak of its recovery.

The forecast also assumes that the regulatory environment affecting general aviation will not change dramatically. Specifically, it is assumed that noise and emissions requirements on business turbine aircraft will remain within the bounds prescribed by current rules and regulations. The forecast also assumes that general aviation activity will not be subject to new user-fees or limited access to airports and airspace.

Finally, the forecast assumes that the fractional ownership market will continue to expand and bring new operators and shareholders into business aviation. The fractional ownership community is not expected to be inhibited by certification and regulatory requirements associated with the adoption of the new fractional ownership rule—Part 91, Subpart K.

To the extent that industry and government programs/initiatives are successful in expanding the market for general aviation products and services, the forecasts for the general aviation fleet, hours flown, and pilots can be achieved or possibly exceeded.

The current forecasts for the general aviation active fleet, hours flown, and fuel consumption use the data obtained from the 2002 survey as the base year**.** Therefore, the forecast period for the three activity measures extends from 2002 through 2015, and references to average annual growth rates for the forecast period include 13 years. Airmen forecasts are based on actual data for 2003, and references to average annual growth rates for the forecast period include 12 years.

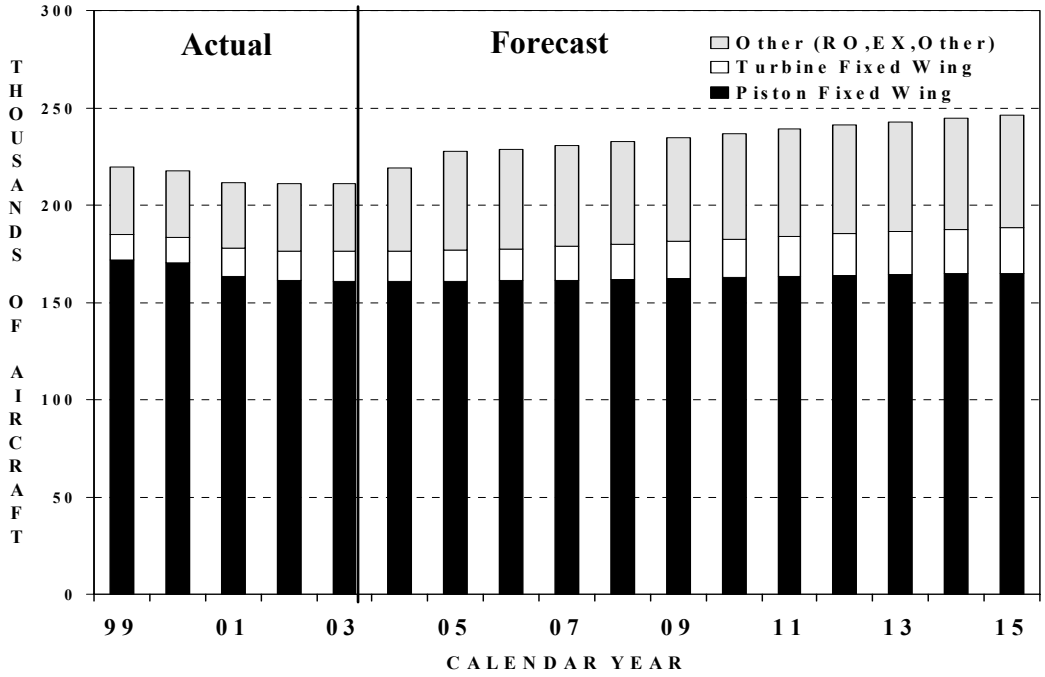
ACTIVE FLEET

In any year, the size of the U.S. fleet is assumed to be the result of new production, the fleet carried over from the previous year, and attrition of existing aircraft during the current year. Attrition occurs from net exports, retirements, and write-offs. New production depends on economic growth and corporate profitability, the introduction of new products, and the prices of the new aircraft offered for sale.

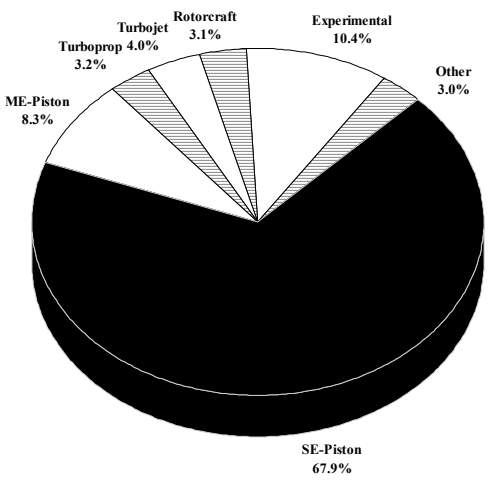
The active general aviation aircraft fleet is expected to increase at an average annual rate of 1.2 percent over the 13-year forecast period, increasing from 211,244 in 2002 to 246,415 in 2015. However, this growth includes the addition of a new aircraft category--light sport aircraft—that is expected to enter the active fleet in 2004 and to account for 20,915 aircraft in 2015. This includes approximately 15,500 existing ultralights not currently included in the FAA's aircraft registry count. In addition, it is assumed that of approximately 330-500 newly manufactured light sport aircraft will enter the actively fleet annually beginning in 2006. Excluding these aircraft, growth averages only 0.5 percent over the 13 years.

There appear to be two separate general aviation economies: turbojet aircraft follow one market pattern; while piston, turboprop, rotorcraft, and experimental aircraft follow a separate “growth” pattern. The number of single-engine piston active aircraft is projected to decrease from 143,503 in 2002 to 143,350 in 2003, maintain this level in 2004, and then begin a period of slow recovery, reaching 148,450 in 2015. This represents average annual growth rate of 0.3 percent over the 13-year period. These forecasts assume that the single-engine piston fleet grows by approximately 380 aircraft annually, counting new production and attrition of approximately 1,500 aircraft per year. The number of active multi-engine piston aircraft fleet is expected to decline by 0.5 percent per year over the forecast period, from 17,584 in 2002 to 16,490 in 2015.

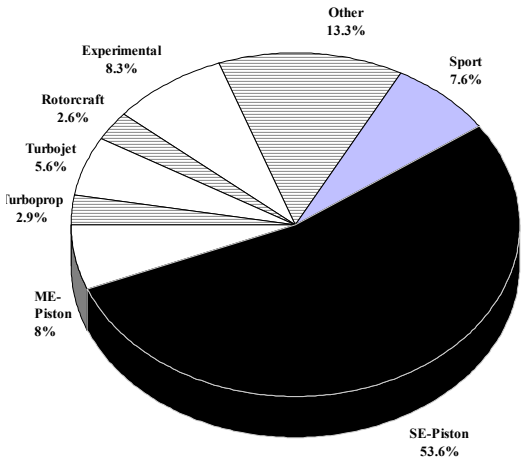
ACTIVE GENERAL AVIATION AIRCRAFT



PERCENT BY AIRCRAFT TYPE



2002



2015

The turbine-powered fleet is expected to increase at an average annual rate of 3.5 percent over the 13-year forecast period. The number of turboprop aircraft is expected to increase from 6,841 in 2002 to 8,120 in 2015. This represents an average annual growth rate of 1.3 percent over the 13-year forecast period. These forecasts assume that the turboprop fleet grows by approximately 100 aircraft per year, counting new production and attrition.

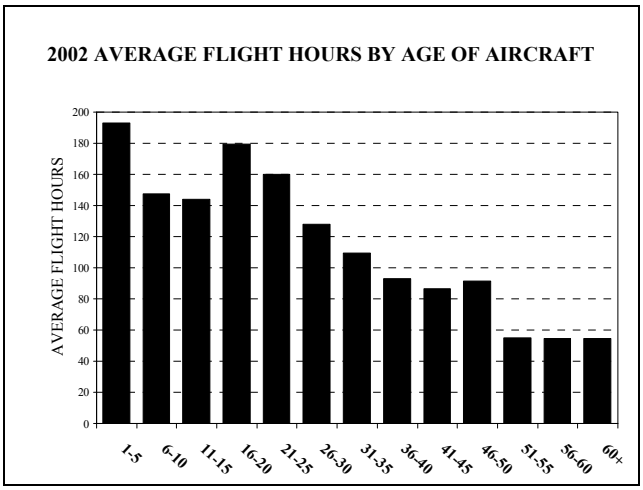
Turbojet aircraft are forecast to increase on average by 4.9 percent annually, from 8,355 in 2002 to 15,510 in 2015. Several factors are responsible for the market for business jets. These include a strong recovery in both the U.S. and global economy; the success and continued growth in the fractional ownership market, new product offerings; and some shift from commercial air travel to corporate/business air travel by business travelers and corporations. In addition, the forecast assumes that Eclipse, or similar type aircraft will enter the active fleet in 2006 and reach a total of 4,600 aircraft by 2015.

The rotorcraft fleet is forecast to grow only 0.6 percent annually over the 13-year forecast period, from 6,648 in 2002 to 7,210 in 2015. The turbine fleet is projected to grow at an annual rate of 0.4 percent, while the smaller piston fleet size is expected to grow at an annual rate of 1.1 percent. A detailed discussion of rotorcraft forecasts is presented in Chapter VI.

The number of experimental aircraft is projected to increase from 21,936 in 2002 to 23,100 in 2015, an average annual growth rate of a little more than 0.4 percent. Gliders and lighter-than-air aircraft are forecast to increase approximately 0.3 percent annually, growing from 6,377 in 2002 to 6,620 in 2015.

AIRCRAFT UTILIZATION

It is assumed that the aging of the general aviation fleet is one of the main determinants of declining utilization of general aviation aircraft. Based on results from the 2002 GA survey, the average age of aircraft in the active general aviation fleet is estimated to be approximately 28 years, with piston aircraft accounting for the majority of the aging fleet. Data from the 2002 GA Survey shows that aircraft utilization peaks at 193.1 hours for aircraft between one and 5 years old. Aircraft average utilization declines substantially after an aircraft reaches 25 years of age.

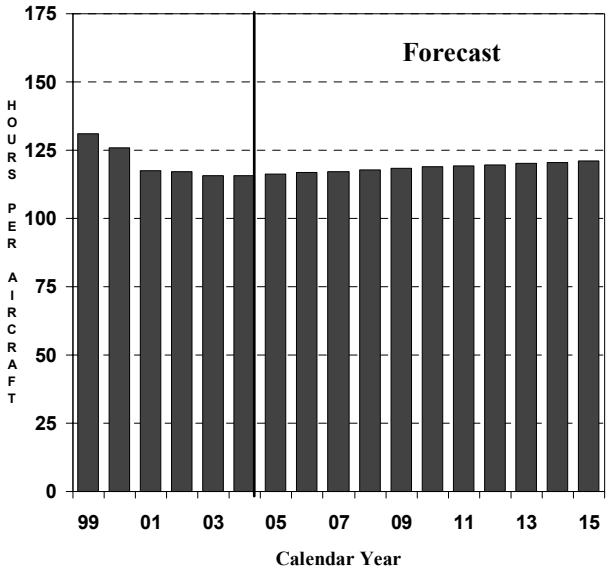


While part of the decline in utilization can be attributed to the aging of the general aviation fleet, U.S. economic slowdowns and/or recessions, such as those which occurred in 1990-91 and 2001 can also impact utilization. The declines in the utilization rates experienced in 2000 (down 3.2 percent) and 2001 (down 7.2 percent) were due, in part, to higher fuel prices and the 2001 U.S. economic recession. However, the restrictions placed on general aviation flying in the aftermath of the September 11th events contributed heavily to the decline in utilization in 2001.

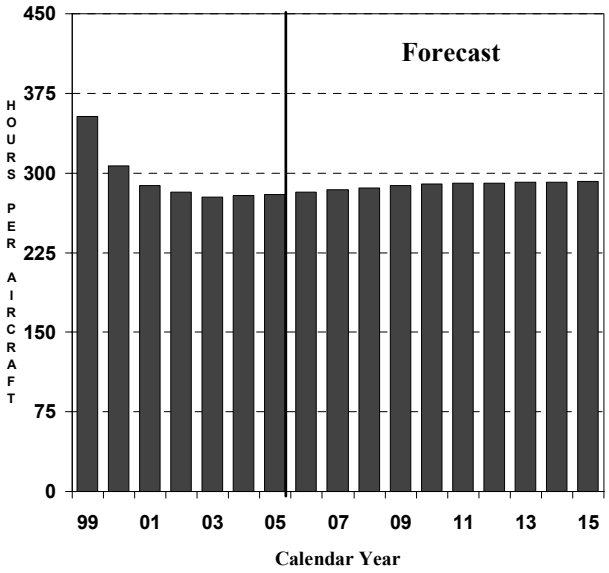
The strong recovery in the U.S. economy in 2004 and 2005 should lead to increased utilization rates for most categories of general aviation aircraft. In addition, new ownership strategies, and other approaches to make flying more desirable and affordable should also be positive forces on utilization rates during the forecast period. For 2002, the utilization rate for single engine piston aircraft is estimated to be approximately 113.8 hours per aircraft. Starting at this base and

GENERAL AVIATION AIRCRAFT UTILIZATION: AVERAGE HOURS PER AIRCRAFT

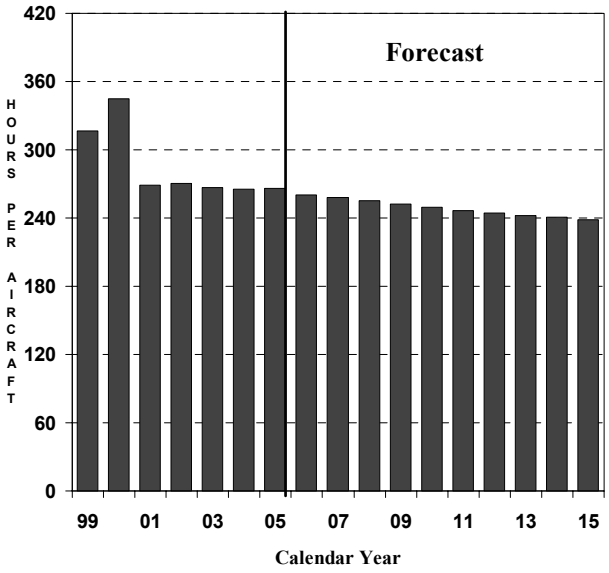
PISTON FIXED WING



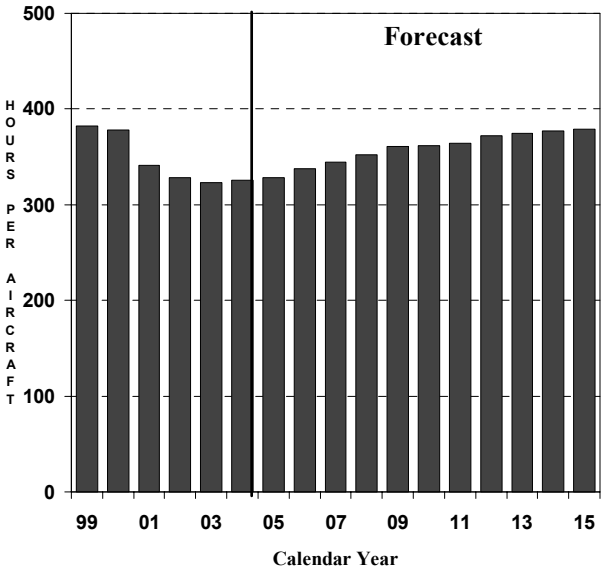
ROTORCRAFT



TURBOPROP



TURBOJET



excluding light sport aircraft, utilization rates for single-engine piston aircraft are projected to increase to 118.2 hours by 2015, an increase of 0.3 percent annually.

The relatively small increase forecast for single-engine piston utilization rates results from the fact that utilization rates tend to be lower for older aircraft. With less than 2,000 new aircraft projected to enter the fleet annually, the single-piston fleet will "age" and, utilization rates should increase only marginally, if at all.

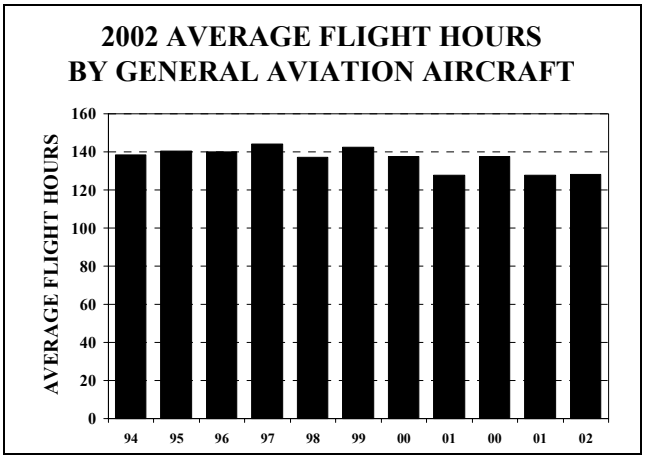
In 2002, multi-engine piston aircraft utilization rates are estimated to be approximately 145.9 hours per aircraft. The utilization of multi-engine piston aircraft is forecast to increase to 146.8 hours in 2015.

The utilization rate for turboprops increased 0.6 percent in 2002; however, utilization is expected to decline by 1.0 percent annually over the 12-year forecast period, falling to 238.3 hours in 2015. Turbojet utilization declined 3.6 percent in 2002 and is projected to decline an additional 1.7 percent in 2003. Thereafter, turbojet utilization is projected to grow at an average annual rate of 1.3 percent over the remainder of the forecast period, from 322.9 hours in 2003 to 379.1 hours in 2015. The increase in utilization rates for turbojets is largely attributable to the increased number of aircraft being operated by fractional ownership providers.

Rotorcraft utilization rates are expected to decrease from 282.1 hours in 2002 to 277.4 hours in 2003. Thereafter, utilization increases at an average annual rate of 0.4 percent, reaching 292.0 hours in 2015. Utilization rates for experimental aircraft are basically flat over the 13-year forecast period, declining in 2003 and 2004, and then increasing gradually over the remainder of the forecast period.

HOURS FLOWN

General aviation hours flown are forecast to increase by 1.5 percent annually over the 13-year forecast period--from 27.0 million in 2002 to 32.7 million in 2015. Excluding light sport aircraft, growth in hours is expected to average 1.2 percent over the 13 years. Single-engine piston aircraft hours are forecast to increase 0.6 percent annually from 16.3 million in 2002 to 17.5 million in 2015. Multi-engine piston aircraft hours are forecast to decline 0.4 percent annually, from 2.6 million in 2002 to 2.4 million in 2015.



Turboprop hours are expected to remain relatively stable at approximately 1.9 million over the 13-year forecast period. Turbojet hours are expected to increase from 2.7 million in 2002 to 5.9 million in 2015, an average annual increase of 6.0 percent. Rotorcraft hours are forecast to increase approximately 0.9 percent annually over the forecast period, from 1.9 million in 2002 to 2.1 million in 2015. Experimental aircraft hours increase at an annual rate of 0.6 percent over the 13-year forecast period, reaching 1.5 million hours in 2015. The new light sport aircraft category is expected to total 315,000 hours in 2015.

PILOT POPULATION

The total pilot population is projected to increase from an estimated 625,011 in 2003 to 777,730 by 2015, an annual increase of 1.6 percent over the 12-year forecast period. However, this growth

includes the certification of 16,100 new sport pilots in 2004 and 2005, with the category growing to a total of 20,800 by 2015. Excluding sport pilots, the number of pilots grows at an average annual rate of 1.4 percent over the 12 years.

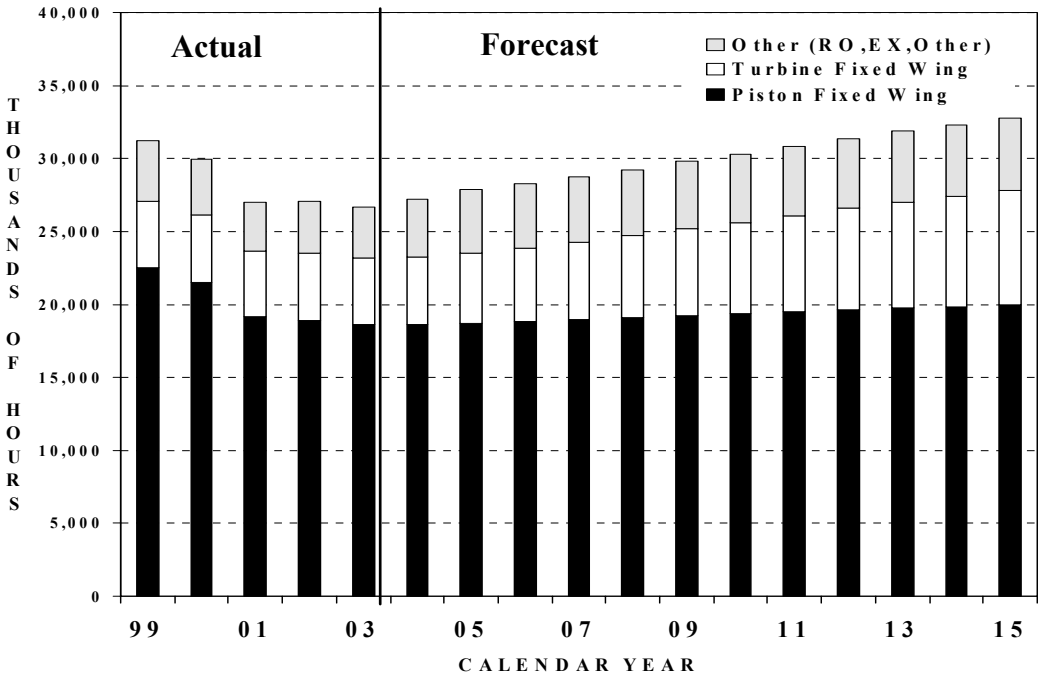
Annual growth rates for the major general aviation pilot categories are: student pilots, up 1.8 percent annually; private pilots, up 1.0 percent annually; and commercial pilots, up 1.6 percent annually.

The student pilot population increased 1.5 percent in 2003. This important pilot category is forecast to increase at an annual rate of 1.9 percent (almost 1,800 students annually) over the 12-year forecast period, reaching a total of 108,430 in 2015. The new category of sport aircraft makes it more economical to learn to fly, thereby attracting more student pilots.

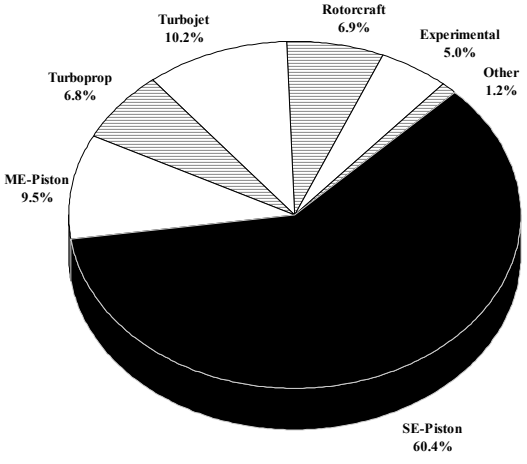
Growth rates for the other pilot categories over the forecast period are: airline transport pilots, up 1.6 percent; recreational, up 0.8 percent; rotorcraft only, up 1.0 percent; and glider only, up 0.2 percent.

The number of instrument rated pilots is expected to increase from 315,413 in 2003 to 385,500 in 2015, a 1.7 percent average annual rate of growth. In 2003, 58.7 percent of active pilots (excluding student, recreational, and sport pilots) are instrument rated. By 2015, the percentage of instrument rated pilots is projected to increase to 61.6 percent. This is largely the result of increased numbers of pilots holding commercial or airline transport ratings.

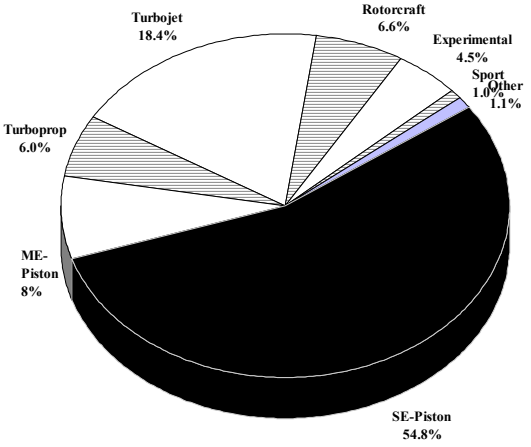
ACTIVE GENERAL AVIATION AND AIR TAXI HOURS FLOWN



PERCENT BY AIRCRAFT TYPE



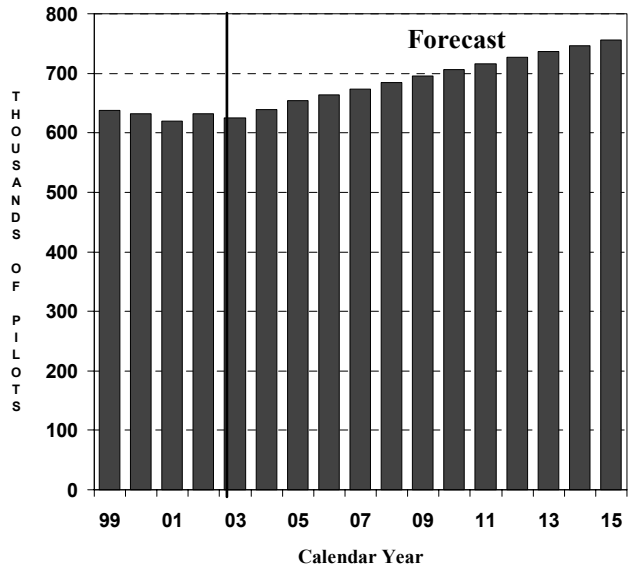
2002



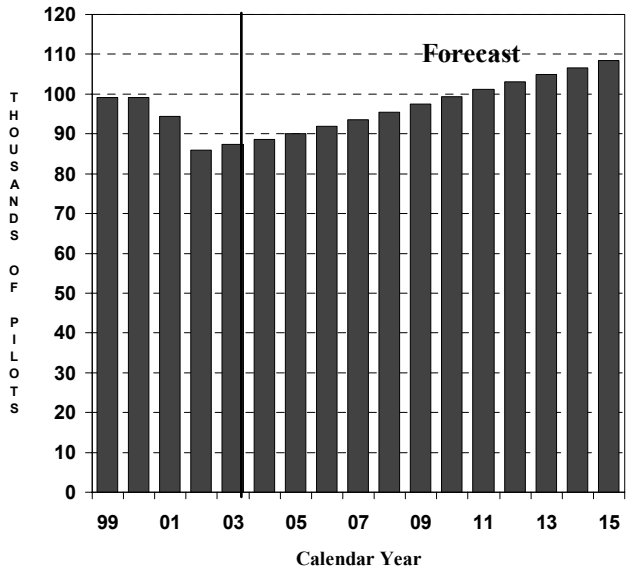
2015

ACTIVE PILOT TRENDS AND FORECASTS

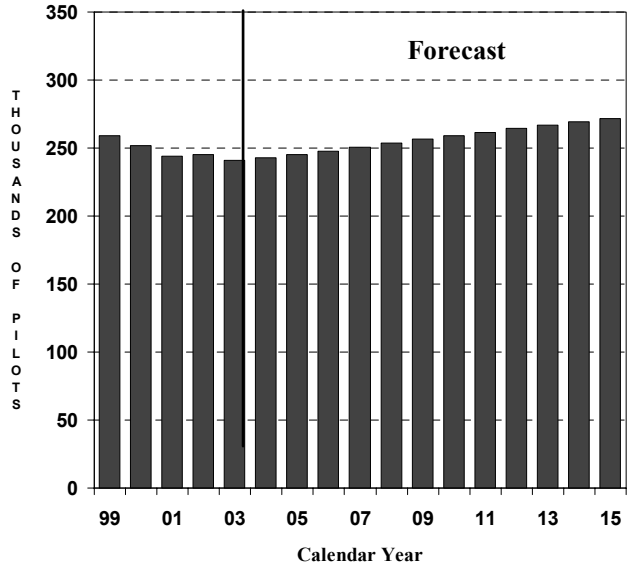
TOTAL



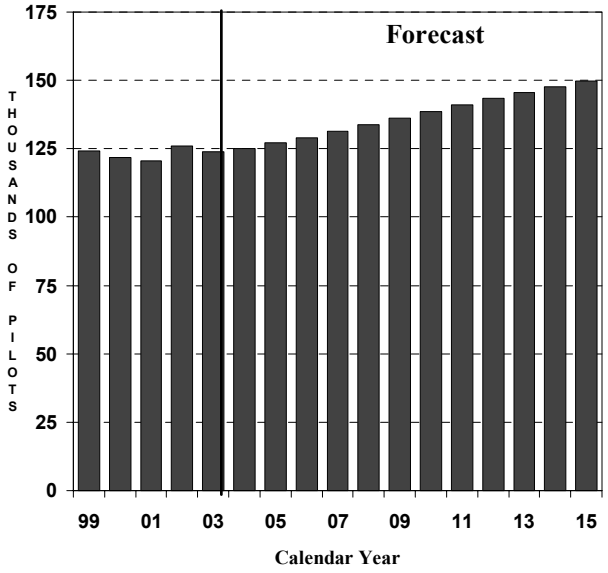
STUDENT



PRIVATE



COMMERCIAL



CHAPTER VI

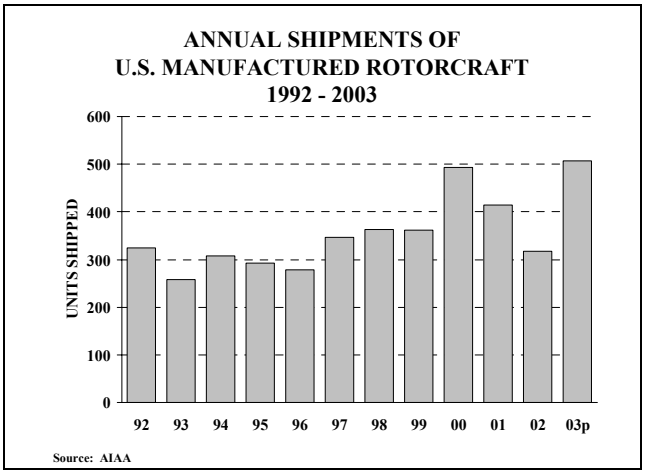
HELICOPTERS

Helicopters participate in a wide range of aviation activities, which are not only important, but contribute to the nation's economy as well. These activities include aerial observation; sightseeing; agricultural application; law enforcement; fire fighting; personal transportation; emergency medical services; transporting personnel and supplies to offshore oil rigs; traffic reporting; electronic news gathering; corporate or business transportation; and heavy lift for the oil, utility, and lumber industries.

REVIEW OF 2002/2003

SHIPMENTS

Preliminary data for calendar year 2003 reported by the Aerospace Industries Association of America (AIA)[1] indicate that shipments of new U.S. civil helicopters will total 507 units. This is a 59.4 percent increase over the 318 units shipped in 2002 and represents the highest level of helicopter shipments since 571 units were shipped in 1991.

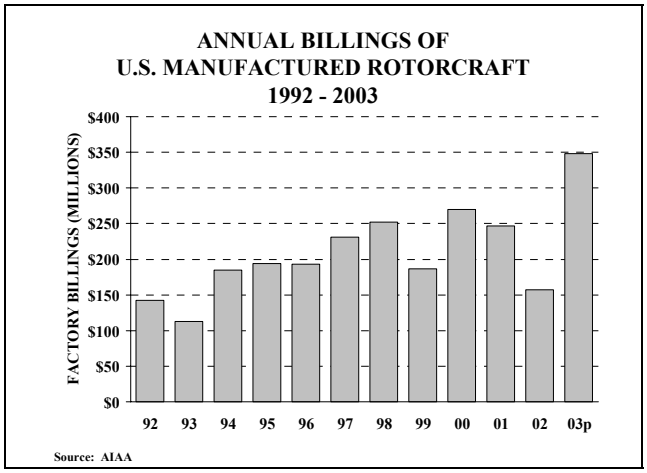


The value of the helicopter shipments totaled $348 million in 2003, an increase of 121.7 percent from billings of $157 million in 2002. This represents the highest helicopter billings in nearly 2 decades--$506 million in 1985.

Over the past 6 years, the average value per helicopter shipped has ranged from a high of $694,000 in 1998 to a low of $533,000 in 2002. However, in 2003 the average value rose to $686,000. Indications are that the increase in shipments is due primarily to the Robinson R44

[1] *2003 Year-End Review and 2003 Forecast—An Analysis*, Aerospace Industries Association of America, December 2003.

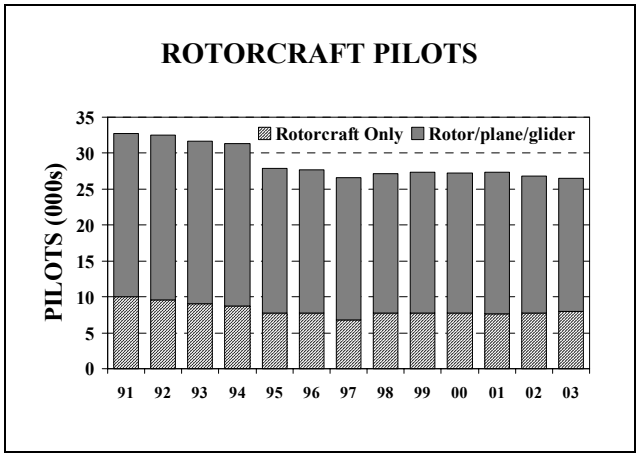
and the increase in value is due primarily to the Sikorsky S-76.



Another factor affecting the sales and shipment figures reported by AIAA is that they don't include U.S. imports from foreign manufacturers.

PILOTS

The total rotorcraft pilot population includes pilots who are certificated to operate only rotorcraft (helicopters and gyrocopters) as well as those that may operate rotorcraft as well as other airplanes and/or gliders. The total number of active rotorcraft pilots declined 1.2 percent in 2003, from 26,765 in 2002 to 26,453 in 2003. The number of pilots who are certificated to fly only rotorcraft increased from 7,770 in 2002 to 7,916 in 2003--up 1.9 percent.



2002 GENERAL AVIATION AND AIR TAXI ACTIVITY SURVEY

The historical rotorcraft active fleet and hours flown discussed in this chapter are derived from the General Aviation and Air Taxi Activity Survey (GA Survey). This survey is conducted annually by the FAA's Statistics and Forecast Branch. The fleet and hours flown data are estimated using a sample of general aviation aircraft from the FAA Civil Aviation Registry.

As in any sample survey, variability can be caused by traditional sampling errors and by non-sampling errors. With small groups such as rotorcraft, the estimates are heavily influenced not only by the number of respondents. but also by who responds. For example, if a large operator with high utilization rates for a particular aircraft type elects to respond one year but not the next, the effect would be to reduce the activity estimates for that particular aircraft type in the second year. This would occur even if that operator had no change in activity.

The active rotorcraft fleet and hours flown by aircraft type are detailed for the period 1996 to 2002 in Chapter V, Tables V-2 and V-3. The 2002 survey results for active rotorcraft and hours flown are also listed in Chapter X, Table 35. The 2002 survey results for active rotorcraft are reported as of December 31, 2002. The 2002 survey results for rotorcraft hours flown are reported as calendar year 2002.

FLEET AND HOURS FLOWN

Based on the 2002 Survey, there are 6,648 active civil rotorcraft in the United States, a decrease of 2.0 percent from the 6,783 rotorcraft reported for 2001. However, this still represents a 1.2 percent increase over he 6,570 rotorcraft reported for

1996. In 2002, the estimate of the number of active turbine rotorcraft is 4,297—a decrease of 4.3 percent from the 2001 estimate, but 4.8 percent more than the estimate for 1996. In 2002, there were 2,351 active piston rotorcraft, an increase of 2.6 percent over the 2001 estimate of 2,292.

At the FAA/Transportaion Research Board (TRB) 12th International Workshop on Future Aviation Activities (September 2002), the Vertical Flight Panel expressed the view that the active helicopter fleet is greater than the Survey estimates. The panel estimates that the active rotorcraft fleet totaled between 10,500 and 11,900 in 2002, considerably higher than that suggested by the GA Survey. The TRB Helicopter Subcommittee, the FAA, and others will continue to address the reconciliation of fleet numbers.

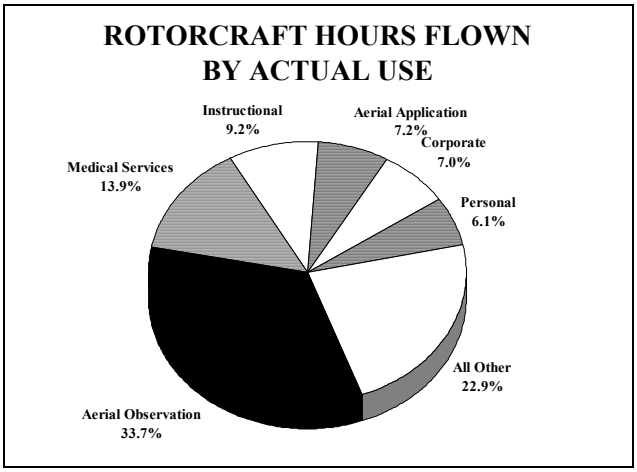
According to the 2002 GA Survey estimates, rotorcraft flew 1.9 million hours in 2002, a decrease of 4.0 percent from 2001. Turbine rotorcraft hours (1.4 million), which account for approximately 76 percent of total rotorcraft hours, decreased 3.8 percent in 2002. Hours flown by piston rotorcraft totaled 453,546--a decrease of 4.4 percent from 2001.

In 2002, the rotorcraft fleet flew an average of 282.1 hours per active aircraft—331.0 hours for turbine rotorcraft and 192.9 hours for piston rotorcraft. The revised data indicate a decrease in the average utilization of the helicopter fleet of 5.9 hours or 2.0 percent. Turbine rotorcraft utilization increased 0.5 percent—up from 329.3 in 2001, while piston rotorcraft utilization decreased 6.8 percent--down from 207.0 in 2001. The decline in utilization in 2002 is due, in part, to the sluggishness of the U.S. economic recovery in that year. However, the year-to-year fluctuations in these rates could be due to the size and/or type of businesses of the helicopter owners/operators responding to the survey in any particular year.

ACTUAL USE OF AIRCRAFT

A public use category was added to the Survey in 1996. In recent years, a number of new use categories have been added to the Survey, and have resulted in some discontinuities in the historical use series. The 1999 survey added a new use category--Air Medical Services--and eliminated the catchall "Other" category. For the 2002 survey the Public Use category was estimated separately and, therefore, is not additive with the other activity categories.

When measured by hours flown and actual use, aerial observation was the leading application for rotorcraft (631,234 hours), followed by medical services (261,085 hours), instructional (173,443 hours), aerial applications (135,245 hours), corporate (131,799 hours) and personal flying (113,914 hours).



For piston-powered rotorcraft, the leading use was instructional flying (29.4 percent), followed by aerial observation (23.0 percent), personal (16.7 percent) and aerial applications (12.9 percent). The top uses for turbine-powered rotorcraft were aerial observation (37.0 percent), medical services (18.4 percent), corporate (8.5 percent), and air tour and external load---both 6.0 percent.

In terms of the number of rotorcraft in 2002, the top primary use categories were aerial observation (26.3 percent), and personal

(20.6 percent). All other use categories fell below 9.0 percent. The leading primary use categories for number of piston rotorcraft were personal use (42.8 percent) instructional flying (18.1 percent), aerial observation (11.8 percent), aerial applications (11.6 percent) and business (10.5 percent). The leading uses for turbine rotorcraft were aerial observation (34.2 percent), medical services (12.4 percent) and corporate (11.9 percent).

FUEL CONSUMED

In 2002, fuel consumed by rotorcraft was estimated to be 53.4 million gallons, a decrease of 11.1 percent from the 2001 level. However, jet fuel consumption decreased by 12.4 percent in 2002 while aviation gasoline consumption declined only 2.7 percent. Jet fuel consumption is expected to increase 2.0 percent in 2003 while aviation gasoline is forecast to increase 0.9 percent.

FUTURE ISSUES

Issues facing the rotorcraft industry include availability of infrastructure, improved safety image, price-to-performance ratio, the maturing of the offshore oil and air medical markets, and environmental impact. Expanding infrastructure faces both public and local government resistance because of safety and environmental concerns. Security restrictions imposed on general aviation and rotorcraft, in particular, has had an impact on the use of helicopters for newsgathering and traffic reporting. Even with falling prices and improved operating performance, the demand for rotorcraft could be dampened by the lack of adequate landing facilities. Helicopters are seen as one option to transporting passengers or cargo from airports into the city or urban sites. However, operators often find themselves unable to convince communities that a heliport can be a good neighbor.

TECHNOLOGY

Technological advances could stimulate helicopter usage. The Global Positioning System (GPS) and other free flight enabling technologies offer the promise of freeing all aircraft, including helicopters, to use efficient direct routing to their destinations. These technologies may also enable helicopters to fly routes less noticeable to persons on the ground, increasing community acceptance and further enhancing the utility of helicopter operations.

Another major technological advance is the civil tilt-rotor, which combines the vertical takeoff and landing capabilities of a helicopter with the speed and range of a turboprop aircraft. Other innovative rotorcraft configurations that have been discussed and may benefit from advanced (vertical) flight research include quad tilt rotor, ducted coaxial rotor, folding prop-rotor, and canard rotor/wing. Intelligent rotorcraft systems and efficient active rotor systems may also compete with the above revolutionary systems for research funding—from both NASA and the FAA.

MARKET FACTORS

Factors increasing the demand for helicopters include economic growth, the aging of the fleet, and the availability of new more efficient models. New models stimulate demand due to improvements in performance and cost of operation. Factors that may slow the demand for new products include lower levels of petroleum extraction in the United States (one of the primary uses of helicopter services)---at least in the short-term---and limitations relating to supporting infrastructure.

According to the FAA/TRB Vertical Flight Panel, growth is expected in the next several years for the corporate/private fleet and the law enforcement fleets. The air medical market for helicopters is maturing. In the near-term, the air medical helicopter fleet is expected to decline in major metropolitan areas as hospital management becomes increasingly aware and concerned about the cost of their rotorcraft operations. However, this decline may be offset by growth in locations outside major cities.

Higher oil prices could result in greater helicopter activity in the Gulf of Mexico. Based on data collected by the Helicopter Safety Advisory Conference (HSAC), the total helicopter fleet in the Gulf has fluctuated between 540 in 1996 and 625 in 2002, peaking at 636 in 1997.

Government regulation and harmonization initiatives may also influence market demand. Aviation regulations could enlarge or reduce the market for aircraft services, depending on whether particular regulations permit or prohibit operations for which a market demand exists. Harmonization is the process of reducing substantive differences between U.S. regulations and those of other nations. Harmonization of aircraft certification requirements helps open international markets to aircraft manufacturers located in participating nations.

A rapidly growing segment of general aviation is fractional ownership. Several companies have expressed interest in offering fractional ownership of helicopters. For a variety of reasons, including speed and operating range, fractional ownership of helicopters will need to be configured differently than it is for business jets.

HELICOPTER FORECASTS

The forecasts of the rotorcraft fleet and flight hours discussed in this section are presented in tabular form in Chapter X, Table 35. Many of the assumptions used to develop these forecasts were derived from discussions with industry experts—including consultants, manufacturers, and industry associations--and from reports presented at meetings of the TRB subcommittee on Civil Helicopter Aviation and the 12th FAA/TRB International Workshop.

The rotorcraft forecasts for active fleet, utilization rates, hours flown, and fuel consumed use the data obtained from the 2002 GA Survey as the base year. Therefore, the forecast period for these four activity measures extends from 2002 through 2015. References to the average annual growth rates for the forecast period include 13 years (2003 to 2015). Forecasts for certificated pilots are based on 2003 data obtained from the airmen certification records maintained at the FAA Aeronautical Center in Oklahoma City. References to average annual growth rates for pilots include 12 years (2004 to 2015).

ACTIVE FLEET

The active rotorcraft fleet is expected to grow from 6,648 in 2002 to 7,210 in 2015, an average annual increase of 0.6 percent over the 13-year forecast period.

The number of turbine rotorcraft is expected to total 4,510 by 2015--an increase of 5.0 percent over the 2002 level. The turbine rotorcraft fleet is forecast to decrease by 1.1 percent in 2003 then increase at an average annual rate of 0.6 percent over the remaining 12 years of the forecast period. Turbine powered rotorcraft are expected to account for 62.6 percent of the rotorcraft fleet in 2015, down 2.0 percentage points from its share of 64.6 percent in 2002.

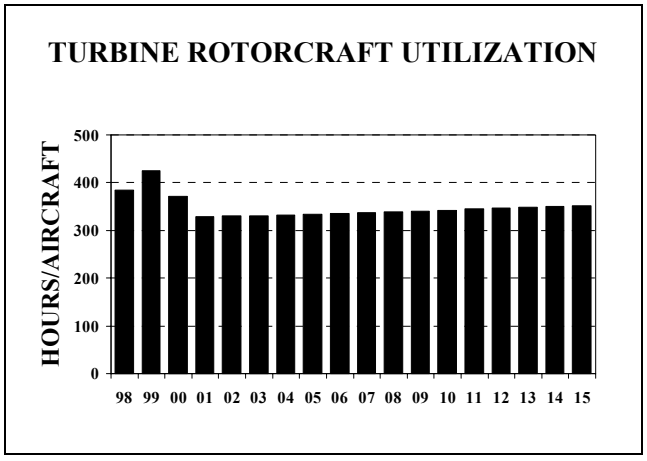
The piston rotorcraft fleet is expected to increase by 2.1 percent in 2003 and then

increase 1.1 percent annually for the rest of the forecast period. The piston fleet reaches a total of 2,700 by 2015--an annual increase of 1.1 percent over the 13-year period.

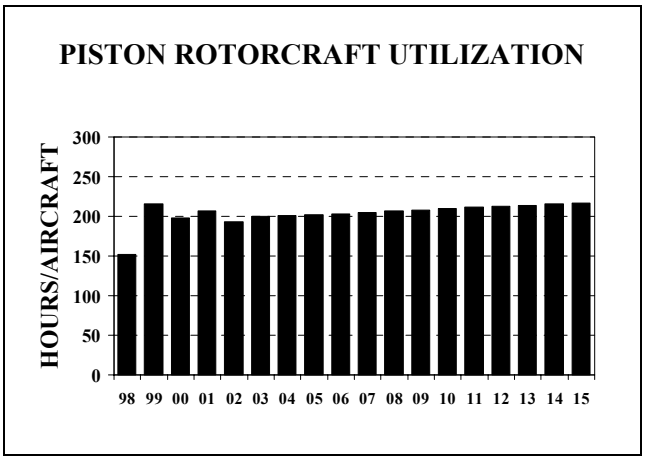
UTILIZATION

The annual utilization rate for all rotorcraft decreased from 288.0 hours in 2001 to 282.1 hours in 2002, down 2.0 percent. However, this relatively small decrease conceals the fact that the piston utilization rate decreased 6.8 percent while the turbine rotorcraft rate increased by 0.5 percent.

Utilization rates for all rotorcraft are expected to increase from 282.1 hours in 2002 to 292.0 in 2015, an annual increase of 0.3 percent. Turbine-powered helicopter utilization is expected to increase by 0.3 percent annually, from 331.0 hours in 2002 to 345.9 hours in 2015.



Piston-powered rotorcraft increase at an annual rate of 0.3 percent over the period, from 192.9 hours in 2002 to 201.9 hours in 2015.



FLIGHT HOURS

Total rotorcraft hours flown are forecast to increase from 1.9 million in 2002 to 2.1 million in 2015, an average annual increase of 0.9 percent. Total flight hours for turbine-powered rotorcraft are projected to increase by 0.7 percent annually, from 1.4 million in 2002 to 1.6 million in 2015. Flight hours for the piston powered portion of the rotorcraft fleet are expected to increase from 453 ,546 hours in 2002 to 555,000 hours in 2015, an average annual increase of 1.4 percent.

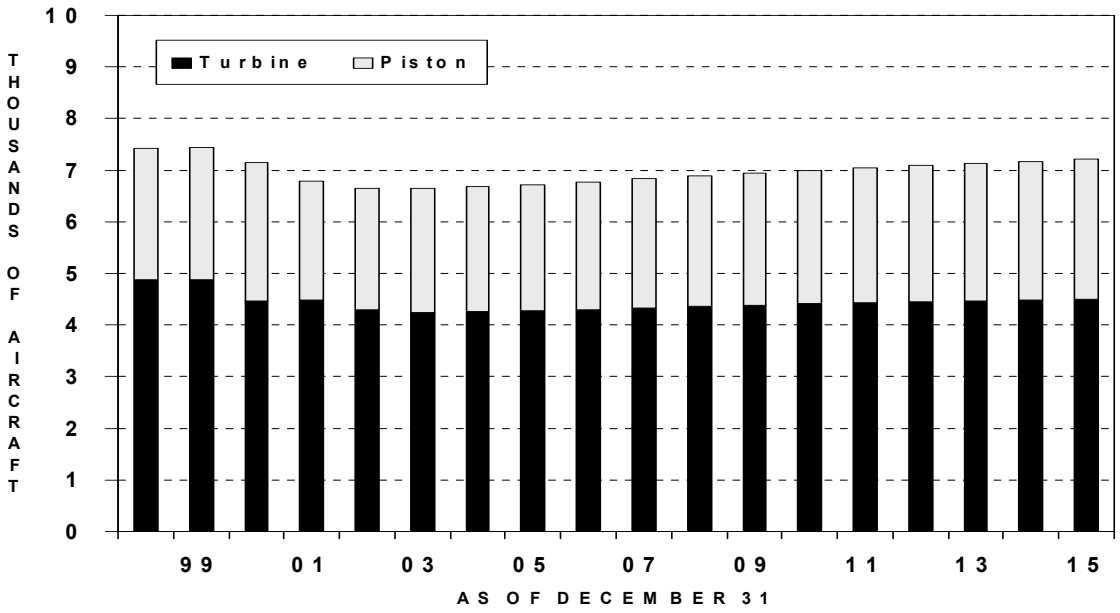
HELICOPTER PILOTS

The number of rotorcraft only pilots is expected to increase at an annual rate of 1.0 percent over the period, rising from 7,918 in 2003 to 8,970 in 2015. This is below the 1.4 percent annual rate of increase expected for the overall pilot population and reflects the relatively slow growth projected in the rotorcraft fleet.

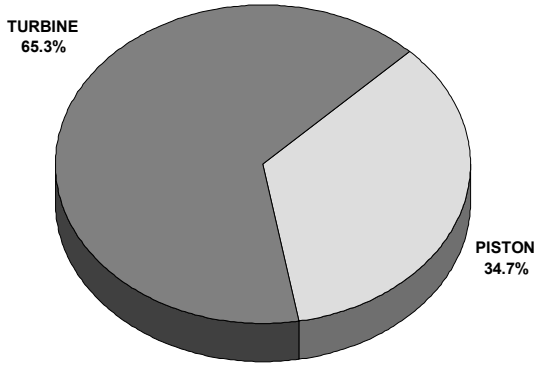
FUEL CONSUMED

In 2002, rotorcraft fuel consumption was estimated at 53.4 million gallons--7.8 million

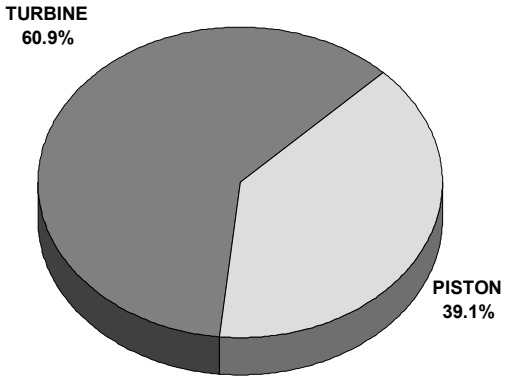
ACTIVE ROTORCRAFT



PERCENT BY AIRCRAFT TYPE

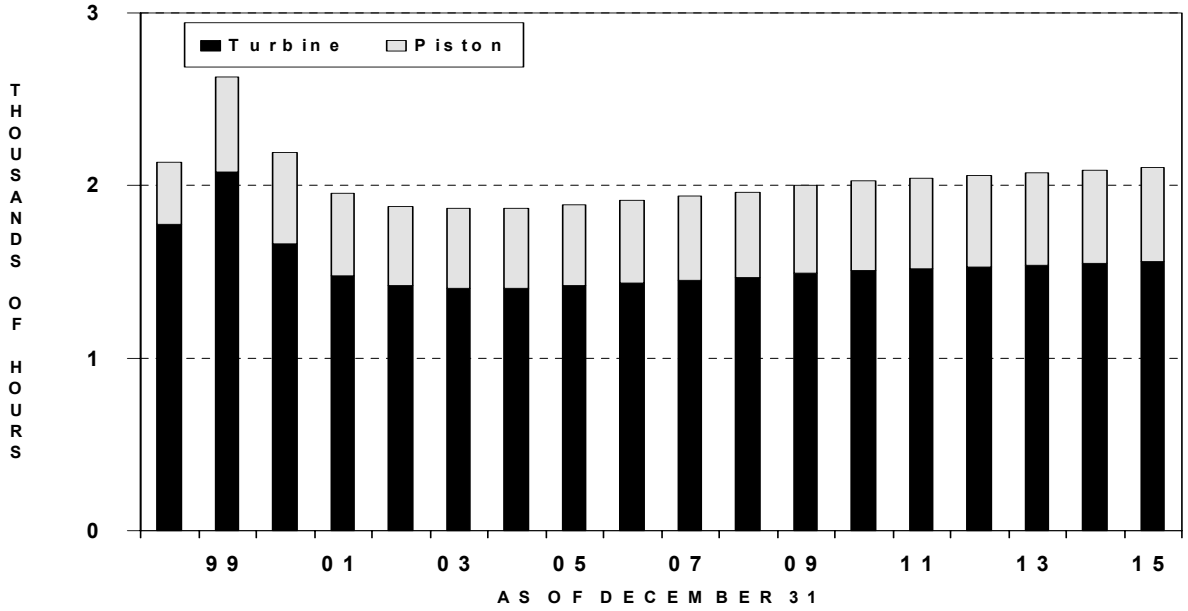


2002

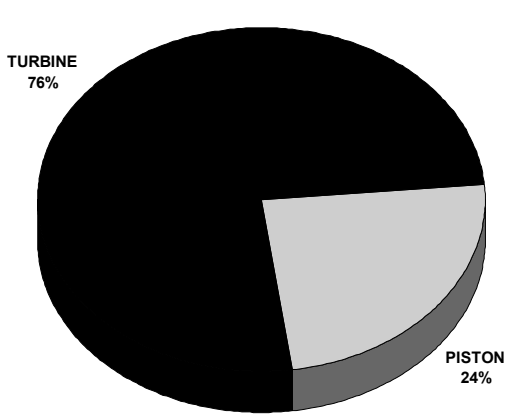


2015

ROTORCRAFT HOURS FLOWN



PERCENT BY AIRCRAFT TYPE



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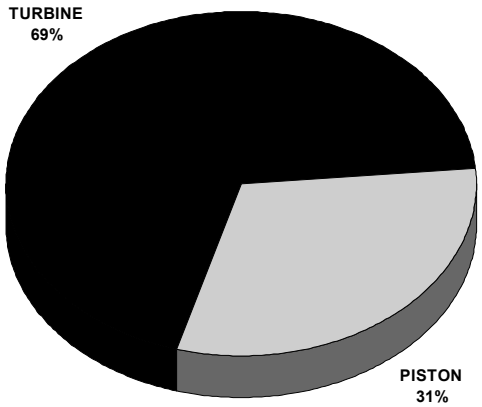


2015

gallons by piston powered helicopters and 45.6 million gallons by turbine powered helicopters. By 2015 total fuel consumption by rotorcraft is projected to total 60.5 million gallons, 13.3 percent higher than the 2002 level. Fuel consumed by turbine-powered helicopters is forecast to be 51.8 million gallons by 2015, a 13.5 increase over 2002. Fuel consumed by piston-powered helicopters is expected to reach 8.7 million gallons by 2015**,** an 11.5 percent increase over 2002.

CHAPTER VII

FAA WORKLOAD MEASURES

The FAA provides the aviation community with three distinct air traffic services: 1) air traffic control tower service at FAA and contract towered airports; 2) traffic surveillance and aircraft separation by air route traffic control centers (ARTCC); and 3) flight planning and pilot briefings at flight service stations (FSS). All four aviation system user groups--air carriers, commuter/air taxi, general aviation, and military--use these FAA operational services to enhance the flow and safety of aviation traffic.

Because the four aviation system user groups differ in the demands they impose on the air traffic system, multiple indicators are used to describe the total FAA operational workload. No single measure typifies past trends or future demand for the services provided by the FAA.

REVIEW OF 2003[1]

During 2003 the number of FAA towered airports remained unchanged at 266, while the number of contract towered airports increased by one to 218. Between 1990 and 2000, the number of FAA towered airports declined by 136, and the number of contract towered airports increased by 214. However, the number of FAA towers has remained constant at 266 since 2000 and is expected to remain at that number throughout the duration of the forecast.

The addition and/or removal of airports to/from FAA air traffic counts make comparisons to previous year's activity levels difficult, if not impossible. To overcome these discontinuities, the FAA reports air traffic activity at FAA and contract tower facilities on both an individual as well as a combined basis. Activity at FAA air route traffic control centers is not affected by the tower conversions.

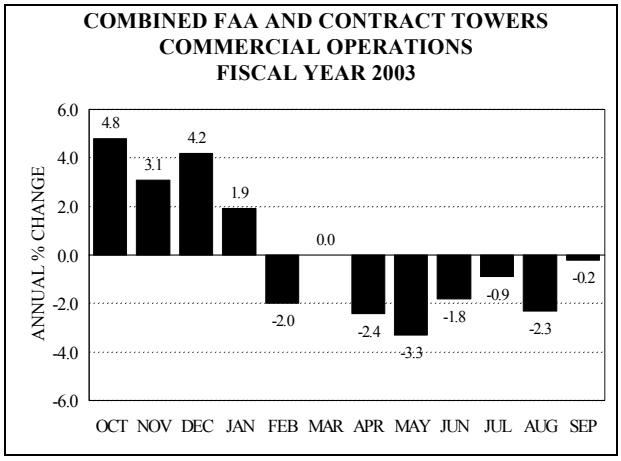
TOWER ACTIVITY

Combined FAA and Contract Towers

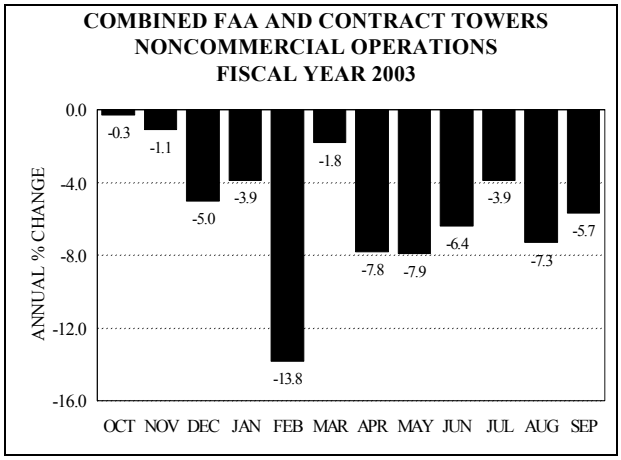
Aircraft activity at the 483 FAA and contract towered airports totaled 62.7 million operations, down 3.3 percent from 2002. In 2003, commercial activity was unchanged from 2002

[1] All specified years are fiscal years (October through September 30), unless designated otherwise.

as declines in the second half of the year offset increases in the first half. Air carrier operations driven by declining traffic and schedule reductions following the beginning of the Iraq war and the outbreak of SARS were down 2.9 percent.



Operations by commuter/air taxi increased 3.6 percent in 2003, to 11.4 million. Much of the growth was the result of the transfer of lower density, short-haul markets to commuters, especially the regional jet operators. In addition, growth in recent years has been stimulated by commuter code-sharing and schedule tie-in agreements with the larger commercial air carriers.



Noncommercial activity (the sum of general aviation and military operations) decreased 5.4 percent in 2003 driven by a fall in general aviation activity. General aviation operations were down 5.5 percent with every month posting negative growth. General aviation itinerant operations were down 5.5 percent and local operations declined 5.6 percent. Military activity was down 1.8 percent with itinerant operations down 1.5 percent and local activity down 2.2 percent.

FAA Towers

On September 30, 2003, there were 266 FAA towered airports. Aircraft operations at these airports totaled 47.0 million, down 3.2 percent from 2002. Of the four users of the system, only commuter/air taxi operations increased during the year, up 4.4 percent. The other users of the system--air carrier, general aviation, and military were down 3.0, 6.2, and 4.3 percent, respectively.

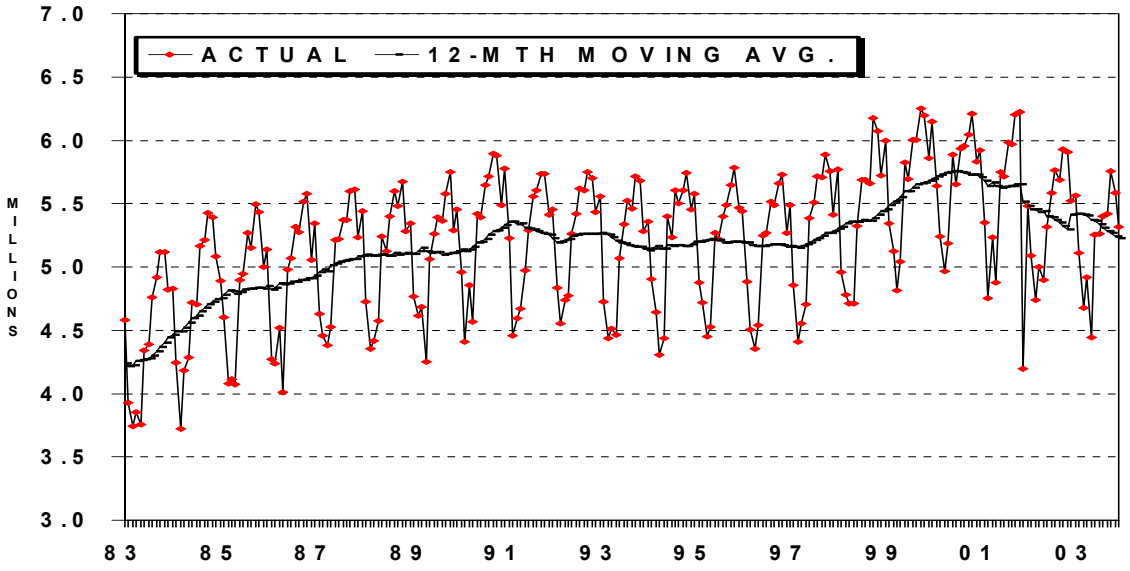
Contract Towers

On September 30, 2003, there were 218 contract towers funded either partially of fully by the FAA. Aircraft activity totaled 15.7 million operations, down 3.6 percent from 2002. Commercial activity decreased 1.5 percent, while noncommercial activity fell 3.8 percent. In 2003 commuter/air taxi operations decreased 1.7 percent while air carrier activity remained flat. General aviation operations decreased by 4.3 percent while military operations rose 2.9 percent. General aviation continues to dominate activity at FAA contract towers, accounting for 82.1 percent of total operations.

Monthly operation counts for the 266 FAA towered airports and the 218 contract towers, by user group, can be found on the internet at: http://www.apo.data.faa.gov/.

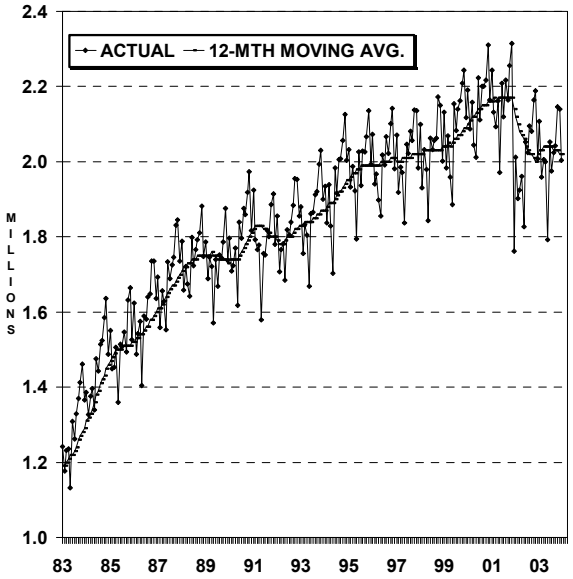
COMBINED FAA AND CONTRACT TOWERS: AIRPORT OPERATIONS

TOTAL OPERATIONS



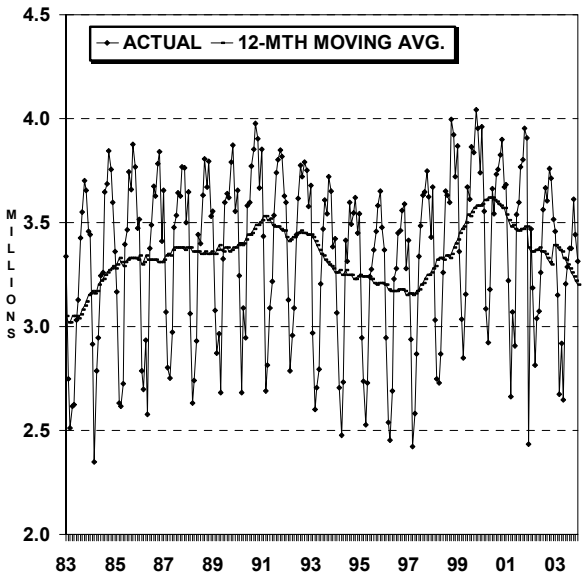
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH

NONCOMMERCIAL OPERATIONS

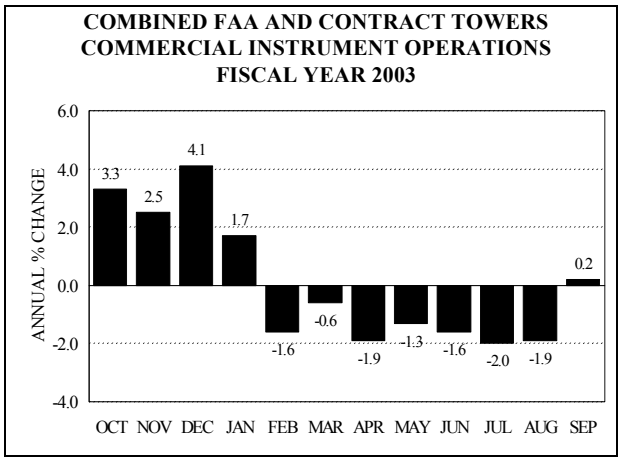


FISCAL YEAR BY MONTH

INSTRUMENT OPERATIONS

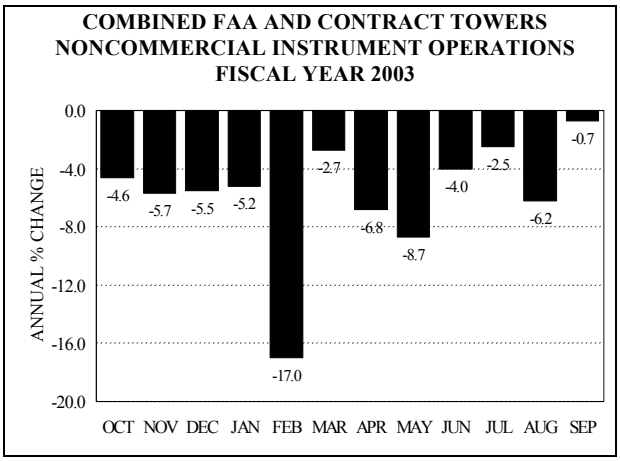
Combined FAA and Contract Towers

Instrument operations handled at combined FAA and contract towers totaled 48.2 million, down 2.7 percent from the 2002 activity level. In 2003, FAA towers accounted for 98.3 percent of combined total instrument operations.



Commercial instrument operations remained flat with 2002 levels at 26.3 million. Increases in the first 4 months of the year were offset by decreases in the last 8 months of the year, reflecting the SARS outbreak and the beginning of the Iraq war. Air carrier activity was down 2.7 percent for the year, while commuter/air taxi instrument operations increased 3.3 percent.

Noncommercial instrument operations fell 5.7 percent to 21.9 million. Year over year decreases in activity were recorded in every month. General aviation operations were down 5.2 percent for the year, but still accounted for 38.6 percent of total instrument operations. Military operations fell 8.3 percent, and accounted for only 6.8 percent of the total.



FAA Towers

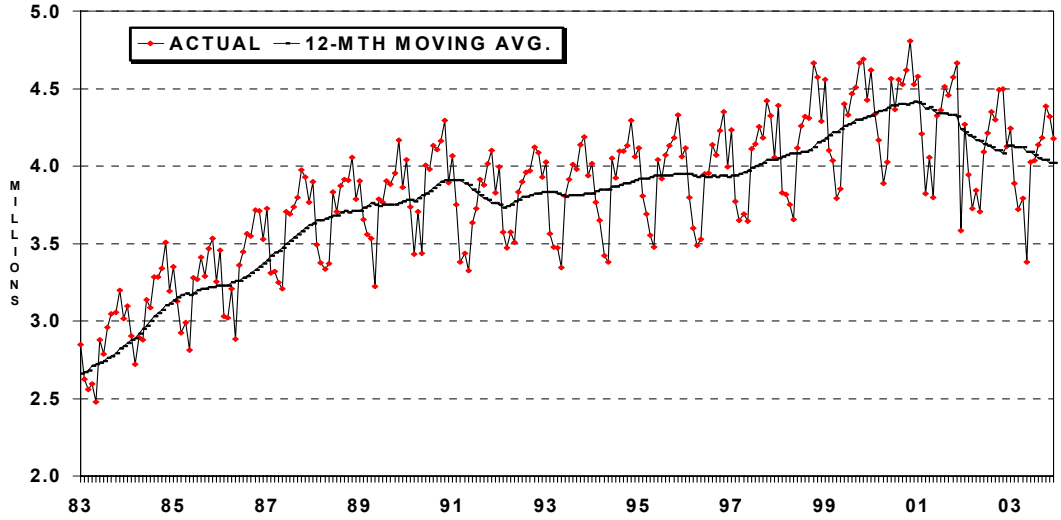
Instrument operations at the 266 FAA towered airports totaled 47.4 million, a decrease of 2.7 percent. Commercial activity was flat, while noncommercial operations fell 5.8 percent. In 2003, only commuter/air tax activity increased, up 3.4 percent. Air carrier, general aviation, and military instrument operations decreased 2.6, 5.3, and 8.5 percent, respectively.

Contract Towers

Instrument operations at FAA contract towered airports totaled 813,400, down 0.1 percent from 2002. Commercial activity decreased 1.3 percent, while noncommercial activity was up 1.8 percent. In 2003, air carrier instrument operations at FAA contract towers recorded the only decrease in activity, down 6.1 percent. Commuter/air taxi and military instrument operations each increased 0.3 percent while general aviation instrument operations increased by 2.1 percent.

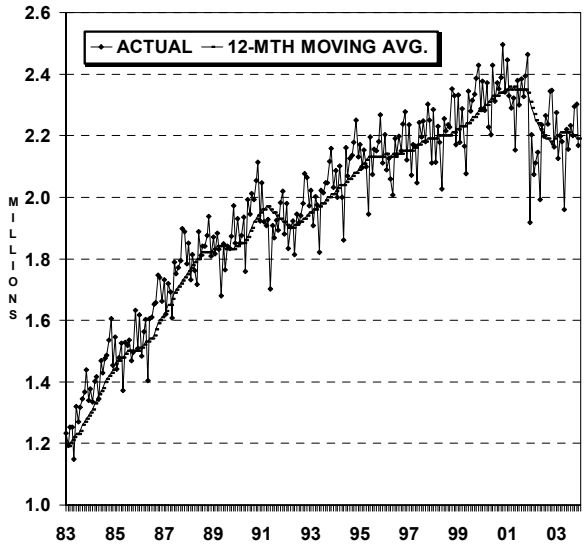
COMBINED FAA AND CONTRACT TOWERS: INSTRUMENT OPERATIONS

TOTAL OPERATIONS



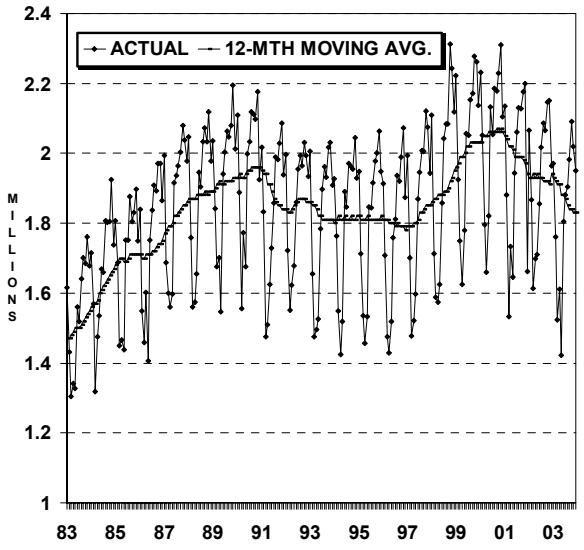
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH

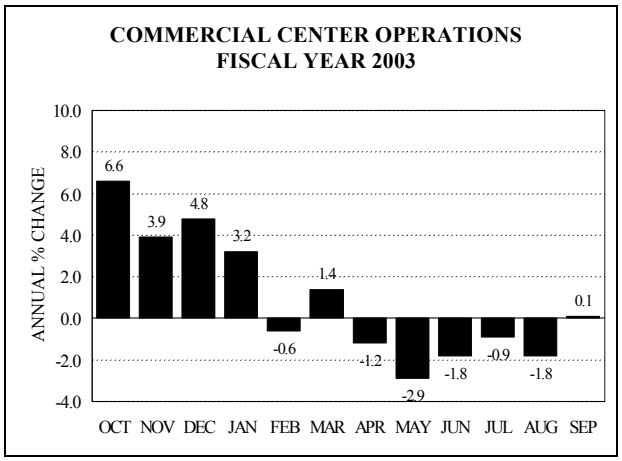
NONCOMMERCIAL OPERATIONS



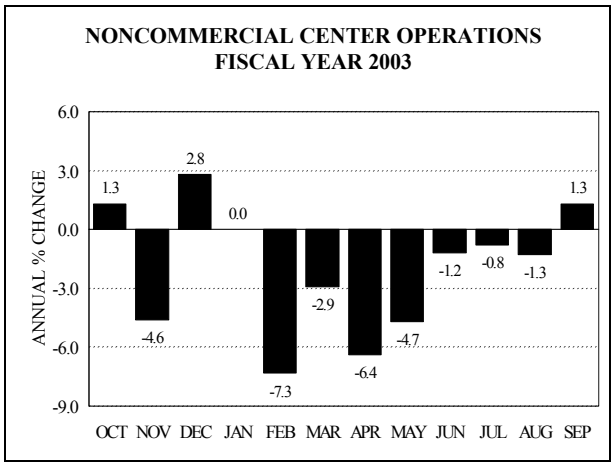
FISCAL YEAR BY MONTH

CENTER ACTIVITY

In 2003, the number of aircraft flying under Instrument Flight Rules (IFR) handled by FAA ARTCCs totaled 43.7 million, unchanged from the 2002 activity counts. The number of commercial aircraft handled at the Centers (31.9 million) rose 0.8 percent in 2003 with year over year increases occurring during the first half of the year. The number of air carrier aircraft handled totaled 22.7 million (down 0.3 percent), while the number of commuter/air taxi aircraft handled totaled 9.1 million (up 3.8 percent).



The number of noncommercial aircraft handled (11.9 million) fell 2.0 percent. After posting increases in 3 of the first 4 months of the year, year-over-year changes in noncommercial aircraft posted declines in the remaining months except for September. The number of general aviation aircraft handled totaled 8.0 million (down 2.2 percent), while military activity totaled 3.9 million (down 1.7 percent).



FLIGHT SERVICE STATION ACTIVITY

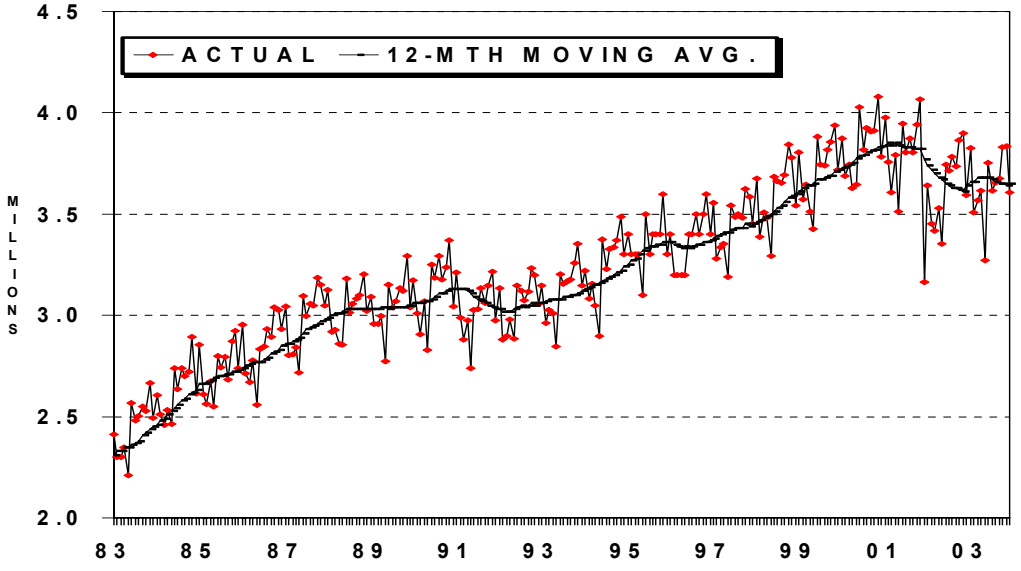
Total flight services, encompassing pilot briefings, flight plans filed, and aircraft contacts recorded by FAA Flight Service Stations (FSS) totaled 27.7 million in 2003, down 6.0 percent from 2002 activity levels. In 2003, the number of aircraft contacted fell 5.4 percent to 2.81 million, the number of pilot briefings declined by 6 percent to 7.01 million, and the number of flight plans originated decreased 6.1 percent to 5.42 million.

The FAA also provides automated flight services, which supplement FSS activity. The Direct User Access Terminal System (DUATS) provides an alternative to the FSS for obtaining pilot briefing information and filing flight plans. Use of this service was introduced in February 1990.

In 2003, total DUATS transactions (including flight plans) totaled 17.5 million, an increase of 6.0 percent over 2002. The number of flight plans filed through DUATS rose 10.3 percent to 1.3 million. The number of DUAT transactions (excluding flight plans) increased 5.3 percent in 2003, from 7.1 million in 2002 to 7.5 million.

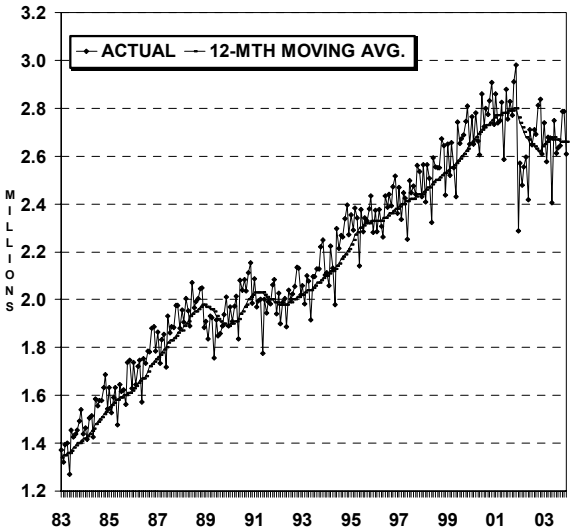
FAA AIR ROUTE TRAFFIC CONTROL CENTERS: IFR AIRCRAFT HANDLED

TOTAL AIRCRAFT HANDLED



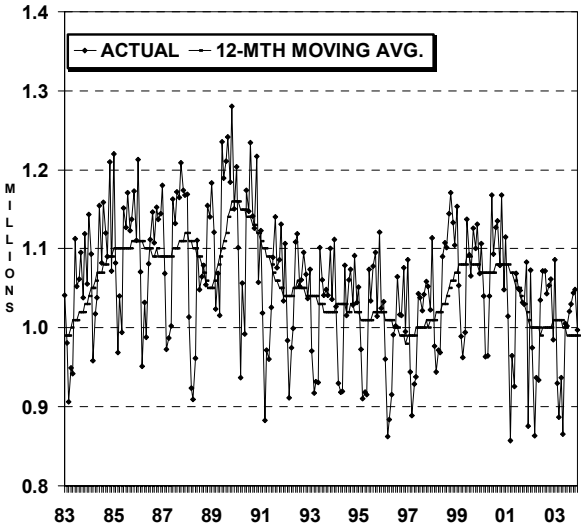
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS

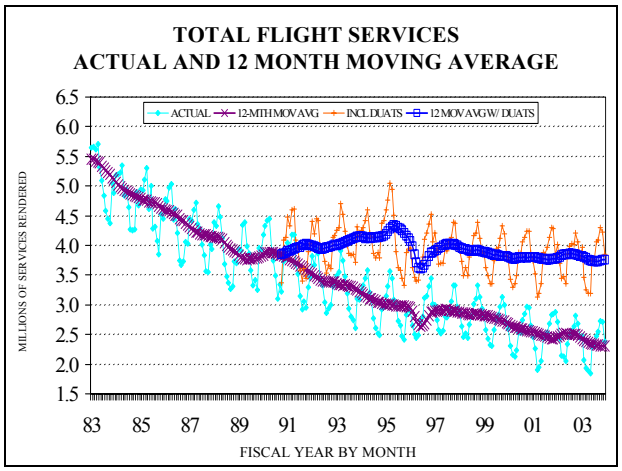


FISCAL YEAR BY MONTH

NONCOMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH



When these DUAT services are included with traditional FSS services, total flight services fell from 45.9 million in 2002 to 45.2 million in 2003, a decrease of 1.7 percent.

FORECAST ASSUMPTIONS

Forecast growth in FAA workload measures includes not only the demand imposed on the existing National Airspace System, but also aviation activity at new locations not previously provided with FAA services. Workload forecasts are presented for combined FAA and contract towers, and separately for FAA facilities and contract towers.

NUMBER OF FAA FACILITIES

There were 266 FAA towered airports on September 30, 2003. There are 148 radar service areas--47 terminal radar service areas, 15 class B (terminal control areas), and 86 class C (airport radar service areas). The number of FSSs and AFSSs totaled 75 on September 30, 2003: 61 AFSSs and 14 Alaskan rotational FSSs.

In 2004, the number of contract tower airports will increase from 218 to 231 and are assumed to remain at that level over the remainder of the forecast period. The number of FAA towers is assumed to remain at 266 throughout the forecast period.

COMMERCIAL AVIATION: RISKS AND UNCERTAINTIES

Although growth in demand for commercial aviation services is based upon continued growth in the U. S. economy, lower industry operating costs, lower fares, lower fuel costs, and financial stability, there is uncertainty associated with these forecasts. A number of events could alter the short and long-term environment, and cause demand to differ substantially from the projections presented in this report. Also, structural changes in the industry could change the mix of operations at FAA facilities.

The events of September 11th have had a significant impact on the demand for aviation services. A rebound from the lows in 2003 is forecast to begin in 2004 and then a return to long-term growth trends is assumed beginning in 2006. Increased demand is initially met by utilizing the existing fleet more intensively and by achieving higher load factors. Ultimately the increase in demand leads to increases in aviation activity.

The introduction of state-of-the-art jet aircraft into the regional/commuter fleet coupled with the financial aftermath of September 11th is significantly altering the route system of the industry. These new aircraft are greatly expanding the number of markets that regional/commuters can serve. Should the number of route transfers or new markets greatly

exceed current expectations, commuter/air tax operations at FAA facilities could be higher than currently forecast. Conversely, air carrier operations would be lower.

Further, with the financial condition of the U.S. airline industry poor, it is conceivable that one or more of the existing carriers will not survive. If the structure of the industry were to change as a result of a failure of a major carrier, it is likely that operations at some FAA facilities would be greatly impacted.

WORKLOAD FORECASTS

METHODOLOGY

The workload measures for airports with air traffic control towers are the number aircraft operations (sum of landings and takeoffs) and instrument operations (arrivals and departures at primary and secondary airports, and overflights). The workload measure for ARTCCs is the number of aircraft handled (sum of departures, landings, and overflights for aircraft operating under instrument flight rules). For flight service stations, the workload measures are flight plans filed, pilot briefings, and aircraft contacts. The workload measures are developed by user category for all three components of the air traffic control system.

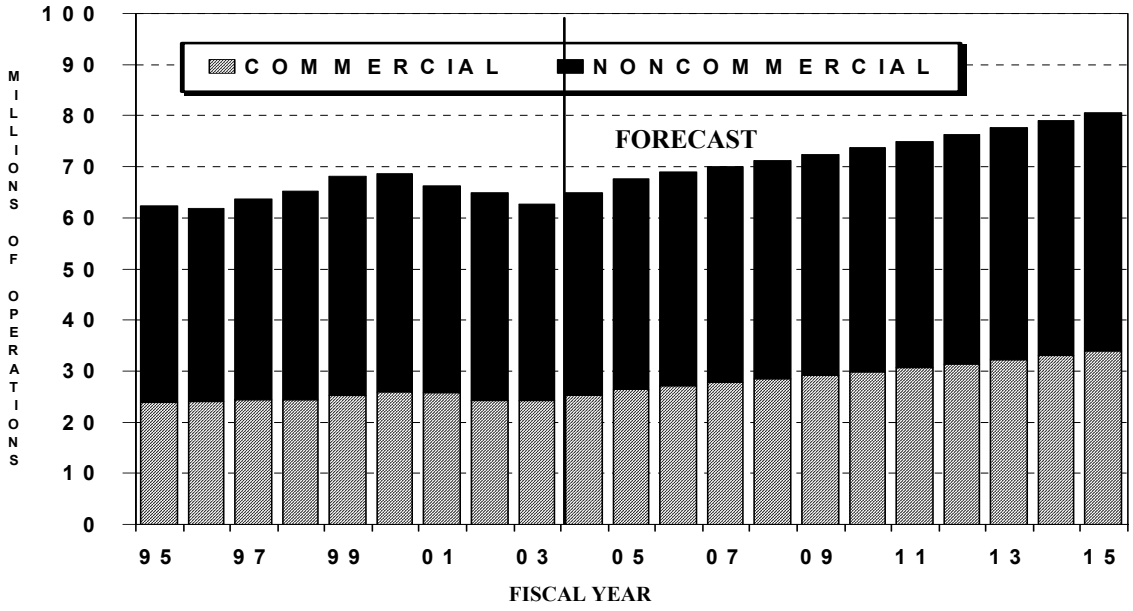
Projections of total operations for commercial air carriers and commuter/air taxis at airports with air traffic control towers are based upon forecasts of Available Seat Miles (ASMs), and assumptions regarding average seats per aircraft, and aircraft stage length. Specifically, if the average number of seats per aircraft is divided into the forecast of ASMs, an estimate of the number of aircraft miles in the system is derived. The average aircraft stage length is then divided into the forecast of aircraft miles in order to derive an estimate for departures. For both air carriers and cargo operators, estimates are made for both international and domestic departures. An estimate of total operations for the air carrier and commuter/air taxis is derived by doubling the number of departures. Forecasts of general aviation airport operations are developed from projections of general aviation hours flown and the general aviation fleet.

Forecasts of instrument operations for airports with air traffic control towers, and the workload measures for ARTCCs and flight service stations are derived from the forecasts of airport operations by user category. With the exception of service at the 13 new contract towers, military operations are assumed to remain at current levels throughout the forecast period.

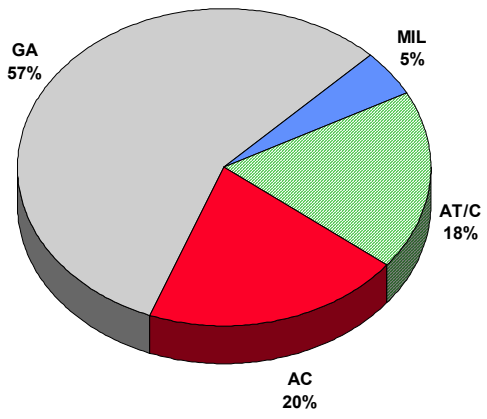
TOWER ACTIVITY

It is assumed that the number of FAA control towers will remain constant at 266 throughout the forecast period. The number of contract towers is expected to increase by 13 to 231 in 2004 and remain at that level for the duration of the forecast. It is assumed that the 13 new towers will be phased in throughout 2004. As such, the addition of the new towers will impact contract tower operations in both 2004 and 2005.

AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP



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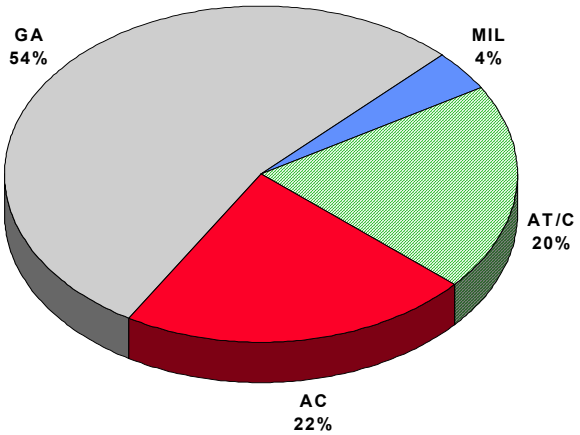


2015

Combined FAA and Contract Towers

During the 12-year forecast period, operations at FAA and contract towered airports grow to 80.5 million by 2015, increasing 2.1 percent annually on average. Growth in tower activity in 2004 is projected to increase 3.4 percent with increases in all activity categories. As the demand for aviation services recovers so does the level of activity. For the balance of the forecast from 2005 to 2015, tower activity is projected to increase an average of 1.8 percent per year. Commercial activity is forecast to grow at relatively faster rates than general aviation. Air carrier operations share of the combined towered airport activity increases 1.9 points from 20.4 percent in 2003 to 22.3 percent in 2015 while the commuter/air taxi share increases 1.7 points from 18.2 percent in 2003 to 19.9 percent. The general aviation share of activity declines from 56.6 percent in 2003 to 53.9 percent by 2015. Commuter/air taxi activity is projected to grow at rates faster than that forecast for the larger commercial air carriers during the early years of the forecast, with accelerating route transfers and increased use of regional jets the primary drivers.

In 2003, air carrier operations declined from 13.2 to 12.8 million operations, a 2.9 percent decrease. As the demand for commercial air travel recovers in 2004 and 2005, air carrier operations increase 2.2 and 4.2 percent respectively, and then grow an average of 2.7 percent per year for the remainder of the forecast period. However, air carrier operations do not return to the 2000 level of activity until 2009. For the entire 12-year forecast period, air carrier operations increase at a rate of 2.8 percent annually.

Commuter/air taxi activity grows an average of 5.4 percent per year in 2004 and 2005 and then increases at a 2.3 percent annual rate over the remainder of the forecast. Over the 12-year forecast period, commuter/air taxi operations grow an average of 2.9 percent annually, increasing from 11.4 to 16.0 million operations. General aviation activity increases 3.2 percent in 2004 and 4.2 percent in 2005, primarily due to the addition of 13 new contract towers. For the remainder of the forecast, general aviation operations increase at a rate of 1.3 percent per year. For the entire forecast period, general aviation operations increase from 35.5 to 43.4 million operations (1.7 percent annual growth). Itinerant general aviation operations are forecast to increase 21.8 percent over the period, while local general aviation operations are projected to increase 23 percent over the period. Total military operations are projected to increase to 3.1 million by 2005 then remain at that level throughout the balance of the forecast period.

Commercial aircraft activity at combined towered airports is projected to increase 4.0 percent in 2004, with increases in both air carrier and commuter/air taxi activity. By 2005, commercial aircraft activity returns to the level of activity in 2000, the worst year on record for delays. Should activity increases occur without an increase in system capacity, significant congestion problems may result.

However, the mix of traffic will be significantly different than existed in 2000. In 2000, air carrier operations accounted for 58.5 percent of total commercial operations. By 2005, it is expected that the air carrier share of commercial operations will decline to 51.9 percent. The surge in regional jet activity adds to the complexity of the FAA workload. Regional jets need more separation then do the large jets operated by the air carriers, and the regional jets fly at the same altitudes as do larger jets, increasing congestion at the higher altitudes. In certain large hubs, such as Chicago O'Hare, the change in the mix of commercial operations is expected to be even greater. For the period 2005 to 2015, commercial activity increases at an average rate of 2.6 percent per year.

Commercial activity growth averages 2.8 percent annually during the 12-year forecast period, increasing from 24.2 to 34.0 million. Noncommercial activity increases at an average of 1.6 percent annually, from 38.5 million in 2003 to 46.5 million in 2015.

Forecasts for individual airports are contained in the FAA's Terminal Area Forecast and are available at the following website: http://www.apo.data.faa.gov/.

FAA Towers

In 2003, operations at the 266 FAA towered airports totaled 47.0 million, down 3.2 percent from 2002. For the 12-year forecast period, operations at FAA towered airports increase 2.0 percent a year. In absolute numbers, towered operations total 59.4 million in 2015.

Commercial aircraft activity at FAA towered airports is projected to grow 2.8 percent annually during the 12-year forecast period, from 22.5 to 31.5 million, exceeding the level of activity that occurred in 2000 by 2005. Noncommercial activity increases from its current level of 24.5 million to 28.0 million in 2015 (1.1 percent annually), and does not exceed the 2000 level of activity during the forecast period.

Contract Towers

In 2003, operations at the 218 contract towered airports totaled 15.7 million, a 3.6 percent decrease from 2002. The forecast assumes that 13 new contract towers are added in 2004. The vast majority of the increased activity at these towers is general aviation and military activity. During the 12-year forecast period, operations at contract towered airports increase at an annual rate of 2.5 percent, totaling 21.1 million in 2015. The additional activity of the new towers provides for significant growth in contract tower operations in both 2004 (7.4 percent) and 2005 (8.9 percent). Thereafter growth in contract tower activity will moderate.

Commercial aircraft activity at contract towered airports grows an average of 3 percent annually during the 12-year forecast period, increasing from 1.7 million to 2.5 million. Noncommercial activity grows slower, averaging 2.4 percent annually, increasing from 14.0 million in 2003 to 18.6 million in 2015.

INSTRUMENT OPERATIONS[2]

Combined FAA and Contract Towers

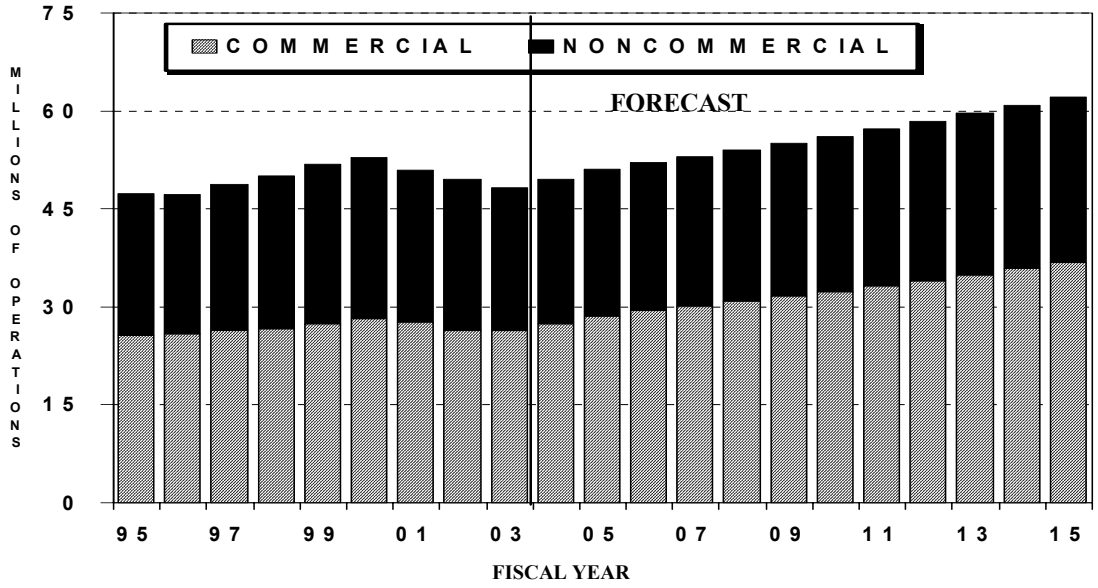
During the forecast period, combined instrument operations increase from 48.2 million operations in 2003 to 62.1 million operations in 2015, averaging 2.1 percent annually. In 2015, FAA towers will account for about 98.3 percent of combined instrument operations.

The mix of instrument operations is expected to change during the forecast period. Both the air carrier and commuter/air taxi share of total instrument operations increase significantly share over the forecast period (from 29.0 to 31.5 percent, and from 25.5 to 27.7 percent, respectively). General aviation's share declines from 38.6 percent to 35.4 percent over the 12-year forecast period.

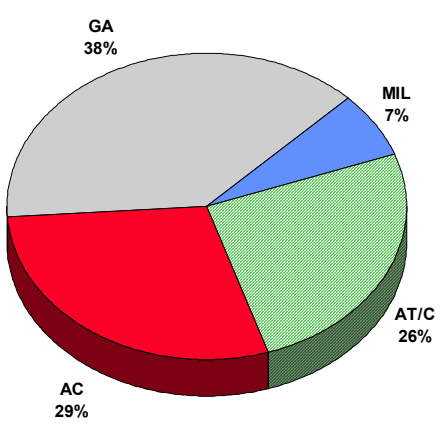
Air carrier instrument operations are forecast to increase 2.2 percent in 2004, then increase

[2] Instrument operations include arrivals and departures at both primary and secondary airports as well as overflights. Thus instrument operations totals at FAA towers are generally higher than aircraft operation counts at the same towers.

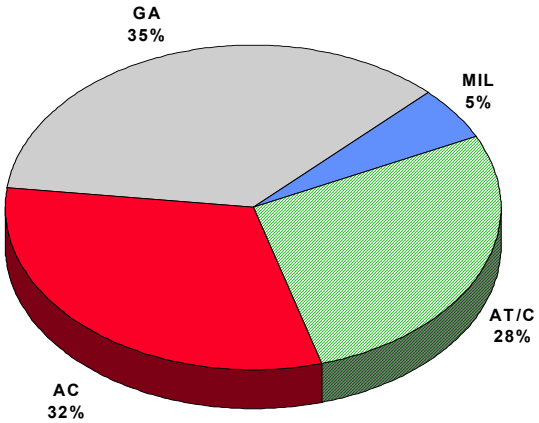
INSTRUMENT OPERATIONS AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP



2003



2015

4.4 percent in 2005 and grow 2.7 percent annually thereafter. During the entire 12-year forecast period, air carrier instrument operations increase 2.8 percent annually from 14.0 million to 19.6 million by 2015. Commuter/air taxi operations increase 5.2 percent per year through 2005, then grow 2.3 percent per year thereafter. For the 12-year forecast period, commuter/air taxi operations grow 2.8 percent annually, increasing from 12.3 million to 17.2 million.

General aviation operations rise 1.7 percent in 2004 and increase steadily thereafter and grow an average of 1.4 percent annually during the forecast period, increasing from 18.6 million to 22.0 million operations. Military activity decreased 8.3 percent in 2003 to 3.3 million, and remains at that level for the balance of the forecast.

During the 12-year forecast period, commercial activity increases 2.8 percent annually, from 26.3 million to 36.8 million. Noncommercial activity is forecast to increase 1.2 percent annually, from 21.9 million in 2003 to 25.3 million in 2015.

FAA Towers

Instrument operations at FAA towered airports are projected to increase 2.8 percent in 2004 with increases in all activity categories except military activity. For the 12-year forecast period, instrument operations at FAA towered airports increase at an average annual rate of 2.1 percent. In absolute numbers, FAA towered instrument operations reach 61.0 million in 2015.

Commercial instrument operations at FAA towered airports increase 3.9 percent in 2004 and 4.5 percent in 2005 mirroring the rebound in demand for commercial air transport. During the period 2005 to 2015, commercial instrument operations at FAA towered airports grow 2.6 percent annually. For the entire 12-year forecast period, commercial instrument operations increase from 25.8 million to 36.1 million, a rate of 2.8 percent annually. Noncommercial activity expands 1.2 percent annually, from 21.6 million in 2003 to 24.9 million in 2015.

Contract Towers

For the 12-year forecast period, instrument operations at contract-towered airports increase 2.1 percent a year, totaling 1.04 million in 2015.

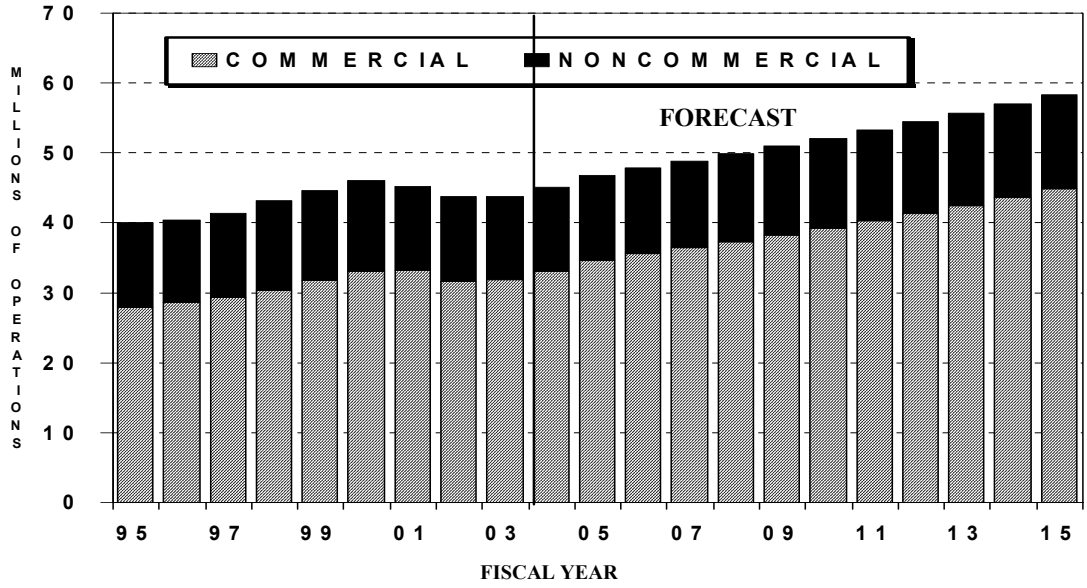
Commercial instrument operations at contract-towered airports grow at an average annual rate of 2.8 percent during the 12-year forecast period, increasing from 471,100 to 658,600. Noncommercial activity is forecast to increase from 342,300 in 2003 to 385,900 in 2015, growing at an average annual rate of 1.0 percent.

CENTER ACTIVITY

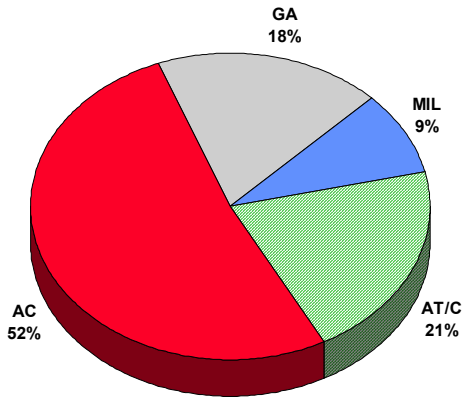
During the 12-year forecast period, the number of aircraft handled at centers increases 2.4 percent annually, expanding from 43.7 million aircraft handled in 2003 to 58.4 million in 2015. Aircraft handled rise 3.2 percent in 2004 with the largest increases occurring in commuter/air taxi and air carrier activity. Following a 3.6 percent increase in 2005, growth in aircraft handled averages 2.2 percent during the period 2005 to 2015.

The number of air carrier aircraft handled at centers is forecast to increase from 22.7 million in 2003 to 32.1 million in 2015, a 2.9 percent annual growth rate. Air carrier aircraft handled increase 3.0 percent in 2004 and 4.4 percent in 2005, then grow at an average rate of 2.7 percent per year between 2005 and 2015.

IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS



DISTRIBUTION OF WORKLOAD BY USER GROUP



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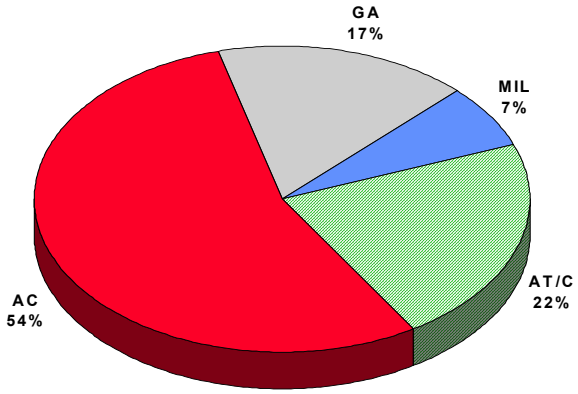


2015

Commuter/air taxi aircraft handled are expected to increase by 5.2 percent per year through 2005 and grow 2.8 percent annually for the 12-year forecast period, increasing from 9.1 million to 12.8 million. The relatively strong growth during the first three years of the forecast period reflects increases in the commuter stage length during this period.

General aviation aircraft handled increase 2.2 percent in 2004 and continue to increase steadily to total 9.7 million in 2015 (1.6 percent annual growth). Military activity decreased 1.7 percent in 2003 to 3.86 million and remains at that level throughout the forecast period.

Commercial activity grows at an average annual rate of 2.9 percent during the forecast period, increasing from 31.9 million to 44.9 million. Noncommercial activity increases 1.1 percent annually, increasing from 11.9 million in 2003 to 13.5 million in 2015.

The commercial aircraft activities' share of center workload is forecast to increase from 72.9 percent in 2003 to 76.8 percent in 2015. Between 2003 and the year 2015, the air carrier share is forecast to increase from 52.0 to 54.9 percent, while the commuter/air taxi share increases from 20.9 to 21.9 percent.

FLIGHT SERVICE STATION ACTIVITY

The introduction of new technology for flight service applications has significantly changed the operating environment of the flight service system. Viewed in the larger context of the total National Airspace System, the recent declining trend in non-automated flight services do not necessarily indicate declining demand for total flight planning services. Rather, they may indicate that demand is being met through increased use of automation and new system capabilities resulting in increased efficiency and productivity.

Non-automated Service

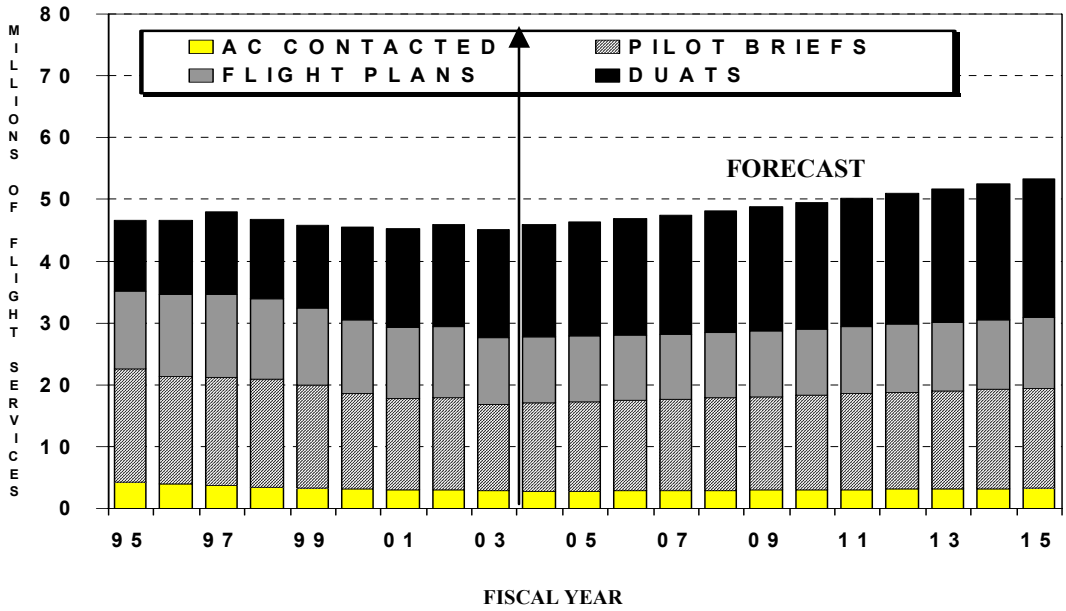
Total traditional (non-automated) flight services originating at FAA flight service stations are projected to post a small increase in 2004. In absolute numbers, the number of total flight services is expected to increase slightly to 27.8 million in 2004. For the balance of the forecast period FSS activity is projected to increase at modest rates. By the end of the forecast period, total flight services provided by the FAA flight service stations are projected to total 30.5 million.

The number of pilot briefings is projected to increase 2.3 percent to 7.17 million in 2004, and continue increasing slowly throughout the remainder of the forecast period. Over all, pilot briefs are projected to increase from 7.01 million in 2003 to 8.10 million in 2015, an average annual rate of 1.2 percent.

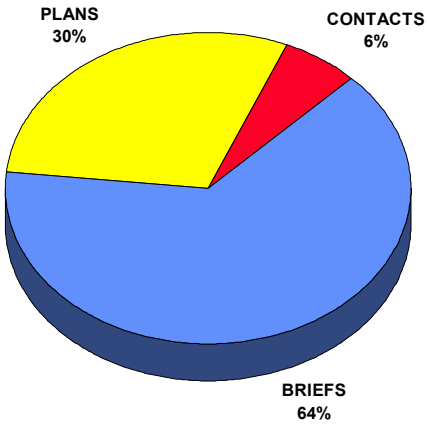
FSS flight plans originated at flight service stations are projected to decline 1.5 percent in 2004. After declining slightly through 2006, total flight plans originated are forecast to grow 0.9 percent per year for the duration of the forecast to total 5.7 million by the year 2015.

The number of aircraft contacted is forecast to decline 1.9 percent in 2004 and then increase steadily for the balance of the forecast. Aircraft contacted in 2015 total 3.2 million, up from 2.8 million in 2003, a 1.1 percent average annual increase.

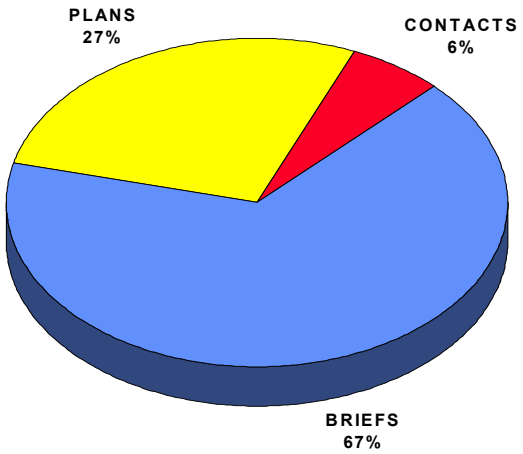
FLIGHT SERVICES ORIGINATED AT FAA FLIGHT SERVICE STATIONS



DISTRIBUTION OF WORKLOAD BY USER GROUP



2003



2015

Automated Service

Several factors resulting from automation will tend to dampen the growth in traditional FSS workload measures, as currently defined. First, pilots can now obtain weather briefings through the Telephone Information Briefing System (TIBS), which does not require contact with a flight service specialist, and is not, therefore, included in the FSS pilot briefings count.

Second, private weather briefing vendors, participating in memorandums of agreement with the FAA, can also provide weather briefings and file flight plans for their customers without going through an FSS. Third, starting February 1990, DUATS became operational. Using DUATS, pilots with access to a computer, modem, and telephone can directly access a national weather data base for weather briefings and flight plan filing without ever going through an FSS.

This automated access may be through the pilot's own computer or through those of fixed-based operators offering the service to their customers. None of the flight planning services provided through the above sources are included in the FSS workload measures.

During 2003 there were a total of 7.45 million DUATS transactions. If each transaction involves a weather briefing, this represents 7.45 million pilot briefs. In addition, approximately 1.3 million flight plans were filed through the DUATS system. Using the weighted total flight services formula (two times the sum of pilot briefs and flight plans filed), this translates into approximately 17.5 million total flight services that are not included in the FAA flight service station workload measure.

DUATS transactions are projected to increase from 7.5 million in 2003 to 7.8 million in 2004 (up 4.0 percent). During the period 2003 through 2015, DUATS transactions are forecast to increase at an average annual rate of 2.2 percent, reaching 9.6 million in 2015.

For the entire forecast period, flight plans filed through DUATS are expected to increase from approximately 1.2 million to 1.6 million in 2015, a 1.9 percent average annual increase. By the year 2015, total services provided through DUATS are projected to account for 22.5 million flight services, or 42.2 percent of total system services.

Total Flight Services

The decline in activity at FAA flight service stations since the mid 1980s is the result of the process of FSS consolidation, and the growing acceptance and utilization of DUATS services.

Total flight services, including non-automated and automated services, are expected to increase 0.4 percent in 2004 to 46.0 million. By 2015 total flight services are forecast to reach 53.3 million, an average annual increase of 1.4 percent over the 12-year forecast period.

CHAPTER VIII

FORECAST ACCURACY

The Federal Aviation Administration (FAA) has developed econometric forecast models and established a forecast process that attempts to anticipate changes that may affect the future direction of the aviation industry. Using this forecast process, the FAA annually provides 12-year forecasts of aviation demand and activity measures, that are, in turn, used for aviation-related personnel and facility planning. The FAA frequently sponsors workshops to critique techniques and practices currently used by the FAA and other aviation forecasters, and to examine the outlook for the aviation industry and its prospects for future growth. The workshops focus on the forecasting process and ways to improve the reliability and utility of forecasting results.

Tables VIII-1 and VIII-2 provide some measure of the accuracy of FAA projections of aviation demand and workloads at FAA facilities. The tables compare forecasts for both short- and long-term periods. The short-term period, 1 to 5 years, is the critical period for personnel planning; the long-term period, 10 years out, is important for facility planning. The two key FAA forecasts are domestic revenue passenger miles (RPMs) and aircraft handled at FAA en route centers, the former used as one of the predictors of the latter.

For short-term trends, forecast errors normally tend to be modest. However, evaluation of the 2003 forecasts demonstrates the impact that exogenous variables can have on forecast accuracy. As a result of the uncertain environment created by the Iraq War and Severe Acute Respiratory Syndrome (SARS), the 2003 domestic RPM forecast was 0.6 percent higher than the actual results for the year—452.8 billion compared to a forecast of 455.6 billion.[1] Despite these two events, the forecast error is the lowest one-year error recorded since 1997. Over the last 7 years, the average absolute 1-year RPM forecast error is 2.2 percent (2.5 percent for the 6 years prior to 2003, and 2.2 percent for the 5 years prior to 2002). The average 1-year forecast error is 0.2 percent for the 7 years--4 of the forecast years being underestimated and 3 of the forecast years being overestimated.

The forecast for aircraft handled in 2003 was 43.6 million compared to an actual of 43.7 million--resulting in the forecast being 0.4 percent lower than actual. The average absolute 1-year forecast

[1]The definition of air carriers was changed in 2002 to exclude regional/commuters reporting on Form 41. Previous forecasts were rebased using the new historical database and previous forecast growth rates.

TABLE VIII-1

U.S. LARGE COMMERCIAL AIR CARRIERS
SCHEDULED DOMESTIC REVENUE PASSENGER MILES (RPMs)
FORECAST EVALUATION

Year Being Forecast	Actual RPMs (Billions)	Forecast RPMs (Billions) Published -- Years Earlier					
		1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1996	412.7	399.3	406.1	383.2	405.5	403.0	465.0
1997	434.6	433.2	420.3	426.6	399.9	422.0	507.5
1998	444.7	453.0	451.6	441.0	443.8	414.9	509.2
1999	463.1	455.0	467.6	467.7	455.2	459.5	496.4
2000	490.0	479.0	466.1	482.4	484.1	469.6	492.6
2001	483.8	506.3	493.9	477.9	498.8	501.4	485.0
2002	443.2	425.8	527.0	515.7	505.7	528.8	509.8
2003	452.8	455.6	485.4	548.1	533.2	527.5	499.9
2004		***475.9***	473.0	507.7	571.7	556.2	553.3
2005			***502.6***	489.6	530.6	596.9	567.6
2006				***521.7***	506.5	553.1	622.1
2007					***539.4***	523.9	649.6
2008						***558.8***	650.4
2009							682.4
2013							***667.5***

Year Being Forecast	Forecast RPMs Percent Error Published--Years Earlier					
	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1997	(0.3)	(3.3)	(1.8)	(8.0)	(2.9)	16.8
1998	1.9	1.5	(0.8)	(0.2)	(6.7)	14.5
1999	(1.8)	1.0	1.0	(1.7)	(0.8)	7.2
2000	(2.3)	(4.9)	(1.6)	(1.2)	(4.2)	0.5
2001	4.7	2.1	(1.2)	3.1	3.6	0.3
2002	(3.9)	18.9	16.4	14.1	19.3	15.0
2003	0.6	7.2	21.0	17.8	16.5	10.4

Note on how to read this table: In 2002 the FAA forecast 455.6 billion RPMs would occur in 2003. In fact, 452.8 billion RPMs were recorded, meaning the forecast was 0.6 percent higher than actual.

The 2004 forecast is shown in bold italics.

TABLE VIII-2

FAA ARTCC AIRCRAFT HANDLED FORECAST EVALUATION

Year Being Forecast	Actual Activity (Millions)	Forecast Activity Level (Millions) Published -- Years Earlier					
		1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1996	40.4	41.1	40.7	39.4	40.0	41.1	44.0
1997	41.4	40.9	42.2	41.5	40.3	40.7	46.0
1998	43.2	42.0	41.8	43.4	42.4	41.1	46.1
1999	44.7	44.2	42.6	42.5	44.4	43.4	46.0
2000	46.0	45.7	45.2	43.2	43.5	45.3	47.1
2001	45.2	47.0	46.8	46.2	44.2	44.4	46.6
2002	43.7	43.2	48.1	48.0	47.3	45.2	45.1
2003	43.7	43.6	45.4	49.3	49.0	48.4	45.0
2004		***45.1***	44.8	46.5	50.4	50.1	47.3
2005			***46.8***	46.0	47.6	51.8	49.3
2006				***47.9***	47.0	48.6	48.5
2007					***48.9***	48.0	49.6
2008						***49.9***	54.2
2009							56.7
2013							***55.7***

Year Being Forecast	Forecast Activity Percent Error Published--Years Earlier					
	1 Year	2 Years	3 Years	4 Years	5 Years	10 Years
1997	(1.2)	1.9	0.2	(2.7)	(1.7)	11.1
1998	(2.8)	(3.2)	0.5	(1.9)	(4.9)	6.7
1999	(1.1)	(4.7)	(4.9)	(0.7)	(2.9)	2.9
2000	(0.7)	(1.8)	(6.1)	(5.5)	(1.6)	2.3
2001	4.0	3.5	2.1	(2.3)	(1.8)	3.0
2002	(1.2)	10.1	9.8	8.2	3.4	3.1
2003	(0.4)	3.8	12.7	12.0	10.6	2.9

Note on how to read this table: In 2002 the FAA forecast 43.6 million aircraft would be handled in 2003. In fact, 43.7 million aircraft were recorded, meaning the forecast was 0.4 percent lower than actual.

The 2004 forecast is shown in bold italics.

error over the last 7 years is 1.6 percent (1.8 percent for the 6 years prior to 2003, and 2.0 percent for the 5 years prior to 2002). The average 1-year forecast error is 0.5 percent, with 6 out of the last 7 forecasts underestimating the number of aircraft handled.

The 10-year out forecast errors tend to be larger because of unanticipated external events that have long-term impacts on the aviation system. Contributing external factors impacting the long-term forecasting accuracy of RPMs and aircraft handled include the 1991 Gulf War and the concomitant rise in fuel prices; the outbreaks of terrorism in 1986, 1991, and 2001; the Southeast Asian financial crisis in 1997-98; and the Iraq War along with the outbreak of SARS in 2003. Since the FAA does not use cyclical economic projections in preparing its long-term forecasts, the 2001 economic recession was not considered in any of the forecasts prepared prior to 2001.

For the 7-year period 1997 through 2003, the average absolute 10-year forecast error for domestic RPMs is 9.2 percent and the average absolute 10-year forecast error for aircraft handled is 4.6 percent. The evaluation of forecasts published in 1993 (for 2002) and 1994 (for 2003) indicate that the forecast errors for domestic RPMs was 15.0 and 10.4 percent, respectively. For aircraft handled, the error for the forecasts published in 1993 and 1994 was 3.1 and 2.9 percent, respectively. This statistical comparison highlights the significant impact that unanticipated exogenous events, or the lack thereof, can have on the long-term accuracy of the forecasts. It should be noted, however, that the errors for forecasts prepared prior to 2002 will continue to widen because of the events of September 11th.

THE FAA AVIATION FORECASTING PROCESS

INTRODUCTION

The FAA's forecasting process is a continuous and interactive one that involves the FAA Statistics and Forecast Branch, as well as other FAA offices, government agencies, and aviation industry groups. In addition, the process uses various economic and aviation databases, econometric models and equations, and other analytical techniques.

Forecasting aviation activity is an essential component of the FAA's planning process. The forecasts are used to determine staffing levels and capital expenditures required to accommodate the growth of aviation activity while maintaining a safe, secure, and efficient environment. The forecasts are also used for short-term budget preparation and trust fund analyses as well as cost-benefit and regulatory analyses.

The relative importance of the forecasting function in the planning process can be gauged by examining the National Airspace System (NAS) Architecture. The NAS architecture is a 15-year plan, with the first 5 years focusing on the Capital Investment Plan (CIP). The CIP identifies the short-term requirements for sustaining and improving the safety, security, and efficiency in the NAS. The sizable investments being made in the National Airspace System make it essential for the FAA to develop and use the most accurate and reliable forecasts possible. Thus, the periodic review and evaluation of the forecasting procedures, models, assumptions, and results constitute essential parts of the process.

The FAA considers over 100 variables when producing a set of national forecasts. Of these, four economic independent variables are obtained from

sources external to the FAA. Consequently, the FAA has no control over these truly exogenous variables. There are 12 quantifiable air carrier forecast assumptions and 3 quantifiable regional/commuter carrier forecast assumptions. These forecast assumptions are made by the FAA analysts who develop the forecast. There are 83 aviation variables that are not FAA workload measures, but influence the workload measures in one way or another. Finally, there are over 30 aviation variables that are workload measures used by the FAA for policy and planning considerations, and for personnel and investment planning.

Table VIII-3 at the end of this chapter contains a list of the variables, the sources of the data, and their relationship to the forecast process. Forecasts of the economic variables are developed outside the FAA. All other forecasts are developed by the FAA.

Research undertaken in the early- and mid-1970s indicated that some measures of economic activity (such as gross domestic product or total employment) and some measures of prices (for example, airline fares and aviation fuel prices) were useful predictors of aviation activity. Some unique events (including the failure of U.S. air carriers to follow rational pricing policies; e.g., the destructive fare wars of 1986 and 1992; the prolonged depressed state of the general aviation manufacturing industry; and the September 2001 terrorist attacks) have altered the relationships between key aviation variables and the economic variables used previously. It has been difficult, therefore, to produce economic or econometric models that predict aviation activity with the same degree of reliability as the models developed in earlier periods. Thus, for the present, the forecasters must rely to a greater degree on subjective judgment, evaluation, and expertise than was required previously. This is not at all unusual in times when significant structural changes are taking place in a volatile industry.

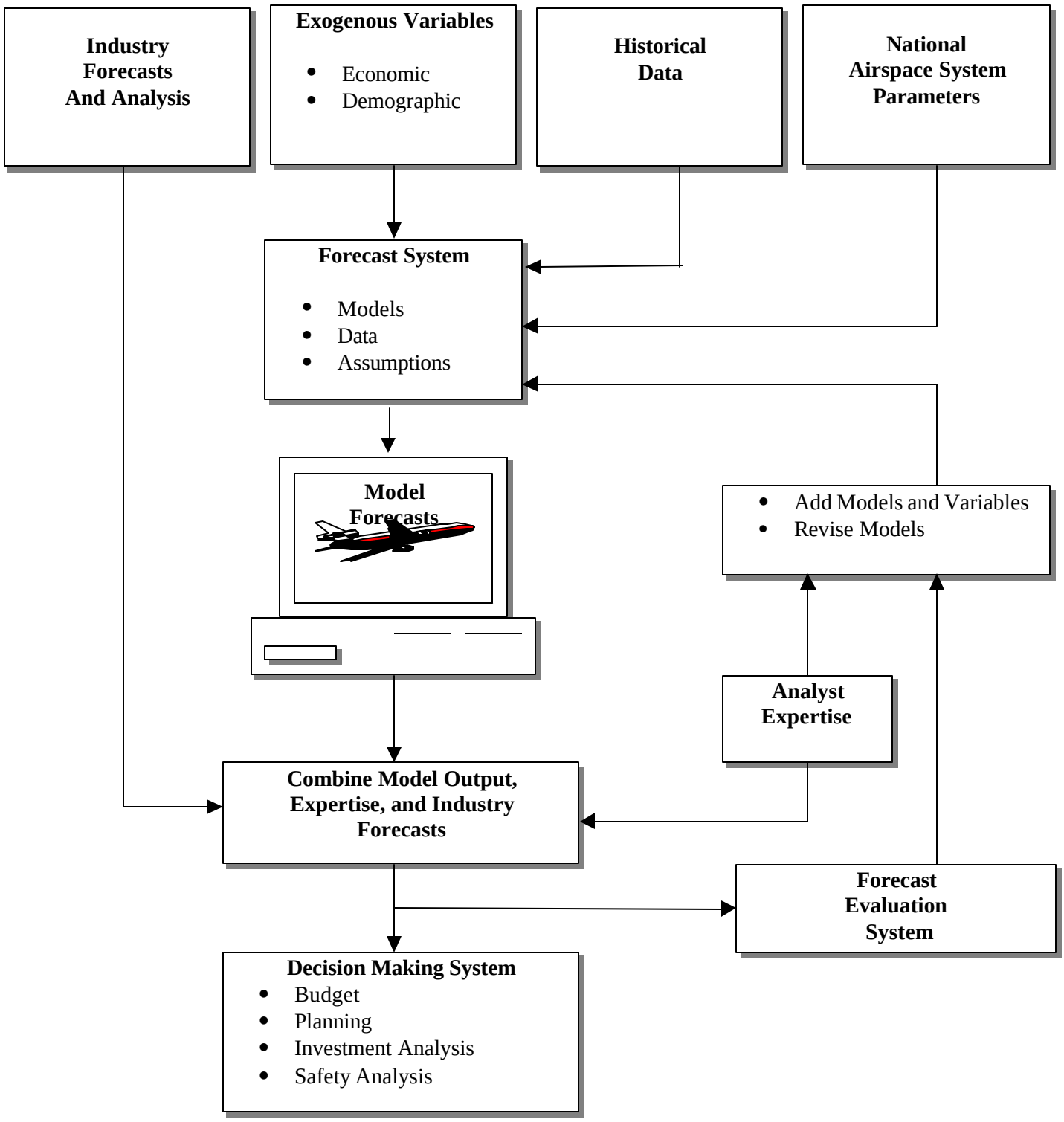
THE FAA FORECASTING PROCESS

During the past several years the FAA has adopted a decision-theoretic forecasting system. The approach is generally accomplished in two stages. Initially, projections are made with the use of econometric and time-series models. The model equations and outcomes are then adjusted based upon "expert industry opinion" to arrive at posterior forecasts for use in the decision-making process. The flow diagram on page VIII-6 shows a generalized version of the FAA aviation forecasting process.

In light of the Iraq War and the outbreak of SARS, this year's forecast process was similar to the process put in place after September 11th. Near-term forecasts (2004) were developed utilizing assumptions regarding capacity and expert judgment as to the degree and timing of the industry recovery. For the remaining years (2005-2015) the air carrier forecasts were based on results derived from econometric and time-series models. The regional/commuter forecast combined assumptions relating to capacity as well as results from econometric models. It is believed that optimum policy forecasts can only be achieved by combining model forecasts and judgment.

In general, these models are relatively simple descriptions of very complex systems, they cannot account for all the political, social, psychological, and economic factors and their interactions that will lead to a particular set of outcomes. Therefore, it is essential to use judgment to account for the complexities of the operating environment. This can be accomplished by adjusting the exogenous variables, adjusting the model outputs, or revising the models initial parameter estimates.

FAA FORECASTING SYSTEM



FORECASTING EVALUATION

It is important to evaluate the forecast results and to determine the causes of the deviations of the forecast values from the actual values observed in the real world. Large forecast errors can lead to inefficient allocation of resources which, in turn, could lead to capacity constraints and delays or to excess capacity in the National Airspace System. For this reason, the FAA continuously evaluates the forecasting process and its results.

The analysis of the errors generally identifies the causes of the deviations and helps determine the proportion due to improper model specifications, erroneous forecasts of independent variables, erroneous forecast assumptions, or incorrect judgments and opinions. If warranted, the forecast error analysis may lead to a reformulation or respecification of the model and to additions or deletions of independent variables, revisions of forecast assumptions, and/or changes in analysts' opinions and judgments about future events.

The evaluation of the forecast process proceeds on several fronts. On a monthly basis, the FAA tracks its short-term forecasts of commercial air carrier traffic (enplanements and RPMs), aircraft operations, instrument operations, IFR aircraft handled, and flight services vis-à-vis actual carrier traffic data reported to DOT and actual activity counts at the FAA facilities. This tracking system alerts FAA management to unexpected deviations from the trends suggested by the forecasts. Inquiries are then initiated to determine the cause(s) of the differences and revised short-term forecasts may be generated, if necessary.

To help the analysts make correct decisions and informed judgments when developing the forecast assumptions, the FAA meets with industry representatives to discuss industry trends, recent developments, and possible future courses of events. Every two years, for example, in cooperation with the National Academy of Sciences, Transportation Research Board (TRB), the FAA sponsors an International Workshop on Future Aviation Activities--"Forecast Assumptions Workshop." This “by invitation only” workshop is attended by some 120-140 industry planners and forecasters representing airlines, aircraft manufacturers, engine manufacturers, trade associations, academic institutions, and other industry groups. The 13th International Workshop on Future Aviation Activities is scheduled to be held in Washington, DC on September 29 through October 1, 2004.

Workshop participants are divided into nine concurrent panels to discuss sectoral trends and problems in the following areas: (1) domestic air carriers, (2) international air carriers, (3) regional and commuter airlines, (4) air cargo, (5) airports and infrastructure, (6) commercial aircraft fleets and manufacturers, (7) light personal and general aviation, (8) business aviation, and (9) vertical flight (rotorcraft).

The subgroups are instructed to critique FAA aviation forecasts for their specific areas. Each subgroup is asked to identify specific assumptions about the short- and long-term future trends of the economic and aviation variables that are important to their segments of the industry, to indicate why these trends are considered important, and to explain why specific trends are anticipated. After discussing the FAA forecast and the group’s assumptions, each group attempts to reach a consensus about the key variables affecting the industry and the most likely future courses of these variables. The findings of these workshops are published by the TRB.

In past years, the TRB workshops have provided discussions beneficial to the participants, while at the same time providing FAA analysts with a benchmark for preparing future aviation forecasts and for evaluating forecasts prepared by other organizations. These meetings are even more

valuable for gaining insight, as the industry continues to be impacted by major world events.

Throughout the year formal and informal meetings with individuals and representatives of specific aviation groups are held, and this is another method used by the FAA to solicit input and comments on FAA forecasts. Meetings are held regularly with aircraft manufacturers and with members of the various aviation trade associations. In addition, FAA analysts maintain one-on-one contact with many industry representatives and also attend annual conferences/meetings conducted by the aviation trade associations.

The largest setting for industry dialogue and critique regarding the FAA aviation forecast process is the annual FAA Aviation Forecast Conference. Now in its 29th year, the conference is used as a forum to release the forecast results for the upcoming 12 years. The last conference was held March 18-19, 2003, in Washington, DC. Participants and attendees were over 500 strong and included airline and airport executives, aircraft and engine manufacturers, trade associations, aviation consultants, consumer groups, industry representatives, and the news media. To the maximum extent possible, the FAA responds to questions raised about the forecasts both during and after the conference.

An important part of the conference is the opportunity for various leaders and experts in the aviation industry to make technical presentations on a variety of topics of interest to the aviation community. The FAA also receives valuable information and insights through the papers presented at the forecast conference. Last year's proceedings can be found at the following address: http://apo.faa.gov/Conference/2003/agenda.htm.

Finally, the FAA requests FAA regional and state participation in the evaluation of the forecast process. For example, the aircraft handled and terminal area forecasts are distributed to FAA regional offices for review and comment. The comments and changes are incorporated in final facility-level reports. In the case of terminal area forecasts, the FAA regions can make changes directly on personal computers. However, the final facility-level forecasts derived by this procedure must be consistent with the national forecasts.

Periodically, the FAA prepares technical reports comparing forecast accuracy of key workload measures with forecast accuracy of economic variables prepared by the major forecasting services. Based on the results of these studies, the FAA forecasts compare favorably with those produced by the major forecasting services.

TABLE VIII-3

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES

TYPES OF VARIABLES AND VARIABLE NAMES	HISTORICAL DATA SOURCES
ECONOMIC	
ECONOMIC ASSUMPTIONS	
Gross Domestic Product (GDP)	OMB, CBO, Global Insight
Consumer Price Index – All Urban Consumers (CPIU)	OMB, CBO, Global Insight
Oil and Gas Deflator	OMB, Global Insight
Energy Deflator	CBO
AIR CARRIER	
FORECAST ASSUMPTIONS	
Domestic Operations	
Average seats per aircraft	BTS/computed
Average passenger trip length[2]	BTS/computed
Revenue per passenger mile (current $)	BTS/computed
Revenue per passenger mile (2003 $)	Computed
Average jet fuel prices (current $)	BTS/computed
Average jet fuel prices (2003 $)	Computed
International Operations (U.S. Carriers)	
(Same as Domestic)	(Same)
SCHEDULED PASSENGER TRAFFIC	
Domestic	
Revenue passenger miles (RPMs)	BTS
Revenue passenger enplanements	BTS
Available seat miles (ASMs)	BTS
Load factors	Computed
International (U.S. Carriers)	
RPMs by World Regions	BTS
Revenue passenger enplanements by World Regions	BTS

[2]Result of econometric models for RPMs and Enplanements

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (CONTINUED)

TYPES OF VARIABLES AND VARIABLE NAMES	HISTORICAL DATA SOURCES
AIR CARRIER (CONTINUED)	
SCHEDULED PASSENGER TRAFFIC (CONTINUED)	
International (U.S. Carriers)	
ASMs by World Region	BTS
Load factors	Computed
International (U.S. and Foreign Flag Carriers)	
Passenger enplanements	INS
SCHEDULED AND NONSCHEDULED CARGO TRAFFIC	
Domestic and International (U.S. Flag Carriers)	
Total Air Cargo Revenue Ton Miles (RTMs)	BTS
Air Cargo RTMs: All-Cargo Carriers	BTS
Air Cargo RTMs: Passenger Carriers	BTS
FLEET	
Large jet aircraft: Passenger	FAA
Large jet aircraft: Cargo	FAA
HOURS FLOWN BY EQUIPMENT TYPE	
Large jet aircraft	BTS
FUEL CONSUMED	
Jet	
Domestic air carriers	BTS
International air carriers	BTS
General aviation	FAA/APO-110
Aviation Gasoline	FAA/APO-110

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (CONTINUED)

TYPES OF VARIABLES AND VARIABLE NAMES	HISTORICAL DATA SOURCES
REGIONAL/COMMUTER	
FORECAST ASSUMPTIONS	
Average seats per aircraft	BTS/Computed
Average passenger trip length	BTS/Computed
Average load factor	BTS/Computed
PASSENGER TRAFFIC	
Revenue passenger enplanements	BTS
RPMs	BTS
ASMs	BTS
FLEET	
Aircraft less than or equal to 70 seats	FAA
HOURS FLOWN	
Total for all passenger airlines	BTS
GENERAL AVIATION	
FLEET	
Active aircraft by equipment type	FAA/APO-110
NUMBER OF AIRCRAFT BY REGION	
Total aircraft in each of nine FAA Regions	FAA/APO-110
HOURS FLOWN	
Hours flown by equipment type	FAA/APO-110
FUEL CONSUMED	
Fuel consumed by equipment type	FAA/APO-110
PILOTS	
Active pilots by certificate type	FAA/Mike Monroney Aeronautical Center

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (CONTINUED)

TYPES OF VARIABLES AND VARIABLE NAMES	HISTORICAL DATA SOURCES
FAA WORKLOAD MEASURES	
FAA TOWERS	
Number of FAA Towers	FAA/APO-130
Number of Contract Towers	FAA/ATP-140
Aircraft Operations:	
Itinerant and local operations by aviation category	FAA/APO-130
Instrument operations by aviation category	FAA/APO-130
Non-IFR Instrument Operations:	
Terminal control areas	FAA/APO-130
Expanded radar service areas	FAA/APO-130
AIR ROUTE TRAFFIC CONTROL CENTERS	
IFR departures by aviation category	FAA/APO-130
IFR overs by aviation category	FAA/APO-130
FLIGHT SERVICE STATIONS	
IFR-DVFR flight plans originated	FAA/APO-130
VFR flight plans originated	FAA/APO-130
Pilot briefings	FAA/APO-130
Aircraft contacted by aviation category	FAA/APO-130
IFR-DVFR aircraft contacted	FAA/APO-130
VFR aircraft contacted	FAA/APO-130

FAA AVIATION FORECAST VARIABLES AND DATA SOURCES (CONTINUED)

TYPES OF VARIABLES AND VARIABLE NAMES	HISTORICAL DATA SOURCES

TERMINAL AREA FORECASTS
(3,404 Towered and Nontowered Airports)

ENPLANEMENTS	
U. S. Flag Carrier	BTS
Foreign Flag Carrier	INS/BTS
Regional/Commuter	BTS
Air Taxi	FAA/VNTSC
OPERATIONS	
Towered Airports:	
Aircraft operations by aviation segment	FAA/APO-130
Scheduled commuter	OAG
Nontowered Airports	FAA/NFDC
Scheduled commuter	OAG

APO-110--Statistics and Forecast Branch, FAA
APO-130--Information Systems Branch, FAA
ATP-140--Contract Air Traffic Services, FAA
BTS--Bureau of Transportation Statistics, Department of Transportation
CBO--Congressional Budget Office
Global Insight--formerly DRI-WEFA, Inc.
INS--Immigration and Naturalization Service, Department of Justice
NFDC--National Flight Data Center, FAA
OAG--North American Official Airline Guide
OMB--Office of Management and Budget
VNTSC--Volpe National Transportation Systems Center, Research and Special Programs Administration, Department of Transportation

CHAPTER VII

FAA WORKLOAD MEASURES

The FAA provides the aviation community with three distinct air traffic services: 1) air traffic control tower service at FAA and contract towered airports; 2) traffic surveillance and aircraft separation by air route traffic control centers (ARTCC); and 3) flight planning and pilot briefings at flight service stations (FSS). All four aviation system user groups--air carriers, commuter/air taxi, general aviation, and military--use these FAA operational services to enhance the flow and safety of aviation traffic.

Because the four aviation system user groups differ in the demands they impose on the air traffic system, multiple indicators are used to describe the total FAA operational workload. No single measure typifies past trends or future demand for the services provided by the FAA.

REVIEW OF 2003[1]

During 2003 the number of FAA towered airports remained unchanged at 266, while the number of contract towered airports increased by one to 218. Between 1990 and 2000, the number of FAA towered airports declined by 136, and the number of contract towered airports increased by 214. However, the number of FAA towers has remained constant at 266 since 2000 and is expected to remain at that number throughout the duration of the forecast.

The addition and/or removal of airports to/from FAA air traffic counts make comparisons to previous year's activity levels difficult, if not impossible. To overcome these discontinuities, the FAA reports air traffic activity at FAA and contract tower facilities on both an individual as well as a combined basis. Activity at FAA air route traffic control centers is not affected by the tower conversions.

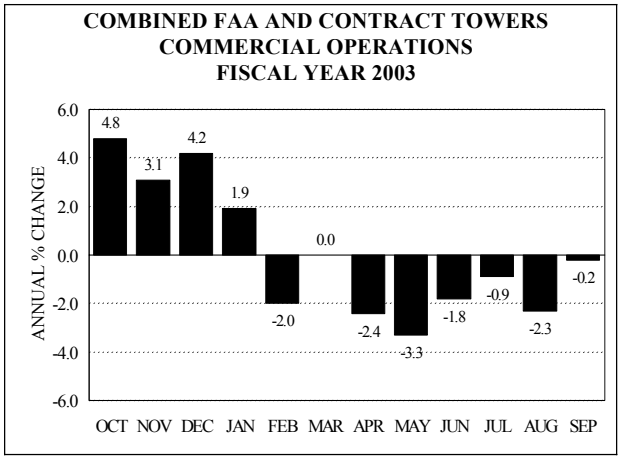
TOWER ACTIVITY

Combined FAA and Contract Towers

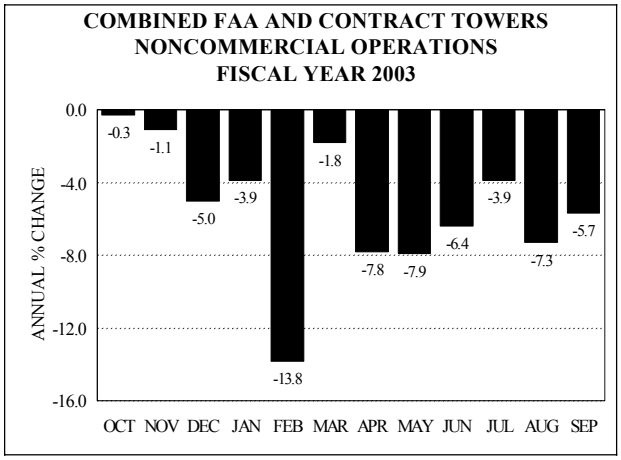
Aircraft activity at the 483 FAA and contract towered airports totaled 62.7 million operations, down 3.3 percent from 2002. In 2003, commercial activity was unchanged from 2002

[1] All specified years are fiscal years (October through September 30), unless designated otherwise.

as declines in the second half of the year offset increases in the first half. Air carrier operations driven by declining traffic and schedule reductions following the beginning of the Iraq war and the outbreak of SARS were down 2.9 percent.



Operations by commuter/air taxi increased 3.6 percent in 2003, to 11.4 million. Much of the growth was the result of the transfer of lower density, short-haul markets to commuters, especially the regional jet operators. In addition, growth in recent years has been stimulated by commuter code-sharing and schedule tie-in agreements with the larger commercial air carriers.



Noncommercial activity (the sum of general aviation and military operations) decreased 5.4 percent in 2003 driven by a fall in general aviation activity. General aviation operations were down 5.5 percent with every month posting negative growth. General aviation itinerant operations were down 5.5 percent and local operations declined 5.6 percent. Military activity was down 1.8 percent with itinerant operations down 1.5 percent and local activity down 2.2 percent.

FAA Towers

On September 30, 2003, there were 266 FAA towered airports. Aircraft operations at these airports totaled 47.0 million, down 3.2 percent from 2002. Of the four users of the system, only commuter/air taxi operations increased during the year, up 4.4 percent. The other users of the system--air carrier, general aviation, and military were down 3.0, 6.2, and 4.3 percent, respectively.

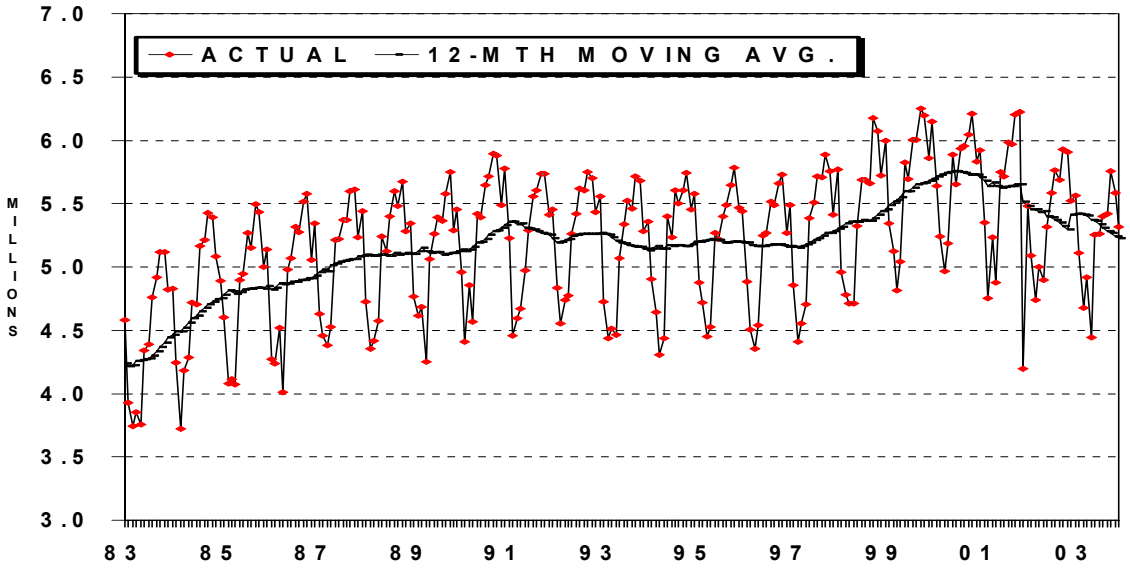
Contract Towers

On September 30, 2003, there were 218 contract towers funded either partially of fully by the FAA. Aircraft activity totaled 15.7 million operations, down 3.6 percent from 2002. Commercial activity decreased 1.5 percent, while noncommercial activity fell 3.8 percent. In 2003 commuter/air taxi operations decreased 1.7 percent while air carrier activity remained flat. General aviation operations decreased by 4.3 percent while military operations rose 2.9 percent. General aviation continues to dominate activity at FAA contract towers, accounting for 82.1 percent of total operations.

Monthly operation counts for the 266 FAA towered airports and the 218 contract towers, by user group, can be found on the internet at: http://www.apo.data.faa.gov/.

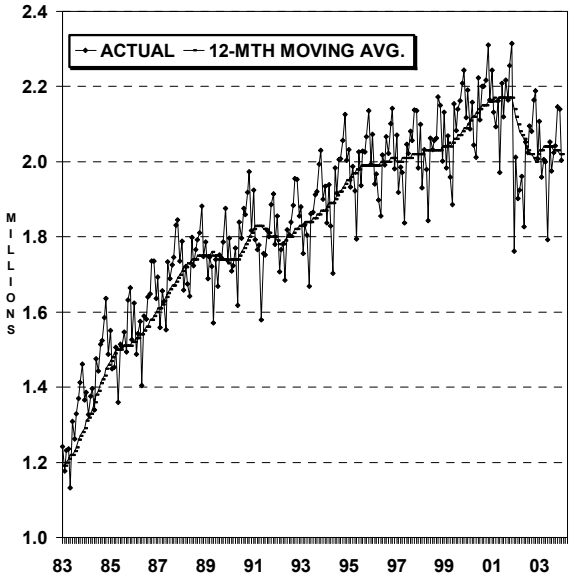
COMBINED FAA AND CONTRACT TOWERS: AIRPORT OPERATIONS

TOTAL OPERATIONS



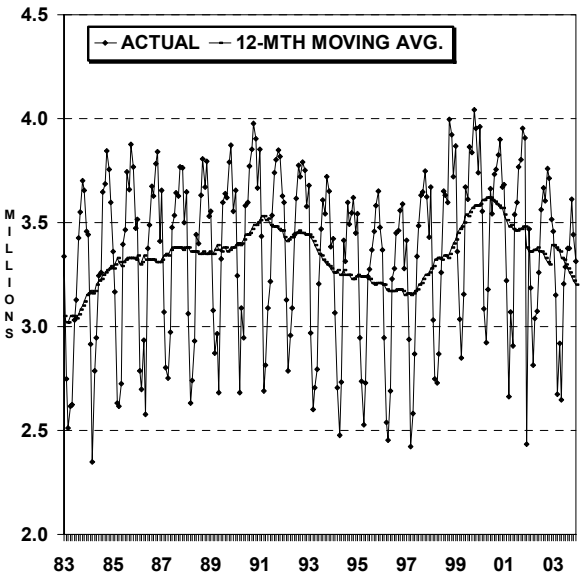
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH

NONCOMMERCIAL OPERATIONS

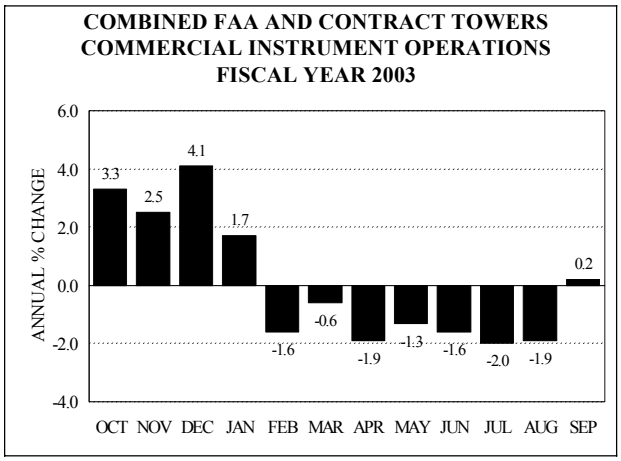


FISCAL YEAR BY MONTH

INSTRUMENT OPERATIONS

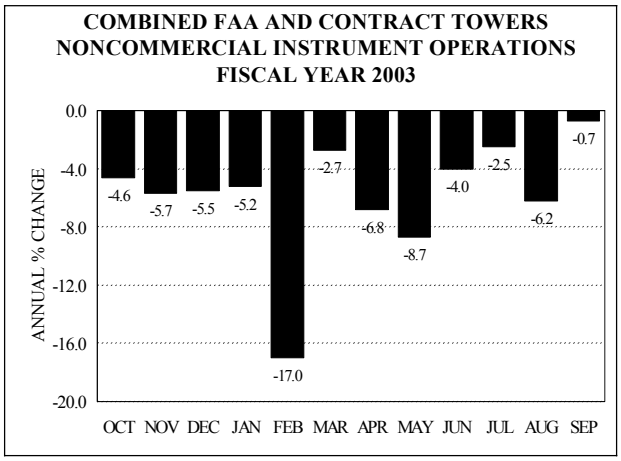
Combined FAA and Contract Towers

Instrument operations handled at combined FAA and contract towers totaled 48.2 million, down 2.7 percent from the 2002 activity level. In 2003, FAA towers accounted for 98.3 percent of combined total instrument operations.



Commercial instrument operations remained flat with 2002 levels at 26.3 million. Increases in the first 4 months of the year were offset by decreases in the last 8 months of the year, reflecting the SARS outbreak and the beginning of the Iraq war. Air carrier activity was down 2.7 percent for the year, while commuter/air taxi instrument operations increased 3.3 percent.

Noncommercial instrument operations fell 5.7 percent to 21.9 million. Year over year decreases in activity were recorded in every month. General aviation operations were down 5.2 percent for the year, but still accounted for 38.6 percent of total instrument operations. Military operations fell 8.3 percent, and accounted for only 6.8 percent of the total.



FAA Towers

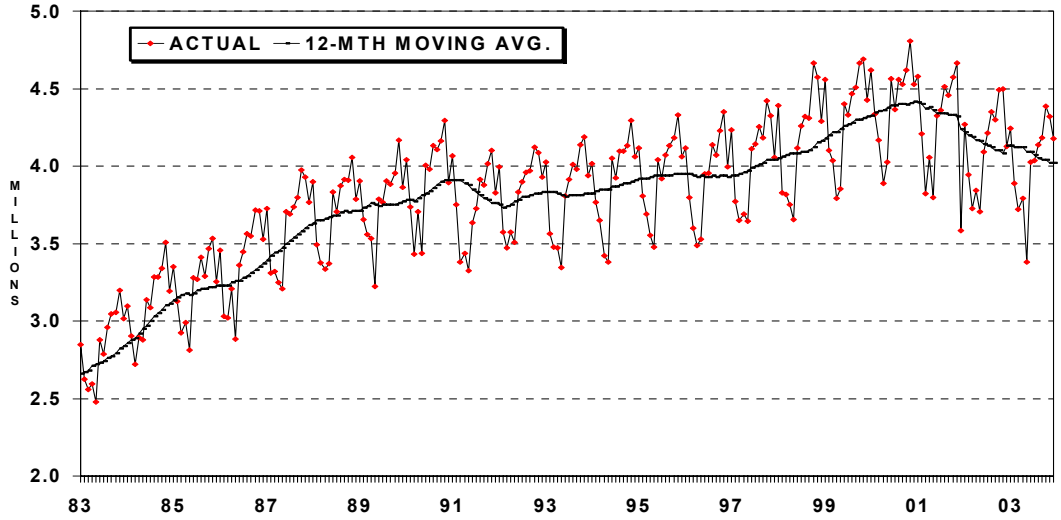
Instrument operations at the 266 FAA towered airports totaled 47.4 million, a decrease of 2.7 percent. Commercial activity was flat, while noncommercial operations fell 5.8 percent. In 2003, only commuter/air tax activity increased, up 3.4 percent. Air carrier, general aviation, and military instrument operations decreased 2.6, 5.3, and 8.5 percent, respectively.

Contract Towers

Instrument operations at FAA contract towered airports totaled 813,400, down 0.1 percent from 2002. Commercial activity decreased 1.3 percent, while noncommercial activity was up 1.8 percent. In 2003, air carrier instrument operations at FAA contract towers recorded the only decrease in activity, down 6.1 percent. Commuter/air taxi and military instrument operations each increased 0.3 percent while general aviation instrument operations increased by 2.1 percent.

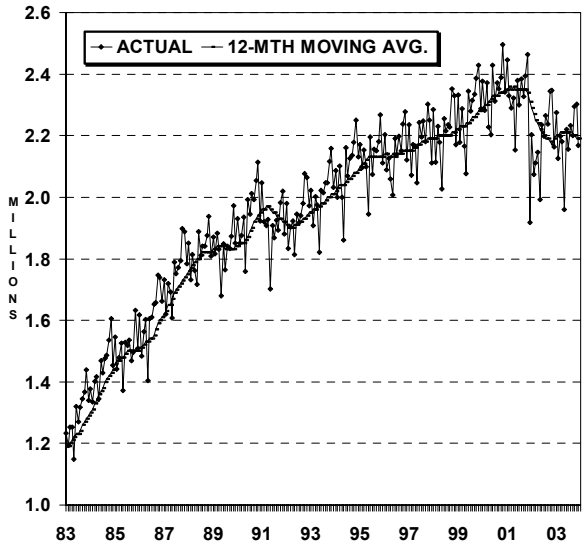
COMBINED FAA AND CONTRACT TOWERS: INSTRUMENT OPERATIONS

TOTAL OPERATIONS



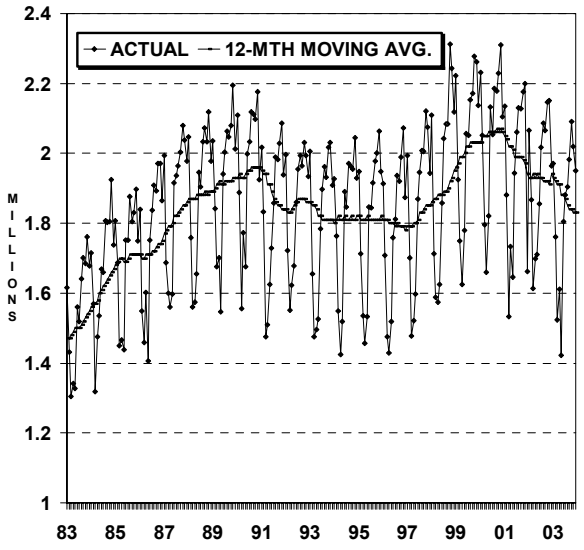
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH

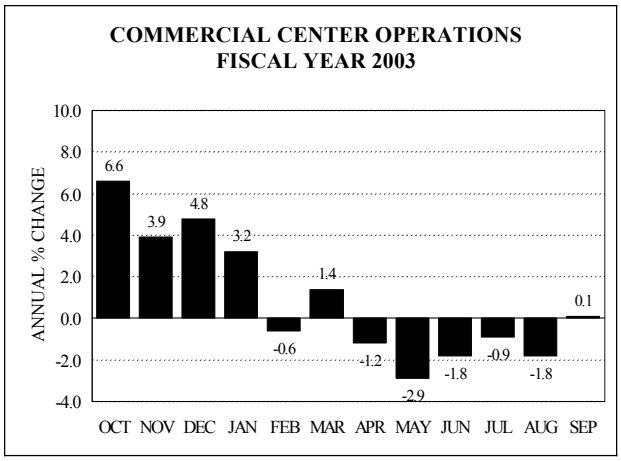
NONCOMMERCIAL OPERATIONS



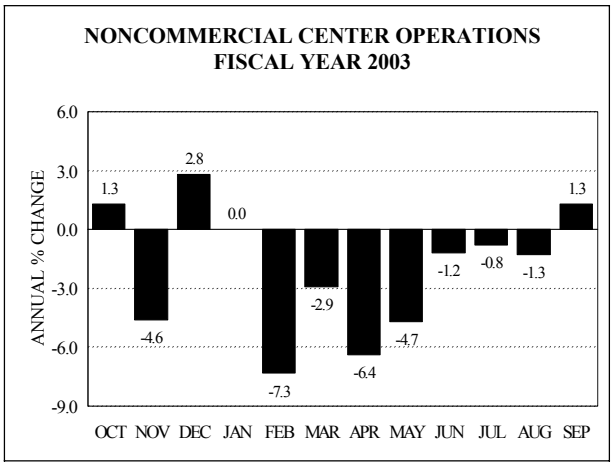
FISCAL YEAR BY MONTH

CENTER ACTIVITY

In 2003, the number of aircraft flying under Instrument Flight Rules (IFR) handled by FAA ARTCCs totaled 43.7 million, unchanged from the 2002 activity counts. The number of commercial aircraft handled at the Centers (31.9 million) rose 0.8 percent in 2003 with year over year increases occurring during the first half of the year. The number of air carrier aircraft handled totaled 22.7 million (down 0.3 percent), while the number of commuter/air taxi aircraft handled totaled 9.1 million (up 3.8 percent).



The number of noncommercial aircraft handled (11.9 million) fell 2.0 percent. After posting increases in 3 of the first 4 months of the year, year-over-year changes in noncommercial aircraft posted declines in the remaining months except for September. The number of general aviation aircraft handled totaled 8.0 million (down 2.2 percent), while military activity totaled 3.9 million (down 1.7 percent).



FLIGHT SERVICE STATION ACTIVITY

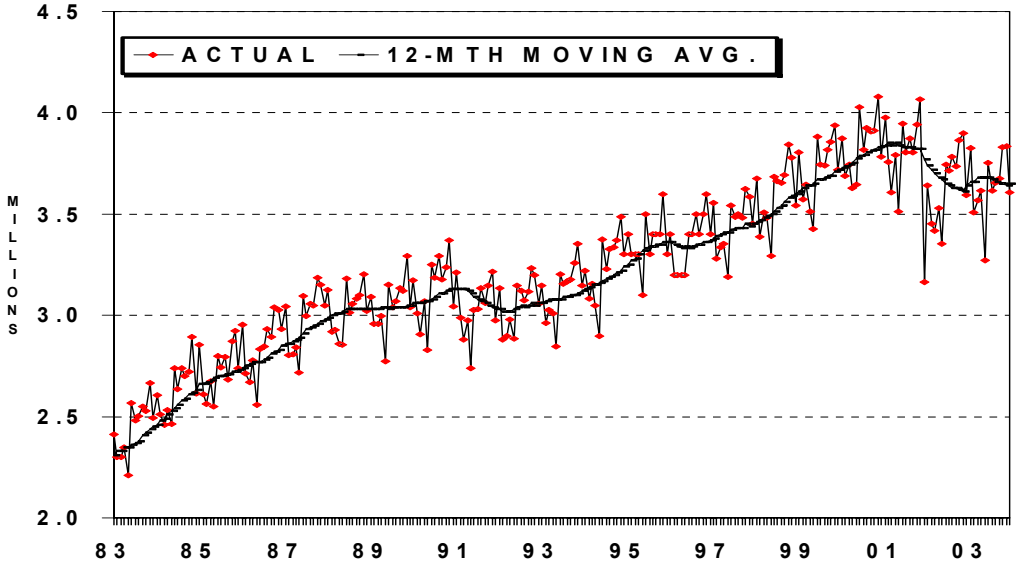
Total flight services, encompassing pilot briefings, flight plans filed, and aircraft contacts recorded by FAA Flight Service Stations (FSS) totaled 27.7 million in 2003, down 6.0 percent from 2002 activity levels. In 2003, the number of aircraft contacted fell 5.4 percent to 2.81 million, the number of pilot briefings declined by 6 percent to 7.01 million, and the number of flight plans originated decreased 6.1 percent to 5.42 million.

The FAA also provides automated flight services, which supplement FSS activity. The Direct User Access Terminal System (DUATS) provides an alternative to the FSS for obtaining pilot briefing information and filing flight plans. Use of this service was introduced in February 1990.

In 2003, total DUATS transactions (including flight plans) totaled 17.5 million, an increase of 6.0 percent over 2002. The number of flight plans filed through DUATS rose 10.3 percent to 1.3 million. The number of DUAT transactions (excluding flight plans) increased 5.3 percent in 2003, from 7.1 million in 2002 to 7.5 million.

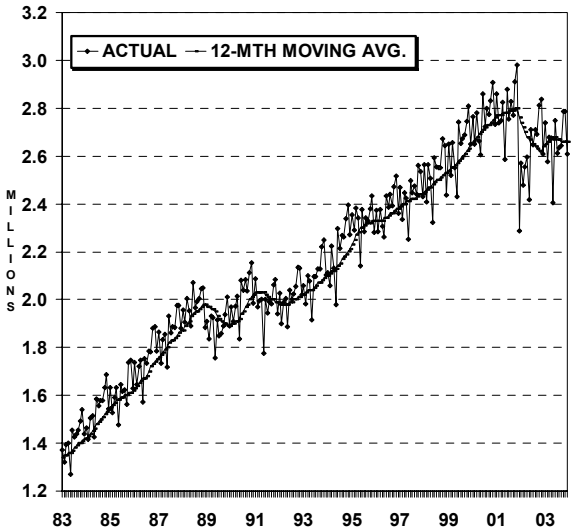
FAA AIR ROUTE TRAFFIC CONTROL CENTERS: IFR AIRCRAFT HANDLED

TOTAL AIRCRAFT HANDLED



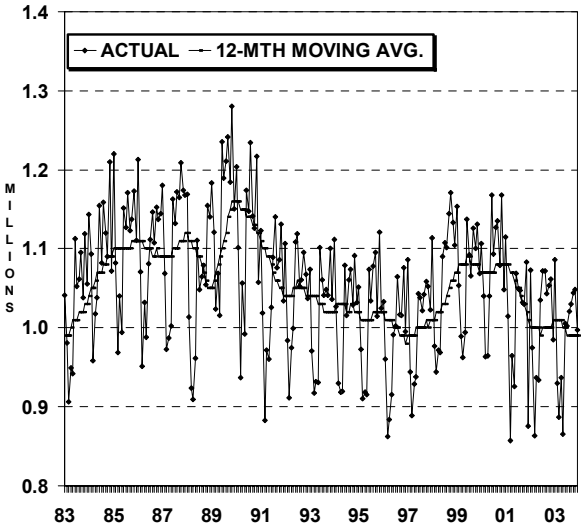
FISCAL YEAR BY MONTH

COMMERCIAL OPERATIONS

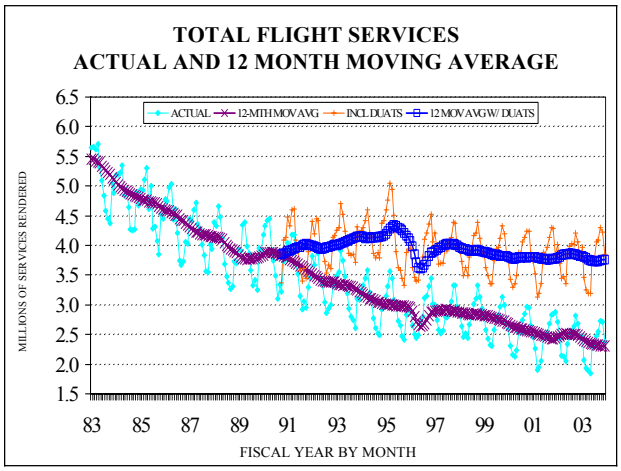


FISCAL YEAR BY MONTH

NONCOMMERCIAL OPERATIONS



FISCAL YEAR BY MONTH



When these DUAT services are included with traditional FSS services, total flight services fell from 45.9 million in 2002 to 45.2 million in 2003, a decrease of 1.7 percent.

FORECAST ASSUMPTIONS

Forecast growth in FAA workload measures includes not only the demand imposed on the existing National Airspace System, but also aviation activity at new locations not previously provided with FAA services. Workload forecasts are presented for combined FAA and contract towers, and separately for FAA facilities and contract towers.

NUMBER OF FAA FACILITIES

There were 266 FAA towered airports on September 30, 2003. There are 148 radar service areas--47 terminal radar service areas, 15 class B (terminal control areas), and 86 class C (airport radar service areas). The number of FSSs and AFSSs totaled 75 on September 30, 2003: 61 AFSSs and 14 Alaskan rotational FSSs.

In 2004, the number of contract tower airports will increase from 218 to 231 and are assumed to remain at that level over the remainder of the forecast period. The number of FAA towers is assumed to remain at 266 throughout the forecast period.

COMMERCIAL AVIATION: RISKS AND UNCERTAINTIES

Although growth in demand for commercial aviation services is based upon continued growth in the U. S. economy, lower industry operating costs, lower fares, lower fuel costs, and financial stability, there is uncertainty associated with these forecasts. A number of events could alter the short and long-term environment, and cause demand to differ substantially from the projections presented in this report. Also, structural changes in the industry could change the mix of operations at FAA facilities.

The events of September 11th have had a significant impact on the demand for aviation services. A rebound from the lows in 2003 is forecast to begin in 2004 and then a return to long-term growth trends is assumed beginning in 2006. Increased demand is initially met by utilizing the existing fleet more intensively and by achieving higher load factors. Ultimately the increase in demand leads to increases in aviation activity.

The introduction of state-of-the-art jet aircraft into the regional/commuter fleet coupled with the financial aftermath of September 11th is significantly altering the route system of the industry. These new aircraft are greatly expanding the number of markets that regional/commuters can serve. Should the number of route transfers or new markets greatly

exceed current expectations, commuter/air tax operations at FAA facilities could be higher than currently forecast. Conversely, air carrier operations would be lower.

Further, with the financial condition of the U.S. airline industry poor, it is conceivable that one or more of the existing carriers will not survive. If the structure of the industry were to change as a result of a failure of a major carrier, it is likely that operations at some FAA facilities would be greatly impacted.

WORKLOAD FORECASTS

METHODOLOGY

The workload measures for airports with air traffic control towers are the number aircraft operations (sum of landings and takeoffs) and instrument operations (arrivals and departures at primary and secondary airports, and overflights). The workload measure for ARTCCs is the number of aircraft handled (sum of departures, landings, and overflights for aircraft operating under instrument flight rules). For flight service stations, the workload measures are flight plans filed, pilot briefings, and aircraft contacts. The workload measures are developed by user category for all three components of the air traffic control system.

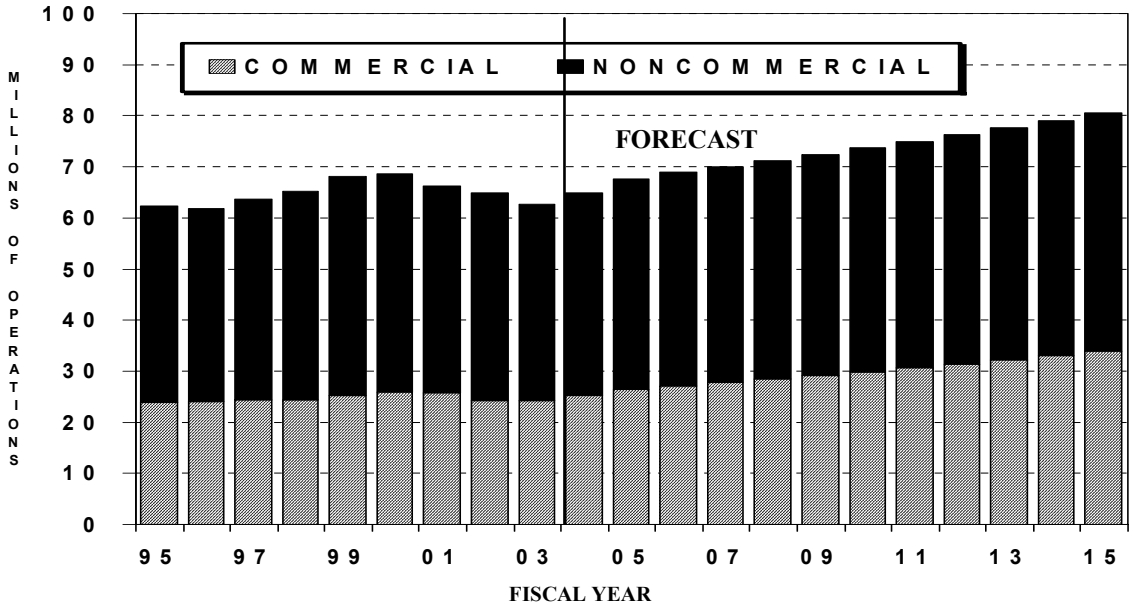
Projections of total operations for commercial air carriers and commuter/air taxis at airports with air traffic control towers are based upon forecasts of Available Seat Miles (ASMs), and assumptions regarding average seats per aircraft, and aircraft stage length. Specifically, if the average number of seats per aircraft is divided into the forecast of ASMs, an estimate of the number of aircraft miles in the system is derived. The average aircraft stage length is then divided into the forecast of aircraft miles in order to derive an estimate for departures. For both air carriers and cargo operators, estimates are made for both international and domestic departures. An estimate of total operations for the air carrier and commuter/air taxis is derived by doubling the number of departures. Forecasts of general aviation airport operations are developed from projections of general aviation hours flown and the general aviation fleet.

Forecasts of instrument operations for airports with air traffic control towers, and the workload measures for ARTCCs and flight service stations are derived from the forecasts of airport operations by user category. With the exception of service at the 13 new contract towers, military operations are assumed to remain at current levels throughout the forecast period.

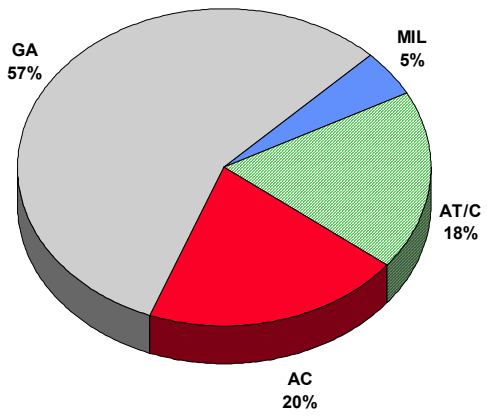
TOWER ACTIVITY

It is assumed that the number of FAA control towers will remain constant at 266 throughout the forecast period. The number of contract towers is expected to increase by 13 to 231 in 2004 and remain at that level for the duration of the forecast. It is assumed that the 13 new towers will be phased in throughout 2004. As such, the addition of the new towers will impact contract tower operations in both 2004 and 2005.

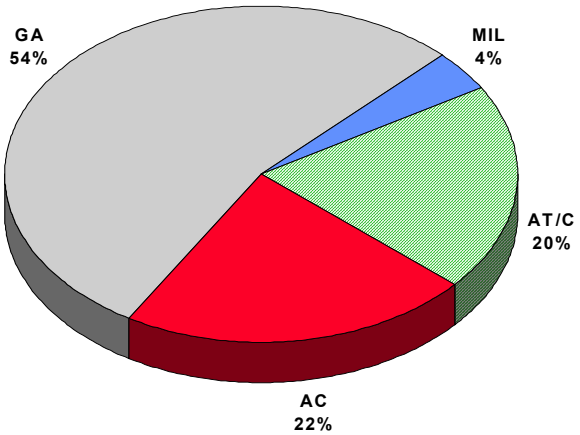
AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP



2003



2015

Combined FAA and Contract Towers

During the 12-year forecast period, operations at FAA and contract towered airports grow to 80.5 million by 2015, increasing 2.1 percent annually on average. Growth in tower activity in 2004 is projected to increase 3.4 percent with increases in all activity categories. As the demand for aviation services recovers so does the level of activity. For the balance of the forecast from 2005 to 2015, tower activity is projected to increase an average of 1.8 percent per year. Commercial activity is forecast to grow at relatively faster rates than general aviation. Air carrier operations share of the combined towered airport activity increases 1.9 points from 20.4 percent in 2003 to 22.3 percent in 2015 while the commuter/air taxi share increases 1.7 points from 18.2 percent in 2003 to 19.9 percent. The general aviation share of activity declines from 56.6 percent in 2003 to 53.9 percent by 2015. Commuter/air taxi activity is projected to grow at rates faster than that forecast for the larger commercial air carriers during the early years of the forecast, with accelerating route transfers and increased use of regional jets the primary drivers.

In 2003, air carrier operations declined from 13.2 to 12.8 million operations, a 2.9 percent decrease. As the demand for commercial air travel recovers in 2004 and 2005, air carrier operations increase 2.2 and 4.2 percent respectively, and then grow an average of 2.7 percent per year for the remainder of the forecast period. However, air carrier operations do not return to the 2000 level of activity until 2009. For the entire 12-year forecast period, air carrier operations increase at a rate of 2.8 percent annually.

Commuter/air taxi activity grows an average of 5.4 percent per year in 2004 and 2005 and then increases at a 2.3 percent annual rate over the remainder of the forecast. Over the 12-year forecast period, commuter/air taxi operations grow an average of 2.9 percent annually, increasing from 11.4 to 16.0 million operations. General aviation activity increases 3.2 percent in 2004 and 4.2 percent in 2005, primarily due to the addition of 13 new contract towers. For the remainder of the forecast, general aviation operations increase at a rate of 1.3 percent per year. For the entire forecast period, general aviation operations increase from 35.5 to 43.4 million operations (1.7 percent annual growth). Itinerant general aviation operations are forecast to increase 21.8 percent over the period, while local general aviation operations are projected to increase 23 percent over the period. Total military operations are projected to increase to 3.1 million by 2005 then remain at that level throughout the balance of the forecast period.

Commercial aircraft activity at combined towered airports is projected to increase 4.0 percent in 2004, with increases in both air carrier and commuter/air taxi activity. By 2005, commercial aircraft activity returns to the level of activity in 2000, the worst year on record for delays. Should activity increases occur without an increase in system capacity, significant congestion problems may result.

However, the mix of traffic will be significantly different than existed in 2000. In 2000, air carrier operations accounted for 58.5 percent of total commercial operations. By 2005, it is expected that the air carrier share of commercial operations will decline to 51.9 percent. The surge in regional jet activity adds to the complexity of the FAA workload. Regional jets need more separation then do the large jets operated by the air carriers, and the regional jets fly at the same altitudes as do larger jets, increasing congestion at the higher altitudes. In certain large hubs, such as Chicago O'Hare, the change in the mix of commercial operations is expected to be even greater. For the period 2005 to 2015, commercial activity increases at an average rate of 2.6 percent per year.

Commercial activity growth averages 2.8 percent annually during the 12-year forecast period, increasing from 24.2 to 34.0 million. Noncommercial activity increases at an average of 1.6 percent annually, from 38.5 million in 2003 to 46.5 million in 2015.

Forecasts for individual airports are contained in the FAA's Terminal Area Forecast and are available at the following website: http://www.apo.data.faa.gov/.

FAA Towers

In 2003, operations at the 266 FAA towered airports totaled 47.0 million, down 3.2 percent from 2002. For the 12-year forecast period, operations at FAA towered airports increase 2.0 percent a year. In absolute numbers, towered operations total 59.4 million in 2015.

Commercial aircraft activity at FAA towered airports is projected to grow 2.8 percent annually during the 12-year forecast period, from 22.5 to 31.5 million, exceeding the level of activity that occurred in 2000 by 2005. Noncommercial activity increases from its current level of 24.5 million to 28.0 million in 2015 (1.1 percent annually), and does not exceed the 2000 level of activity during the forecast period.

Contract Towers

In 2003, operations at the 218 contract towered airports totaled 15.7 million, a 3.6 percent decrease from 2002. The forecast assumes that 13 new contract towers are added in 2004. The vast majority of the increased activity at these towers is general aviation and military activity. During the 12-year forecast period, operations at contract towered airports increase at an annual rate of 2.5 percent, totaling 21.1 million in 2015. The additional activity of the new towers provides for significant growth in contract tower operations in both 2004 (7.4 percent) and 2005 (8.9 percent). Thereafter growth in contract tower activity will moderate.

Commercial aircraft activity at contract towered airports grows an average of 3 percent annually during the 12-year forecast period, increasing from 1.7 million to 2.5 million. Noncommercial activity grows slower, averaging 2.4 percent annually, increasing from 14.0 million in 2003 to 18.6 million in 2015.

INSTRUMENT OPERATIONS[2]

Combined FAA and Contract Towers

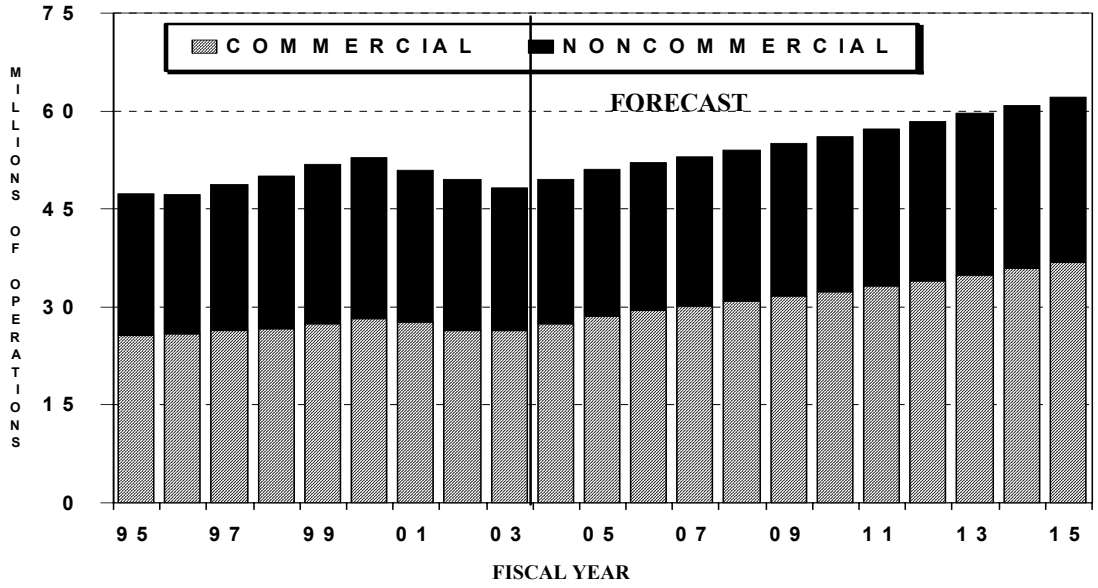
During the forecast period, combined instrument operations increase from 48.2 million operations in 2003 to 62.1 million operations in 2015, averaging 2.1 percent annually. In 2015, FAA towers will account for about 98.3 percent of combined instrument operations.

The mix of instrument operations is expected to change during the forecast period. Both the air carrier and commuter/air taxi share of total instrument operations increase significantly share over the forecast period (from 29.0 to 31.5 percent, and from 25.5 to 27.7 percent, respectively). General aviation's share declines from 38.6 percent to 35.4 percent over the 12-year forecast period.

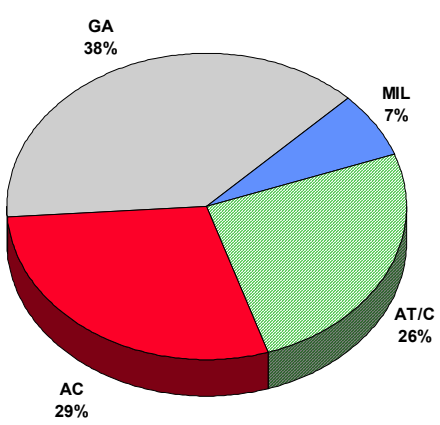
Air carrier instrument operations are forecast to increase 2.2 percent in 2004, then increase

[2] Instrument operations include arrivals and departures at both primary and secondary airports as well as overflights. Thus instrument operations totals at FAA towers are generally higher than aircraft operation counts at the same towers.

INSTRUMENT OPERATIONS AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE



DISTRIBUTION OF WORKLOAD BY USER GROUP



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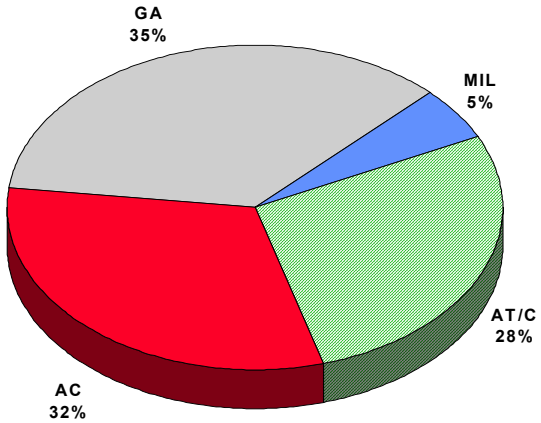


2015

4.4 percent in 2005 and grow 2.7 percent annually thereafter. During the entire 12-year forecast period, air carrier instrument operations increase 2.8 percent annually from 14.0 million to 19.6 million by 2015. Commuter/air taxi operations increase 5.2 percent per year through 2005, then grow 2.3 percent per year thereafter. For the 12-year forecast period, commuter/air taxi operations grow 2.8 percent annually, increasing from 12.3 million to 17.2 million.

General aviation operations rise 1.7 percent in 2004 and increase steadily thereafter and grow an average of 1.4 percent annually during the forecast period, increasing from 18.6 million to 22.0 million operations. Military activity decreased 8.3 percent in 2003 to 3.3 million, and remains at that level for the balance of the forecast.

During the 12-year forecast period, commercial activity increases 2.8 percent annually, from 26.3 million to 36.8 million. Noncommercial activity is forecast to increase 1.2 percent annually, from 21.9 million in 2003 to 25.3 million in 2015.

FAA Towers

Instrument operations at FAA towered airports are projected to increase 2.8 percent in 2004 with increases in all activity categories except military activity. For the 12-year forecast period, instrument operations at FAA towered airports increase at an average annual rate of 2.1 percent. In absolute numbers, FAA towered instrument operations reach 61.0 million in 2015.

Commercial instrument operations at FAA towered airports increase 3.9 percent in 2004 and 4.5 percent in 2005 mirroring the rebound in demand for commercial air transport. During the period 2005 to 2015, commercial instrument operations at FAA towered airports grow 2.6 percent annually. For the entire 12-year forecast period, commercial instrument operations increase from 25.8 million to 36.1 million, a rate of 2.8 percent annually. Noncommercial activity expands 1.2 percent annually, from 21.6 million in 2003 to 24.9 million in 2015.

Contract Towers

For the 12-year forecast period, instrument operations at contract-towered airports increase 2.1 percent a year, totaling 1.04 million in 2015.

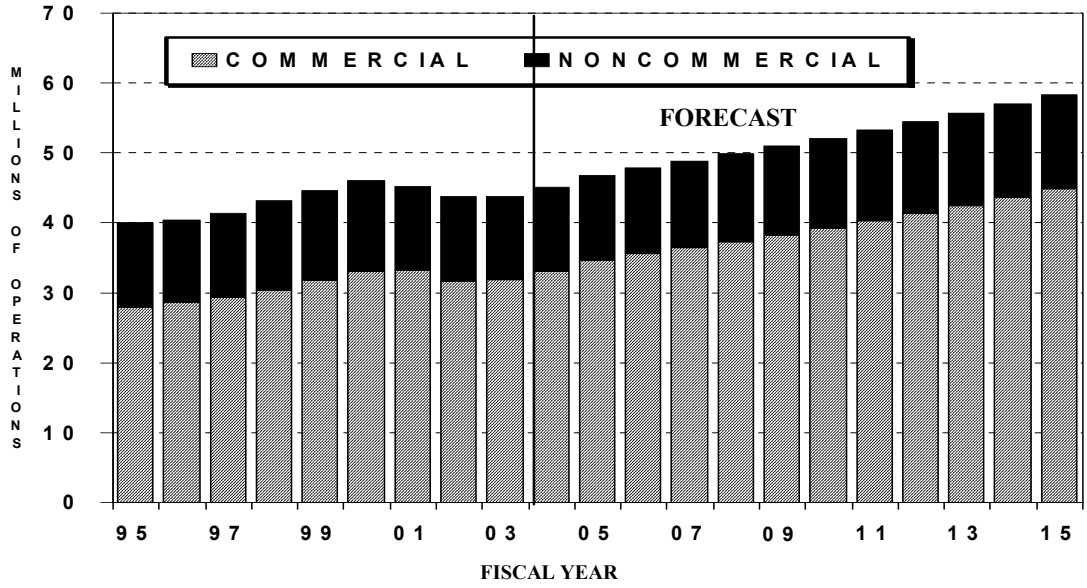
Commercial instrument operations at contract-towered airports grow at an average annual rate of 2.8 percent during the 12-year forecast period, increasing from 471,100 to 658,600. Noncommercial activity is forecast to increase from 342,300 in 2003 to 385,900 in 2015, growing at an average annual rate of 1.0 percent.

CENTER ACTIVITY

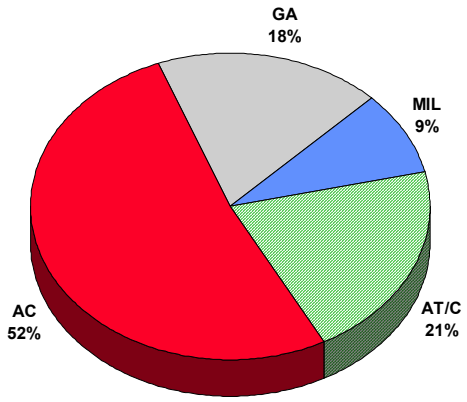
During the 12-year forecast period, the number of aircraft handled at centers increases 2.4 percent annually, expanding from 43.7 million aircraft handled in 2003 to 58.4 million in 2015. Aircraft handled rise 3.2 percent in 2004 with the largest increases occurring in commuter/air taxi and air carrier activity. Following a 3.6 percent increase in 2005, growth in aircraft handled averages 2.2 percent during the period 2005 to 2015.

The number of air carrier aircraft handled at centers is forecast to increase from 22.7 million in 2003 to 32.1 million in 2015, a 2.9 percent annual growth rate. Air carrier aircraft handled increase 3.0 percent in 2004 and 4.4 percent in 2005, then grow at an average rate of 2.7 percent per year between 2005 and 2015.

IFR AIRCRAFT HANDLED AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS



DISTRIBUTION OF WORKLOAD BY USER GROUP



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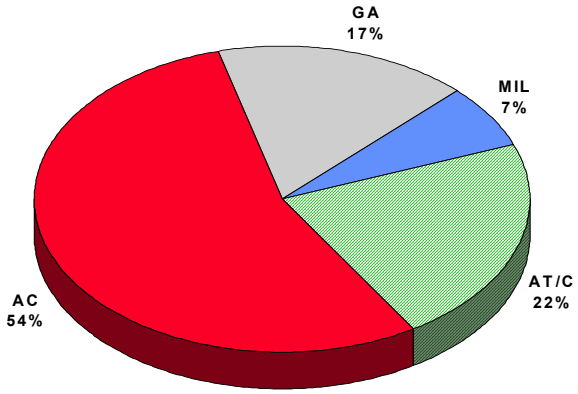

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Commuter/air taxi aircraft handled are expected to increase by 5.2 percent per year through 2005 and grow 2.8 percent annually for the 12-year forecast period, increasing from 9.1 million to 12.8 million. The relatively strong growth during the first three years of the forecast period reflects increases in the commuter stage length during this period.

General aviation aircraft handled increase 2.2 percent in 2004 and continue to increase steadily to total 9.7 million in 2015 (1.6 percent annual growth). Military activity decreased 1.7 percent in 2003 to 3.86 million and remains at that level throughout the forecast period.

Commercial activity grows at an average annual rate of 2.9 percent during the forecast period, increasing from 31.9 million to 44.9 million. Noncommercial activity increases 1.1 percent annually, increasing from 11.9 million in 2003 to 13.5 million in 2015.

The commercial aircraft activities' share of center workload is forecast to increase from 72.9 percent in 2003 to 76.8 percent in 2015. Between 2003 and the year 2015, the air carrier share is forecast to increase from 52.0 to 54.9 percent, while the commuter/air taxi share increases from 20.9 to 21.9 percent.

FLIGHT SERVICE STATION ACTIVITY

The introduction of new technology for flight service applications has significantly changed the operating environment of the flight service system. Viewed in the larger context of the total National Airspace System, the recent declining trend in non-automated flight services do not necessarily indicate declining demand for total flight planning services. Rather, they may indicate that demand is being met through increased use of automation and new system capabilities resulting in increased efficiency and productivity.

Non-automated Service

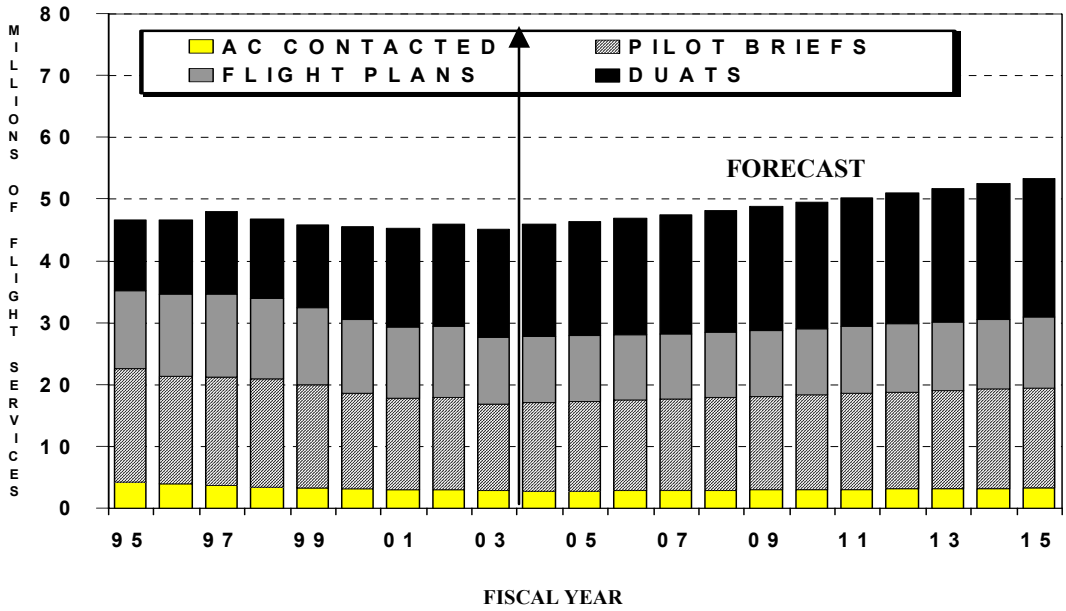
Total traditional (non-automated) flight services originating at FAA flight service stations are projected to post a small increase in 2004. In absolute numbers, the number of total flight services is expected to increase slightly to 27.8 million in 2004. For the balance of the forecast period FSS activity is projected to increase at modest rates. By the end of the forecast period, total flight services provided by the FAA flight service stations are projected to total 30.5 million.

The number of pilot briefings is projected to increase 2.3 percent to 7.17 million in 2004, and continue increasing slowly throughout the remainder of the forecast period. Over all, pilot briefs are projected to increase from 7.01 million in 2003 to 8.10 million in 2015, an average annual rate of 1.2 percent.

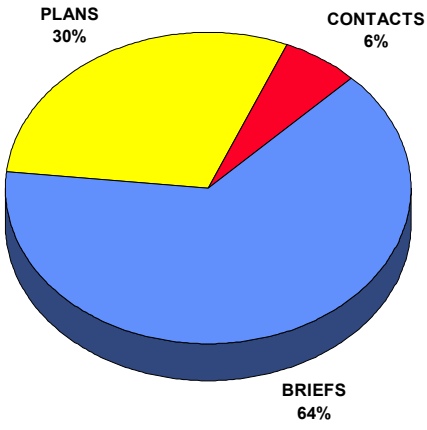
FSS flight plans originated at flight service stations are projected to decline 1.5 percent in 2004. After declining slightly through 2006, total flight plans originated are forecast to grow 0.9 percent per year for the duration of the forecast to total 5.7 million by the year 2015.

The number of aircraft contacted is forecast to decline 1.9 percent in 2004 and then increase steadily for the balance of the forecast. Aircraft contacted in 2015 total 3.2 million, up from 2.8 million in 2003, a 1.1 percent average annual increase.

FLIGHT SERVICES ORIGINATED AT FAA FLIGHT SERVICE STATIONS



DISTRIBUTION OF WORKLOAD BY USER GROUP



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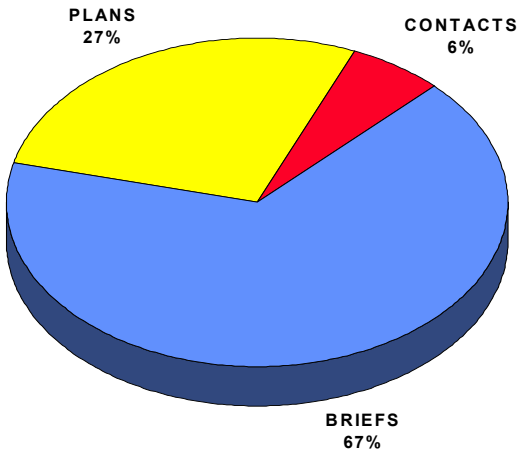


2015

Automated Service

Several factors resulting from automation will tend to dampen the growth in traditional FSS workload measures, as currently defined. First, pilots can now obtain weather briefings through the Telephone Information Briefing System (TIBS), which does not require contact with a flight service specialist, and is not, therefore, included in the FSS pilot briefings count.

Second, private weather briefing vendors, participating in memorandums of agreement with the FAA, can also provide weather briefings and file flight plans for their customers without going through an FSS. Third, starting February 1990, DUATS became operational. Using DUATS, pilots with access to a computer, modem, and telephone can directly access a national weather data base for weather briefings and flight plan filing without ever going through an FSS.

This automated access may be through the pilot's own computer or through those of fixed-based operators offering the service to their customers. None of the flight planning services provided through the above sources are included in the FSS workload measures.

During 2003 there were a total of 7.45 million DUATS transactions. If each transaction involves a weather briefing, this represents 7.45 million pilot briefs. In addition, approximately 1.3 million flight plans were filed through the DUATS system. Using the weighted total flight services formula (two times the sum of pilot briefs and flight plans filed), this translates into approximately 17.5 million total flight services that are not included in the FAA flight service station workload measure.

DUATS transactions are projected to increase from 7.5 million in 2003 to 7.8 million in 2004 (up 4.0 percent). During the period 2003 through 2015, DUATS transactions are forecast to increase at an average annual rate of 2.2 percent, reaching 9.6 million in 2015.

For the entire forecast period, flight plans filed through DUATS are expected to increase from approximately 1.2 million to 1.6 million in 2015, a 1.9 percent average annual increase. By the year 2015, total services provided through DUATS are projected to account for 22.5 million flight services, or 42.2 percent of total system services.

Total Flight Services

The decline in activity at FAA flight service stations since the mid 1980s is the result of the process of FSS consolidation, and the growing acceptance and utilization of DUATS services.

Total flight services, including non-automated and automated services, are expected to increase 0.4 percent in 2004 to 46.0 million. By 2015 total flight services are forecast to reach 53.3 million, an average annual increase of 1.4 percent over the 12-year forecast period.

CHAPTER VI

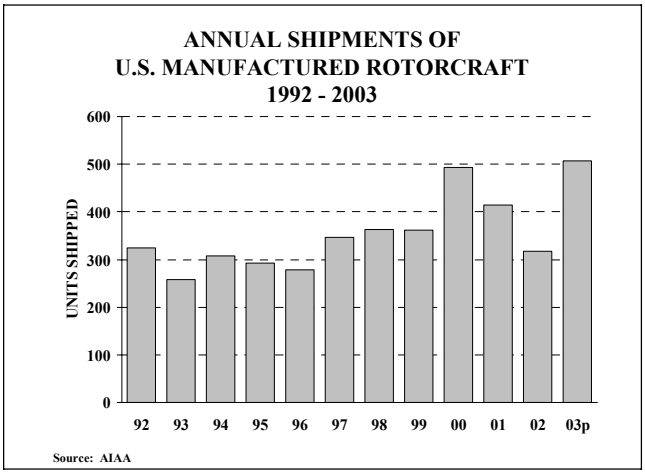
HELICOPTERS

Helicopters participate in a wide range of aviation activities, which are not only important, but contribute to the nation's economy as well. These activities include aerial observation; sightseeing; agricultural application; law enforcement; fire fighting; personal transportation; emergency medical services; transporting personnel and supplies to offshore oil rigs; traffic reporting; electronic news gathering; corporate or business transportation; and heavy lift for the oil, utility, and lumber industries.

REVIEW OF 2002/2003

SHIPMENTS

Preliminary data for calendar year 2003 reported by the Aerospace Industries Association of America (AIA)[1] indicate that shipments of new U.S. civil helicopters will total 507 units. This is a 59.4 percent increase over the 318 units shipped in 2002 and represents the highest level of helicopter shipments since 571 units were shipped in 1991.

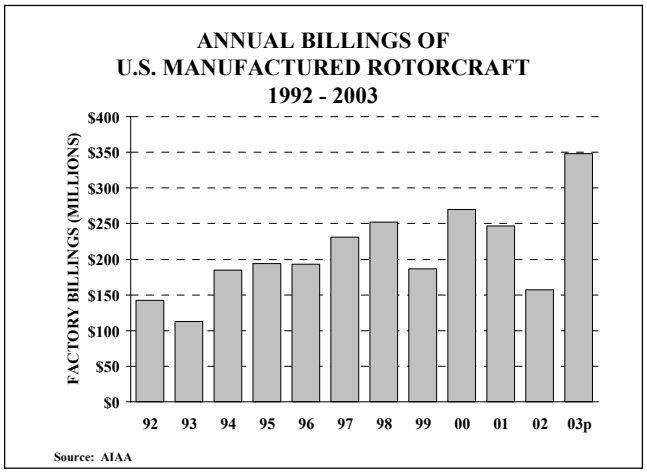


The value of the helicopter shipments totaled $348 million in 2003, an increase of 121.7 percent from billings of $157 million in 2002. This represents the highest helicopter billings in nearly 2 decades--$506 million in 1985.

Over the past 6 years, the average value per helicopter shipped has ranged from a high of $694,000 in 1998 to a low of $533,000 in 2002. However, in 2003 the average value rose to $686,000. Indications are that the increase in shipments is due primarily to the Robinson R44

[1] *2003 Year-End Review and 2003 Forecast—An Analysis*, Aerospace Industries Association of America, December 2003.

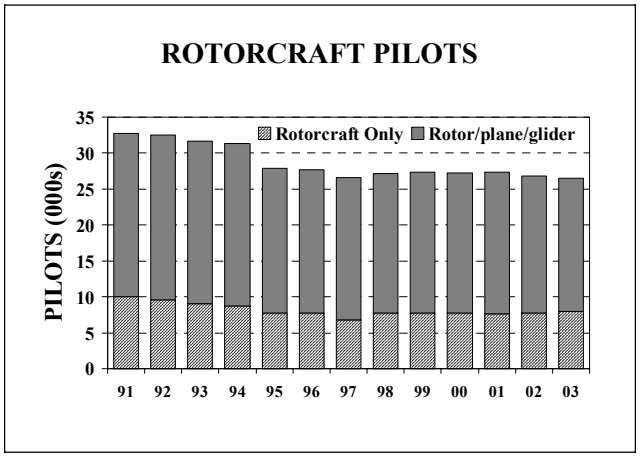
and the increase in value is due primarily to the Sikorsky S-76.



Another factor affecting the sales and shipment figures reported by AIAA is that they don't include U.S. imports from foreign manufacturers.

PILOTS

The total rotorcraft pilot population includes pilots who are certificated to operate only rotorcraft (helicopters and gyrocopters) as well as those that may operate rotorcraft as well as other airplanes and/or gliders. The total number of active rotorcraft pilots declined 1.2 percent in 2003, from 26,765 in 2002 to 26,453 in 2003. The number of pilots who are certificated to fly only rotorcraft increased from 7,770 in 2002 to 7,916 in 2003--up 1.9 percent.



2002 GENERAL AVIATION AND AIR TAXI ACTIVITY SURVEY

The historical rotorcraft active fleet and hours flown discussed in this chapter are derived from the General Aviation and Air Taxi Activity Survey (GA Survey). This survey is conducted annually by the FAA's Statistics and Forecast Branch. The fleet and hours flown data are estimated using a sample of general aviation aircraft from the FAA Civil Aviation Registry.

As in any sample survey, variability can be caused by traditional sampling errors and by non-sampling errors. With small groups such as rotorcraft, the estimates are heavily influenced not only by the number of respondents. but also by who responds. For example, if a large operator with high utilization rates for a particular aircraft type elects to respond one year but not the next, the effect would be to reduce the activity estimates for that particular aircraft type in the second year. This would occur even if that operator had no change in activity.

The active rotorcraft fleet and hours flown by aircraft type are detailed for the period 1996 to 2002 in Chapter V, Tables V-2 and V-3. The 2002 survey results for active rotorcraft and hours flown are also listed in Chapter X, Table 35. The 2002 survey results for active rotorcraft are reported as of December 31, 2002. The 2002 survey results for rotorcraft hours flown are reported as calendar year 2002.

FLEET AND HOURS FLOWN

Based on the 2002 Survey, there are 6,648 active civil rotorcraft in the United States, a decrease of 2.0 percent from the 6,783 rotorcraft reported for 2001. However, this still represents a 1.2 percent increase over he 6,570 rotorcraft reported for

1996. In 2002, the estimate of the number of active turbine rotorcraft is 4,297—a decrease of 4.3 percent from the 2001 estimate, but 4.8 percent more than the estimate for 1996. In 2002, there were 2,351 active piston rotorcraft, an increase of 2.6 percent over the 2001 estimate of 2,292.

At the FAA/Transportaion Research Board (TRB) 12th International Workshop on Future Aviation Activities (September 2002), the Vertical Flight Panel expressed the view that the active helicopter fleet is greater than the Survey estimates. The panel estimates that the active rotorcraft fleet totaled between 10,500 and 11,900 in 2002, considerably higher than that suggested by the GA Survey. The TRB Helicopter Subcommittee, the FAA, and others will continue to address the reconciliation of fleet numbers.

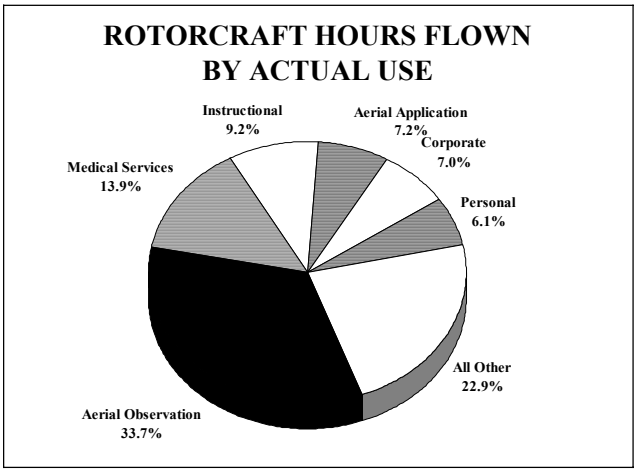
According to the 2002 GA Survey estimates, rotorcraft flew 1.9 million hours in 2002, a decrease of 4.0 percent from 2001. Turbine rotorcraft hours (1.4 million), which account for approximately 76 percent of total rotorcraft hours, decreased 3.8 percent in 2002. Hours flown by piston rotorcraft totaled 453,546--a decrease of 4.4 percent from 2001.

In 2002, the rotorcraft fleet flew an average of 282.1 hours per active aircraft—331.0 hours for turbine rotorcraft and 192.9 hours for piston rotorcraft. The revised data indicate a decrease in the average utilization of the helicopter fleet of 5.9 hours or 2.0 percent. Turbine rotorcraft utilization increased 0.5 percent—up from 329.3 in 2001, while piston rotorcraft utilization decreased 6.8 percent--down from 207.0 in 2001. The decline in utilization in 2002 is due, in part, to the sluggishness of the U.S. economic recovery in that year. However, the year-to-year fluctuations in these rates could be due to the size and/or type of businesses of the helicopter owners/operators responding to the survey in any particular year.

ACTUAL USE OF AIRCRAFT

A public use category was added to the Survey in 1996. In recent years, a number of new use categories have been added to the Survey, and have resulted in some discontinuities in the historical use series. The 1999 survey added a new use category--Air Medical Services--and eliminated the catchall "Other" category. For the 2002 survey the Public Use category was estimated separately and, therefore, is not additive with the other activity categories.

When measured by hours flown and actual use, aerial observation was the leading application for rotorcraft (631,234 hours), followed by medical services (261,085 hours), instructional (173,443 hours), aerial applications (135,245 hours), corporate (131,799 hours) and personal flying (113,914 hours).



For piston-powered rotorcraft, the leading use was instructional flying (29.4 percent), followed by aerial observation (23.0 percent), personal (16.7 percent) and aerial applications (12.9 percent). The top uses for turbine-powered rotorcraft were aerial observation (37.0 percent), medical services (18.4 percent), corporate (8.5 percent), and air tour and external load---both 6.0 percent.

In terms of the number of rotorcraft in 2002, the top primary use categories were aerial observation (26.3 percent), and personal

(20.6 percent). All other use categories fell below 9.0 percent. The leading primary use categories for number of piston rotorcraft were personal use (42.8 percent) instructional flying (18.1 percent), aerial observation (11.8 percent), aerial applications (11.6 percent) and business (10.5 percent). The leading uses for turbine rotorcraft were aerial observation (34.2 percent), medical services (12.4 percent) and corporate (11.9 percent).

FUEL CONSUMED

In 2002, fuel consumed by rotorcraft was estimated to be 53.4 million gallons, a decrease of 11.1 percent from the 2001 level. However, jet fuel consumption decreased by 12.4 percent in 2002 while aviation gasoline consumption declined only 2.7 percent. Jet fuel consumption is expected to increase 2.0 percent in 2003 while aviation gasoline is forecast to increase 0.9 percent.

FUTURE ISSUES

Issues facing the rotorcraft industry include availability of infrastructure, improved safety image, price-to-performance ratio, the maturing of the offshore oil and air medical markets, and environmental impact. Expanding infrastructure faces both public and local government resistance because of safety and environmental concerns. Security restrictions imposed on general aviation and rotorcraft, in particular, has had an impact on the use of helicopters for newsgathering and traffic reporting. Even with falling prices and improved operating performance, the demand for rotorcraft could be dampened by the lack of adequate landing facilities. Helicopters are seen as one option to transporting passengers or cargo from airports into the city or urban sites. However, operators often find themselves unable to convince communities that a heliport can be a good neighbor.

TECHNOLOGY

Technological advances could stimulate helicopter usage. The Global Positioning System (GPS) and other free flight enabling technologies offer the promise of freeing all aircraft, including helicopters, to use efficient direct routing to their destinations. These technologies may also enable helicopters to fly routes less noticeable to persons on the ground, increasing community acceptance and further enhancing the utility of helicopter operations.

Another major technological advance is the civil tilt-rotor, which combines the vertical takeoff and landing capabilities of a helicopter with the speed and range of a turboprop aircraft. Other innovative rotorcraft configurations that have been discussed and may benefit from advanced (vertical) flight research include quad tilt rotor, ducted coaxial rotor, folding prop-rotor, and canard rotor/wing. Intelligent rotorcraft systems and efficient active rotor systems may also compete with the above revolutionary systems for research funding—from both NASA and the FAA.

MARKET FACTORS

Factors increasing the demand for helicopters include economic growth, the aging of the fleet, and the availability of new more efficient models. New models stimulate demand due to improvements in performance and cost of operation. Factors that may slow the demand for new products include lower levels of petroleum extraction in the United States (one of the primary uses of helicopter services)---at least in the short-term---and limitations relating to supporting infrastructure.

According to the FAA/TRB Vertical Flight Panel, growth is expected in the next several years for the corporate/private fleet and the law enforcement fleets. The air medical market for helicopters is maturing. In the near-term, the air medical helicopter fleet is expected to decline in major metropolitan areas as hospital management becomes increasingly aware and concerned about the cost of their rotorcraft operations. However, this decline may be offset by growth in locations outside major cities.

Higher oil prices could result in greater helicopter activity in the Gulf of Mexico. Based on data collected by the Helicopter Safety Advisory Conference (HSAC), the total helicopter fleet in the Gulf has fluctuated between 540 in 1996 and 625 in 2002, peaking at 636 in 1997.

Government regulation and harmonization initiatives may also influence market demand. Aviation regulations could enlarge or reduce the market for aircraft services, depending on whether particular regulations permit or prohibit operations for which a market demand exists. Harmonization is the process of reducing substantive differences between U.S. regulations and those of other nations. Harmonization of aircraft certification requirements helps open international markets to aircraft manufacturers located in participating nations.

A rapidly growing segment of general aviation is fractional ownership. Several companies have expressed interest in offering fractional ownership of helicopters. For a variety of reasons, including speed and operating range, fractional ownership of helicopters will need to be configured differently than it is for business jets.

HELICOPTER FORECASTS

The forecasts of the rotorcraft fleet and flight hours discussed in this section are presented in tabular form in Chapter X, Table 35. Many of the assumptions used to develop these forecasts were derived from discussions with industry experts—including consultants, manufacturers, and industry associations--and from reports presented at meetings of the TRB subcommittee on Civil Helicopter Aviation and the 12th FAA/TRB International Workshop.

The rotorcraft forecasts for active fleet, utilization rates, hours flown, and fuel consumed use the data obtained from the 2002 GA Survey as the base year. Therefore, the forecast period for these four activity measures extends from 2002 through 2015. References to the average annual growth rates for the forecast period include 13 years (2003 to 2015). Forecasts for certificated pilots are based on 2003 data obtained from the airmen certification records maintained at the FAA Aeronautical Center in Oklahoma City. References to average annual growth rates for pilots include 12 years (2004 to 2015).

ACTIVE FLEET

The active rotorcraft fleet is expected to grow from 6,648 in 2002 to 7,210 in 2015, an average annual increase of 0.6 percent over the 13-year forecast period.

The number of turbine rotorcraft is expected to total 4,510 by 2015--an increase of 5.0 percent over the 2002 level. The turbine rotorcraft fleet is forecast to decrease by 1.1 percent in 2003 then increase at an average annual rate of 0.6 percent over the remaining 12 years of the forecast period. Turbine powered rotorcraft are expected to account for 62.6 percent of the rotorcraft fleet in 2015, down 2.0 percentage points from its share of 64.6 percent in 2002.

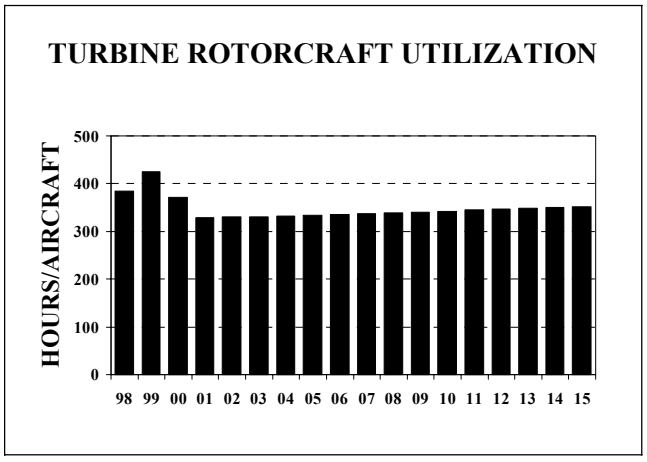
The piston rotorcraft fleet is expected to increase by 2.1 percent in 2003 and then

increase 1.1 percent annually for the rest of the forecast period. The piston fleet reaches a total of 2,700 by 2015--an annual increase of 1.1 percent over the 13-year period.

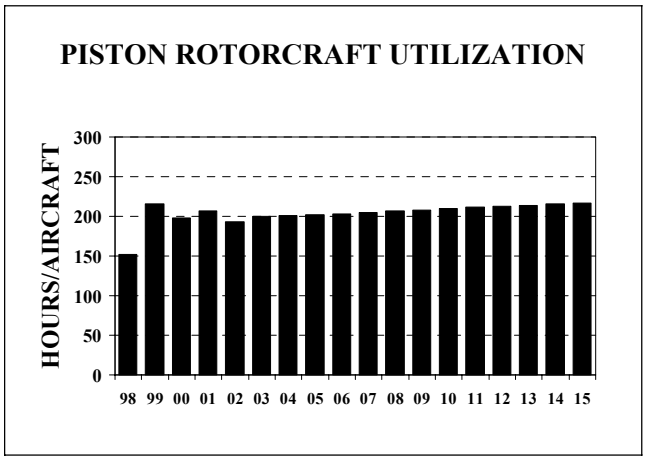
UTILIZATION

The annual utilization rate for all rotorcraft decreased from 288.0 hours in 2001 to 282.1 hours in 2002, down 2.0 percent. However, this relatively small decrease conceals the fact that the piston utilization rate decreased 6.8 percent while the turbine rotorcraft rate increased by 0.5 percent.

Utilization rates for all rotorcraft are expected to increase from 282.1 hours in 2002 to 292.0 in 2015, an annual increase of 0.3 percent. Turbine-powered helicopter utilization is expected to increase by 0.3 percent annually, from 331.0 hours in 2002 to 345.9 hours in 2015.



Piston-powered rotorcraft increase at an annual rate of 0.3 percent over the period, from 192.9 hours in 2002 to 201.9 hours in 2015.



FLIGHT HOURS

Total rotorcraft hours flown are forecast to increase from 1.9 million in 2002 to 2.1 million in 2015, an average annual increase of 0.9 percent. Total flight hours for turbine-powered rotorcraft are projected to increase by 0.7 percent annually, from 1.4 million in 2002 to 1.6 million in 2015. Flight hours for the piston powered portion of the rotorcraft fleet are expected to increase from 453 ,546 hours in 2002 to 555,000 hours in 2015, an average annual increase of 1.4 percent.

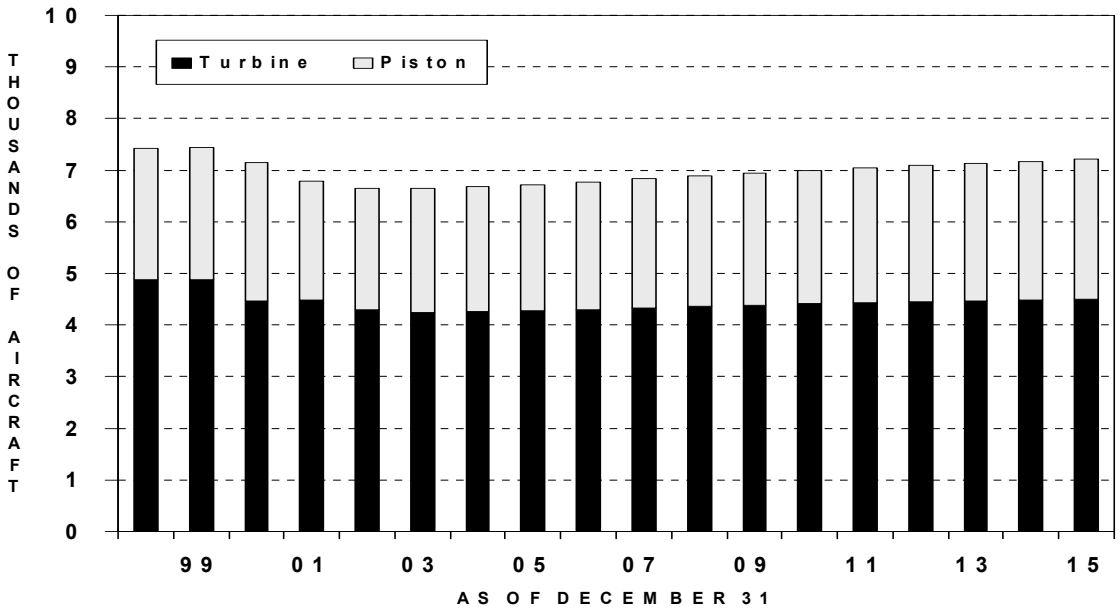
HELICOPTER PILOTS

The number of rotorcraft only pilots is expected to increase at an annual rate of 1.0 percent over the period, rising from 7,918 in 2003 to 8,970 in 2015. This is below the 1.4 percent annual rate of increase expected for the overall pilot population and reflects the relatively slow growth projected in the rotorcraft fleet.

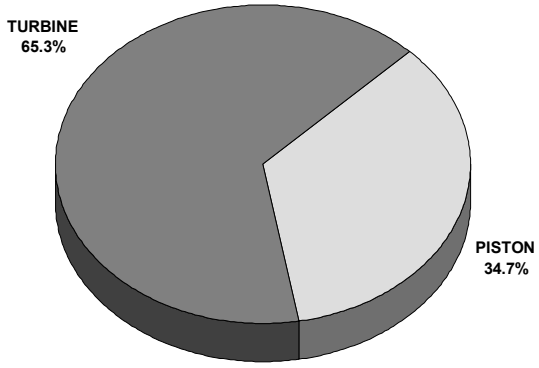
FUEL CONSUMED

In 2002, rotorcraft fuel consumption was estimated at 53.4 million gallons--7.8 million

ACTIVE ROTORCRAFT



PERCENT BY AIRCRAFT TYPE



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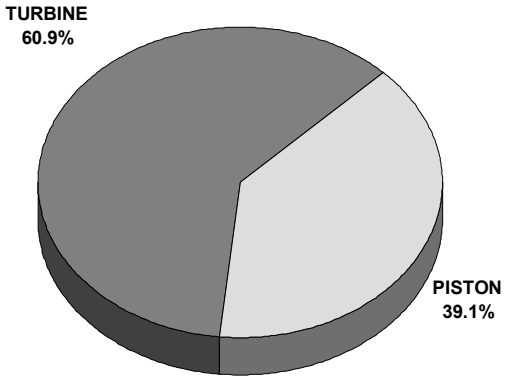
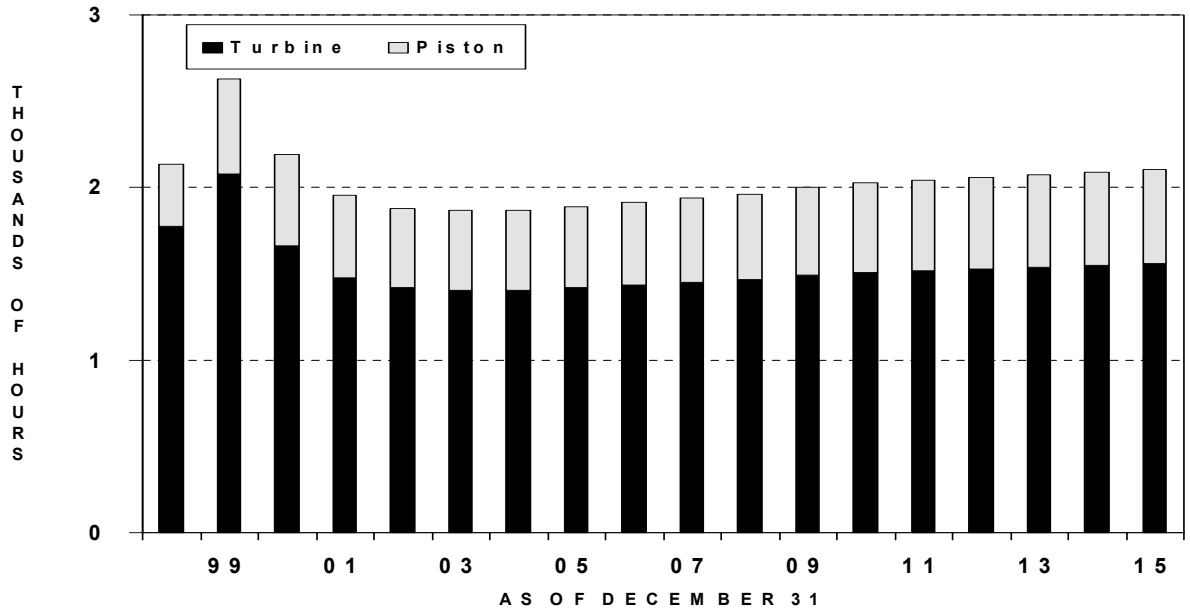
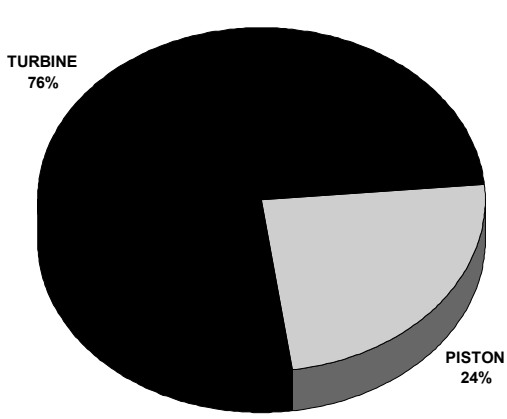


2015

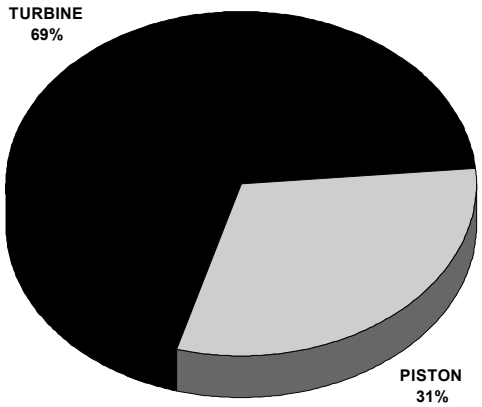
ROTORCRAFT HOURS FLOWN



PERCENT BY AIRCRAFT TYPE



2002



2015

gallons by piston powered helicopters and 45.6 million gallons by turbine powered helicopters. By 2015 total fuel consumption by rotorcraft is projected to total 60.5 million gallons, 13.3 percent higher than the 2002 level. Fuel consumed by turbine-powered helicopters is forecast to be 51.8 million gallons by 2015, a 13.5 increase over 2002. Fuel consumed by piston-powered helicopters is expected to reach 8.7 million gallons by 2015**,** an 11.5 percent increase over 2002.

CHAPTER IX

COMMERCIAL SPACE TRANSPORTATION

The Federal Aviation Administration's (FAA) Associate Administrator for Commercial Space Transportation (AST) licenses and regulates U.S. commercial space launch activity as authorized by Executive Order 12465, *Commercial Expendable Launch Vehicle Activities*, and the *Commercial Space Launch Act of 1984*, as amended. AST's mission is to license and regulate commercial launch and reentry operations to protect public health and safety, the safety of property, and the national security and foreign policy interests of the United States. In addition, the FAA licenses commercial launch sites. The *Commercial Space Launch Act of 1984* and the *1996 National Space Policy* also direct the DOT (FAA) to encourage, facilitate, and promote commercial launches.

INTRODUCTION TO COMMERCIAL SPACE TRANSPORTATION

WHAT IS COMMERCIAL SPACE TRANSPORTATION?

The term "commercial space transportation" refers to the launch of an object into space or the reentry of an object from space by a private, non-government entity. Typically, commercial space transportation concerns the activities of launch service providers – companies that place satellites into orbit under contract from corporations, governments, universities, or other organizations. Launch service providers may also conduct suborbital flights, which are typically launches of objects high into the atmosphere or into space that return to Earth instead of entering orbit. The world's major launch service providers are in the United States, Europe, Russia, and China. Other countries, such as Brazil, Japan, and India, are attempting to enter the market.

The FAA issues licenses to companies that conduct commercial launches in the United States and to

U.S. companies that conduct launches outside U.S. territory. Examples of launch service providers who receive FAA licenses are Lockheed Martin's International Launch Services (ILS), Boeing Launch Services (BLS), and Orbital Sciences Corporation (OSC). The FAA also issues licenses for suborbital launches. Licenses from FAA/AST may also be required for certain large hobby or research rockets, depending on the rocket's motor impulse, operating time, and ballistic coefficient factors.

Suborbital launches by private entities are an increasingly important regulatory activity for the FAA. Several organizations are developing reusable suborbital vehicles designed to carry people or payloads to and from very high altitudes. The following sections will briefly describe the history of the commercial use of space, U.S. orbital launch service providers, and the emerging suborbital service providers using new reusable vehicles.

COMMERCIAL USE OF SPACE

Since the launch of Sputnik in 1957, spaceflight has largely been a government endeavor. Even though satellites serving commercial or quasi-commercial purposes went into service in the early 1960s, the business of launching them was strictly a government affair. Many of the early commercial satellites launched were telecommunications spacecraft located in geosynchronous Earth orbit[1] (GEO) used to relay video and audio signals for television and telephone services.

Launches of satellites that serve commercial purposes have steadily increased from the early 1980s to the late 1990s. In 2003, commercial launches represented about 27 percent of the total orbital launches conducted worldwide. Until the mid-1990s, commercial satellites were almost exclusively telecommunications satellites located in GEO.

Since 1997, new satellite markets have opened up for commercial mobile telephones, data messaging, and remote sensing in low Earth orbit (LEO) or non-geosynchronous orbit (NGSO).[2] Digital satellite radio services began in North America in late 2001.

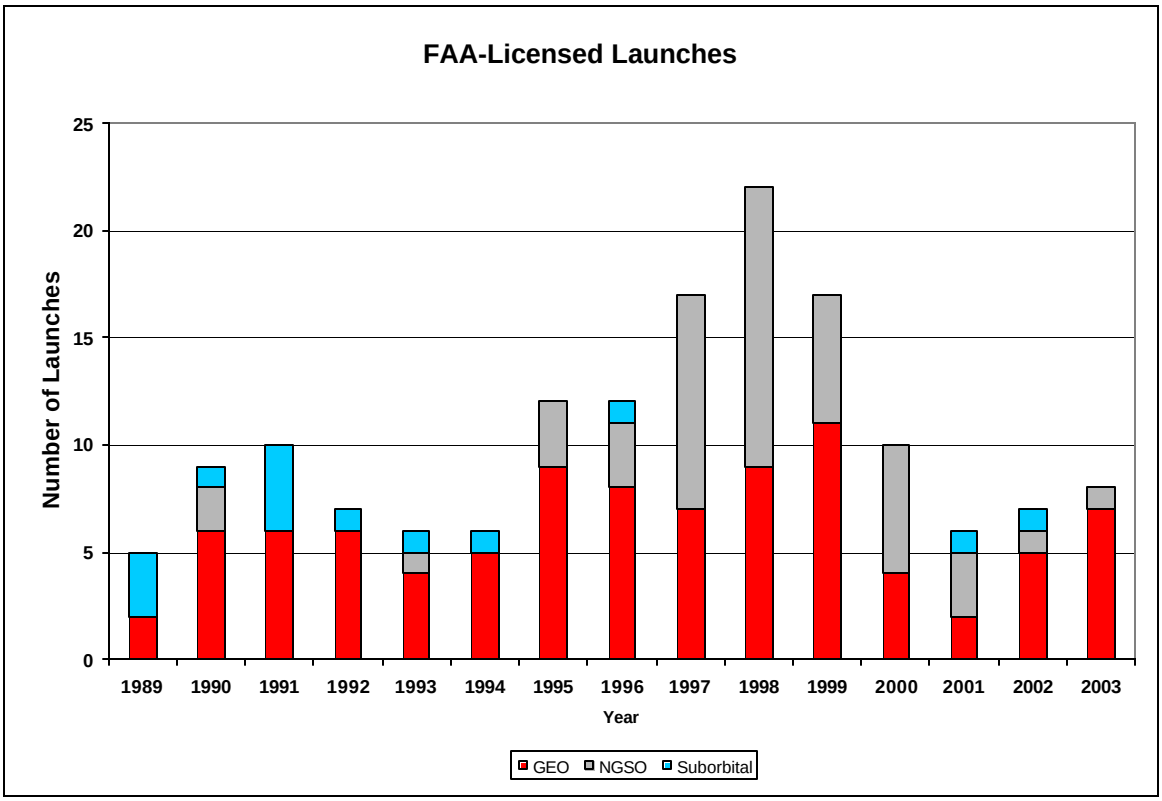
Other types of commercial launches are also emerging. Cargo flights to the Mir Space Station, partially funded through private parties, took place in the 1990s, and two space tourists have paid for seats on Russian spacecraft for rides to the International Space Station. Public space travel is expected to increase in the future as current and new entrepreneurial companies develop passenger vehicles capable of suborbital and orbital space flights.

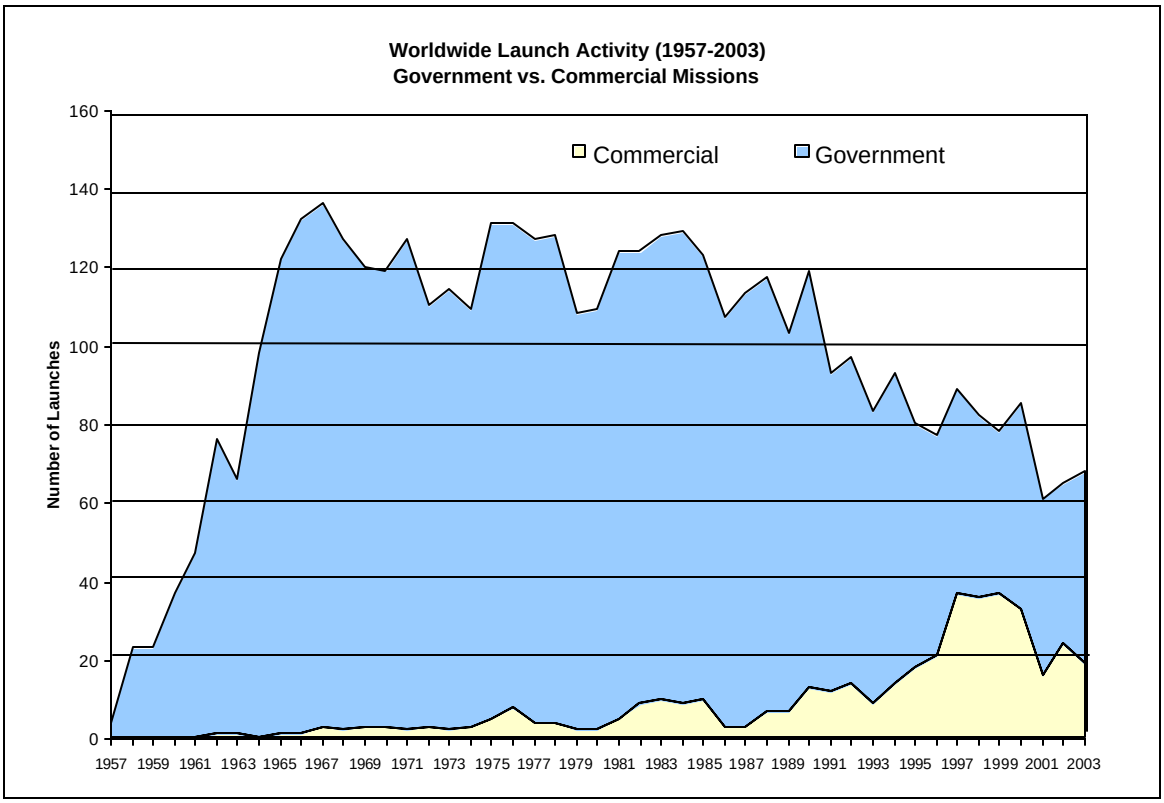
U.S. COMMERCIAL LAUNCH SERVICES

Up until the early 1980s, all commercial satellites were launched on rockets owned and operated by the U.S. government, including the Space Shuttle. When Europe's Arianespace began offering launch services for commercial satellites in 1983, an international launch market was created and has since grown to over 15 vehicle families worldwide.

[1] A spacecraft in geostationary Earth orbit is synchronized with the Earth's rotation, orbiting once every 24 hours, and appears to an observer on the ground to be stationary in the sky. GEO is a broader category used for any circular orbit at an altitude of 35,852 kilometers with a low inclination (i.e., over the equator).

[2] Non-geosynchronous orbit (NGSO) satellites are those in orbits other than GEO. They are located in LEO (lowest achievable orbit to about 2,400 kilometers), medium Earth orbit (MEO, 2,400 kilometers to GEO), and all other high or elliptical orbits or trajectories.


FAA-Licensed Launches
Number of Launches
25
20
15
10
5
0
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
Year
GEO
NGSO
Suborbital


Worldwide Launch Activity (1957-2003)
Government vs. Commercial Missions
Commercial
Government
Number of Launches
160
140
120
100
80
60
40
20
0
1957
1959
1961
1963
1965
1967
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003

Following the passage of the *Commercial Space Launch Act of 1984*, the U.S. government and industry began to transition from government to commercial operations for expendable launch vehicles (ELVs). The *Commercial Space Launch Act* authorized the Department of Transportation (DOT) to regulate and license commercial launch activities. From 1989 through the end of 2003, the DOT has licensed over 150 orbital and suborbital commercial launches.

NASA and the U.S. Air Force continue to launch government satellites, which include flights of the Space Shuttle. These flights are not considered commercial by the FAA because they are conducted for and by government agencies and not by the private launch service provider, even though the same vehicles may be used. Occasionally, a U.S. government agency may contract a private launch service provider to deploy a satellite, or may contract a satellite manufacturer to build a satellite and deliver it on orbit. In this case the manufacturer would contract with a private launch service provider. Launches of U.S. government payloads may or may not be FAA-licensed as commercial depending on who is conducting the specific launch. Launches of foreign government satellites on U.S. vehicles are nearly always contracted through the private service providers and are considered commercial.

Launch providers continually upgrade their vehicles to keep pace with the marketplace and technology and retire older models. Currently active ELVs that are licensed by the FAA for orbital launches include:

- Atlas 2, 3, and 5 (intermediate to heavy class), all built by Lockheed Martin and marketed by International Launch Services (ILS);
- Delta 2 (medium class) and Delta 4 (intermediate class), built by The Boeing Company and marketed by Boeing Launch Services (BLS).
- Zenit 3SL (intermediate class), built by KB Yuzhnoye (in Ukraine) for the Sea Launch partnership and marketed by BLS; and
- Pegasus XL and Taurus (small class), both built and marketed by OSC.

New expendable and reusable launch vehicles (RLVs) are also being developed for orbital and suborbital launches.

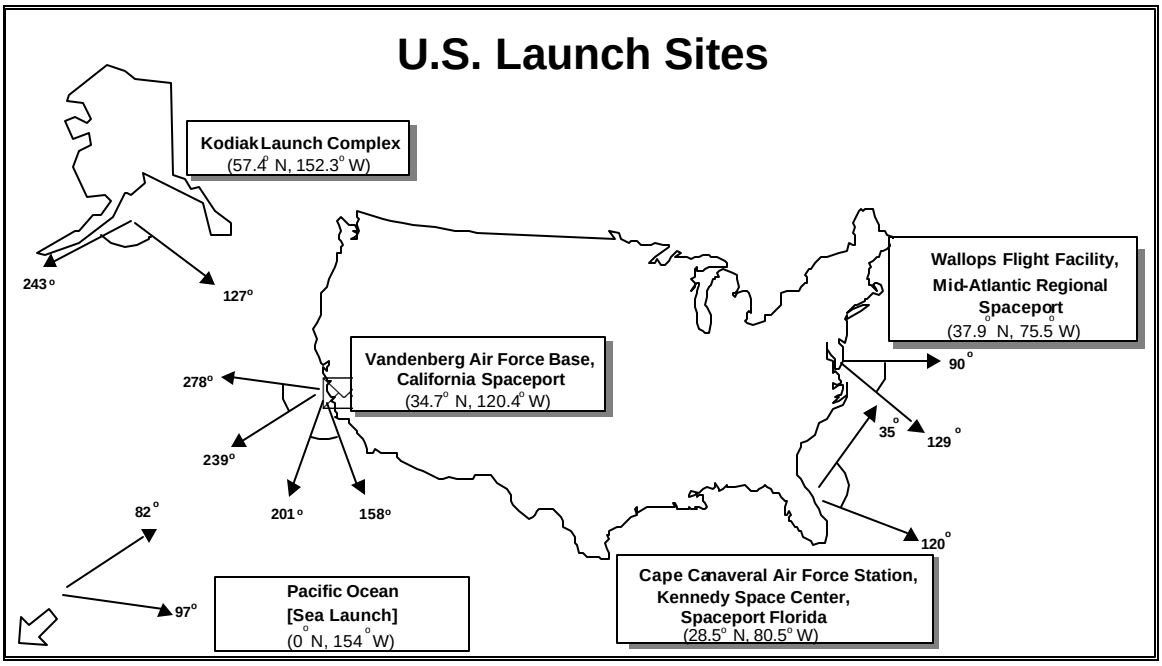
A Delta 4 heavy version is being prepared by Boeing Launch Services for a demonstration launch scheduled in 2004 and a heavy lift version of the Atlas 5 is under development by Lockheed Martin.

The Falcon, developed by SpaceX with a first launch in 2004, can carry satellites up to 454 kilograms (1,000 pounds). SpaceX intends to develop a more powerful version, capable of lifting up to 4,200 kilograms (9,259 pounds) to LEO.

US and International Partner Commercial Launch Systems

	Small		Medium	Intermediate		Heavy			
									
Vehicle Name	Pegasus	Taurus	Delta 2	Delta IV	Atlas II/III	Atlas V	Proton*	Zenit 3SL	Delta IV Heavy
Company	OSC	OSC	Boeing	Boeing	ILS	ILS	ILS	Sea Launch	Boeing
First Commercial Launch	1993	1998	1989	2002	1990	2002	1996	1999	-

*Not FAA Licensed



New suborbital vehicles capable of carrying human crews include SpaceShipOne from Scaled Composites, Armadillo from Armadillo Aerospace, and a demonstration vehicle by XCOR Aerospace.

ILS and BLS launch satellites to GEO from Cape Canaveral (CCAFS) in Florida. Sea Launch conducts GEO launches from a mobile ocean platform in the Eastern-central Pacific Ocean. Launches to NGSO can take place from CCAFS, Vandenberg Air Force Base (VAFB) in California, the Mid-Atlantic Regional Spaceport in Virginia, or Kodiak Launch Complex in Alaska (see figure "U.S. Launch Sites" above).

FAA/AST has issued four launch site operator licenses to state-run organizations to operate commercial launch sites, or spaceports. They are:

- Spaceport Florida at CCAFS, Florida (license held by Florida Space Authority);
- California Spaceport at VAFB, California (license held by Spaceport Systems International);
- Mid-Atlantic Regional Spaceport at Wallops Island, Virginia (license held by Virginia Commercial Space Flight Authority); and
- Kodiak Launch Complex on Kodiak Island, Alaska (license held by Alaska Aerospace Development Corporation), the first spaceport not located on a federal range.

Other states are actively seeking to develop additional spaceports, including New Mexico, Oklahoma, and Texas.

Several reusable suborbital vehicles are currently in development. The X Prize competition, modeled after the competitions in the early days of aviation for new aeronautical feats, plans to award a $10 million prize for the first privately developed vehicle that carries a crew of three to an altitude of 100 kilometers (62 miles), and repeats the feat in less than 2 weeks. The competition has motivated more than 20 entrants to develop vehicles. The X Prize Foundation currently has funding to award a prize if a successful flight occurs by the end of 2004.

The Foundation is also in the process of selecting one of four sites to be a regular host of the X Prize

Cup, similar to an annual air show for the private space community. The four states being considered for the proposed annual event are California, Florida, Oklahoma and New Mexico.

REVIEW OF 2003

There were eight FAA-licensed launches in 2003, up from seven in 2002. ILS carried out four Atlas launches, all from Cape Canaveral. Sea Launch conducted three successful launches of GEO communications satellites from their Pacific Ocean platform, and Orbital Sciences Corporation conducted a successful launch of a remote sensing satellite from their Pegasus small vehicle.

Russian launch ranges deployed five vehicles for commercial missions. Europe's Arianespace conducted four commercial launch campaigns from Kourou in French Guiana, their lowest total since 1987. China did not launch any commercial payloads in 2003. Therefore, including the five launches from U.S. ranges and the three flights for Sea Launch, 17 orbital commercial launches were conducted during 2003. There were 64 total worldwide commercial, civil, and military launches, with commercial launches representing about 20 percent of total launches. For more details, see the Year In Review report available from the FAA/AST website at *http://ast.faa.gov/rep_study/yir.htm*.

COMMERCIAL SPACE TRANSPORTATION FORECASTS

In May 2003, the FAA and the Commercial Space Transportation Advisory Committee (COMSTAC) published their annual forecast for commercial launch demand, the *2003 Commercial Space Transportation Forecasts.* This forecast combined the *COMSTAC 2003 Commercial Geostationary Launch Demand Model,* which covers satellites that operate in GEO, with the FAA's *2003 Commercial Space Transportation Projections for Non-Geosynchronous Orbits (NGSO).* The forecast projected an average of nearly 24 commercial orbital launches worldwide annually through 2012.

The 2003-2012 forecasts project an annual average of:

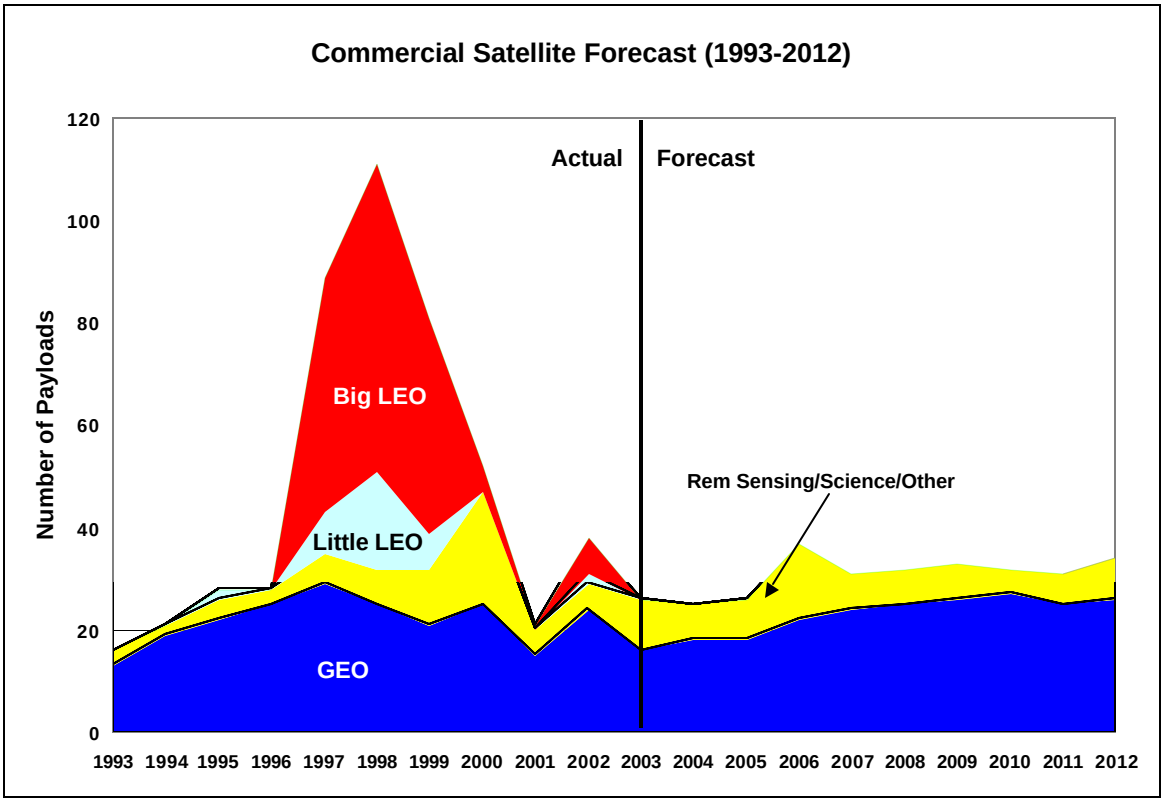
- 18.6 launches of medium-to-heavy vehicles to deploy GEO satellites;
- 2.2 launches of medium-to-heavy vehicles to NGSO; and
- 2.9 launches to NGSO by small vehicles.

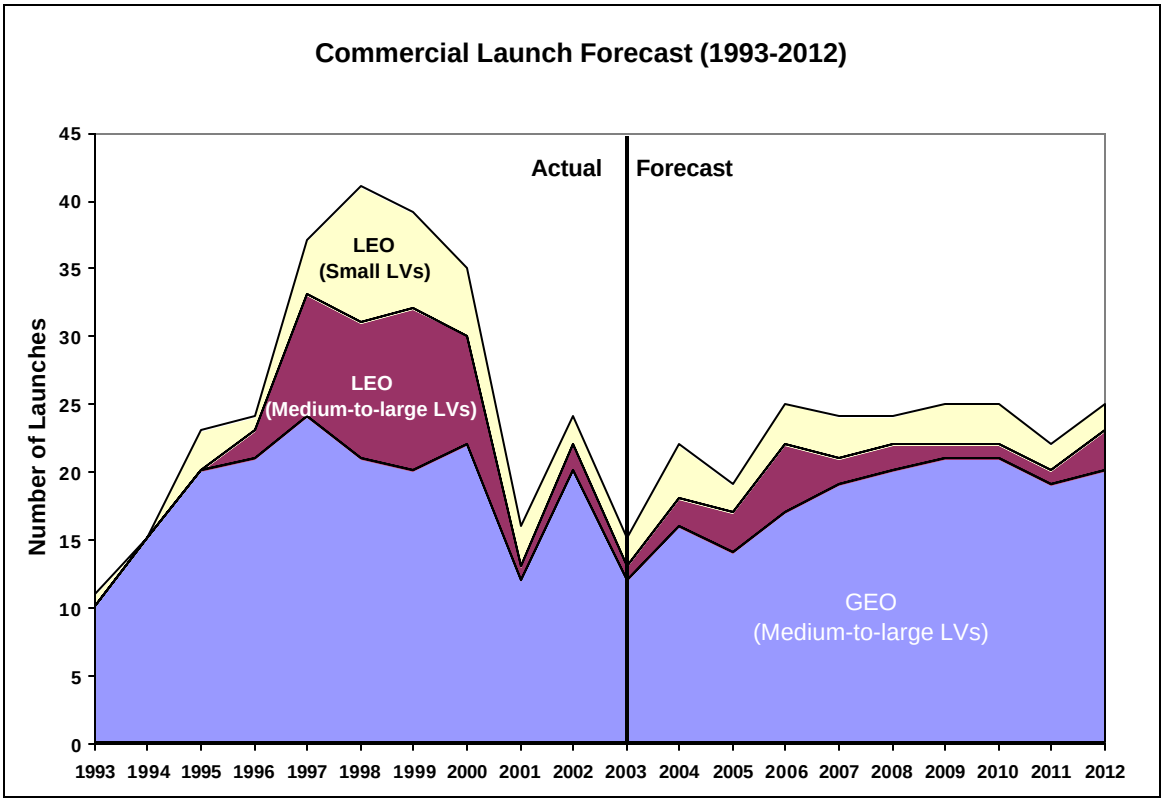
These estimates account for multiple manifesting payloads, since commercial NGSO payloads could be launched in groups to reduce launch costs.

The forecast is based on industry inputs from across the satellite and launch service industry and represents the demand for launch services for actual or projected satellite programs in a given year. The forecast is not a prediction of what will actually be launched.

Several factors can affect the forecast, including satellite manufacturing delays, launch vehicle component problem launch failure investigations, or manifesting issues. Regulatory issues, such as satellite export compliance or FCC licensing, can come into play. Also, changes in the business environment can cause satellite companies to alter or cancel their development plans.

The complete forecast report is available at *http://ast.faa.gov/rep_study/forcasts_and_reports.htm*.


Commercial Satellite Forecast (1993-2012)
Number of Payloads
120
100
80
60
40
20
0
Actual
Forecast
Big LEO
Little LEO
GEO
Rem Sensing/Science/Other
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012


Commercial Launch Forecast (1993-2012)
Number of Launches
45
40
35
30
25
20
15
10
5
0
Actual
Forecast
LEO
(Small LVs)
LEO
(Medium-to-large LVs)
GEO
(Medium-to-large LVs)
1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

GENERAL TRENDS

The dominant feature of the commercial launch industry continues to be the launch of commercial satellites to GEO. There are also a small number of commercial launches to NGSO for remote sensing and international science payloads, but NGSO launches make up a considerably smaller portion of the market today then during the deployment phase of Iridium and Globalstar in the late 1990s. The NGSO telecommunications market has declined significantly, and the 2003 COMSTAC forecast projects the composition of NGSO payloads to be about 75 percent international science and research, and the remaining payloads for remote sensing. Only 4 of 17 commercial launches during 2003 contained NGSO payloads.

The commercial market generally has experienced a sharp decline in demand due to the global economic slowdown and business failures of first generation mobile telecommunications companies. Launch activity is expected to grow only gradually over the next several years. U.S. commercial providers hope that new government markets open up for resupply of the International Space Station and possible future Moon missions.

The global marketplace continues to have a surplus in commercial launch capacity. The largest providers of commercial launch services in the United States, Europe, and Russia continue to operate fewer launches than in the recent past. New efforts to offer commercial services from Japan and Brazil have slowed because of vehicle failures and a generally crowded marketplace.

A revival of the suborbital market is expected soon, spurred by the emerging public space travel market and competition for X Prize. Developers inside and outside the United States hope to open space to ordinary passengers.

TABLE 1

U.S. SHORT-TERM ECONOMIC FORECASTS

ECONOMIC VARIABLE	FISCAL YEAR 2004				FISCAL YEAR 2005			
	1ST. QTR.	2ND. QTR.	3RD QTR.	4TH. QTR.	1ST. QTR.	2ND. QTR.	3RD QTR.	4TH. QTR.
REAL GDP								
(1996 Chained $, Billions)								
GLOBAL INSIGHT	9,905.2	10,011.7	10,121.8	10,246.1	10,355.1	10,451.2	10,538.6	10,615.1
OMB	9,918.0	10,015.0	10,112.9	10,212.1	10,311.0	10,392.4	10,482.2	10,572.7
CBO	9,889.0	9,998.4	10,104.2	10,208.7	10,321.6	10,393.1	10,482.0	10,564.9
OIL AND GAS PRICE INDEX								
(1996 EQUALS 100)								
GLOBAL INSIGHT	124.9	114.7	108.7	111.4	114.4	113.7	112.7	112.4
OMB	131.7	128.1	122.4	117.6	114.0	111.5	111.9	112.3
CBO (Energy Deflator)	125.7	125.1	124.7	124.1	123.6	123.3	123.3	123.7
CONSUMER PRICE INDEX								
(1982-84 EQUALS 100)								
GLOBAL INSIGHT	185.2	185.6	186.0	186.8	187.6	188.3	189.0	189.7
OMB	185.0	185.6	186.3	186.9	187.6	188.3	189.0	189.7
CBO	185.2	186.0	186.9	187.7	188.7	189.7	190.8	192.0

Source: Global Insight, December 2003; Office of Management and Budget, December 2003; Congressional Budget Office, November 2003.

TABLE 2

U.S. LONG-TERM ECONOMIC FORECASTS

FISCAL YEAR	GROSS DOMESTIC PRODUCT (Billions 1996$)	CONSUMER PRICE INDEX (1982-84=100)	OIL AND GAS PRICE INDEX (1996 = 100)
Historical			
1998	8,410.2	162.4	90.8
1999	8,765.9	165.5	89.7
2000	9,140.5	170.8	116.3
2001	9,213.3	176.3	122.8
2002	9,372.5	178.9	105.4
2003E	9,630.2	183.1	124.1
Forecast			
2004	10,064.5	186.0	124.9
2005	10,439.6	188.6	112.4
2006	10,797.1	191.9	113.3
2007	11,156.1	195.8	115.2
2008	11,518.0	200.3	117.3
2009	11,877.9	205.3	119.6
2010	12,247.2	210.4	121.9
2011	12,626.8	215.7	124.3
2012	13,018.2	221.1	126.7
2013	13,421.7	226.6	129.2
2014	13,837.7	232.3	131.7
2015	14,266.7	238.0	134.3

Source: 2003-2014; Office of Management and Budget, December 2003. Extrapolated to 2015.

TABLE 3

ALTERNATIVE U.S. LONG-TERM ECONOMIC FORECASTS

FISCAL YEAR	GROSS DOMESTIC PRODUCT (Billions 1996$)		CONSUMER PRICE INDEX (1982-84 = 100)		OIL AND GAS PRICE INDEX (1996 = 100)	
	CBO	GLOBAL INSIGHT	CBO	GLOBAL INSIGHT	CBO*	GLOBAL INSIGHT
Historical						
1998	8,410.2	8,410.2	162.4	162.4	91.1	90.8
1999	8,765.9	8,765.9	165.5	165.5	89.7	89.7
2000	9,140.5	9,140.5	170.8	170.8	116.6	116.3
2001	9,213.3	9,213.3	176.3	176.3	124.0	122.8
2002	9,372.5	9,372.5	178.9	178.9	106.5	105.4
2003E	9,624.2	9,630.2	183.1	183.1	125.5	124.1
Forecast						
2004	10,050.1	10,071.2	186.5	185.9	124.9	114.9
2005	10,440.4	10,490.0	190.3	188.7	123.5	113.3
2006	10,771.8	10,823.3	195.0	191.8	125.1	114.4
2007	11,101.5	11,200.5	199.8	195.6	127.5	118.2
2008	11,433.1	11,521.1	204.8	199.9	130.1	120.7
2009	11,768.2	11,842.7	209.9	204.4	132.7	123.3
2010	12,094.8	12,176.9	215.2	209.4	135.5	126.6
2011	12,413.1	12,502.0	220.6	215.0	138.3	132.1
2012	12,734.4	12,857.0	226.1	220.9	141.2	136.8
2013	13,067.1	13,257.5	231.7	227.0	144.1	142.7
2014	13,401.9	13,666.4	237.5	233.8	147.2	148.4
2015	13,742.5	14,061.5	243.5	241.1	150.2	154.2

Source: Global Insight, December 2003; Congressional Budget Office, November 2003.
*Energy Deflator

TABLE 4

INTERNATIONAL GDP FORECASTS BY TRAVEL REGION

CALENDAR YEAR	GROSS DOMESTIC PRODUCT (In Billions of 2000 U.S. Dollars) CANADA	EUROPE/ AFRICA/ MIDDLE EAST	LATIN AMERICA/ MEXICO	JAPAN/PACIFIC BASIN/CHINA/OTHER ASIA/AUSTRALIA/ N. ZEALAND	WORLD
Historical					
1998	651.8	9,466.7	1,765.0	7,684.6	29,302.9
1999	687.9	9,708.7	1,766.3	7,883.4	30,186.7
2000	724.1	10,088.9	1,835.7	8,225.9	31,413.7
2001	738.0	10,262.3	1,837.0	8,376.4	31,811.0
2002	762.2	10,407.4	1,815.3	8,581.1	32,434.7
2003E	775.0	10,530.5	1,836.7	8,885.8	33,243.4
Forecast					
2004	803.0	10,782.5	1,901.2	9,243.4	34,474.3
2005	831.9	11,093.0	1,968.8	9,601.1	35,695.8
2006	859.3	11,397.6	2,041.8	9,949.7	36,861.9
2007	887.4	11,695.3	2,119.7	10,311.2	38,062.0
2008	914.8	11,998.3	2,202.5	10,691.9	39,238.7
2009	943.3	12,305.5	2,291.2	11,086.2	40,455.2
2010	972.4	12,619.1	2,383.3	11,490.8	41,701.4
2011	1,001.4	12,943.7	2,479.5	11,911.6	42,974.3
2012	1,027.3	13,276.3	2,580.1	12,340.9	44,307.4
2013	1,052.5	13,614.1	2,685.2	12,768.6	45,698.0
2014	1,077.6	13,959.0	2,795.8	13,202.0	47,126.8
2015	1,102.4	14,311.9	2,911.9	13,647.9	48,521.6

Source: Global Insight, World Economic Outlook, December 2003.

TABLE 5

INTERNATIONAL GDP FORECASTS--SELECTED AREAS/COUNTRIES

CALENDAR YEAR	GROSS DOMESTIC PRODUCT (In Billions of 2000 U.S. Dollars)				
	NORTH AMERICA (NAFTA)	EUROZONE	UNITED KINGDOM	JAPAN	CHINA
Historical					
1998	10,273.6	5,683.0	1,350.0	4,626.7	933.7
1999	10,703.4	5,841.5	1,387.8	4,634.7	1,000.0
2000	11,130.1	6,058.6	1,440.2	4,762.7	1,080.0
2001	11,166.6	6,160.6	1,471.0	4,780.4	1,158.8
2002	11,437.4	6,216.7	1,496.3	4,787.9	1,251.5
2003E	11,763.1	6,247.5	1,526.7	4,891.8	1,355.4
Forecast					
2004	12,296.6	6,354.7	1,569.4	5,007.9	1,462.6
2005	12,763.4	6,511.5	1,610.4	5,125.0	1,567.4
2006	13,183.1	6,660.7	1,650.6	5,222.3	1,672.4
2007	13,624.6	6,802.0	1,691.2	5,321.6	1,783.0
2008	14,011.8	6,945.1	1,731.6	5,422.7	1,903.7
2009	14,415.5	7,091.5	1,773.8	5,520.3	2,036.1
2010	14,827.0	7,238.6	1,819.8	5,619.7	2,174.2
2011	15,233.4	7,388.9	1,867.8	5,720.8	2,323.4
2012	15,680.1	7,543.2	1,916.4	5,823.8	2,472.8
2013	16,175.1	7,699.2	1,965.4	5,928.6	2,612.5
2014	16,690.0	7,858.0	2,014.0	6,035.3	2,753.0
2015	17,144.4	8,021.2	2,063.3	6,137.9	2,908.4

Source: Global Insight, World Economic Outlook, December 2003.

TABLE 6

INTERNATIONAL EXCHANGE RATE FORECASTS

CALENDAR YEAR	FOREIGN EXCHANGE RATES (US$/Local Currency, Average)				UNITED STATES OECD TRADE-WEIGHTED NOMINAL EXCHANGE RATE (1990 EQUALS 100)
	CANADA	UNITED KINGDOM	JAPAN*	EURO	
Historical					
1998	0.674	1.659	7.639	1.119	115.2
1999	0.673	1.618	8.797	1.066	113.4
2000	0.673	1.514	9.277	0.921	118.3
2001	0.646	1.441	8.229	0.895	126.3
2002	0.637	1.501	7.983	0.944	125.3
2003E	0.714	1.635	8.610	1.129	111.8
Forecast					
2004	0.784	1.767	9.228	1.242	106.2
2005	0.802	1.813	9.631	1.287	103.4
2006	0.810	1.821	10.152	1.310	101.1
2007	0.816	1.825	10.299	1.325	99.4
2008	0.824	1.828	10.604	1.333	98.0
2009	0.831	1.832	10.893	1.337	97.0
2010	0.838	1.838	11.099	1.342	96.1
2011	0.842	1.845	11.261	1.346	95.3
2012	0.846	1.850	11.390	1.350	94.6
2013	0.851	1.854	11.481	1.354	94.1
2014	0.856	1.857	11.547	1.355	93.7
2015	0.861	1.863	11.601	1.360	93.3

Source: Global Insight, World Economic Outlook, December 2003.
* U.S.$ per 1,000 Yen.

TABLE 7

U.S. AND FOREIGN FLAG CARRIERS

TOTAL PASSENGER TRAFFIC TO/FROM THE UNITED STATES

CALENDAR YEAR	TOTAL PASSENGERS BY WORLD TRAVEL AREA (Millions)				
	ATLANTIC	LATIN AMERICA	PACIFIC	U.S./CANADA TRANSBORDER	TOTAL
Historical*					
1998	46.6	37.7	22.9	19.0	126.1
1999	48.7	38.8	24.3	19.6	131.4
2000	53.0	40.8	26.0	20.8	140.6
2001	47.5	38.8	23.0	19.5	128.8
2002	43.4	36.9	22.3	18.3	120.8
2003E	43.2	36.9	19.5	17.3	116.9
Forecast					
2004	47.1	41.1	21.7	18.0	127.9
2005	51.1	44.0	23.5	19.1	137.7
2006	53.9	46.5	24.9	19.8	145.1
2007	56.3	48.9	26.2	20.4	151.8
2008	58.8	51.3	27.5	21.1	158.7
2009	61.3	53.9	28.9	21.7	165.7
2010	63.8	56.6	30.3	22.3	173.0
2011	66.4	59.4	31.8	23.0	180.5
2012	69.1	62.2	33.3	23.6	188.2
2013	71.8	65.2	34.8	24.2	196.0
2014	74.7	68.4	36.3	24.8	204.1
2015	77.5	71.6	37.8	25.5	212.5

* Sources: Atlantic, Pacific, and Latin America, INS Form I-92, U.S. Department of Commerce; U.S./ Canada Transborder, Transport Canada.

TABLE 8

U.S. COMMERCIAL AIR CARRIERS' FORECAST ASSUMPTIONS 1/

SEATS PER AIRCRAFT AND PASSENGER TRIP LENGTH

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT			AVERAGE PASSENGER TRIP LENGTH		
	DOMESTIC (Seats)	INT'L. (Seats)	SYSTEM (Seats)	DOMESTIC (Miles)	INT'L. (Miles)	SYSTEM (Miles)
Historical*						
1998	130.5	232.9	146.9	780.3	3,014.4	968.3
1999	130.5	229.5	146.2	789.6	3,097.9	979.9
2000	129.4	230.6	145.1	799.8	3,223.2	995.7
2001	127.7	226.9	143.5	810.7	3,233.5	1,011.6
2002	125.9	221.5	140.3	823.3	3,088.8	1,008.8
2003E	123.2	216.3	136.9	837.7	2,879.5	1,010.0
Forecast						
2004	121.2	214.8	134.9	837.8	2,921.9	1,018.5
2005	120.6	216.7	134.7	837.7	2,950.4	1,020.5
2006	120.5	217.7	135.0	838.2	2,973.7	1,023.9
2007	120.4	218.2	135.2	839.0	2,988.2	1,027.5
2008	120.5	218.6	135.6	841.7	3,000.5	1,033.1
2009	120.8	219.1	136.0	844.4	3,013.7	1,038.2
2010	121.0	219.6	136.4	847.1	3,023.4	1,043.3
2011	121.2	220.1	136.9	848.9	3,031.9	1,047.7
2012	121.5	220.8	137.4	850.7	3,040.2	1,052.0
2013	121.9	221.1	137.8	854.8	3,048.0	1,058.0
2014	122.2	221.5	138.2	860.5	3,054.7	1,064.9
2015	122.5	221.8	138.6	866.9	3,060.6	1,072.5

* Source: Forms 41 and 298-C, U.S. Department of Transportation.
1/ Sum of Large Air Carriers and Regionals/Commuters

TABLE 9

U.S. COMMERCIAL AIR CARRIERS 1/

TOTAL SCHEDULED U.S. PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (Millions)			REVENUE PASSENGER MILES (Billions)		
	DOMESTIC	INTERNATIONAL	SYSTEM	DOMESTIC	INTERNATIONAL	SYSTEM
Historical*						
1998	590.4	54.2	644.7	460.7	163.5	624.2
1999	610.9	54.9	665.8	482.4	170.1	652.4
2000	641.2	56.4	697.6	512.8	181.8	694.6
2001	626.8	56.7	683.4	508.1	183.3	691.4
2002	574.5	51.2	625.8	473.0	158.2	631.3
2003E	587.3	54.1	641.4	491.9	155.9	647.8
Forecast						
2004	627.2	59.5	686.7	525.5	174.0	699.4
2005	668.5	63.3	731.8	560.1	186.7	746.8
2006	697.8	66.4	764.2	584.9	197.6	782.4
2007	724.1	69.6	793.8	607.5	208.1	815.6
2008	749.6	72.9	822.5	631.0	218.8	849.8
2009	776.8	76.2	853.0	655.9	229.6	885.6
2010	804.0	79.7	883.7	681.0	241.0	922.0
2011	831.5	83.3	914.8	705.8	252.7	958.5
2012	860.5	87.1	947.6	732.1	264.8	996.9
2013	891.2	91.0	982.1	761.8	277.3	1,039.0
2014	924.2	95.0	1,019.2	795.3	290.1	1,085.4
2015	958.4	99.1	1,057.6	830.8	303.4	1,134.2

* Source: Forms 41 and 298-C, U.S. Department of Transportation.
1/ Sum of Large Air Carriers and Regionals/Commuters

TABLE 10

U.S. COMMERCIAL AIR CARRIERS 1/

SCHEDULED PASSENGER CAPACITY, TRAFFIC, AND LOAD FACTORS

	DOMESTIC			INTERNATIONAL			SYSTEM		
FISCAL YEAR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR
Historical*									
1998	660.4	460.7	69.8	223.7	163.5	73.1	884.1	624.2	70.6
1999	694.7	482.4	69.4	230.1	170.1	73.9	924.8	652.4	70.5
2000	727.2	512.8	70.5	239.3	181.8	76.0	966.5	694.6	71.9
2001	732.5	508.1	69.4	246.6	183.3	74.3	979.1	691.4	70.6
2002	681.3	473.0	69.4	212.3	158.2	74.5	893.6	631.3	70.6
2003E	683.2	491.9	72.0	206.8	155.9	75.3	890.1	647.8	72.8
Forecast									
2004	728.0	525.5	72.2	221.8	174.0	78.4	949.8	699.4	73.6
2005	778.0	560.1	72.0	241.2	186.7	77.4	1,019.2	746.8	73.3
2006	810.7	584.9	72.1	256.3	197.6	77.1	1,067.0	782.4	73.3
2007	838.6	607.5	72.4	270.7	208.1	76.9	1,109.4	815.6	73.5
2008	867.4	631.0	72.7	284.6	218.8	76.9	1,152.0	849.8	73.8
2009	898.3	655.9	73.0	298.8	229.6	76.9	1,197.1	885.6	74.0
2010	929.3	681.0	73.3	313.6	241.0	76.8	1,242.9	922.0	74.2
2011	962.9	705.8	73.3	328.9	252.7	76.8	1,291.8	958.5	74.2
2012	997.9	732.1	73.4	344.8	264.8	76.8	1,342.7	996.9	74.2
2013	1,036.9	761.8	73.5	361.1	277.3	76.8	1,398.0	1,039.0	74.3
2014	1,080.3	795.3	73.6	377.9	290.1	76.8	1,458.2	1,085.4	74.4
2015	1,126.3	830.8	73.8	395.2	303.4	76.8	1,521.5	1,134.2	74.5

* Source: Forms 41 and 298-C, U.S. Department of Transportation.
1/ Sum of Large Air Carriers and Regionals/Commuters

TABLE 11

U.S. COMMERCIAL AIR CARRIERS 1/

TOTAL SCHEDULED U.S. INTERNATIONAL PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS				REVENUE PASSENGER MILES			
	ATLANTIC (Mil)	LATIN AMERICA (Mil)	PACIFIC (Mil)	TOTAL INTERNATIONAL (Mil)	ATLANTIC (Bil)	LATIN AMERICA (Bil)	PACIFIC (Bil)	TOTAL INTERNATIONAL (Bil)
Historical*								
1998	18.0	22.1	14.1	54.2	74.6	32.3	56.7	163.5
1999	19.1	23.5	12.3	54.9	79.6	34.4	56.1	170.1
2000	20.9	24.3	11.2	56.4	87.1	36.3	58.4	181.8
2001	20.5	24.8	11.4	56.7	86.2	37.6	59.4	183.3
2002	18.0	23.6	9.6	51.2	74.7	34.5	49.0	158.2
2003E	17.8	25.8	10.5	54.1	73.2	36.5	46.2	155.9
Forecast								
2004	19.6	28.5	11.4	59.5	81.9	40.9	51.2	174.0
2005	20.8	30.0	12.5	63.3	87.0	43.7	56.0	186.7
2006	21.9	31.3	13.2	66.4	91.5	46.4	59.6	197.6
2007	23.0	32.8	13.9	69.6	96.1	49.2	62.8	208.1
2008	24.0	34.2	14.6	72.9	100.7	52.0	66.1	218.8
2009	25.0	35.8	15.4	76.2	105.2	54.9	69.5	229.6
2010	26.1	37.5	16.1	79.7	109.8	58.0	73.1	241.0
2011	27.2	39.3	16.9	83.3	114.6	61.4	76.7	252.7
2012	28.3	41.2	17.7	87.1	119.5	64.8	80.5	264.8
2013	29.4	43.1	18.5	91.0	124.5	68.5	84.3	277.3
2014	30.5	45.2	19.3	95.0	129.7	72.3	88.1	290.1
2015	31.7	47.3	20.1	99.1	135.1	76.2	92.0	303.4

* Source: Forms 41 and 298-C, U.S. Department of Transportation.
1/ Sum of Large Air Carriers and Regionals/Commuters

TABLE 12

U.S. LARGE AIR CARRIER FORECAST ASSUMPTIONS

AVERAGE SEATS PER AIRCRAFT

FISCAL YEAR	DOMESTIC (Seats)	INTERNATIONAL ATLANTIC (Seats)	INTERNATIONAL LATIN AMERICA (Seats)	INTERNATIONAL PACIFIC (Seats)	INTERNATIONAL TOTAL (Seats)	SYSTEM (Seats)
Historical*						
1998	149.6	228.4	181.3	318.2	237.8	165.7
1999	149.8	229.6	180.9	303.8	234.2	165.1
2000	148.8	233.7	179.5	307.8	236.6	164.5
2001	146.6	232.6	174.7	304.1	233.6	162.5
2002	148.0	233.8	172.5	295.2	228.6	162.3
2003E	148.5	231.2	171.8	286.6	224.6	162.1
Forecast						
2004	148.5	233.7	170.8	281.6	223.6	162.2
2005	149.0	235.2	171.3	282.4	225.3	163.2
2006	149.5	236.2	171.8	282.9	226.0	164.1
2007	150.0	237.0	172.3	283.1	226.4	164.9
2008	150.5	237.2	172.8	283.1	226.6	165.6
2009	151.0	237.7	173.3	283.9	227.1	166.3
2010	151.5	238.2	173.8	284.6	227.5	167.0
2011	152.0	238.7	174.3	285.4	227.9	167.7
2012	152.5	239.2	174.8	286.9	228.5	168.4
2013	153.0	239.7	175.3	287.1	228.8	169.0
2014	153.5	240.2	175.8	287.4	229.0	169.5
2015	154.0	240.7	176.3	287.6	229.3	170.0

* Source: Form 41, U.S. Department of Transportation.

TABLE 13

U.S. LARGE AIR CARRIER FORECAST ASSUMPTIONS

AVERAGE PASSENGER TRIP LENGTH

FISCAL YEAR	DOMESTIC (Miles)	INTERNATIONAL ATLANTIC (Miles)	INTERNATIONAL LATIN AMERICA (Miles)	INTERNATIONAL PACIFIC (Miles)	INTERNATIONAL TOTAL (Miles)	SYSTEM (Miles)
Historical*						
1998	847.5	4,135.4	1,586.7	4,023.6	3,126.7	1,053.5
1999	861.1	4,161.9	1,634.3	4,563.4	3,253.6	1,072.3
2000	872.6	4,168.1	1,675.2	5,219.9	3,397.3	1,091.4
2001	885.5	4,211.8	1,688.3	5,228.8	3,405.0	1,110.4
2002	912.1	4,147.5	1,622.5	5,077.6	3,251.5	1,124.0
2003E	939.1	4,109.3	1,590.8	4,409.1	3,062.9	1,140.5
Forecast						
2004	947.2	4,184.5	1,609.5	4,477.8	3,106.4	1,162.3
2005	949.9	4,180.5	1,633.9	4,494.2	3,132.1	1,169.5
2006	951.8	4,182.5	1,662.9	4,502.7	3,154.8	1,176.2
2007	953.6	4,186.5	1,681.9	4,511.9	3,168.4	1,182.5
2008	956.4	4,188.1	1,699.6	4,520.5	3,180.0	1,189.0
2009	959.1	4,200.1	1,715.9	4,529.1	3,192.9	1,195.2
2010	961.9	4,210.6	1,729.8	4,537.7	3,201.9	1,201.3
2011	963.8	4,218.7	1,743.8	4,546.4	3,209.8	1,206.7
2012	965.7	4,228.8	1,756.9	4,555.1	3,217.5	1,211.9
2013	970.3	4,238.2	1,770.3	4,563.8	3,224.9	1,219.1
2014	976.9	4,249.6	1,782.8	4,568.2	3,231.2	1,227.3
2015	984.4	4,257.8	1,794.7	4,576.9	3,236.8	1,236.3

* Source: Form 41, U.S. Department of Transportation.

TABLE 14

U.S. LARGE AIR CARRIER FORECAST ASSUMPTIONS

PASSENGER YIELDS

FISCAL YEAR	REVENUE PER PASSENGER MILE					
	DOMESTIC		INTERNATIONAL		SYSTEM	
	CURRENT $ (Cents)	FY 2003 $ (Cents)	CURRENT $ (Cents)	FY 2003 $ (Cents)	CURRENT $ (Cents)	FY 2003 $ (Cents)
Historical*						
1998	13.79	15.54	10.49	11.81	12.90	14.54
1999	13.54	14.97	9.99	11.05	12.59	13.92
2000	14.03	15.03	10.46	11.21	13.06	14.00
2001	13.53	14.05	10.34	10.74	12.65	13.15
2002	11.88	12.17	9.78	10.01	11.33	11.60
2003E	11.82	11.82	9.84	9.84	11.32	11.32
Forecast						
2004	11.82	11.64	9.96	9.81	11.32	11.15
2005	12.27	11.91	10.02	9.73	11.66	11.32
2006	12.43	11.86	10.11	9.65	11.79	11.26
2007	12.52	11.71	10.25	9.59	11.89	11.12
2008	12.63	11.54	10.43	9.53	12.01	10.98
2009	12.77	11.39	10.62	9.47	12.16	10.85
2010	12.92	11.24	10.82	9.42	12.32	10.72
2011	13.10	11.12	11.03	9.36	12.50	10.62
2012	13.28	11.00	11.24	9.31	12.69	10.51
2013	13.46	10.87	11.45	9.26	12.87	10.40
2014	13.62	10.74	11.67	9.20	13.05	10.29
2015	13.78	10.60	11.90	9.15	13.23	10.18

* Source: Form 41, U.S. Department of Transportation.

TABLE 15

U.S. LARGE AIR CARRIER FORECAST ASSUMPTIONS

INTERNATIONAL PASSENGER YIELDS BY REGION

	REVENUE PER PASSENGER MILE							
	ATLANTIC		LATIN AMERICA 1/		PACIFIC		TOTAL INTERNATIONAL	
FISCAL	CURRENT $	FY 2003 $	CURRENT $	FY 2003 $	CURRENT $	FY 2003 $	CURRENT $	FY 2003 $
YEAR	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)	(Cents)
Historical*								
1998	10.13	11.41	13.53	15.24	9.25	10.42	10.49	11.81
1999	9.61	10.62	12.54	13.86	9.00	9.95	9.99	11.05
2000	9.73	10.43	13.00	13.94	9.99	10.71	10.46	11.21
2001	9.71	10.09	13.38	13.90	9.38	9.75	10.34	10.74
2002	9.29	9.51	12.49	12.79	8.67	8.87	9.78	10.01
2003E	9.53	9.53	12.34	12.34	8.42	8.42	9.84	9.84
Forecast								
2004	9.53	9.39	12.28	12.09	8.84	8.71	9.96	9.81
2005	9.57	9.29	12.40	12.03	8.92	8.66	10.02	9.73
2006	9.64	9.20	12.55	11.97	8.99	8.58	10.11	9.65
2007	9.79	9.15	12.74	11.91	9.08	8.49	10.25	9.59
2008	9.96	9.11	12.97	11.85	9.19	8.41	10.43	9.53
2009	10.16	9.06	13.22	11.79	9.33	8.32	10.62	9.47
2010	10.36	9.02	13.49	11.74	9.47	8.24	10.82	9.42
2011	10.57	8.97	13.75	11.68	9.61	8.16	11.03	9.36
2012	10.78	8.93	14.03	11.62	9.75	8.07	11.24	9.31
2013	10.99	8.88	14.31	11.56	9.89	7.99	11.45	9.26
2014	11.21	8.84	14.59	11.50	10.04	7.91	11.67	9.20
2015	11.43	8.79	14.88	11.45	10.19	7.83	11.90	9.15

1/ Large Air Carrier Only

* Source: Form 41, U.S. Department of Transportation.

TABLE 16

U.S. LARGE AIR CARRIER FORECAST ASSUMPTIONS

JET FUEL PRICES

FISCAL YEAR	DOMESTIC		INTERNATIONAL		SYSTEM	
	CURRENT $ (Cents)	FY 2003 $ (Cents)	CURRENT $ (Cents)	FY 2003 $ (Cents)	CURRENT $ (Cents)	FY 2003 $ (Cents)
Historical*						
1998	53.5	60.3	57.9	65.2	54.67	61.59
1999	48.5	53.7	52.9	58.5	49.69	54.93
2000	71.5	76.6	79.4	85.0	73.57	78.85
2001	82.4	85.6	86.1	89.5	83.37	86.62
2002	67.0	68.6	71.7	73.4	68.28	69.90
2003E	82.4	82.4	86.2	86.2	83.45	83.45
Forecast						
2004	82.1	80.9	86.0	84.6	83.19	81.91
2005	75.9	73.7	79.5	77.2	76.93	74.67
2006	75.7	72.3	79.3	75.6	76.71	73.21
2007	76.6	71.6	80.2	75.0	77.60	72.59
2008	77.7	71.1	81.4	74.4	78.76	72.00
2009	79.0	70.5	82.7	73.8	80.02	71.38
2010	80.3	69.8	84.0	73.1	81.31	70.75
2011	81.6	69.3	85.4	72.5	82.65	70.16
2012	82.9	68.7	86.8	71.9	84.00	69.58
2013	84.3	68.1	88.2	71.3	85.39	69.00
2014	85.7	67.5	89.7	70.7	86.80	68.43
2015	87.1	67.0	91.2	70.2	88.27	67.89

* Source: Form 41, U.S. Department of Transportation.

TABLE 17

U. S. LARGE AIR CARRIERS

SCHEDULED PASSENGER TRAFFIC

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (Millions)			REVENUE PASSENGER MILES (Billions)		
	DOMESTIC	INTERNATIONAL	SYSTEM	DOMESTIC	INTERNATIONAL	SYSTEM
Historical*						
1998	524.7	52.1	576.8	444.7	163.0	607.7
1999	537.8	52.1	589.9	463.1	169.4	632.5
2000	561.5	53.3	614.8	490.0	181.0	670.9
2001	546.3	53.5	599.9	483.8	182.3	666.1
2002	485.9	48.4	534.3	443.2	157.3	600.5
2003E	482.2	50.5	532.7	452.8	154.7	607.5
Forecast						
2004	502.4	55.6	558.0	475.9	172.6	648.5
2005	529.0	59.2	588.2	502.6	185.3	687.9
2006	548.1	62.2	610.3	521.7	196.1	717.8
2007	565.6	65.2	630.8	539.4	206.5	745.9
2008	584.3	68.3	652.6	558.8	217.1	775.9
2009	604.2	71.4	675.5	579.5	227.9	807.4
2010	624.1	74.7	698.8	600.3	239.1	839.5
2011	644.1	78.1	722.2	620.8	250.7	871.5
2012	665.3	81.7	747.0	642.5	262.8	905.3
2013	687.9	85.3	773.3	667.5	275.1	942.7
2014	712.7	89.1	801.8	696.2	287.8	984.1
2015	738.4	93.0	831.4	726.9	301.0	1,027.8

* Source: Form 41, U.S. Department of Transportation.

TABLE 18

U.S. LARGE AIR CARRIERS

SCHEDULED PASSENGER CAPACITY, TRAFFIC, AND LOAD FACTORS

	DOMESTIC			INTERNATIONAL			SYSTEM		
FISCAL YEAR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR
Historical*									
1998	631.9	444.7	70.4	222.9	163.0	73.1	854.9	607.7	71.1
1999	661.4	463.1	70.0	229.0	169.4	74.0	890.4	632.5	71.0
2000	688.3	490.0	71.2	238.0	181.0	76.0	926.2	670.9	72.4
2001	691.1	483.8	70.0	244.9	182.3	74.4	936.0	666.1	71.2
2002	632.6	443.2	70.1	210.8	157.3	74.6	843.5	600.5	71.2
2003E	622.9	452.8	72.7	205.0	154.7	75.5	827.9	607.5	73.4
Forecast									
2004	651.6	475.9	73.0	219.6	172.6	78.6	871.2	648.5	74.4
2005	688.8	502.6	73.0	238.9	185.3	77.6	927.7	687.9	74.2
2006	712.9	521.7	73.2	253.9	196.1	77.2	966.8	717.8	74.2
2007	733.6	539.4	73.5	268.2	206.5	77.0	1,001.8	745.9	74.5
2008	756.6	558.8	73.9	282.0	217.1	77.0	1,038.6	775.9	74.7
2009	781.4	579.5	74.2	296.0	227.9	77.0	1,077.4	807.4	74.9
2010	806.5	600.3	74.4	310.7	239.1	77.0	1,117.2	839.5	75.1
2011	834.0	620.8	74.4	325.9	250.7	76.9	1,159.9	871.5	75.1
2012	862.7	642.5	74.5	341.7	262.8	76.9	1,204.4	905.3	75.2
2013	895.3	667.5	74.6	357.8	275.1	76.9	1,253.1	942.7	75.2
2014	932.1	696.2	74.7	374.4	287.8	76.9	1,306.5	984.1	75.3
2015	971.3	726.9	74.8	391.6	301.0	76.9	1,362.9	1,027.8	75.4

* Source: Form 41, U.S. Department of Transportation.

TABLE 19

U.S. LARGE AIR CARRIERS

SCHEDULED INTERNATIONAL PASSENGER ENPLANEMENTS

FISCAL YEAR	REVENUE PASSENGER ENPLANEMENTS (MIL)			
	ATLANTIC	LATIN AMERICA	PACIFIC	TOTAL
Historical*				
1998	18.0	20.0	14.1	52.1
1999	19.1	20.7	12.3	52.1
2000	20.9	21.2	11.2	53.3
2001	20.5	21.7	11.4	53.5
2002	18.0	20.7	9.6	48.4
2003E	17.8	22.2	10.5	50.5
Forecast				
2004	19.6	24.6	11.4	55.6
2005	20.8	25.9	12.5	59.2
2006	21.9	27.0	13.2	62.2
2007	23.0	28.3	13.9	65.2
2008	24.0	29.6	14.6	68.3
2009	25.0	31.0	15.4	71.4
2010	26.1	32.5	16.1	74.7
2011	27.2	34.1	16.9	78.1
2012	28.3	35.8	17.7	81.7
2013	29.4	37.5	18.5	85.3
2014	30.5	39.3	19.3	89.1
2015	31.7	41.2	20.1	93.0

* Source: Form 41, U.S. Department of Transportation.
Note: Detail may not add to total because of rounding.

TABLE 20

U.S. LARGE AIR CARRIERS

SCHEDULED PASSENGER CAPACITY, TRAFFIC, AND LOAD FACTORS BY INTERNATIONAL TRAVEL REGIONS

	ATLANTIC			LATIN AMERICA			PACIFIC			INTERNATIONAL		
FISCAL YEAR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR	ASMs (BIL)	RPMs (BIL)	% LOAD FACTOR
Historical*												
1998	94.6	74.6	78.9	50.5	31.8	62.9	77.9	56.7	72.8	222.9	163.0	73.1
1999	102.6	79.6	77.5	51.2	33.8	66.0	75.2	56.1	74.5	229.0	169.4	74.0
2000	109.9	87.1	79.2	51.4	35.5	69.0	76.6	58.4	76.2	238.0	181.0	76.0
2001	112.9	86.2	76.4	53.0	36.6	69.2	79.1	59.4	75.2	244.9	182.3	74.4
2002	97.0	74.7	77.0	50.6	33.6	66.5	63.2	49.0	77.5	210.8	157.3	74.6
2003E	93.7	73.2	78.1	51.0	35.4	69.3	60.3	46.2	76.6	205.0	154.7	75.5
Forecast												
2004	101.0	81.9	81.1	55.9	39.5	70.7	62.7	51.2	81.6	219.6	172.6	78.6
2005	107.9	87.0	80.6	60.0	42.3	70.5	70.9	56.0	79.0	238.9	185.3	77.6
2006	114.0	91.5	80.3	64.0	45.0	70.3	76.0	59.6	78.5	253.9	196.1	77.2
2007	120.1	96.1	80.0	68.0	47.6	70.0	80.1	62.8	78.5	268.2	206.5	77.0
2008	125.9	100.7	80.0	71.9	50.3	70.0	84.2	66.1	78.5	282.0	217.1	77.0
2009	131.5	105.2	80.0	75.9	53.1	70.0	88.6	69.5	78.5	296.0	227.9	77.0
2010	137.3	109.8	80.0	80.3	56.2	70.0	93.1	73.1	78.5	310.7	239.1	77.0
2011	143.2	114.6	80.0	84.9	59.4	70.0	97.8	76.7	78.5	325.9	250.7	76.9
2012	149.4	119.5	80.0	89.7	62.8	70.0	102.6	80.5	78.5	341.7	262.8	76.9
2013	155.6	124.5	80.0	94.8	66.3	70.0	107.4	84.3	78.5	357.8	275.1	76.9
2014	162.2	129.7	80.0	100.0	70.0	70.0	112.2	88.1	78.5	374.4	287.8	76.9
2015	168.8	135.1	80.0	105.5	73.9	70.0	117.3	92.0	78.5	391.6	301.0	76.9

* Source: Form 41, U.S. Department of Transportation.

TABLE 21

U.S. LARGE AIR CARRIERS

AIR CARGO REVENUE TON MILES 1/

FISCAL YEAR	ALL-CARGO CARRIER RTMS (Millions)			PASSENGER CARRIER RTMS (Millions)			TOTAL RTMS (Millions)		
	DOMESTIC	INT'L.	TOTAL	DOMESTIC	INT'L.	TOTAL	DOMESTIC	INT'L.	TOTAL
Historical*									
1998	9,351.4	8,025.3	17,376.7	4,476.7	6,496.9	10,973.6	13,828.1	14,522.2	28,350.3
1999	9,756.7	7,328.1	17,084.8	4,218.2	6,798.8	11,017.0	13,974.9	14,126.9	28,101.8
2000	10,283.5	7,568.2	17,851.7	4,415.3	7,789.6	12,204.9	14,698.8	15,357.8	30,056.6
2001	9,992.3	7,370.4	17,362.7	3,941.7	7,176.6	11,118.3	13,934.0	14,547.0	28,481.0
2002	9,629.9	8,202.1	17,832.0	3,337.4	6,594.0	9,931.4	12,967.3	14,796.1	27,763.4
2003E 2/	10,264.2	11,407.4	21,671.6	3,704.2	6,809.4	10,513.6	13,968.4	18,216.8	32,185.2
2003E 3/	10,965.9	11,407.4	22,373.3	3,704.2	6,809.4	10,513.6	14,670.1	18,216.8	32,886.9
Forecast									
2004	11,481.8	11,814.7	23,296.5	3,811.1	6,968.1	10,779.2	15,292.9	18,782.8	34,075.7
2005	11,985.4	12,680.5	24,665.9	3,908.6	7,388.9	11,297.5	15,894.0	20,069.4	35,963.4
2006	12,476.6	13,580.6	26,057.2	3,996.9	7,818.0	11,814.9	16,473.5	21,398.6	37,872.1
2007	12,977.9	14,459.0	27,436.9	4,083.3	8,223.0	12,306.3	17,061.2	22,682.0	39,743.2
2008	13,486.8	15,326.1	28,812.9	4,167.0	8,610.3	12,777.3	17,653.8	23,936.4	41,590.2
2009	13,997.1	16,221.9	30,219.0	4,246.1	9,002.6	13,248.7	18,243.2	25,224.5	43,467.7
2010	14,523.1	17,156.3	31,679.4	4,324.8	9,404.9	13,729.7	18,847.9	26,561.2	45,409.1
2011	15,066.1	18,129.6	33,195.7	4,403.3	9,816.6	14,219.9	19,469.4	27,946.2	47,415.6
2012	15,628.3	19,150.2	34,778.5	4,482.1	10,241.6	14,723.7	20,110.4	29,391.8	49,502.2
2013	16,210.1	20,203.9	36,414.0	4,561.0	10,671.6	15,232.6	20,771.1	30,875.5	51,646.6
2014	16,812.3	21,269.4	38,081.7	4,639.9	11,095.1	15,735.0	21,452.2	32,364.5	53,816.7
2015	17,435.6	22,355.3	39,790.9	4,718.9	11,516.4	16,235.3	22,154.5	33,871.7	56,026.2

* Source: Form 41, U.S. Department of Transportation.

1/ Includes freight/express and mail revenue ton miles.

2/ Domestic figures from 1998 through this line exclude Airborne Express, Inc.; international figures for 2003 and beyond include new reporting of contract service by U.S. carriers for foreign flag carriers.

3/ Domestic figures from this line and beyond include Airborne Express. Inc.

TABLE 22

U.S. LARGE AIR CARRIERS

PASSENGER JET AIRCRAFT

CALENDA	LARGE NARROWBODY				LARGE WIDEBODY				LARGE	REGIONAL	TOTAL
YEAR	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	JETS	JETS	JETS
Historical											
1998	2,949	508	32	3,489	309	226	122	657	4,146	10	4,156
1999	3,139	436	21	3,596	361	204	129	694	4,290	18	4,308
2000	3,362	385	9	3,756	424	169	120	713	4,469	26	4,495
2001	3,432	228	11	3,671	461	105	98	664	4,335	18	4,353
2002	3,406	145	0	3,551	482	86	90	658	4,209	1	4,210
2003E	3,370	101	0	3,471	480	56	74	610	4,081	9	4,090
Forecast											
2004	3,399	101	0	3,500	492	51	73	616	4,116	9	4,125
2005	3,504	100	0	3,604	514	42	73	629	4,233	16	4,249
2006	3,633	99	0	3,732	534	34	73	641	4,373	35	4,408
2007	3,728	98	0	3,826	554	33	73	660	4,486	53	4,539
2008	3,846	97	0	3,943	570	31	71	672	4,615	71	4,686
2009	3,972	96	0	4,068	581	29	68	678	4,746	89	4,835
2010	4,096	95	0	4,191	596	29	64	689	4,880	107	4,987
2011	4,219	94	0	4,313	611	30	64	705	5,018	124	5,142
2012	4,331	94	0	4,425	625	30	64	719	5,144	139	5,283
2013	4,451	94	0	4,545	637	30	64	731	5,276	149	5,425
2014	4,575	94	0	4,669	646	30	64	740	5,409	159	5,568
2015	4,721	94	0	4,815	654	30	64	748	5,563	169	5,732

TABLE 23

U.S. LARGE AIR CARRIERS

CARGO JET AIRCRAFT

CALENDAR	LARGE NARROWBODY				LARGE WIDEBODY				
YEAR	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	TOTAL
Historical									
1998	166	326	197	689	111	123	44	278	967
1999	172	338	196	706	134	147	53	334	1,040
2000	166	332	176	674	164	158	68	390	1,064
2001	163	302	143	608	183	176	72	431	1,039
2002	158	277	114	549	204	148	64	416	965
2003E	159	247	126	532	197	148	65	410	942
Forecast									
2004	159	239	127	525	215	163	66	444	969
2005	159	230	128	517	232	174	66	472	989
2006	159	234	129	522	250	182	68	500	1,022
2007	159	237	130	526	270	188	68	526	1,052
2008	159	237	131	527	295	194	72	561	1,088
2009	159	237	132	528	321	201	75	597	1,125
2010	159	237	132	528	346	208	80	634	1,162
2011	159	237	132	528	371	214	83	668	1,196
2012	159	237	132	528	397	221	86	704	1,232
2013	159	237	132	528	422	227	89	738	1,266
2014	159	237	132	528	447	233	92	772	1,300
2015	159	237	132	528	472	238	94	804	1,332

TABLE 24

U.S. LARGE AIR CARRIERS

TOTAL AIRBORNE HOURS 1/

(In Thousands)

FISCAL	LARGE NARROWBODY				LARGE WIDEBODY				
YEAR	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	2 ENGINE	3 ENGINE	4 ENGINE	TOTAL	TOTAL
Historical*									
1998	8,661	1,477	261	10,399	1,285	942	511	2,738	13,137
1999	9,195	1,385	249	10,828	1,489	908	503	2,900	13,728
2000	9,795	1,226	201	11,222	1,690	846	501	3,037	14,258
2001	10,167	969	186	11,321	1,885	669	483	3,037	14,358
2002	9,542	433	112	10,087	1,920	527	435	2,882	12,969
2003E	9,519	249	95	9,863	1,926	469	358	2,753	12,616
Forecast									
2004	9,885	241	96	10,222	2,061	504	367	2,932	13,154
2005	10,330	231	97	10,658	2,208	514	371	3,093	13,751
2006	10,747	231	98	11,076	2,343	514	380	3,237	14,313
2007	11,071	230	98	11,399	2,475	526	376	3,377	14,776
2008	11,464	227	99	11,790	2,611	536	378	3,525	15,315
2009	11,855	224	100	12,179	2,730	548	378	3,656	15,835
2010	12,241	221	100	12,562	2,858	564	380	3,802	16,364
2011	12,626	218	100	12,944	2,987	581	388	3,956	16,900
2012	12,982	216	100	13,298	3,116	598	396	4,110	17,408
2013	13,362	214	100	13,676	3,237	612	404	4,253	17,929
2014	13,756	212	100	14,068	3,349	626	412	4,387	18,455
2015	14,215	210	100	14,525	3,459	638	417	4,514	19,039

* Source: Form 41, U.S. Department of Transportation.

1/ Includes both passenger (excluding regional jets) and cargo aircraft.

TABLE 25

TOTAL JET FUEL AND AVIATION GASOLINE FUEL CONSUMPTION

U.S. CIVIL AVIATION AIRCRAFT

(Millions of Gallons)

FISCAL YEAR	JET FUEL					AVIATION GASOLINE			TOTAL FUEL CONSUMED
	U.S. AIR CARRIERS 1/			GENERAL AVIATION	TOTAL	AIR CARRIER	GENERAL AVIATION	TOTAL	
	DOMESTIC	INT'L.	TOTAL						
Historical*									
1998	13,754	5,129	18,883	815	19,697	2	311	313	20,011
1999	14,243	5,186	19,428	967	20,396	2	345	347	20,743
2000	14,746	5,297	20,043	972	21,015	2	333	335	21,350
2001	14,469	5,395	19,864	953	20,817	2	275	277	21,094
2002	12,653	4,844	17,497	984	18,481	2	278	280	18,761
2003E	12,886	4,990	17,876	989	18,865	2	276	278	19,144
Forecast									
2004	13,682	5,157	18,839	1,018	19,856	2	279	281	20,137
2005	14,659	5,533	20,192	1,065	21,257	2	283	285	21,543
2006	15,236	5,850	21,086	1,125	22,210	2	286	288	22,498
2007	15,723	6,121	21,845	1,194	23,039	2	290	292	23,331
2008	16,223	6,398	22,620	1,274	23,894	2	293	295	24,189
2009	16,758	6,684	23,442	1,358	24,799	2	296	298	25,097
2010	17,295	6,999	24,294	1,429	25,723	2	297	299	26,022
2011	17,876	7,324	25,199	1,508	26,707	2	301	303	27,010
2012	18,479	7,659	26,138	1,604	27,742	2	304	306	28,048
2013	19,154	8,000	27,153	1,675	28,828	2	308	310	29,139
2014	19,905	8,351	28,256	1,733	29,988	2	311	313	30,301
2015	20,719	8,712	29,431	1,789	31,220	2	315	317	31,537

* Source: Air carrier jet fuel, Form 41, U.S. Department of Transportation; all others, FAA APO estimates.
1/ Includes both passenger (large air carrier and regional/commuter) and cargo carriers.

TABLE 26

U.S. REGIONALS/COMMUTERS FORECAST ASSUMPTIONS

FISCAL YEAR	AVERAGE SEATS PER AIRCRAFT			AVERAGE PASSENGER TRIP LENGTH			REVENUE PER PASSENGER MILE**	
	DOMESTIC (Seats)	INT'L. (Seats)	SYSTEM (Seats)	DOMESTIC (Miles)	INT'L. (Miles)	SYSTEM (Miles)	CURRENT $ (Cents)	2003$ (Cents)
Historical*								
1998	34.0	34.2	34.0	244.2	238.4	244.0	34.64	39.06
1999	36.7	42.2	36.8	263.4	240.5	262.6	31.88	35.27
2000	39.1	41.8	39.2	286.5	260.0	285.5	30.42	32.62
2001	40.5	43.0	40.6	302.1	302.9	302.1	31.78	33.01
2002	42.8	41.0	42.8	336.3	320.4	335.8	27.23	27.87
2003E	44.7	43.2	44.7	372.3	310.8	370.2	27.11	27.11
Forecast								
2004	47.2	43.7	47.1	397.3	335.0	395.4	27.01	26.59
2005	48.8	44.2	48.7	412.3	340.0	410.2	27.28	26.48
2006	49.9	44.7	49.8	422.3	345.0	420.1	27.55	26.29
2007	50.6	45.2	50.5	429.8	350.0	427.6	27.82	26.02
2008	51.1	45.7	51.0	436.6	355.0	434.4	28.10	25.69
2009	51.7	46.2	51.6	442.8	360.0	440.6	28.38	25.31
2010	52.1	46.7	52.0	448.5	365.0	446.3	28.67	24.95
2011	52.5	47.2	52.4	453.9	370.0	451.6	28.95	24.58
2012	52.9	47.7	52.8	459.0	375.0	456.7	29.24	24.22
2013	53.3	48.2	53.2	463.7	380.0	461.4	29.54	23.87
2014	53.5	48.7	53.4	468.2	385.0	465.9	29.83	23.52
2015	53.7	49.2	53.6	472.4	390.0	470.2	30.12	23.17

* Source: Form 41, U.S. Department of Transportation.

** Reporting Carriers

TABLE 27

U.S. REGIONALS/COMMUTERS

SCHEDULED PASSENGER TRAFFIC

(In Millions)

FISCAL YEAR	REVENUE PASSENGERS			REVENUE PASSENGER MILES		
	DOMESTIC	INTERNATIONAL	SYSTEM	DOMESTIC	INTERNATIONAL	SYSTEM
Historical*						
1998	65.7	2.1	67.8	16,047.2	502.9	16,550.1
1999	73.1	2.8	76.0	19,265.0	682.6	19,947.6
2000	79.7	3.1	82.8	22,824.7	813.9	23,638.6
2001	80.4	3.1	83.6	24,298.8	946.8	25,245.7
2002	88.6	2.8	91.5	29,807.2	911.1	30,718.3
2003E	105.1	3.6	108.7	39,128.2	1,121.1	40,249.3
Forecast						
2004	124.8	4.0	128.7	49,561.7	1,327.6	50,889.3
2005	139.5	4.1	143.6	57,508.7	1,400.6	58,909.3
2006	149.7	4.3	153.9	63,198.6	1,477.6	64,676.2
2007	158.5	4.5	162.9	68,120.7	1,558.9	69,679.6
2008	165.3	4.6	170.0	72,194.8	1,644.6	73,839.4
2009	172.6	4.8	177.5	76,447.1	1,735.1	78,182.2
2010	179.9	5.0	184.9	80,697.6	1,830.5	82,528.1
2011	187.4	5.2	192.6	85,061.9	1,931.2	86,993.1
2012	195.2	5.4	200.6	89,576.8	2,037.4	91,614.2
2013	203.2	5.7	208.9	94,231.9	2,149.4	96,381.3
2014	211.5	5.9	217.4	99,027.5	2,267.7	101,295.2
2015	220.1	6.1	226.2	103,968.9	2,392.4	106,361.3

* Source: Form 41, U.S. Department of Transportation.

TABLE 28

U.S. REGIONALS/COMMUTERS

SCHEDULED PASSENGER CAPACITY, TRAFFIC, AND LOAD FACTORS

FISCAL YEAR	DOMESTIC			INTERNATIONAL			SYSTEM		
	ASMs (MIL)	RPMs (MIL)	% LOAD FACTOR	ASMs (MIL)	RPMs (MIL)	% LOAD FACTOR	ASMs (MIL)	RPMs (MIL)	% LOAD FACTOR
Historical*									
1998	28,428.6	16,047.2	56.4	793.7	502.9	63.4	29,222.3	16,550.1	56.6
1999	33,345.6	19,265.0	57.8	1,054.8	682.6	64.7	34,400.4	19,947.6	58.0
2000	38,962.8	22,824.7	58.6	1,337.9	813.9	60.8	40,300.7	23,638.6	58.7
2001	41,418.3	24,298.8	58.7	1,632.6	946.8	58.0	43,050.9	25,245.7	58.6
2002	48,660.1	29,807.2	61.3	1,491.6	911.1	61.1	50,151.7	30,718.3	61.3
2003E	60,320.3	39,128.2	64.9	1,891.3	1,121.1	59.3	62,211.5	40,249.3	64.7
Forecast									
2004	76,404.6	49,561.7	64.9	2,212.6	1,327.6	60.0	78,617.2	50,889.3	64.7
2005	89,193.3	57,508.7	64.5	2,315.0	1,400.6	60.5	91,508.3	58,909.3	64.4
2006	97,782.6	63,198.6	64.6	2,422.3	1,477.6	61.0	100,204.9	64,676.2	64.5
2007	105,040.2	68,120.7	64.9	2,534.8	1,558.9	61.5	107,575.0	69,679.6	64.8
2008	110,829.9	72,194.8	65.1	2,652.6	1,644.6	62.0	113,482.5	73,839.4	65.1
2009	116,871.1	76,447.1	65.4	2,776.1	1,735.1	62.5	119,647.2	78,182.2	65.3
2010	122,843.2	80,697.6	65.7	2,905.6	1,830.5	63.0	125,748.8	82,528.1	65.6
2011	128,936.4	85,061.9	66.0	3,041.2	1,931.2	63.5	131,977.6	86,993.1	65.9
2012	135,207.0	89,576.8	66.3	3,183.4	2,037.4	64.0	138,390.4	91,614.2	66.2
2013	141,635.4	94,231.9	66.5	3,332.5	2,149.4	64.5	144,967.9	96,381.3	66.5
2014	148,219.6	99,027.5	66.8	3,488.7	2,267.7	65.0	151,708.3	101,295.2	66.8
2015	154,965.3	103,968.9	67.1	3,652.5	2,392.4	65.5	158,617.8	106,361.3	67.1

* Source: Form 41, U.S. Department of Transportation.

TABLE 29

U.S. REGIONALS/COMMUTERS

PASSENGER AIRCRAFT

AS OF JANUARY 1	REGIONAL/COMMUTER AIRCRAFT											
	LESS THAN 9 SEATS	10 TO 19 SEATS	20 TO 30 SEATS	31 TO 40 SEATS			OVER 40 SEATS			TOTAL FLEET		
				PROP	JET	TOTAL	PROP	JET	TOTAL	NON JET	JET	TOTAL
Historical*												
1998	526	419	294	483	0	483	172	240	412	1,894	240	2,134
1999	452	401	279	485	22	507	169	370	539	1,786	392	2,178
2000	470	343	262	474	74	548	155	496	651	1,704	570	2,274
2001	490	250	248	445	110	555	148	672	820	1,581	782	2,363
2002	490	253	194	396	118	514	128	917	1045	1,461	1,035	2,496
2003E	485	261	160	328	129	457	117	1,192	1,309	1,351	1,321	2,672
Forecast												
2004	480	250	145	300	129	429	112	1,469	1,581	1,287	1,598	2,885
2005	475	250	130	280	129	409	107	1,741	1,848	1,242	1,870	3,112
2006	470	250	115	260	129	389	102	1,940	2,042	1,197	2,069	3,266
2007	465	250	100	240	129	369	100	2,091	2,191	1,155	2,220	3,375
2008	460	250	85	220	129	349	96	2,213	2,309	1,111	2,342	3,453
2009	455	250	80	200	129	329	96	2,340	2,436	1,081	2,469	3,550
2010	455	250	80	200	129	329	96	2,467	2,563	1,081	2,596	3,677
2011	455	250	80	200	129	329	96	2,593	2,689	1,081	2,722	3,803
2012	455	250	80	200	129	329	96	2,719	2,815	1,081	2,848	3,929
2013	455	250	80	200	129	329	96	2,844	2,940	1,081	2,973	4,054
2014	455	250	80	200	129	329	96	2,969	3,065	1,081	3,098	4,179
2015	455	250	80	200	129	329	96	3,093	3,189	1,081	3,222	4,303

* Source: Back Aviation Solutions.

TABLE 30

U.S. REGIONALS/COMMUTERS

BLOCK HOURS FLOWN

(In Thousands)

AS OF JANUARY 1	REGIONAL/COMMUTER AIRCRAFT											
	LESS THAN 9 SEATS	10 TO 19 SEATS	20 TO 30 SEATS	31 TO 40 SEATS			OVER 40 SEATS			TOTAL BLOCK HOURS		
				PROP	JET	TOTAL	PROP	JET	TOTAL	NON JET	JET	TOTAL
Historical*												
1998	435	1,035	844	1,297	0	1,297	446	574	1,020	4,057	574	4,631
1999	364	1,024	841	1,402	9	1,411	416	1,000	1,416	4,047	1,009	5,056
2000	384	852	782	1,447	121	1,568	392	1,381	1,773	3,857	1,502	5,359
2001	397	609	675	1,201	263	1,464	364	1,647	2,011	3,246	1,910	5,156
2002	372	517	526	1,216	272	1,489	282	2,372	2,655	2,913	2,644	5,558
2003E	366	531	432	1,002	298	1,300	234	3,010	3,244	2,565	3,307	5,872
Forecast												
2004	360	503	387	908	298	1,206	222	3,673	3,894	2,380	3,971	6,351
2005	355	501	346	843	299	1,142	211	4,309	4,520	2,255	4,608	6,862
2006	349	498	304	779	299	1,078	200	4,753	4,953	2,130	5,052	7,183
2007	344	496	263	715	300	1,015	195	5,149	5,344	2,013	5,449	7,462
2008	338	493	224	656	301	956	186	5,476	5,663	1,897	5,777	7,674
2009	333	491	211	596	301	897	185	5,819	6,005	1,816	6,121	7,936
2010	331	488	211	596	302	898	184	6,166	6,350	1,811	6,468	8,278
2011	330	486	211	596	305	901	184	6,546	6,729	1,806	6,850	8,656
2012	328	486	211	596	308	904	184	6,932	7,116	1,804	7,240	9,044
2013	326	486	211	596	311	907	184	7,324	7,507	1,802	7,635	9,437
2014	325	486	211	596	314	910	184	7,722	7,905	1,801	8,036	9,837
2015	323	486	211	596	317	913	184	8,125	8,308	1,799	8,442	10,241

***** Source: 1997-2002, Based on utilization rates from AvStat Associates, Inc./Regional Airline Association

TABLE 31

ACTIVE GENERAL AVIATION AND AIR TAXI AIRCRAFT

AS OF DEC. 31	FIXED WING						ROTORCRAFT			EXPERI-MENTAL	SPORT AIRCRAFT	OTHER	TOTAL GENERAL AVIATION FLEET	TOTAL FLEET LESS SPORT AC
	PISTON			TURBINE										
	SINGLE ENGINE	MULTI-ENGINE	TOTAL	TURBO PROP	TURBO JET	TOTAL	PISTON	TURBINE	TOTAL					
Historical*														
1998	144,234	18,729	162,963	6,174	6,066	12,240	2,545	4,881	7,426	16,502	NA	5,580	204,711	204,711
1999	150,886	21,038	171,924	5,679	7,120	12,799	2,564	4,884	7,448	20,528	NA	6,765	219,464	219,464
2000	149,422	21,091	170,513	5,762	7,001	12,763	2,680	4,470	7,150	20,407	NA	6,700	217,533	217,533
2001	145,034	18,281	163,315	6,596	7,787	14,383	2,292	4,491	6,783	20,421	NA	6,545	211,447	211,447
2002	143,503	17,584	161,087	6,841	8,355	15,196	2,351	4,297	6,648	21,936	NA	6,377	211,244	211,244
2003E	143,350	17,500	160,850	6,860	8,500	15,360	2,400	4,250	6,650	21,950	NA	6,380	211,190	211,190
Forecast														
2004	143,350	17,420	160,770	6,900	8,650	15,550	2,420	4,260	6,680	22,000	7,700	6,400	219,100	211,400
2005	143,500	17,340	160,840	7,000	9,020	16,020	2,440	4,280	6,720	22,050	15,535	6,420	227,585	212,050
2006	143,850	17,250	161,100	7,100	9,420	16,520	2,470	4,300	6,770	22,150	15,885	6,440	228,865	212,980
2007	144,350	17,160	161,510	7,200	9,980	17,180	2,500	4,330	6,830	22,300	16,355	6,460	230,635	214,280
2008	144,950	17,080	162,030	7,330	10,620	17,950	2,530	4,360	6,890	22,450	16,925	6,480	232,725	215,800
2009	145,550	16,990	162,540	7,460	11,260	18,720	2,560	4,390	6,950	22,600	17,495	6,500	234,805	217,310
2010	146,150	16,910	163,060	7,580	11,990	19,570	2,590	4,410	7,000	22,700	18,065	6,520	236,915	218,850
2011	146,700	16,820	163,520	7,700	12,760	20,460	2,620	4,430	7,050	22,800	18,635	6,540	239,005	220,370
2012	147,200	16,740	163,940	7,820	13,520	21,340	2,640	4,450	7,090	22,900	19,205	6,560	241,035	221,830
2013	147,600	16,660	164,260	7,920	14,250	22,170	2,660	4,470	7,130	23,000	19,775	6,580	242,915	223,140
2014	148,050	16,570	164,620	8,020	14,880	22,900	2,680	4,490	7,170	23,050	20,345	6,600	244,685	224,340
2015	148,450	16,490	164,940	8,120	15,510	23,630	2,700	4,510	7,210	23,100	20,915	6,620	246,415	225,500

* Source: 1997-2002, FAA General Aviation and Air Taxi Activity (and Avionics) Surveys.
1/ Estimates have been revised to reflect changes in edit and estimation procedures, and may not be comparable to estimates prior to 1995.
Note: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

TABLE 32

ACTIVE GENERAL AVIATION AND AIR TAXI HOURS FLOWN

(In Thousands)

CALENDAR YEAR	FIXED WING						ROTORCRAFT			EXPERI-MENTAL	SPORT AIRCRAFT	OTHER	TOTAL GENERAL AVIATION HOURS
	PISTON			TURBINE									
	SINGLE ENGINE	MULTI-ENGINE	TOTAL	TURBO PROP	TURBO JET	TOTAL	PISTON	TURBINE	TOTAL				
Historical*													
1998	16,823	3,578	20,401	1,765	2,226	3,991	430	1,912	2,342	1,071	NA	295	28,100
1999R	18,983	3,545	22,528	1,797	2,721	4,518	552	2,077	2,629	1,246	NA	309	31,230
2000R	18,089	3,403	21,492	1,986	2,648	4,634	530	1,661	2,191	1,280	NA	361	29,958
2001R	16,549	2,644	19,194	1,773	2,654	4,426	474	1,479	1,953	1,157	NA	287	27,017
2002	16,325	2,566	18,891	1,850	2,745	4,595	454	1,422	1,876	1,345	NA	333	27,040
2003E	16,060	2,540	18,600	1,830	2,745	4,575	455	1,390	1,845	1,345	NA	330	26,695
Forecast													
2004	16,090	2,530	18,620	1,830	2,820	4,650	465	1,400	1,865	1,345	385	335	26,815
2005	16,190	2,520	18,710	1,840	2,960	4,800	470	1,410	1,880	1,350	777	335	27,852
2006	16,310	2,510	18,820	1,850	3,180	5,030	480	1,430	1,910	1,360	794	335	28,249
2007	16,450	2,500	18,950	1,860	3,440	5,300	490	1,450	1,940	1,370	819	340	28,719
2008	16,600	2,490	19,090	1,870	3,740	5,610	500	1,470	1,970	1,385	850	340	29,245
2009	16,760	2,480	19,240	1,880	4,060	5,940	510	1,490	2,000	1,400	880	340	29,800
2010	16,910	2,470	19,380	1,890	4,340	6,230	520	1,510	2,030	1,410	910	340	30,300
2011	17,060	2,460	19,520	1,900	4,650	6,550	525	1,520	2,045	1,420	941	340	30,816
2012	17,180	2,450	19,630	1,910	5,030	6,940	530	1,530	2,060	1,430	972	340	31,372
2013	17,300	2,440	19,740	1,920	5,340	7,260	535	1,540	2,075	1,440	1,003	345	31,863
2014	17,420	2,430	19,850	1,930	5,610	7,540	540	1,550	2,090	1,445	1,034	345	32,304
2015	17,540	2,420	19,960	1,935	5,880	7,815	545	1,560	2,105	1,450	1,065	345	32,740

* Source: 1997-2002, FAA General Aviation and Air Taxi Surveys.

1/ Estimates have been revised to reflect changes in edit and estimation procedures, and may not be comparable to estimates prior to 1995.

Note: An active aircraft is one that has a current registration and was flown at least one hour during the previous calendar year.

TABLE 33

ACTIVE PILOTS BY TYPE OF CERTIFICATE

AS OF DECEMBER 31	STUDENTS	RECREA-TIONAL	SPORT PILOT	PRIVATE	COMMERCIAL	AIRLINE TRANSPORT	ROTOR-CRAFT ONLY	GLIDER ONLY	TOTAL PILOTS	TOTAL LESS AT PILOTS	INSTRUMENT RATED PILOTS 1/
Historical*											
1998	97,736	305	NA	247,226	122,053	134,612	6,964	9,402	618,298	483,686	300,183
1999	99,184	343	NA	258,749	124,261	137,642	7,728	9,390	637,297	499,655	308,951
2000	99,110	340	NA	251,561	121,858	141,598	7,775	9,387	631,629	490,031	315,100
2001	94,420	316	NA	243,823	120,502	144,702	7,727	8,473	619,963	475,261	321,000
2002	85,991	317	NA	245,230	125,920	144,708	7,770	21,826 2\	631,762	487,054	317,389
2003E	87,296	310	NA	241,045	123,990	143,504	7,916	20,950	625,011	481,507	315,413
Forecast											
2004	88,600	310	7,700	242,730	125,230	144,940	7,970	20,980	638,460	493,520	318,500
2005	90,110	315	16,100	245,000	127,110	146,680	8,020	21,020	654,355	507,675	323,300
2006	91,820	320	16,520	247,500	129,140	148,880	8,070	21,070	663,320	514,440	329,100
2007	93,650	325	17,000	250,500	131,330	151,560	8,170	21,130	673,665	522,105	335,700
2008	95,520	330	17,500	253,400	133,690	154,590	8,270	21,200	684,500	529,910	342,400
2009	97,430	330	18,000	256,400	136,230	157,680	8,370	21,260	695,700	538,020	349,200
2010	99,280	335	18,500	259,000	138,680	160,520	8,470	21,310	706,095	545,575	355,800
2011	101,170	335	19,000	261,600	141,040	163,410	8,570	21,350	716,475	553,065	362,200
2012	102,990	335	19,500	264,200	143,300	166,190	8,670	21,400	726,585	560,395	368,300
2013	104,840	340	20,000	266,800	145,450	169,020	8,770	21,440	736,660	567,640	374,200
2014	106,620	340	20,500	269,200	147,490	171,720	8,870	21,490	746,230	574,510	379,800
2015	108,430	340	20,800	271,400	149,550	174,470	8,970	21,530	755,490	581,020	385,500

* Source: FAA U.S. Civil Airmen Statistics.
1/ Instrument rated pilots should not be added to other categories in deriving total.
2/ In March 2001, the FAA Registry changed the definition of this pilot category. It added approximately 13,000 to this pilot category.
E: Estimate
Note: An active pilot is a person with a pilot certificate and a valid medical certificate.

TABLE 34

GENERAL AVIATION AIRCRAFT FUEL CONSUMPTION

(In Millions of Gallons)

CALENDAR YEAR	FIXED WING				ROTORCRAFT		EXPERI-MENTAL/ SPORT/ OTHER	TOTAL FUEL CONSUMED		
	PISTON		TURBINE							
	SINGLE ENGINE	MULTI-ENGINE	TURBO-PROP	TURBO-JET	PISTON	TURBINE		AVGAS	JET FUEL	TOTAL
Historical										
1998	181.8	109.6	149.1	608.8	6.5	56.8	13.4	311.3	814.7	1,126.0
1999	209.9	111.6	153.3	750.8	8.4	63.2	15.5	345.4	967.3	1,312.7
2000R	200.8	108.4	176.3	736.7	8.4	59.0	15.2	332.7	972.0	1,304.7
2001R	178.7	76.7	157.8	743.0	8.0	52.1	11.8	275.2	952.8	1,228.1
2002	179.6	75.7	164.6	774.1	7.8	45.6	14.8	277.9	984.3	1,262.2
2003E	177.5	76.2	163.2	779.6	7.9	46.5	14.9	276.4	989.3	1,265.7
Forecast										
2004	178.6	77.2	163.6	806.5	8.1	47.6	17.0	280.8	1,017.7	1,298.6
2005	180.5	78.1	164.9	852.5	8.2	47.9	19.7	286.5	1,065.3	1,351.8
2006	182.7	77.8	166.1	909.5	8.4	48.9	20.3	289.2	1,124.5	1,413.7
2007	185.1	78.8	167.4	977.0	8.5	49.9	20.9	293.2	1,194.2	1,487.5
2008	185.9	79.7	168.9	1,054.7	8.7	50.3	21.7	295.9	1,273.8	1,569.8
2009	187.7	80.6	170.3	1,136.8	8.7	50.7	22.5	299.4	1,357.8	1,657.2
2010	186.9	81.5	171.8	1,206.5	8.8	51.0	23.2	300.4	1,429.4	1,729.7
2011	188.5	83.6	173.3	1,283.4	8.7	51.1	23.9	304.7	1,507.8	1,812.4
2012	189.0	85.8	174.8	1,378.2	8.5	51.1	24.6	307.8	1,604.1	1,911.9
2013	190.3	87.8	176.3	1,447.1	8.6	51.4	25.3	312.0	1,674.8	1,986.8
2014	189.9	89.9	177.8	1,503.5	8.6	51.5	26.0	314.4	1,732.7	2,047.1
2015	191.2	92.0	178.8	1,558.2	8.7	51.8	26.6	318.5	1,788.8	2,107.3

Source: FAA APO Estimates.
Note: Detail may not add to total because of independent rounding.

TABLE 35

ACTIVE ROTORCRAFT FLEET AND HOURS FLOWN

CALENDAR YEAR	ACTIVE FLEET			HOURS FLOWN (Thousands)		
	PISTON	TURBINE	TOTAL	PISTON	TURBINE	TOTAL
Historical*						
1998	2,545	4,881	7,426	430	1,912	2,342
1999	2,564	4,884	7,448	552	2,077	2,629
2000	2,680	4,470	7,150	530	1,661	2,191
2001	2,292	4,491	6,783	474	1,479	1,953
2002	2,351	4,297	6,648	454	1,422	1,876
2003E	2,400	4,250	6,650	455	1,390	1,845
Forecast						
2004	2,420	4,260	6,680	465	1,400	1,865
2005	2,440	4,280	6,720	470	1,410	1,880
2006	2,470	4,300	6,770	480	1,430	1,910
2007	2,500	4,330	6,830	490	1,450	1,940
2008	2,530	4,360	6,890	500	1,470	1,970
2009	2,560	4,390	6,950	510	1,490	2,000
2010	2,590	4,410	7,000	520	1,510	2,030
2011	2,620	4,430	7,050	525	1,520	2,045
2012	2,640	4,450	7,090	530	1,530	2,060
2013	2,660	4,470	7,130	535	1,540	2,075
2014	2,680	4,490	7,170	540	1,550	2,090
2015	2,700	4,510	7,210	545	1,560	2,105

* Source: 1997-2002, FAA General Aviation and Air Taxi Activity (and Avionics) Surveys.
1/ Estimates have been revised to reflect changes in edit and estimation procedures, and may not be comparable to estimates prior to 1995.
Notes: An active aircraft is one that has a current registration and was flown at least one hour during the calendar year.

TABLE 36

TOTAL COMBINED AIRCRAFT OPERATIONS AT AIRPORTS

WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL	NUMBER OF TOWERS	
						FAA	CONTRACT
Historical*							
1998	14,258.0	10,172.2	38,046.5	2,781.4	65,258.1	288	161
1999	14,581.2	10,573.5	39,999.6	2,950.5	68,104.8	288	165
2000	15,158.7	10,760.6	39,878.5	2,888.0	68,685.8	266	192
2001	14,762.8	10,882.1	37,627.0	2,917.1	66,189.0	266	206
2002	13,209.2	11,029.6	37,602.8	3,062.3	64,903.9	266	217
2003E	12,823.7	11,424.8	35,493.6	3,007.0	62,749.1	266	218
Forecast							
2004	13,105.9	12,101.6	36,630.2	3,051.2	64,888.9	266	231
2005	13,682.5	12,697.4	38,174.9	3,117.4	67,672.2	266	231
2006	14,093.0	13,078.3	38,677.4	3,117.4	68,966.1	266	231
2007	14,431.2	13,339.8	39,160.4	3,117.4	70,048.8	266	231
2008	14,792.0	13,646.7	39,672.8	3,117.4	71,228.9	266	231
2009	15,176.6	13,974.2	40,180.8	3,117.4	72,449.0	266	231
2010	15,556.0	14,295.6	40,714.9	3,117.4	73,683.9	266	231
2011	15,991.6	14,624.4	41,255.7	3,117.4	74,989.1	266	231
2012	16,439.4	14,960.8	41,803.8	3,117.4	76,321.4	266	231
2013	16,916.1	15,304.8	42,334.2	3,117.4	77,672.5	266	231
2014	17,423.6	15,656.9	42,845.8	3,117.4	79,043.7	266	231
2015	17,946.3	16,017.0	43,423.3	3,117.4	80,504.0	266	231

* Source: FAA Air Traffic Activity.

TABLE 37

COMBINED ITINERANT AIRCRAFT OPERATIONS AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	14,258.0	10,172.2	22,086.5	1,354.4	47,871.1
1999	14,581.2	10,573.5	23,019.4	1,441.6	49,615.7
2000	15,158.7	10,760.6	22,844.1	1,439.8	50,203.2
2001	14,762.8	10,882.1	21,433.3	1,479.5	48,557.7
2002	13,209.2	11,029.6	21,430.0	1,551.3	47,220.1
2003E	12,823.7	11,424.8	20,227.1	1,528.5	46,004.1
Forecast					
2004	13,105.9	12,101.6	20,829.8	1,573.0	47,610.3
2005	13,682.5	12,697.4	21,617.7	1,639.2	49,636.8
2006	14,093.0	13,078.3	21,886.8	1,639.2	50,697.3
2007	14,431.2	13,339.8	22,165.4	1,639.2	51,575.6
2008	14,792.0	13,646.7	22,461.6	1,639.2	52,539.5
2009	15,176.6	13,974.2	22,767.8	1,639.2	53,557.8
2010	15,556.0	14,295.6	23,078.4	1,639.2	54,569.2
2011	15,991.6	14,624.4	23,393.1	1,639.2	55,648.3
2012	16,439.4	14,960.8	23,712.0	1,639.2	56,751.4
2013	16,916.1	15,304.8	24,020.3	1,639.2	57,880.4
2014	17,423.6	15,656.9	24,317.2	1,639.2	59,036.9
2015	17,946.3	16,017.0	24,644.3	1,639.2	60,246.8

* Source: FAA Air Traffic Activity.

TABLE 38

COMBINED LOCAL AIRCRAFT OPERATIONS AT AIRPORTS

WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	GENERAL AVIATION	MILITARY	TOTAL
Historical*			
1998	15,960.0	1,427.0	17,387.0
1999	16,980.2	1,508.9	18,489.1
2000	17,034.4	1,448.2	18,482.6
2001	16,193.7	1,437.6	17,631.3
2002	16,172.8	1,511.0	17,683.8
2003E	15,266.5	1,478.5	16,745.0
Forecast			
2004	15,800.4	1,478.2	17,278.6
2005	16,557.2	1,478.2	18,035.4
2006	16,790.6	1,478.2	18,268.8
2007	16,995.0	1,478.2	18,473.2
2008	17,211.2	1,478.2	18,689.4
2009	17,413.0	1,478.2	18,891.2
2010	17,636.5	1,478.2	19,114.7
2011	17,862.6	1,478.2	19,340.8
2012	18,091.8	1,478.2	19,570.0
2013	18,313.9	1,478.2	19,792.1
2014	18,528.6	1,478.2	20,006.8
2015	18,779.0	1,478.2	20,257.2

* Source: FAA Air Traffic Activity.

TABLE 39

TOTAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	14,101.7	8,928.1	27,928.8	2,028.8	52,987.4
1999	14,422.7	9,316.5	29,110.1	2,181.7	55,031.0
2000	14,921.1	9,217.2	27,002.8	2,031.7	53,172.8
2001	14,539.6	9,304.9	24,783.9	1,998.4	50,626.8
2002	13,004.1	9,469.5	24,091.5	2,012.5	48,577.6
2003E	12,618.7	9,890.7	22,568.7	1,926.8	47,004.9
Forecast					
2004	12,896.3	10,464.4	22,699.6	1,926.8	47,987.1
2005	13,463.7	10,956.2	22,922.1	1,926.8	49,268.8
2006	13,867.7	11,284.9	23,210.8	1,926.8	50,290.1
2007	14,200.5	11,510.6	23,484.6	1,926.8	51,122.5
2008	14,555.5	11,775.3	23,785.3	1,926.8	52,042.9
2009	14,933.9	12,057.9	24,094.5	1,926.8	53,013.2
2010	15,307.3	12,335.3	24,427.1	1,926.8	53,996.4
2011	15,735.9	12,619.0	24,764.2	1,926.8	55,045.8
2012	16,176.5	12,909.2	25,105.9	1,926.8	56,118.4
2013	16,645.6	13,206.1	25,427.3	1,926.8	57,205.8
2014	17,145.0	13,509.9	25,727.4	1,926.8	58,309.0
2015	17,659.3	13,820.6	26,031.0	1,926.8	59,437.7

* Source: FAA Air Traffic Activity.

TABLE 40

ITINERANT AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	14,101.7	8,928.1	16,846.1	1,052.3	40,928.2
1999	14,422.7	9,316.5	17,422.2	1,118.6	42,280.0
2000	14,921.1	9,217.2	16,286.1	1,090.6	41,515.0
2001	14,539.6	9,304.9	14,949.4	1,090.3	39,884.2
2002	13,004.1	9,469.5	14,552.8	1,100.9	38,127.3
2003E	12,618.7	9,890.7	13,573.4	1,063.9	37,146.7
Forecast					
2004	12,896.3	10,464.4	13,654.8	1,063.9	38,079.4
2005	13,463.7	10,956.2	13,791.4	1,063.9	39,275.2
2006	13,867.7	11,284.9	13,943.1	1,063.9	40,159.5
2007	14,200.5	11,510.6	14,110.4	1,063.9	40,885.4
2008	14,555.5	11,775.3	14,293.8	1,063.9	41,688.6
2009	14,933.9	12,057.9	14,494.0	1,063.9	42,549.7
2010	15,307.3	12,335.3	14,696.9	1,063.9	43,403.3
2011	15,735.9	12,619.0	14,902.6	1,063.9	44,321.4
2012	16,176.5	12,909.2	15,111.3	1,063.9	45,260.9
2013	16,645.6	13,206.1	15,307.7	1,063.9	46,223.3
2014	17,145.0	13,509.9	15,491.4	1,063.9	47,210.1
2015	17,659.3	13,820.6	15,677.3	1,063.9	48,221.1

* Source: FAA Air Traffic Activity.

TABLE 41

LOCAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	GENERAL AVIATION	MILITARY	TOTAL
Historical*			
1998	11,082.7	976.5	12,059.2
1999	11,687.9	1,063.1	12,751.0
2000	10,716.7	941.1	11,657.8
2001	9,834.5	908.1	10,742.6
2002	9,538.7	911.6	10,450.3
2003E	8,995.3	862.9	9,858.2
Forecast			
2004	9,044.8	862.9	9,907.7
2005	9,130.7	862.9	9,993.6
2006	9,267.7	862.9	10,130.6
2007	9,374.2	862.9	10,237.1
2008	9,491.4	862.9	10,354.3
2009	9,600.6	862.9	10,463.5
2010	9,730.2	862.9	10,593.1
2011	9,861.5	862.9	10,724.4
2012	9,994.7	862.9	10,857.6
2013	10,119.6	862.9	10,982.5
2014	10,236.0	862.9	11,098.9
2015	10,353.7	862.9	11,216.6

* Source: FAA Air Traffic Activity.

TABLE 42

TOTAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	156.3	1,244.1	10,117.7	752.6	12,270.7
1999	158.5	1,257.0	10,889.5	768.8	13,073.8
2000	237.6	1,543.4	12,875.7	856.3	15,513.0
2001	223.2	1,577.2	12,843.1	918.7	15,562.2
2002	205.1	1,560.1	13,511.3	1,049.8	16,326.3
2003E	205.0	1,534.1	12,924.9	1,080.2	15,744.2
Forecast					
2004	209.6	1,637.3	13,930.6	1,124.4	16,901.8
2005	218.8	1,741.2	15,252.8	1,190.6	18,403.3
2006	225.3	1,793.4	15,466.7	1,190.6	18,676.0
2007	230.8	1,829.3	15,675.7	1,190.6	18,926.3
2008	236.5	1,871.4	15,887.5	1,190.6	19,186.0
2009	242.7	1,916.3	16,086.3	1,190.6	19,435.8
2010	248.7	1,960.3	16,287.8	1,190.6	19,687.5
2011	255.7	2,005.4	16,491.5	1,190.6	19,943.2
2012	262.9	2,051.6	16,697.9	1,190.6	20,202.9
2013	270.5	2,098.7	16,907.0	1,190.6	20,466.8
2014	278.6	2,147.0	17,118.4	1,190.6	20,734.6
2015	287.0	2,196.4	17,392.3	1,190.6	21,066.2

* Source: FAA Air Traffic Activity.

Note: Detail may not add to total because of rounding.

TABLE 43

ITINERANT AIRCRAFT OPERATIONS

AT AIRPORTS WITH CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	156.3	1,244.1	5,240.4	302.1	6,942.9
1999	158.5	1,257.0	5,597.2	323.0	7,335.7
2000	237.6	1,543.4	6,558.0	349.2	8,688.2
2001	223.2	1,577.2	6,483.9	389.2	8,673.5
2002	205.1	1,560.1	6,877.2	450.4	9,092.8
2003E	205.0	1,534.1	6,653.7	464.6	8,857.4
Forecast					
2004	209.6	1,637.3	7,175.0	509.1	9,530.9
2005	218.8	1,741.2	7,826.3	575.3	10,361.5
2006	225.3	1,793.4	7,943.7	575.3	10,537.8
2007	230.8	1,829.3	8,054.9	575.3	10,690.3
2008	236.5	1,871.4	8,167.7	575.3	10,850.9
2009	242.7	1,916.3	8,273.9	575.3	11,008.1
2010	248.7	1,960.3	8,381.5	575.3	11,165.9
2011	255.7	2,005.4	8,490.4	575.3	11,326.9
2012	262.9	2,051.6	8,600.7	575.3	11,490.4
2013	270.5	2,098.7	8,712.6	575.3	11,657.1
2014	278.6	2,147.0	8,825.8	575.3	11,826.7
2015	287.0	2,196.4	8,967.0	575.3	12,025.6

* Source: FAA Air Traffic Activity.

TABLE 44

LOCAL AIRCRAFT OPERATIONS

AT AIRPORTS WITH CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	GENERAL AVIATION	MILITARY	TOTAL
Historical*			
1998	4,877.3	450.5	5,327.8
1999	5,292.3	445.8	5,738.1
2000	6,317.7	507.1	6,824.8
2001	6,359.2	529.5	6,888.7
2002	6,634.1	599.4	7,233.5
2003E	6,271.2	615.6	6,886.8
Forecast			
2004	6,755.6	615.3	7,370.9
2005	7,426.5	615.3	8,041.8
2006	7,523.0	615.3	8,138.3
2007	7,620.8	615.3	8,236.1
2008	7,719.8	615.3	8,335.1
2009	7,812.5	615.3	8,427.8
2010	7,906.3	615.3	8,521.6
2011	8,001.1	615.3	8,616.4
2012	8,097.2	615.3	8,712.5
2013	8,194.4	615.3	8,809.7
2014	8,292.6	615.3	8,907.9
2015	8,425.3	615.3	9,040.6

* Source: FAA Air Traffic Activity.

TABLE 45

TOTAL COMBINED INSTRUMENT OPERATIONS

AT AIRPORTS WITH FAA AND CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	15,405.1	11,220.6	19,931.2	3,423.7	49,980.6
1999	15,833.1	11,586.7	20,897.8	3,512.3	51,829.9
2000	16,534.7	11,623.3	21,221.6	3,529.2	52,908.8
2001	16,030.8	11,751.8	19,705.5	3,530.4	51,018.5
2002	14,379.0	11,934.1	19,655.8	3,586.0	49,554.9
2003E	13,995.0	12,323.5	18,630.3	3,288.2	48,237.0
Forecast					
2004	14,302.9	13,038.2	18,953.1	3,288.2	49,582.5
2005	14,932.3	13,651.0	19,161.3	3,288.2	51,032.8
2006	15,380.2	14,060.6	19,391.0	3,288.2	52,120.0
2007	15,749.4	14,341.8	19,642.7	3,288.2	53,022.1
2008	16,143.1	14,671.6	19,917.4	3,288.2	54,020.4
2009	16,562.8	15,023.8	20,215.9	3,288.2	55,090.7
2010	16,976.9	15,369.3	20,518.9	3,288.2	56,153.3
2011	17,452.2	15,722.8	20,826.3	3,288.2	57,289.6
2012	17,940.9	16,084.4	21,138.4	3,288.2	58,452.0
2013	18,461.2	16,454.4	21,434.0	3,288.2	59,637.8
2014	19,015.0	16,832.8	21,712.3	3,288.2	60,848.4
2015	19,585.5	17,220.0	21,994.3	3,288.2	62,087.9

* Source: FAA Air Traffic Activity.

TABLE 46

INSTRUMENT OPERATIONS

AT AIRPORTS WITH FAA TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	15,309.9	10,916.3	19,678.6	3,368.0	49,272.8
1999	15,742.3	11,270.0	20,643.7	3,454.2	51,110.2
2000	16,408.8	11,244.4	20,945.6	3,468.5	52,067.3
2001	15,908.4	11,371.7	19,431.8	3,467.4	50,179.3
2002	14,257.7	11,577.9	19,380.4	3,525.0	48,741.0
2003E	13,881.1	11,966.3	18,349.2	3,227.0	47,423.6
Forecast					
2004	14,186.5	12,660.3	18,670.3	3,227.0	48,744.1
2005	14,810.7	13,255.4	18,875.7	3,227.0	50,168.8
2006	15,255.0	13,653.0	19,102.2	3,227.0	51,237.3
2007	15,621.1	13,926.1	19,350.5	3,227.0	52,124.7
2008	16,011.7	14,246.4	19,621.4	3,227.0	53,106.5
2009	16,428.0	14,588.3	19,915.7	3,227.0	54,159.0
2010	16,838.7	14,923.8	20,214.5	3,227.0	55,204.0
2011	17,310.1	15,267.1	20,517.7	3,227.0	56,321.9
2012	17,794.8	15,618.2	20,825.5	3,227.0	57,465.6
2013	18,310.9	15,977.5	21,117.0	3,227.0	58,632.3
2014	18,860.2	16,344.9	21,391.5	3,227.0	59,823.6
2015	19,426.0	16,720.9	21,669.6	3,227.0	61,043.5

* Source: FAA Air Traffic Activity.

TABLE 47

INSTRUMENT OPERATIONS

AT AIRPORTS WITH CONTRACT TRAFFIC CONTROL SERVICE

(In Thousands)

FISCAL YEAR	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	95.2	304.3	252.6	55.7	707.8
1999	90.8	316.7	254.1	58.1	719.7
2000	125.9	378.9	276.0	60.7	841.5
2001	122.4	380.1	273.7	63.0	839.2
2002	121.3	356.2	275.4	61.0	813.9
2003E	113.9	357.2	281.1	61.2	813.4
Forecast					
2004	116.5	377.9	282.8	61.2	838.4
2005	121.6	395.7	285.6	61.2	864.1
2006	125.2	407.5	288.8	61.2	882.7
2007	128.2	415.7	292.2	61.2	897.4
2008	131.4	425.2	296.0	61.2	913.9
2009	134.9	435.4	300.2	61.2	931.7
2010	138.2	445.5	304.4	61.2	949.3
2011	142.1	455.7	308.6	61.2	967.6
2012	146.1	466.2	312.9	61.2	986.4
2013	150.3	476.9	317.0	61.2	1,005.5
2014	154.8	487.9	320.8	61.2	1,024.7
2015	159.5	499.1	324.7	61.2	1,044.5

* Source: FAA Air Traffic Activity.

TABLE 48

IFR AIRCRAFT HANDLED

AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS

(In Thousands)

FISCAL YEAR	IFR AIRCRAFT HANDLED				
	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	TOTAL
Historical*					
1998	23,227.0	7,137.1	8,641.1	4,190.7	43,195.9
1999	24,044.8	7,732.1	8,807.7	4,069.7	44,654.3
2000	24,987.1	8,100.9	8,744.4	4,192.5	46,024.9
2001	24,865.5	8,303.3	8,024.6	4,038.6	45,232.0
2002	22,814.5	8,810.6	8,180.8	3,920.7	43,726.6
2003E	22,743.5	9,149.0	7,999.8	3,855.2	43,747.5
Forecast					
2004	23,425.8	9,679.6	8,174.3	3,855.2	45,134.9
2005	24,456.5	10,134.6	8,305.2	3,855.2	46,751.5
2006	25,190.2	10,438.6	8,431.4	3,855.2	47,915.5
2007	25,794.8	10,647.4	8,559.7	3,855.2	48,857.1
2008	26,439.7	10,892.3	8,688.0	3,855.2	49,875.2
2009	27,127.1	11,153.7	8,830.5	3,855.2	50,966.5
2010	27,805.3	11,410.2	8,971.8	3,855.2	52,042.5
2011	28,583.8	11,672.7	9,115.3	3,855.2	53,227.0
2012	29,384.2	11,941.1	9,261.2	3,855.2	54,441.7
2013	30,236.3	12,215.8	9,400.0	3,855.2	55,707.3
2014	31,143.4	12,496.8	9,531.6	3,855.2	57,027.0
2015	32,077.7	12,784.2	9,665.2	3,855.2	58,382.3

* Source: FAA Air Traffic Activity.

TABLE 49

IFR DEPARTURES AND OVERS

AT FAA AIR ROUTE TRAFFIC CONTROL CENTERS

(In Thousands)

FISCAL YEAR	AIR CARRIER		AIR TAXI/COMMUTER		GENERAL AVIATION		MILITARY		TOTAL	
	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS	IFR DEPARTURES	OVERS
Historical*										
1998	7,677.1	7,872.8	3,284.7	567.7	3,493.6	1,653.9	1,485.2	1,220.3	15,940.6	11,314.7
1999	7,835.5	8,373.8	3,512.7	706.7	3,535.2	1,737.3	1,467.3	1,135.1	16,350.7	11,952.9
2000	8,036.2	8,914.7	3,641.4	818.1	3,476.3	1,791.8	1,482.7	1,227.1	16,636.6	12,751.7
2001	7,828.1	9,209.3	3,633.5	1,036.3	3,191.9	1,640.8	1,428.1	1,182.4	16,081.6	13,068.8
2002	7,124.6	8,565.3	3,792.1	1,226.4	3,240.4	1,700.0	1,371.2	1,178.3	15,528.3	12,670.0
2003E	6,934.5	8,874.5	3,921.7	1,305.6	3,149.8	1,700.2	1,365.4	1,124.4	15,371.4	13,004.7
Forecast										
2004	7,142.5	9,140.7	4,149.2	1,381.3	3,215.9	1,742.5	1,365.4	1,124.4	15,873.0	13,389.0
2005	7,456.8	9,542.9	4,344.2	1,446.2	3,264.1	1,777.0	1,365.4	1,124.4	16,430.5	13,890.6
2006	7,680.5	9,829.2	4,474.5	1,489.6	3,313.0	1,805.4	1,365.4	1,124.4	16,833.4	14,248.6
2007	7,864.8	10,065.1	4,564.0	1,519.4	3,362.7	1,834.3	1,365.4	1,124.4	17,156.9	14,543.2
2008	8,061.5	10,316.7	4,669.0	1,554.4	3,413.1	1,861.8	1,365.4	1,124.4	17,508.9	14,857.3
2009	8,271.1	10,585.0	4,781.0	1,591.7	3,469.1	1,892.3	1,365.4	1,124.4	17,886.6	15,193.4
2010	8,477.8	10,849.6	4,891.0	1,628.3	3,524.6	1,922.6	1,365.4	1,124.4	18,258.8	15,524.9
2011	8,715.2	11,153.4	5,003.5	1,665.7	3,581.0	1,953.3	1,365.4	1,124.4	18,665.1	15,896.8
2012	8,959.2	11,465.7	5,118.5	1,704.1	3,638.3	1,984.6	1,365.4	1,124.4	19,081.5	16,278.7
2013	9,219.1	11,798.2	5,236.3	1,743.2	3,692.8	2,014.4	1,365.4	1,124.4	19,513.5	16,680.2
2014	9,495.6	12,152.1	5,356.7	1,783.3	3,744.5	2,042.6	1,365.4	1,124.4	19,962.2	17,102.5
2015	9,780.5	12,516.7	5,479.9	1,824.4	3,797.0	2,071.2	1,365.4	1,124.4	20,422.8	17,536.7

* Source: FAA Air Traffic Activity.

Note: Totals may not add because of rounding.

TABLE 50

TOTAL FLIGHT SERVICES

AT FAA FLIGHT SERVICE STATIONS

(In Thousands)

FISCAL YEAR	FLIGHT PLANS ORIGINATED	PILOT BRIEFS	AIRCRAFT CONTACTED	TOTAL FLIGHT SERVICES	FLIGHT SERVICES INCLUDING DUATS
Historical*					
1998	6,493	8,728	3,476	33,918	46,776
1999	6,252	8,293	3,325	32,415	45,785
2000	5,925	7,713	3,205	30,481	45,483
2001	5,749	7,424	2,964	29,310	45,228
2002	5,772	7,458	2,974	29,434	45,923
2003E	5,417	7,010	2,814	27,669	45,150
Forecast					
2004	5,336	7,171	2,761	27,777	46,001
2005	5,294	7,235	2,791	27,849	46,424
2006	5,280	7,305	2,842	28,011	46,587
2007	5,282	7,382	2,879	28,207	47,504
2008	5,300	7,467	2,922	28,455	48,125
2009	5,329	7,559	2,960	28,737	48,406
2010	5,372	7,653	3,007	29,057	49,492
2011	5,426	7,747	3,055	29,402	50,231
2012	5,489	7,843	3,104	29,768	50,597
2013	5,558	7,933	3,144	30,126	51,765
2014	5,630	8,017	3,185	30,480	52,119
2015	5,706	8,102	3,227	30,843	53,325

* Source: FAA Air Traffic Activity.
Notes: Total flight services is equal to the sum of flight plans originated and pilot briefs, multiplied by two, plus the number of aircraft contacted.

TABLE 51

FLIGHT PLANS ORIGINATED

AT FAA FLIGHT SERVICE STATIONS

(In Thousands)

FISCAL YEAR	FLIGHT PLANS ORIGINATED		
	IFR-DVFR	VFR	TOTAL
Historical*			
1998	5,227	1,266	6,493
1999	5,018	1,234	6,252
2000	4,668	1,257	5,925
2001	4,516	1,233	5,749
2002	4,541	1,231	5,772
2003E	4,276	1,141	5,417
Forecast			
2004	4,206	1,131	5,336
2005	4,159	1,135	5,294
2006	4,138	1,142	5,280
2007	4,134	1,148	5,282
2008	4,145	1,154	5,300
2009	4,169	1,160	5,329
2010	4,206	1,167	5,372
2011	4,252	1,174	5,426
2012	4,308	1,181	5,489
2013	4,370	1,187	5,558
2014	4,437	1,193	5,630
2015	4,507	1,200	5,706

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 52

AIRCRAFT CONTACTED

AT FAA FLIGHT SERVICE STATIONS

(In Thousands)

FISCAL YEAR	USER CATEGORY				FLIGHT RULES		
	AIR CARRIER	AIR TAXI/ COMMUTER	GENERAL AVIATION	MILITARY	IFR-DVFR	VFR	TOTAL
Historical*							
1998	150	570	2,600	156	1,138	2,338	3,476
1999	136	515	2,524	150	1,044	2,282	3,325
2000	127	495	2,438	145	960	2,245	3,205
2001	108	514	2,196	146	922	2,042	2,964
2002	96	558	2,170	150	868	2,105	2,974
2003E	86	558	2050	120	848	1,966	2,814
Forecast							
2004	84	548	2,011	118	832	1,929	2,761
2005	85	554	2,034	119	841	1,950	2,791
2006	86	564	2,070	121	856	1,985	2,842
2007	88	571	2,097	123	868	2,011	2,879
2008	89	580	2,129	125	881	2,041	2,922
2009	90	587	2,156	126	892	2,068	2,960
2010	91	596	2,191	128	906	2,101	3,007
2011	93	606	2,226	131	921	2,134	3,055
2012	94	616	2,261	133	936	2,169	3,104
2013	96	624	2,291	134	948	2,197	3,144
2014	97	632	2,321	136	960	2,225	3,185
2015	98	640	2,351	138	972	2,254	3,227

* Source: FAA Air Traffic Activity.

Notes: Detail may not add to total because of rounding.

TABLE 53

AUTOMATED FLIGHT SERVICES

DUATS TRANSACTIONS

(In Thousands)

FISCAL YEAR	DUATS FLIGHT PLANS	DUATS TRANSACTIONS	TOTAL DUATS
Historical*			
1998	881	5,548	12,858
1999	724	5,961	13,370
2000	799	6,702	15,002
2001	787	7,172	15,918
2002	1,168	7,076	16,489
2003E	1,288	7,452	17,481
Forecast			
2004	1,365	7,748	18,225
2005	1,385	7,903	18,576
2006	1,406	8,061	18,933
2007	1,427	8,222	19,298
2008	1,448	8,386	19,670
2009	1,470	8,554	20,049
2010	1,492	8,725	20,435
2011	1,514	8,900	20,829
2012	1,537	9,078	21,230
2013	1,560	9,259	21,639
2014	1,584	9,445	22,056
2015	1,607	9,633	22,482

* Source: FAA Air Traffic Activity.

Notes: Total DUATS services are equal to the sum of flight plans originated and transactions multiplied by two.