

# 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 workload 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

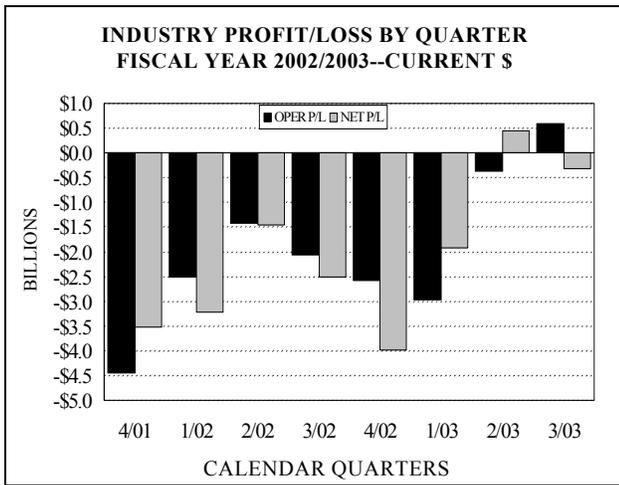
specified quarters are fiscal year quarters, unless designated otherwise.

### REVIEW OF 2003

#### FINANCIAL RESULTS

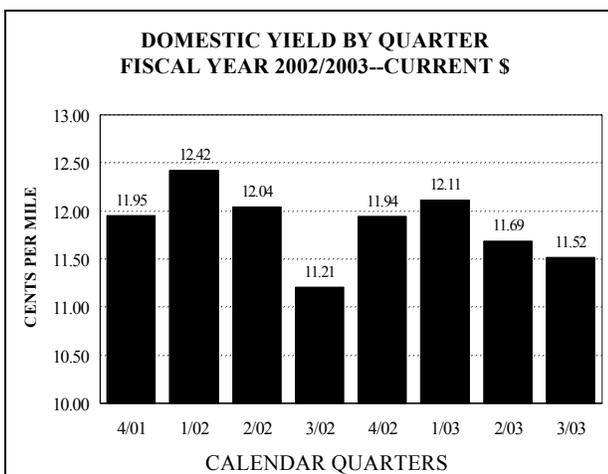
For the third consecutive year, operating expenses for large U.S. commercial airlines exceeded operating revenues. The poor financial performance in 2003 was driven by a reduction in traffic in part by the Iraq War and SARS, declining yields, escalating costs for security, insurance, and fuel prices. 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,

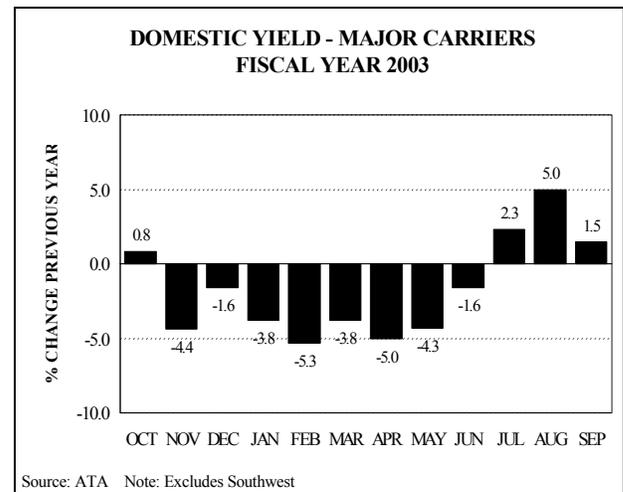


fuel prices rose 22.0 percent in 2003, increasing operating expenses by \$2.7 billion. Industry labor costs, accounting for 35 percent of total operating expenses, fell 3.0 percent to \$38.9 billion.

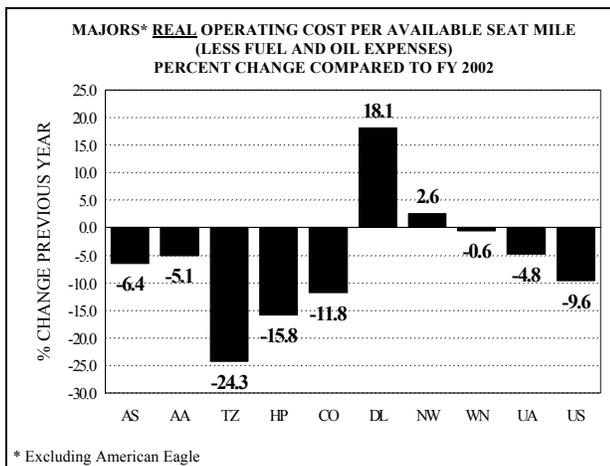
Domestic nominal yield for the large air carriers fell 0.5 percent, while yield, adjusted for inflation decreased 2.9 percent. Yield was down throughout the most of the year as carriers continued to discount fares in order to boost demand. Competition in the industry is intense as low fare carriers continue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



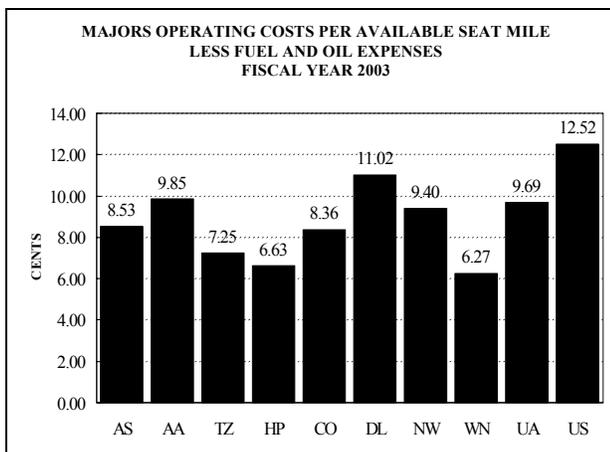
Nominal international yield increased 0.6 percent as a 2.6 percent increase in Atlantic markets offset declines in the Latin and Pacific markets. In Atlantic markets real yield increased 0.2 percent while in Latin and Pacific markets real yield decreased 3.5 and 5.1 percent, respectively. The increase 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.



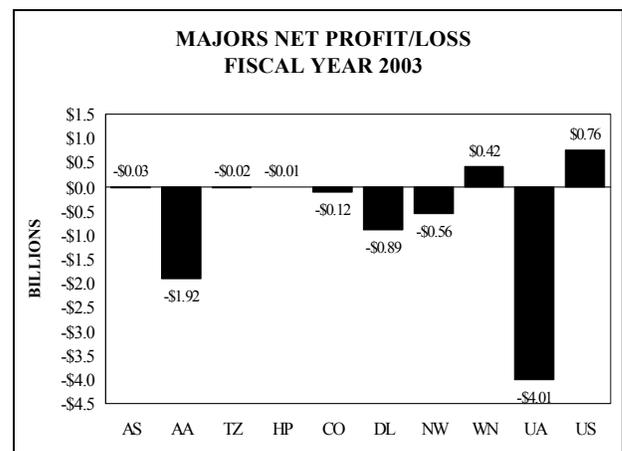
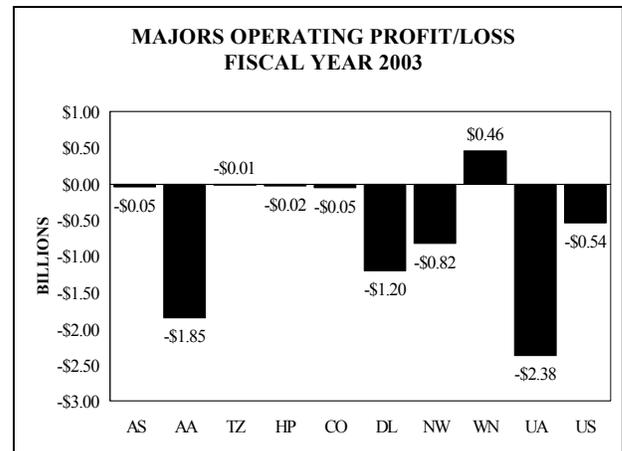
System average real operating cost per available seat mile (excluding fuel and oil) for the major passenger carriers was 9.45 cents in 2003, down 2.8 percent from 2002. System real unit costs (including fuel and oil) decreased 0.8 percent. In 2003, Southwest had the lowest operating cost (excluding fuel 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.<sup>1</sup>



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

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

10 major passenger air carriers.<sup>2</sup> 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.

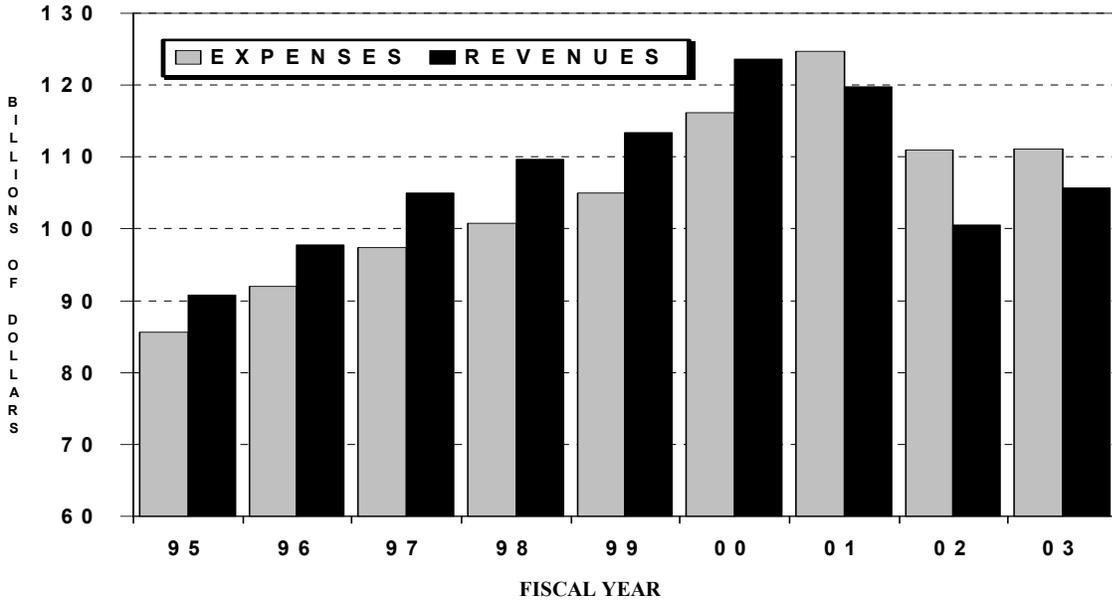


Controlling costs is key to the industry's ability to return to sustained profitability. Revenue will remain at low levels due to continued weak demand and increased competition from low fare carriers. Insurance costs, security enhancements, and fuel costs are expected to increase and further widen the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

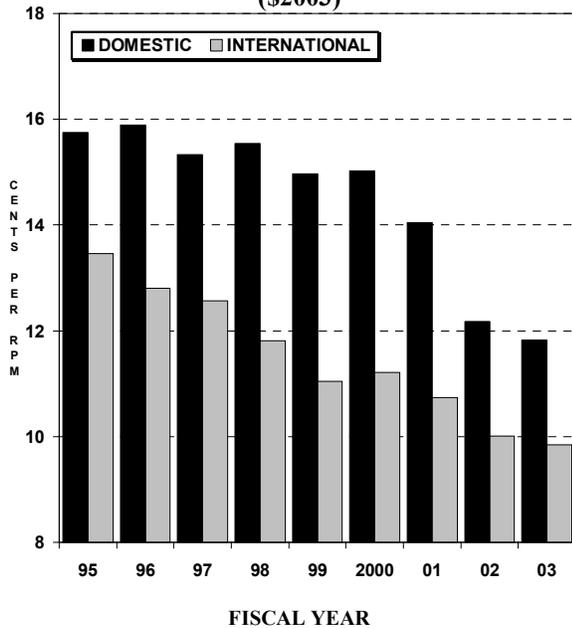
<sup>2</sup> A Major carrier by definition is one that has annual operating revenues in excess of \$1B. American Eagle, considered a regional carrier, has been excluded from this analysis.

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

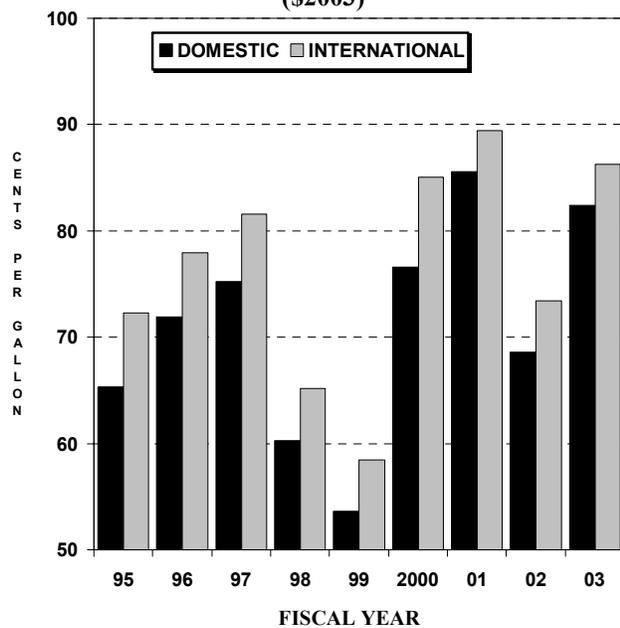
**OPERATING REVENUES AND EXPENSES  
(CURRENT DOLLARS)**



**PASSENGER YIELDS  
(\$2003)**



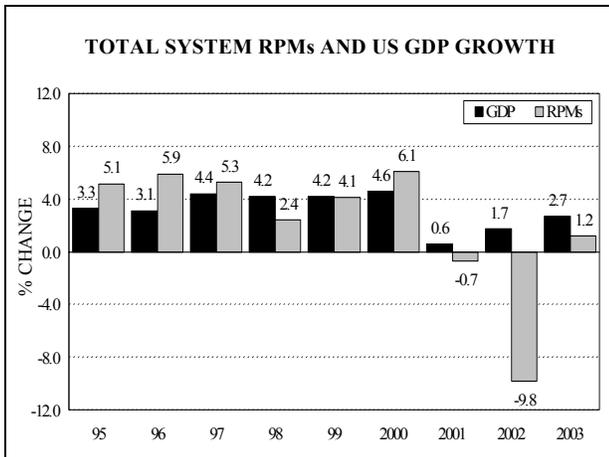
**JET FUEL PRICES  
(\$2003)**



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).

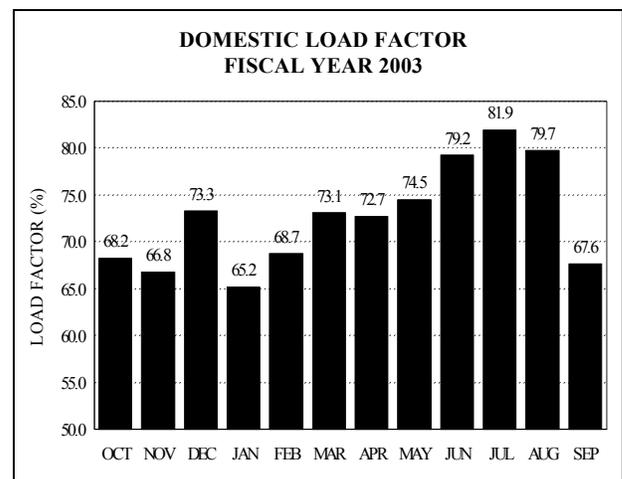
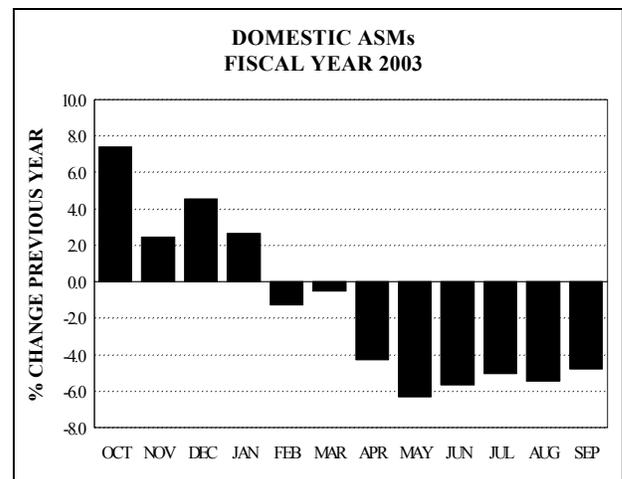
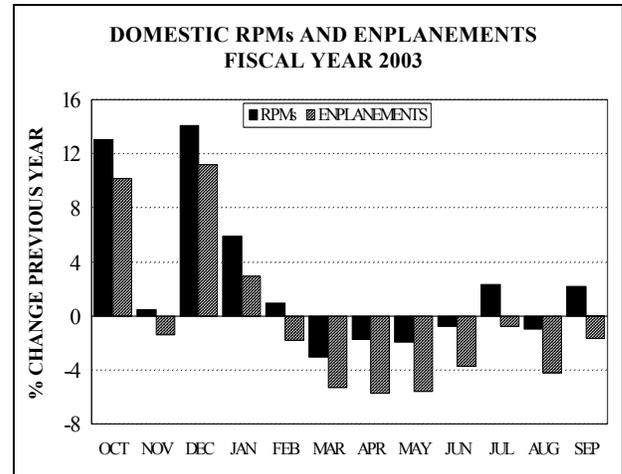


System available seat miles (ASMs) decreased for the second consecutive year in 2003, down 1.8 percent. System load factor increased 2.2 points to a record 73.4 percent.

### Domestic Passenger Traffic and Capacity

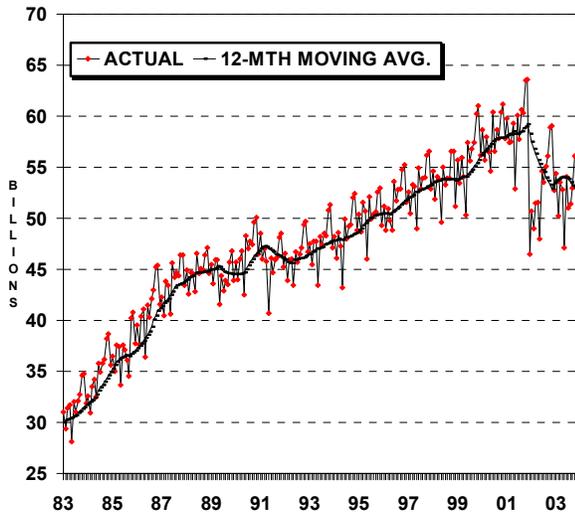
In 2003, an improving economy and greater consumer confidence in flying resulted in RPMs increasing 2.2 percent. Enplanements fell 0.8 percent. Traffic was up year-over-year in

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.



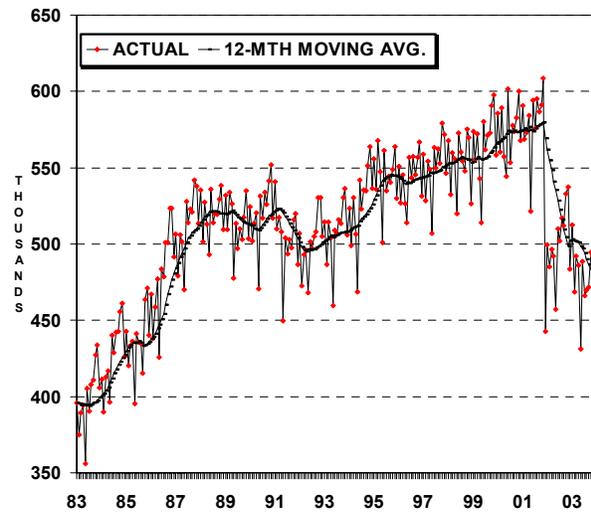
# U.S. AIR CARRIER DOMESTIC TRAFFIC TRENDS (Data through August 03)

**AVAILABLE SEAT MILES**



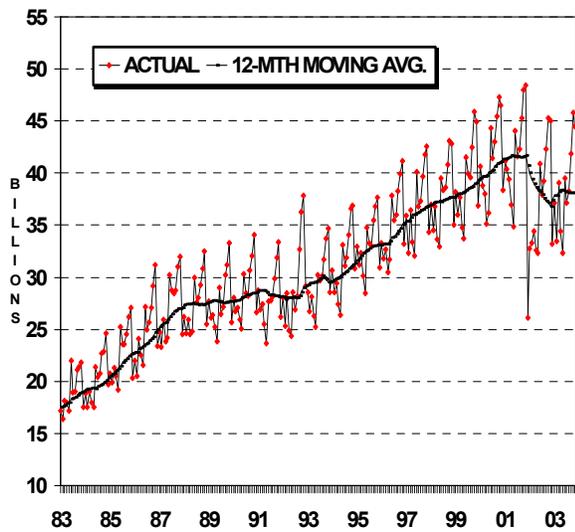
FISCAL YEAR BY MONTH

**AIRCRAFT DEPARTURES**



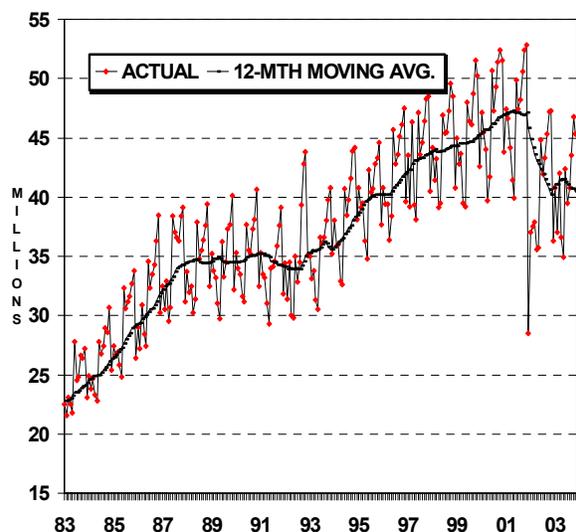
FISCAL YEAR BY MONTH

**REVENUE PASSENGER MILES**



FISCAL YEAR BY MONTH

**ENPLANEMENTS**

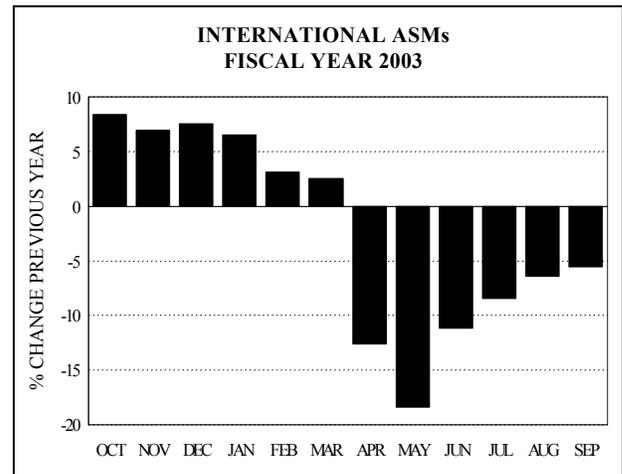
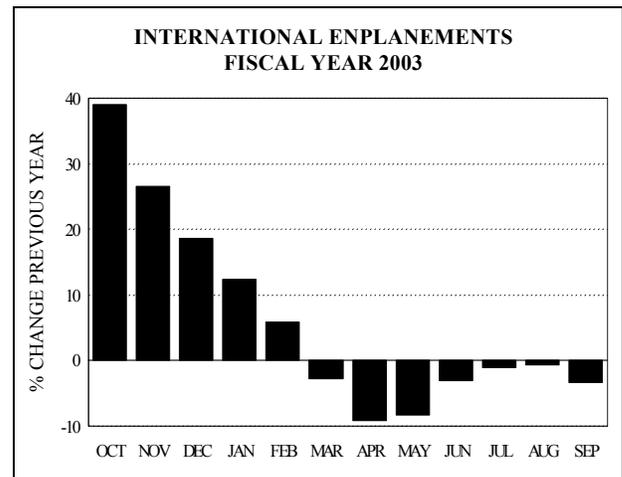
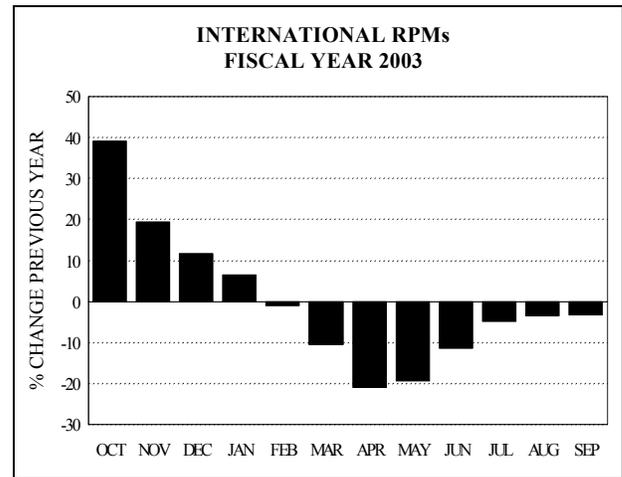


FISCAL YEAR BY MONTH

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

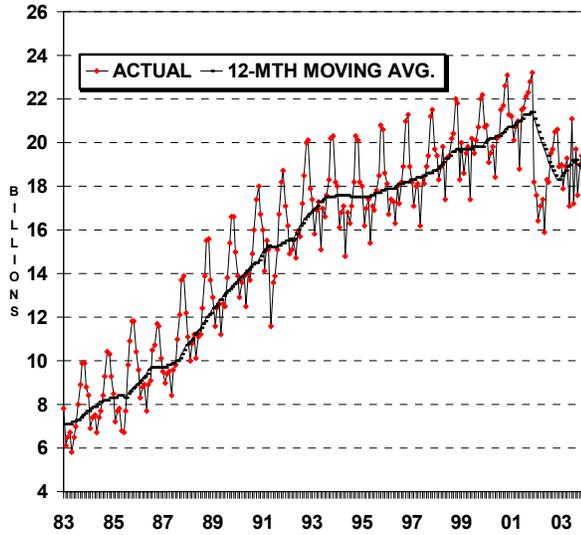
In 2003, total international RPMs decreased for a second consecutive year, falling 1.6 percent. Enplanements increased by 4.4 percent. Both RPMs and enplanements were up in the first quarter of the year but with the outbreak of SARS and beginning of the Iraq war, traffic declined and capacity was reduced. 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.



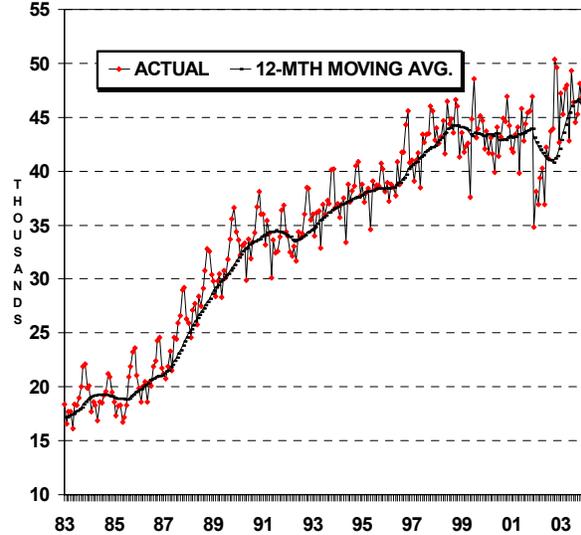
# U.S. AIR CARRIER INTERNATIONAL TRAFFIC TRENDS (through August 03)

**AVAILABLE SEAT MILES**



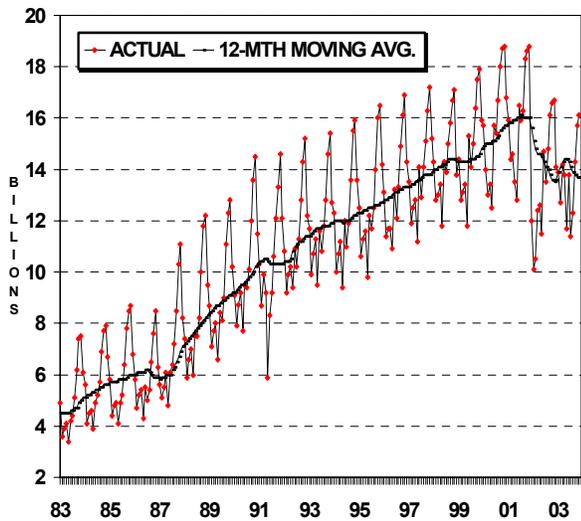
FISCAL YEAR BY MONTH

**AIRCRAFT DEPARTURES**



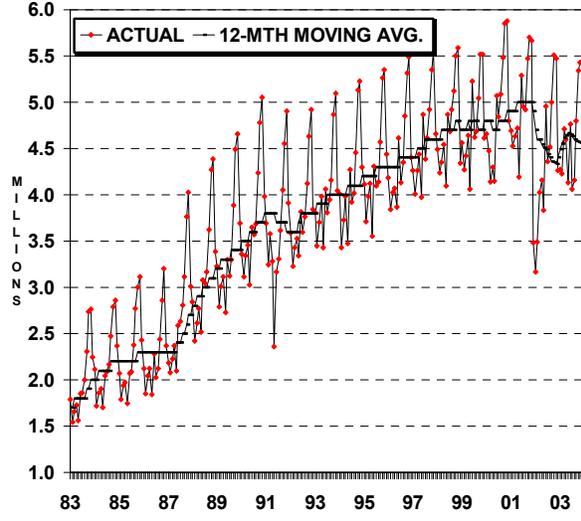
FISCAL YEAR BY MONTH

**REVENUE PASSENGER MILES**



FISCAL YEAR BY MONTH

**ENPLANEMENTS**



FISCAL YEAR BY MONTH

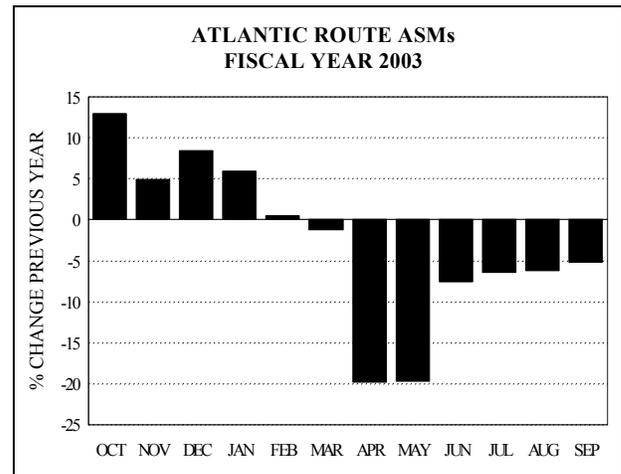
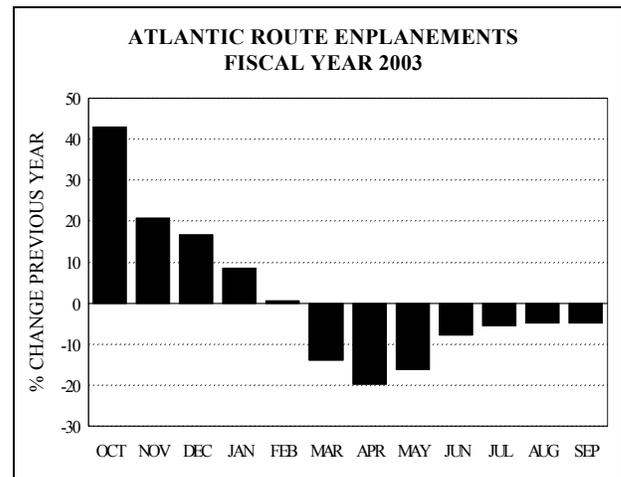
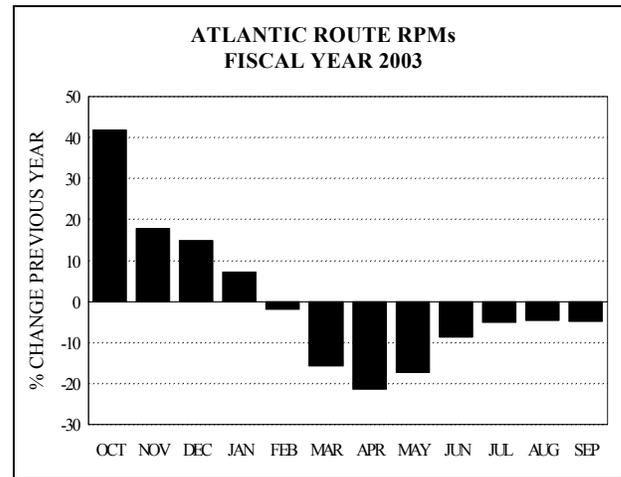
## Atlantic Routes

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.

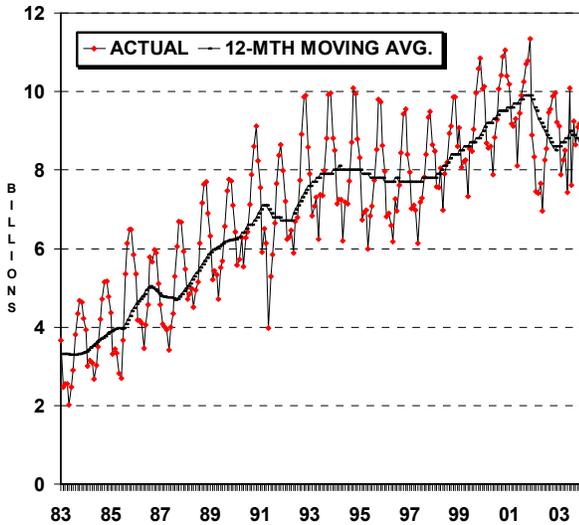
Immigration and Naturalization Service (INS) data, which is compiled by the U.S. Department of Commerce, showed in CY2002 U.S. flag carrier market share in the region was 42.1 percent. After increasing for three consecutive years, data through August 2003 indicate that U.S. flag carrier market share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



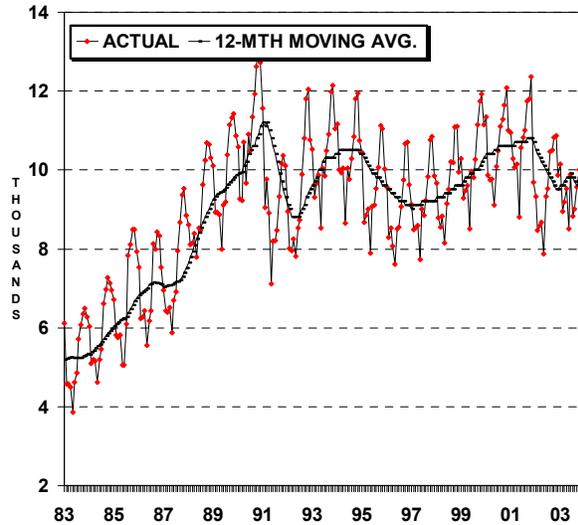
# U.S. AIR CARRIER TRAFFIC TRENDS: ATLANTIC ROUTES (through August 2003)

**AVAILABLE SEAT MILES**



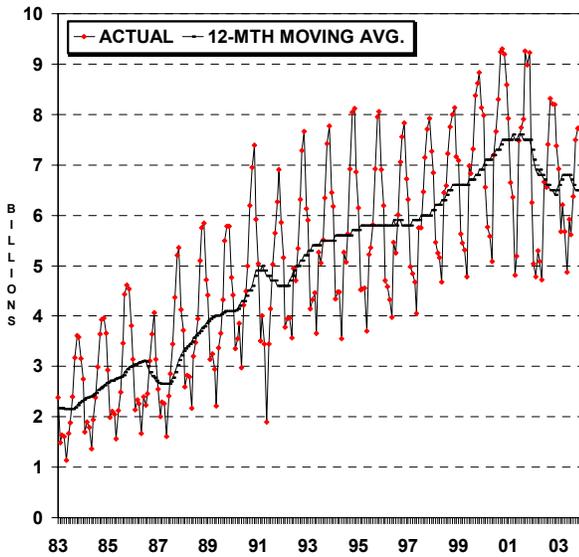
FISCAL YEAR BY MONTH

**AIRCRAFT DEPARTURES**



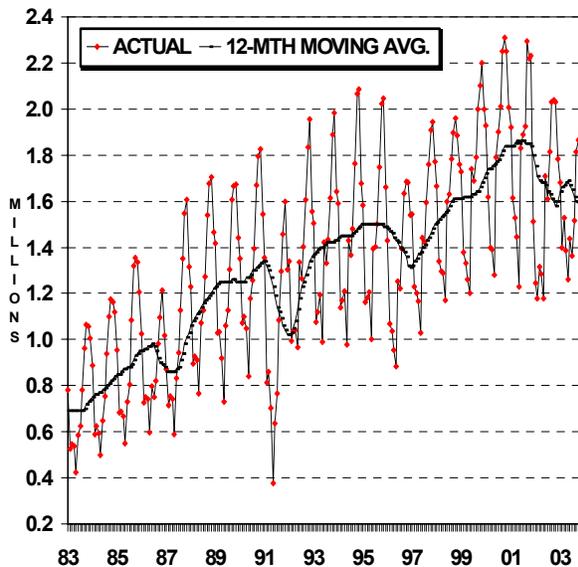
FISCAL YEAR BY MONTH

**REVENUE PASSENGER MILES**



FISCAL YEAR BY MONTH

**ENPLANEMENTS**



FISCAL YEAR BY MONTH

## Latin American Routes

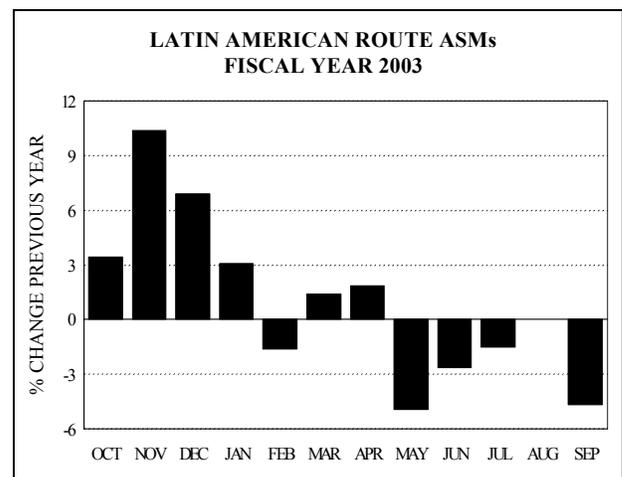
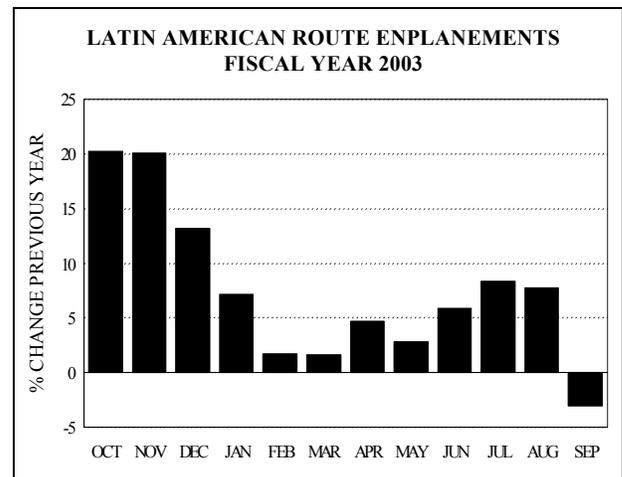
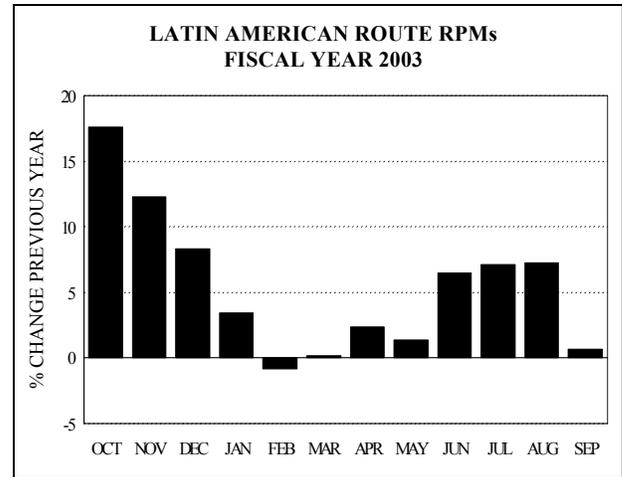
In contrast to other international markets, traffic to Latin America (destinations in South America, Central America, Mexico, and the Caribbean) rose in 2003. In 2003, RPMs and passenger enplanements were up 5.2 and 7.3 percent, respectively.

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.

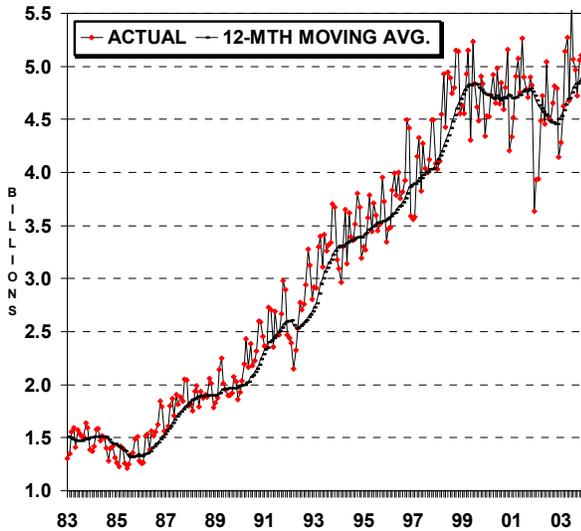
Despite higher traffic, U.S. passenger carriers had an operating loss of \$114.3 million in Latin American markets in 2003. This represented a \$320.6 million improvement over the \$434.9 million operating loss of 2002.

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.



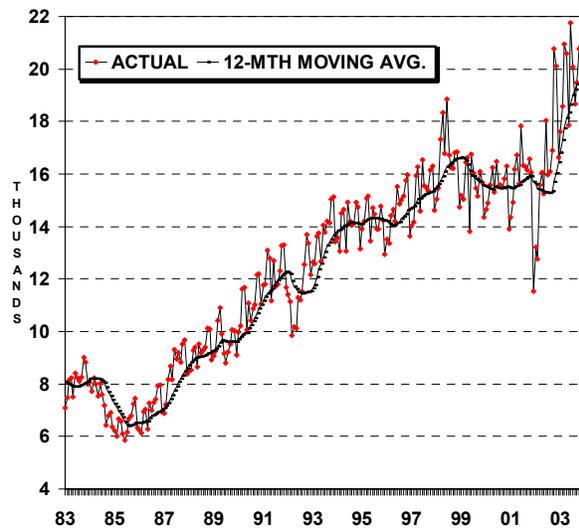
# U.S. AIR CARRIER TRAFFIC TRENDS: LATIN AMERICAN ROUTES (through August 2003)

**AVAILABLE SEAT MILES**



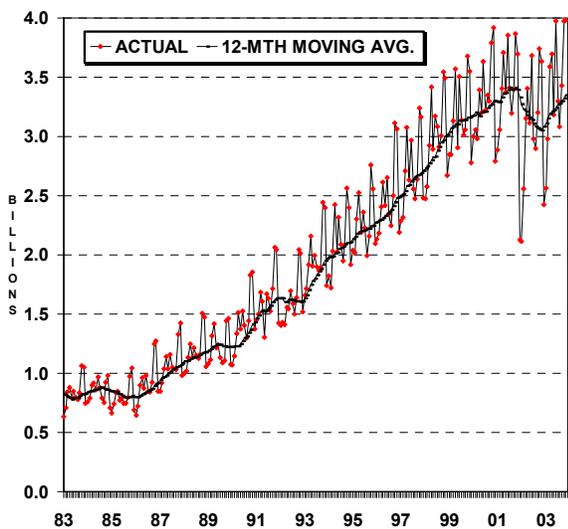
FISCAL YEAR BY MONTH

**AIRCRAFT DEPARTURES**



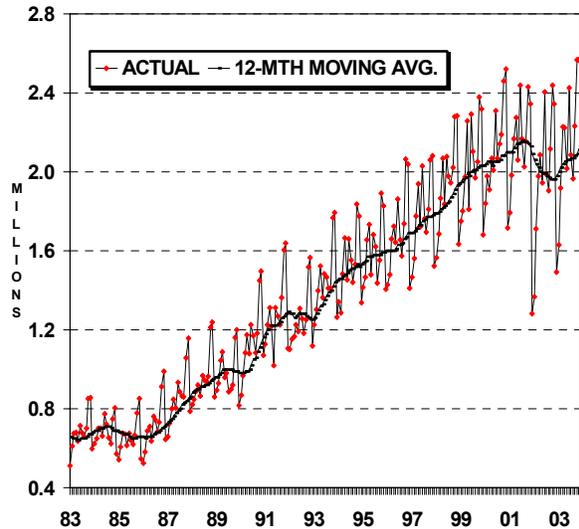
FISCAL YEAR BY MONTH

**REVENUE PASSENGER MILES**



FISCAL YEAR BY MONTH

**ENPLANEMENTS**



FISCAL YEAR BY MONTH

## Pacific Routes

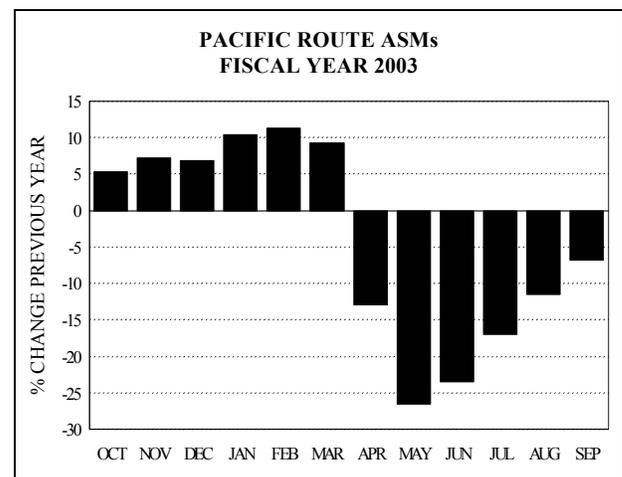
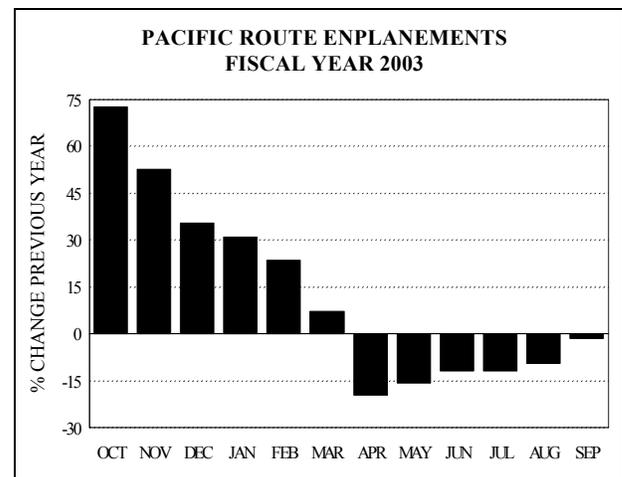
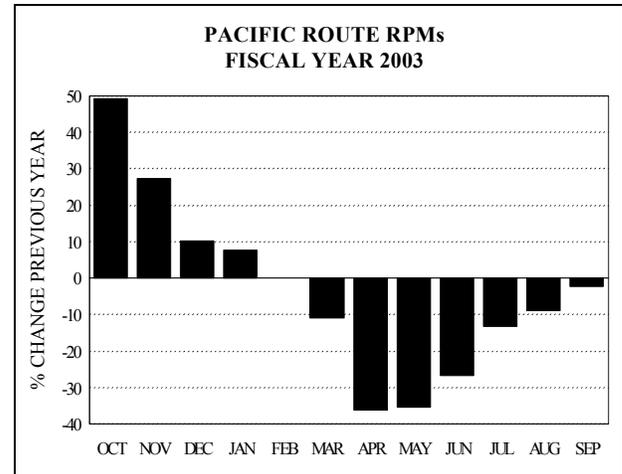
Despite a promising beginning to the year, traffic in Asia/Pacific markets fell again in 2003, with RPMs down 5.7 percent versus 2002. After increasing in the first 4 months of the year, including gains of 49.3 and 27.4 percent in October and November, traffic collapsed with the outbreak of the SARS 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<sup>3</sup>.

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

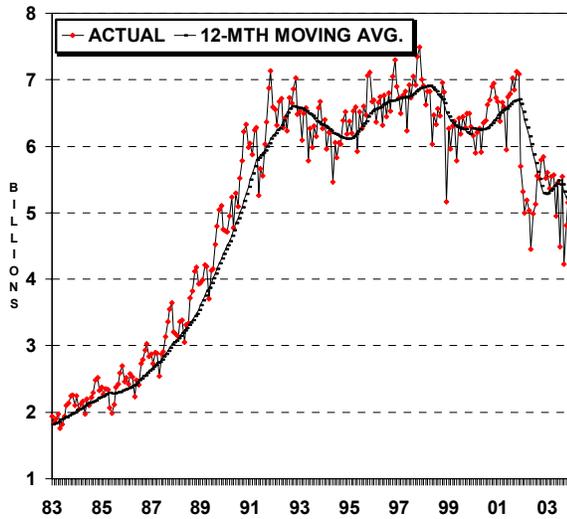
the countries of the region. These agreements will stimulate aviation growth by providing travelers with service to more cities and lower fares.



<sup>3</sup> 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.

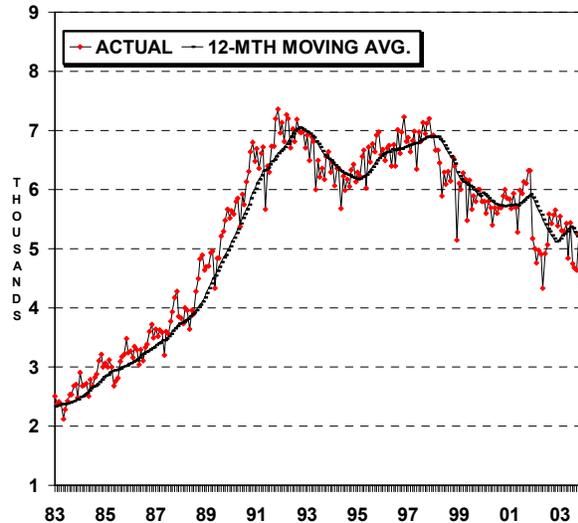
# U.S. AIR CARRIER TRAFFIC TRENDS: PACIFIC ROUTES (through August 2003)

AVAILABLE SEAT MILES



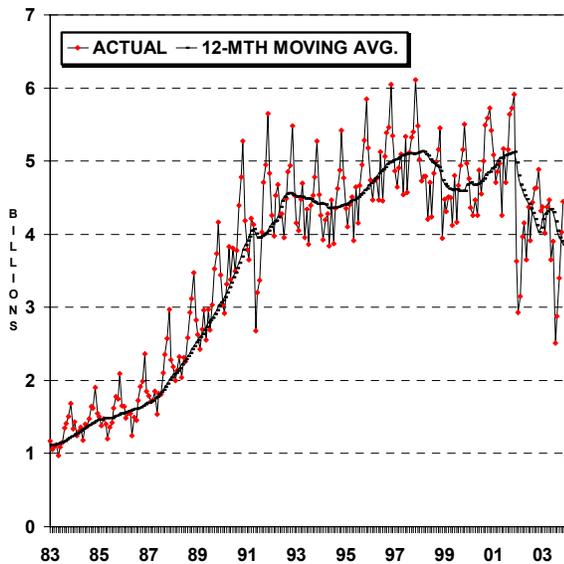
FISCAL YEAR BY MONTH

AIRCRAFT DEPARTURES



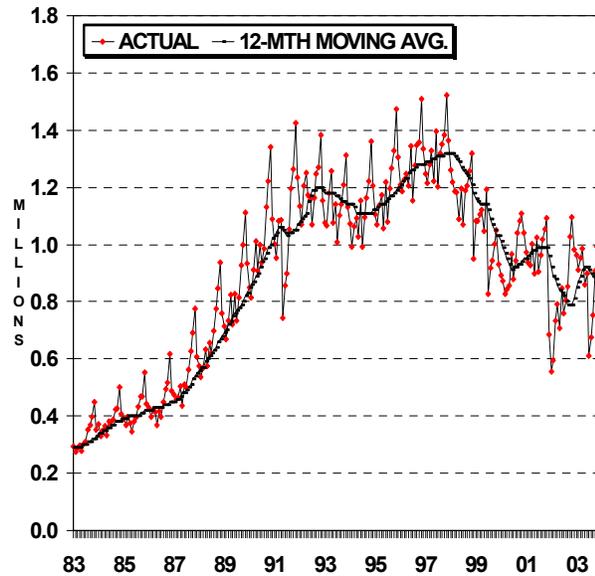
FISCAL YEAR BY MONTH

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 11<sup>th</sup> 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 11<sup>th</sup> 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 11<sup>th</sup>, 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.<sup>4</sup> 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."<sup>5</sup>

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 11<sup>th</sup> in order to survive. On June 30, 2001, the six legacy carriers<sup>6</sup> had a total of

---

<sup>4</sup> Goldman Sachs report issued Oct 2, 2003

---

<sup>5</sup> USA Today, November 7, 2003

<sup>6</sup> 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 11<sup>th</sup> 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 11<sup>th</sup> 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 11<sup>th</sup> attacks and the bankruptcy of

United and US Airways. Some trends that were taking place prior to September 11<sup>th</sup> 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 11<sup>th</sup> 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 11<sup>th</sup>. According to American Express, the amount of vacationers planning to fly increased to 55 percent in 2003 from 42 percent in 2002.<sup>7</sup> Despite the events of September 11<sup>th</sup>, the trends mentioned above are expected to lead to a continued increase in the demand for leisure travel.

---

<sup>7</sup> American Express Leisure Travel Index, October 22, 2003

## GLOBAL RISKS AND UNCERTAINTIES

It was clear that in the immediate aftermath of the events of September 11<sup>th</sup>, 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 11<sup>th</sup> 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.

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 11<sup>th</sup>. 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 11<sup>th</sup> 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 11<sup>th</sup> 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).

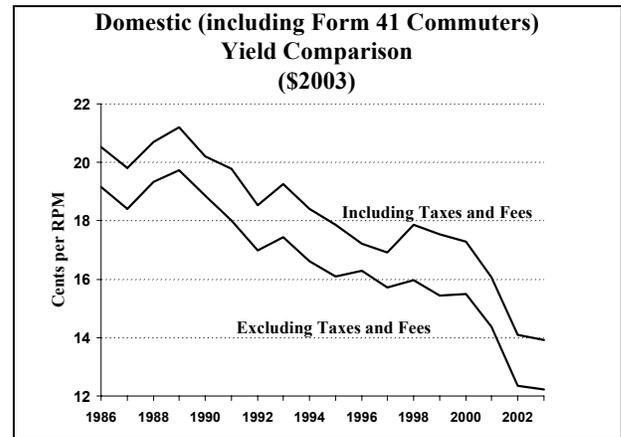
## **MODELING DOMESTIC RPMS AND ENPLANEMENTS**

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

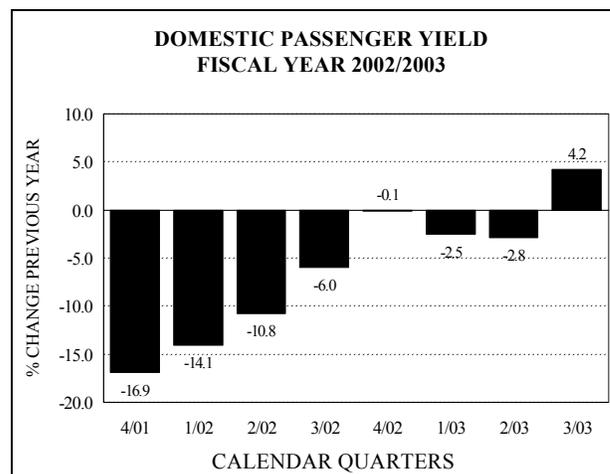
Between 1978 and 1990, domestic capacity grew an average of 5.5 percent annually, matching the growth of traffic during the same period. From 1991 through 1997, capacity grew 2.4 percent annually. During this period, the carriers developed the capability to rapidly adjust capacity to changing conditions 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

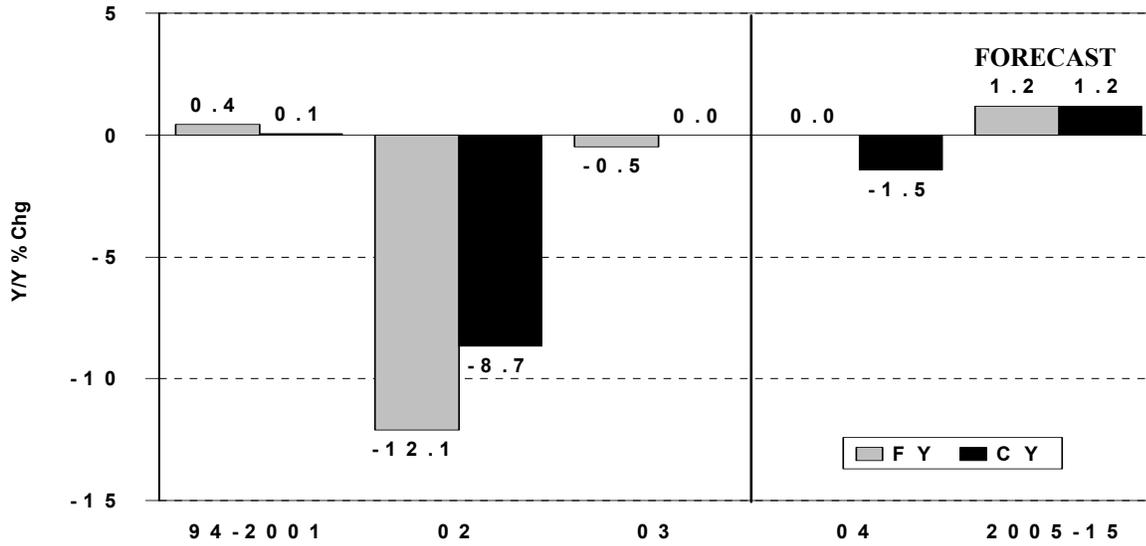
Between 1978 (when the industry was deregulated) and 2001, domestic real yield declined an average of 2.2 percent per year. In the 1980s the decline resulted from the airlines adjusting to deregulation by rationalizing their route structures and increasing labor productivity. In the 1990's, financial 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 11<sup>th</sup> 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.

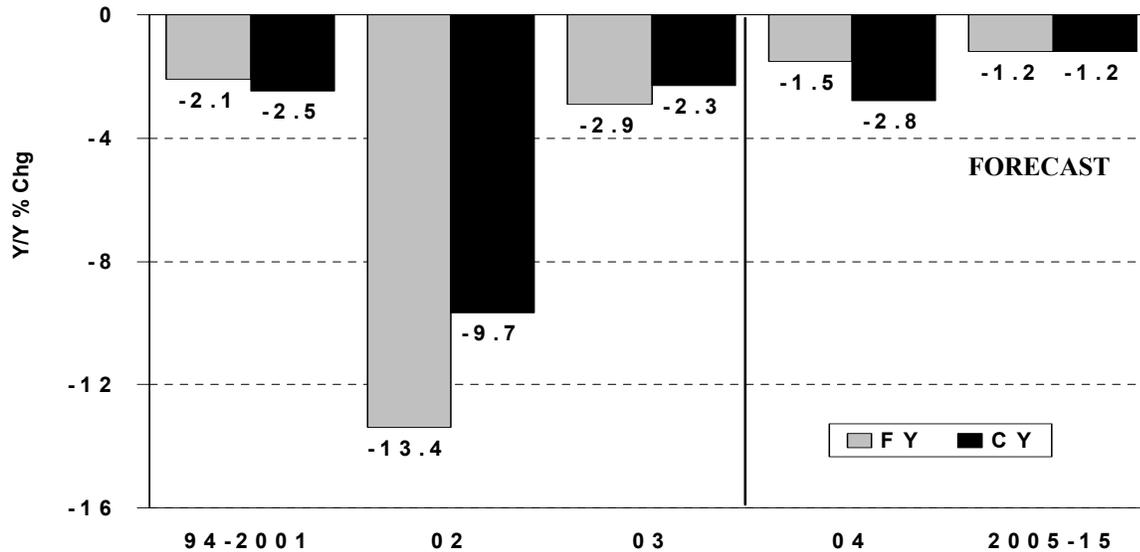


# U.S. COMMERCIAL LARGE AIR CARRIERS: DOMESTIC PASSENGER YIELD

## CURRENT DOLLARS



## 2003 DOLLARS

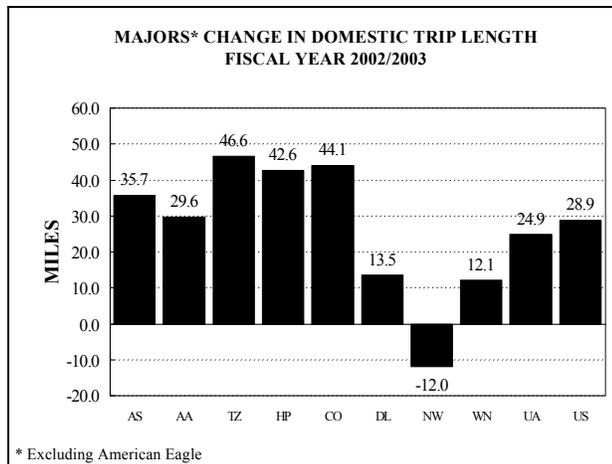


Nominal yield is forecast to remain flat in 2004 as the expansion of low-cost carrier networks and the growth of the network carriers low fare subsidiaries keeps prices in check. Yield will be up modestly versus 2003 for the first half of the year but turns negative for the balance of the year.

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.

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

### 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 11<sup>th</sup>.

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

### 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**

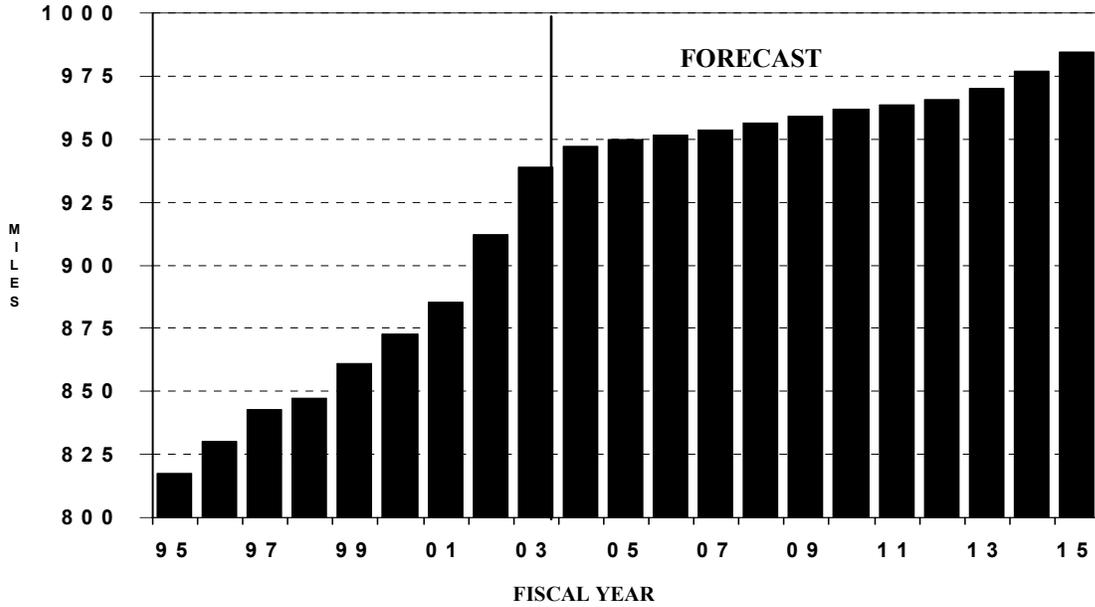
Similar to the forecasts of domestic traffic, forecasts for U.S. flag carriers' international RPMs and enplanements for the three world regions--Atlantic, Pacific, and Latin America,

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 used 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.

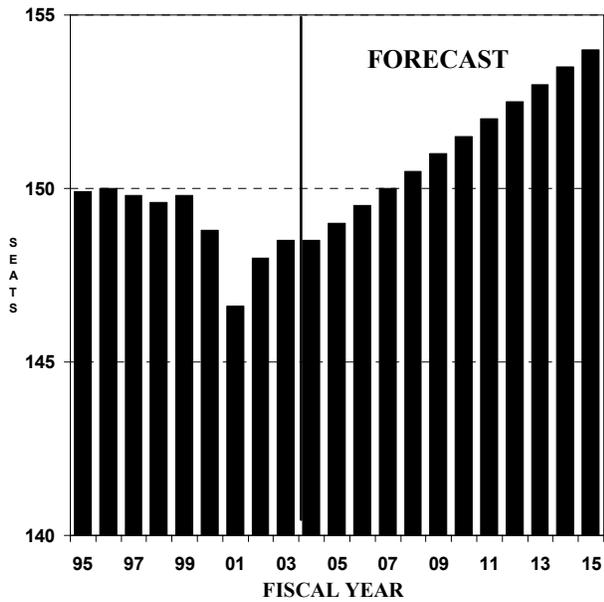
Although economic theory suggests that fares, exchange rates, and relative country consumer prices should be important arguments in an international demand equation, the analyses clearly demonstrate that aggregate economic activity explains a large percentage of the variability in demand and is sufficient 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

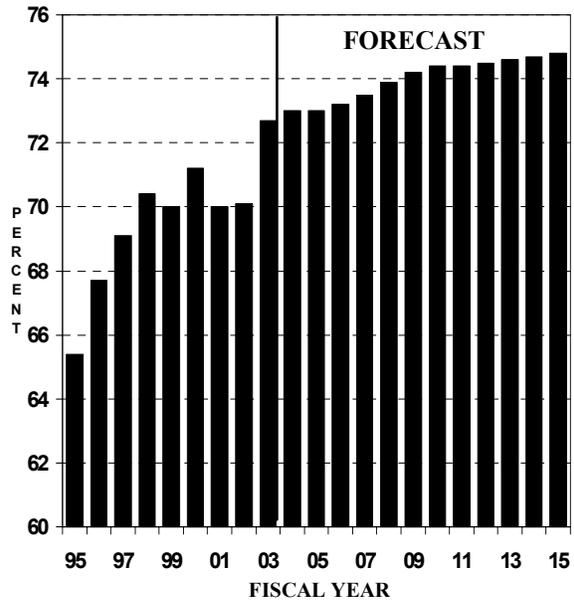
**PASSENGER TRIP LENGTH**



**SEATS PER AIRCRAFT**

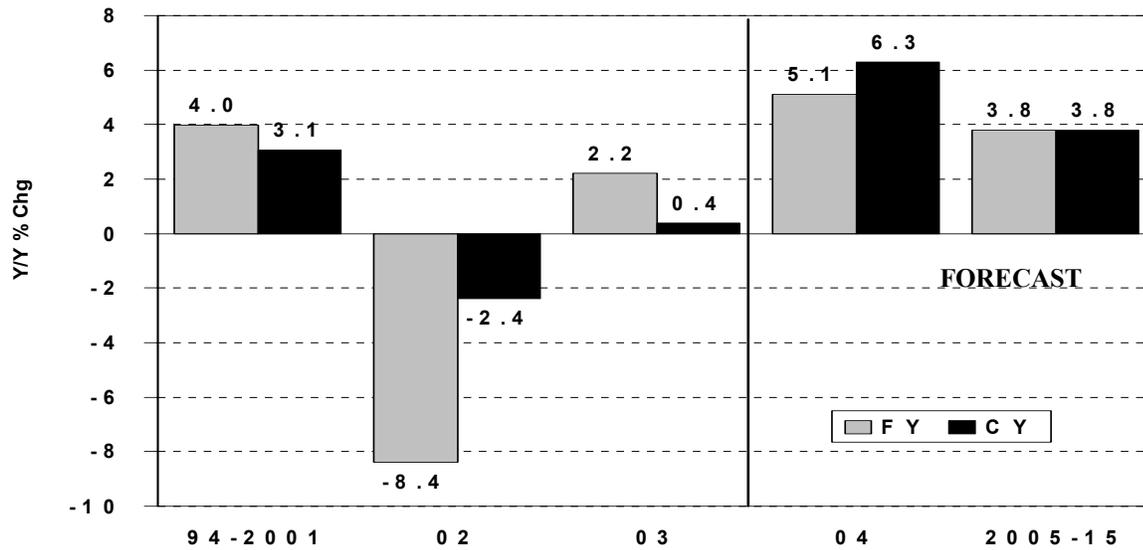


**LOAD FACTOR**

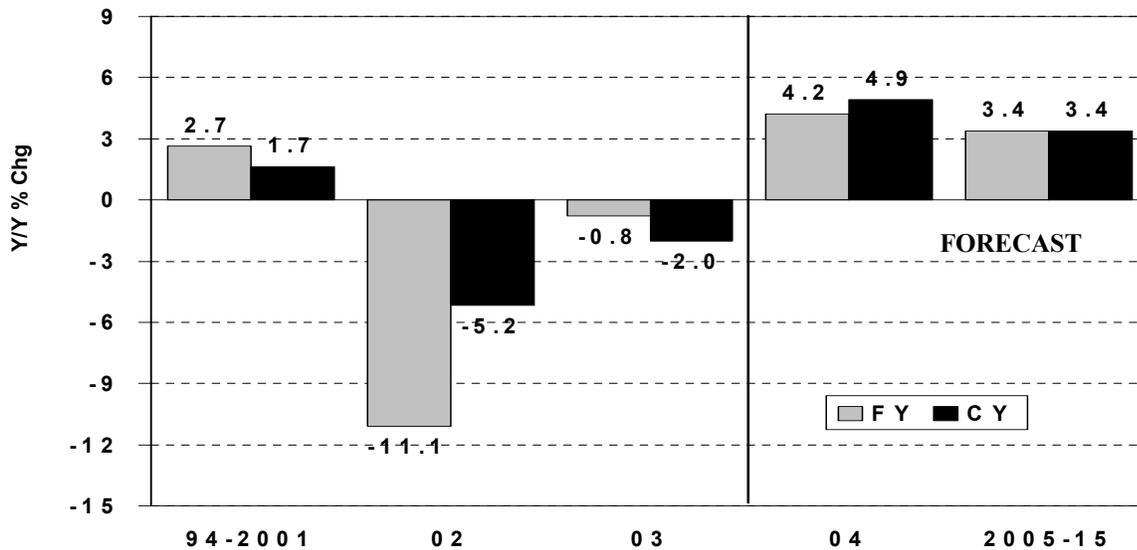


# U.S. COMMERCIAL LARGE AIR CARRIERS: DOMESTIC FORECASTS

## 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.

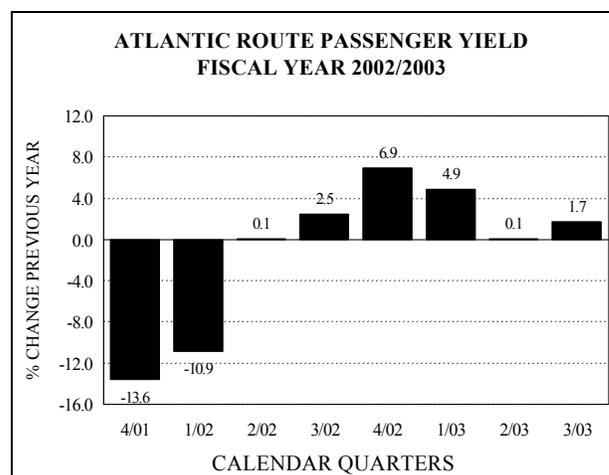
For the period 2005 through 2015, forecast capacity growth averages 4.6 percent per year with the rates of growth diminishing over the course of the forecast. The average annual growth over the 12-year forecast period is 5.0 percent with Atlantic ASMs totaling 168.8 billion in 2015.

#### 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.<sup>8</sup>

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 11<sup>th</sup> 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

---

<sup>8</sup> 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.

Aviation Policy and Plans, phone (202) 267-3355.

## U.S. Large Carrier Passenger Enplanements

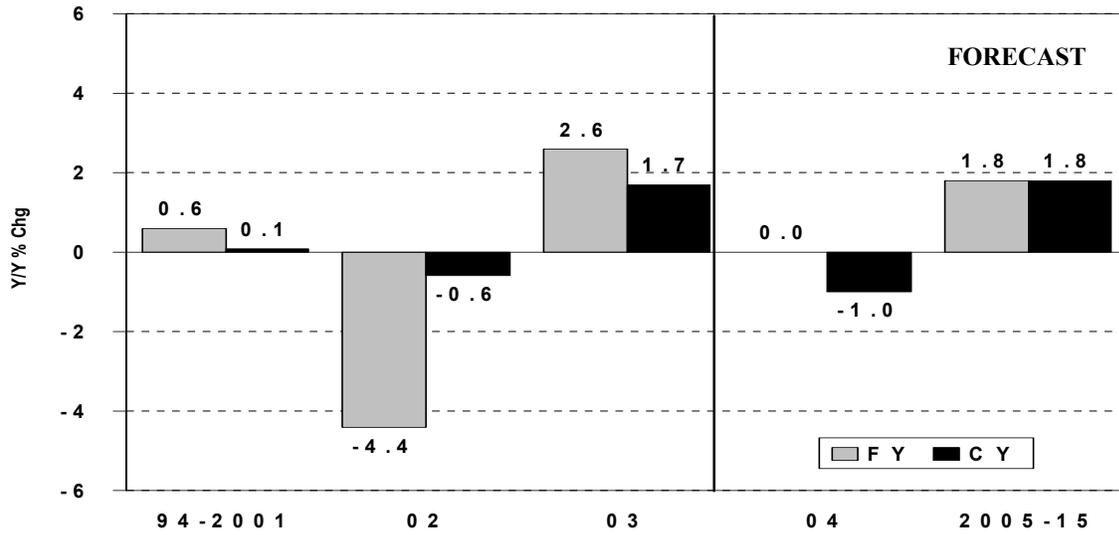
U.S. scheduled air carriers in the Atlantic market enplaned a total of 17.8 million passengers in 2003, down 1.1 percent. Enplanement growth was positive every month through February, then turned negative in March and remained down year-over-year for the balance of the year. Atlantic passenger enplanements 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

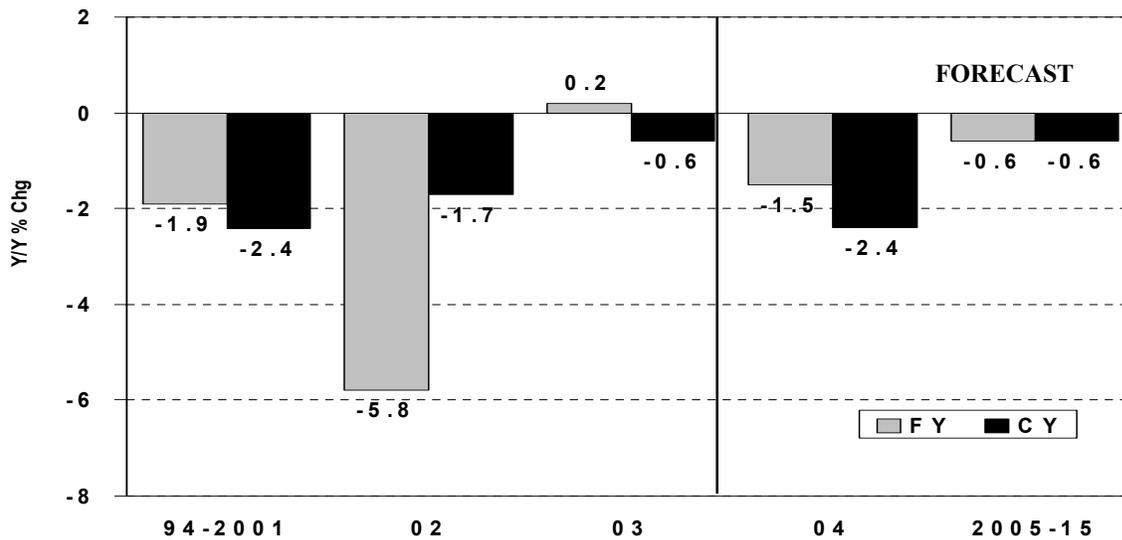
During the 1990's, Atlantic market RPMs continuously increased at a rate of 7.1 percent per year, due to strong, steady economic growth in the U.S. and Europe and declining real yields. However the first decade of the 21<sup>st</sup> century has been a different story. For the third consecutive year, 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

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

CURRENT DOLLARS

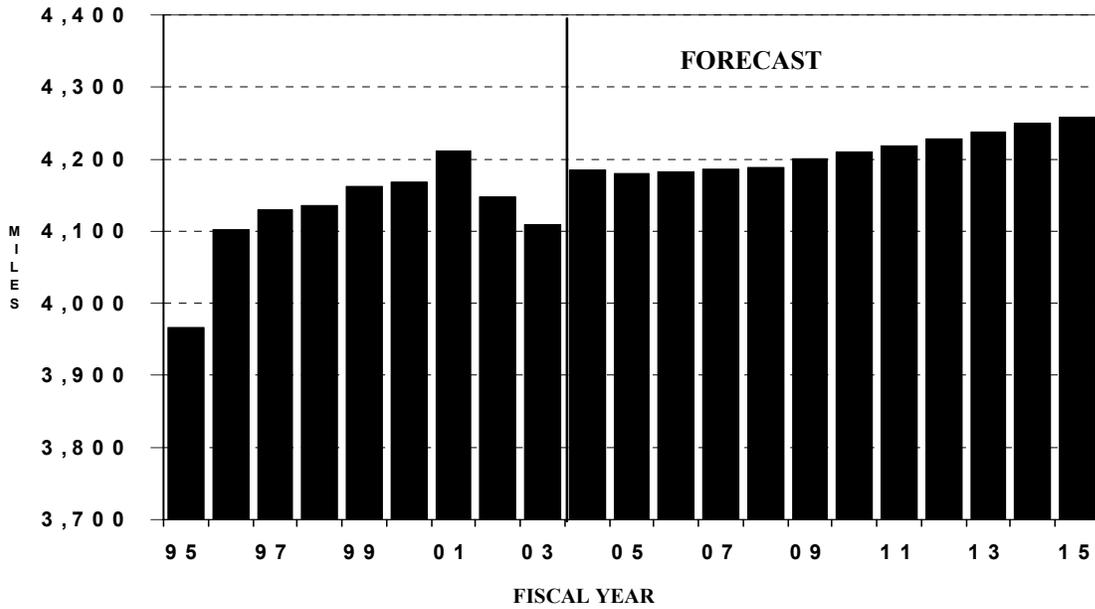


2003 DOLLARS

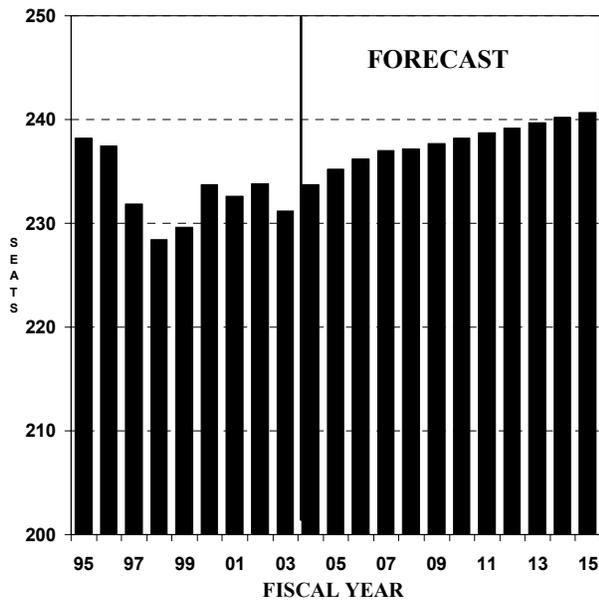


# U.S. COMMERCIAL LARGE AIR CARRIERS: ATLANTIC OPERATIONAL VARIABLES

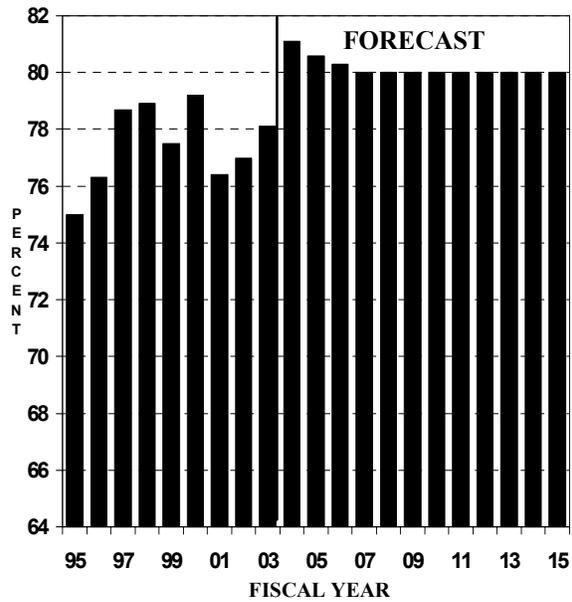
**PASSENGER TRIP LENGTH**



**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

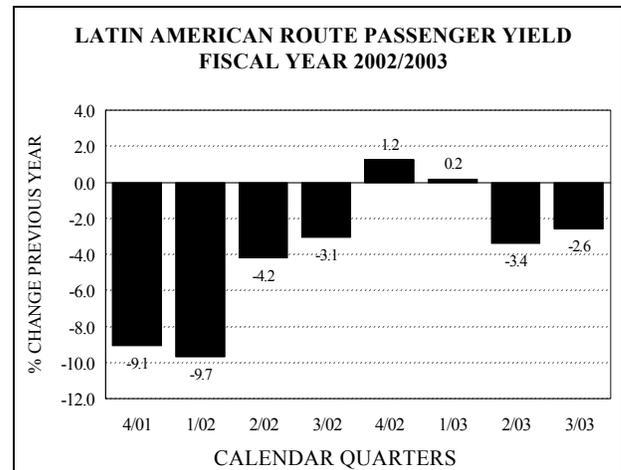
In 2003, regional capacity increased just 0.9 percent, following a decrease of 4.5 percent in 2002. Capacity was up 3.8 percent year-over-year during the first 6 months of the year, but then was down 1.9 percent in the last half of the year as carriers (especially Delta and United) reduced capacity in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

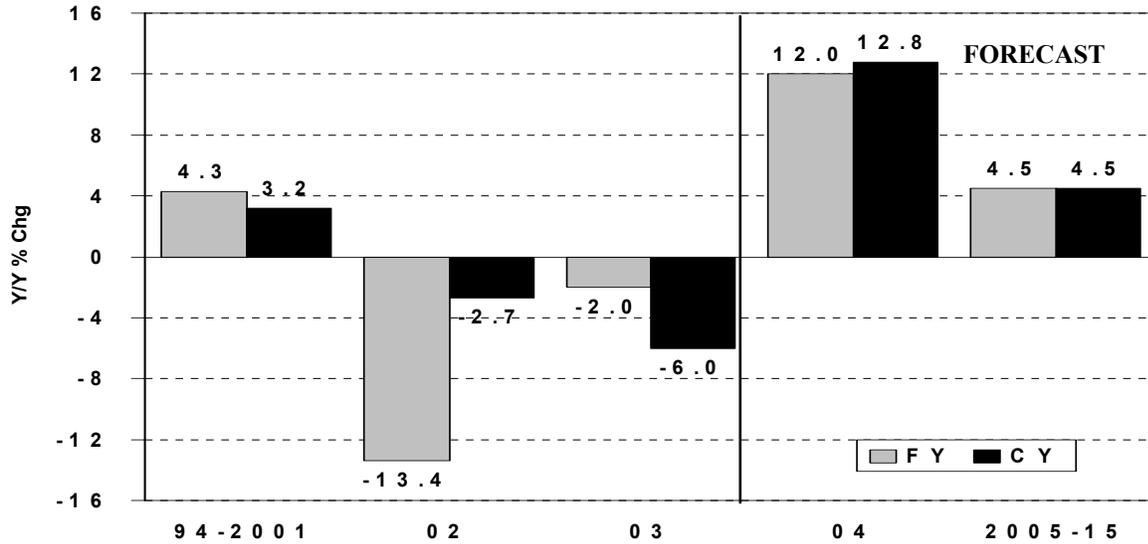
In 2003 Latin American yield (12.34 cents) decreased 1.2 percent while real yield declined 3.5 percent. This followed declines in 2002 of 6.6 and 8.0 percent for nominal and real yield, respectively. Since 1998, real yield in the market has declined 19.0 percent.



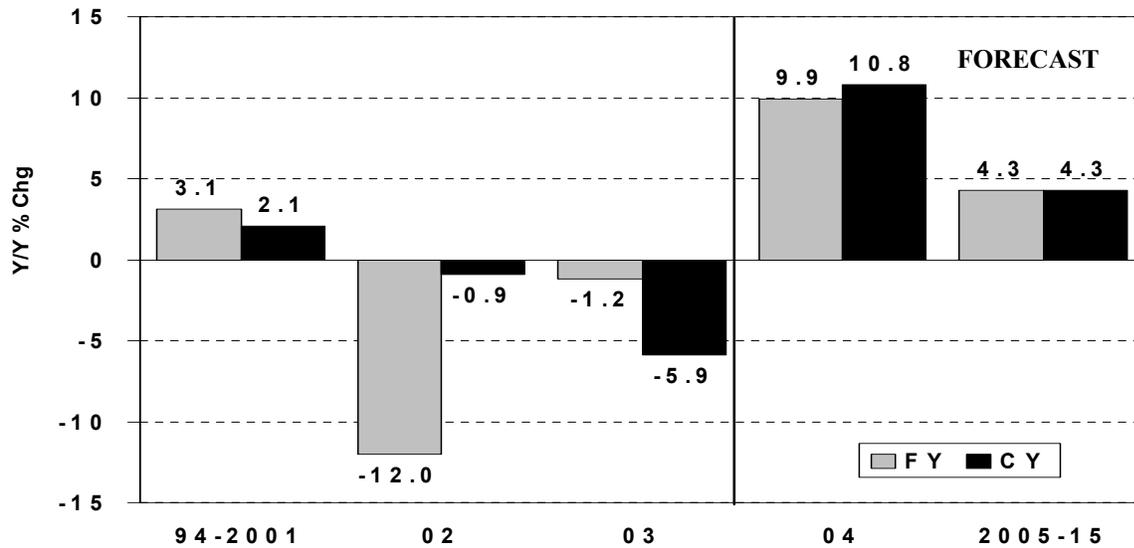
In 2004 real yield is forecast to fall another 2 percent as competition in Caribbean and Central American markets pushes fares lower. From 2005 through the remainder of the forecast period, real yield continues its historic decline, falling at a rate of 0.5 percent a year, driven by increasing demand 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 than 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 11<sup>th</sup> 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.

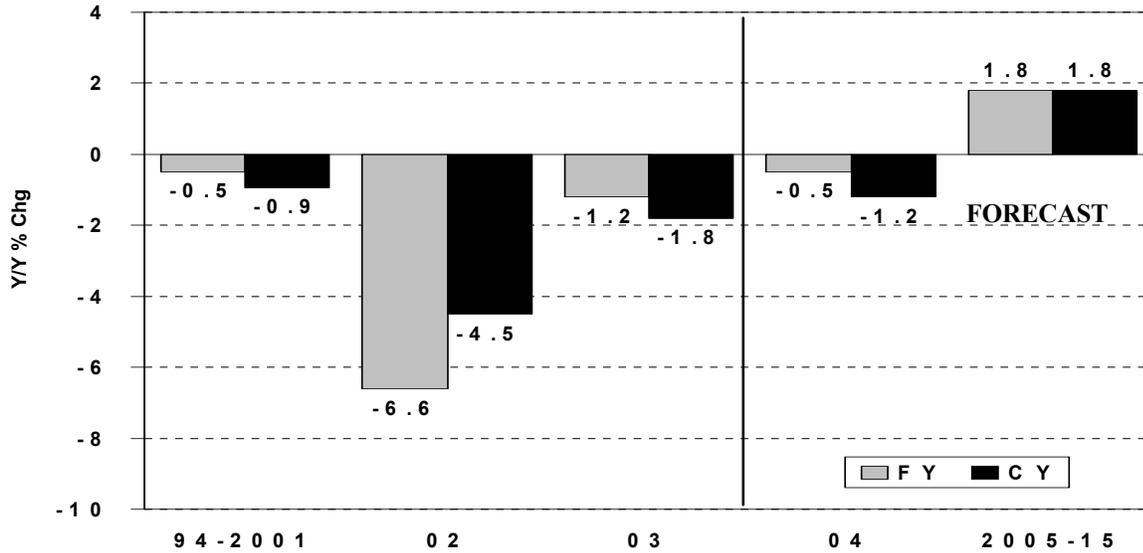
### U.S. Large Carrier Passenger Enplanements

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.

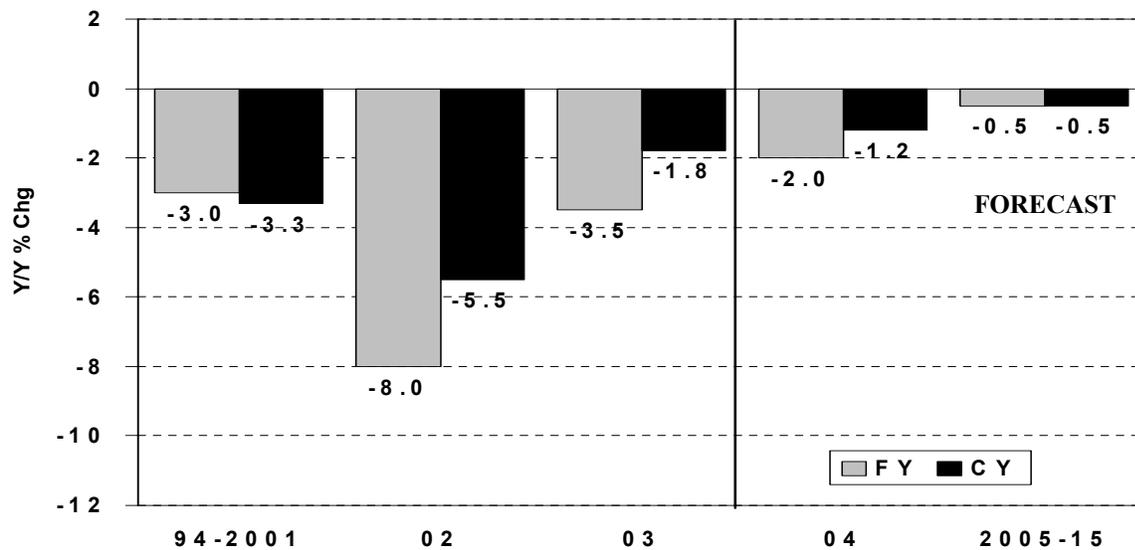
In 2004, passengers are forecast to increase 10.5 percent with the largest increases occurring in the second half of the year. For the remainder of the forecast, economic growth in both the U.S. and in Latin America propel enplanements upward at a rate of 4.7 percent per year. The growth in enplanements 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

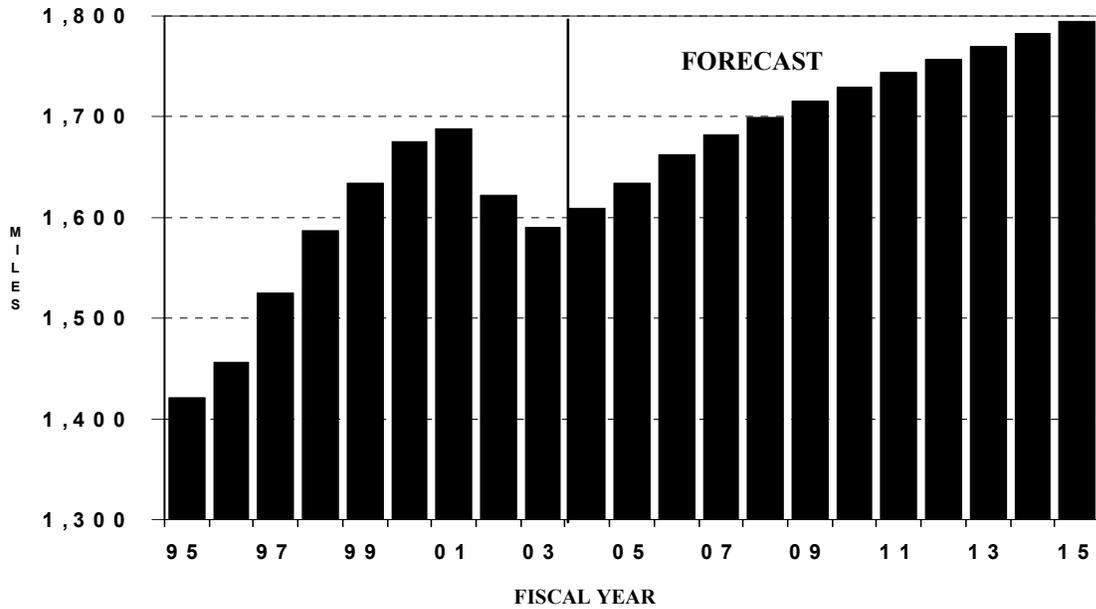


2003 DOLLARS

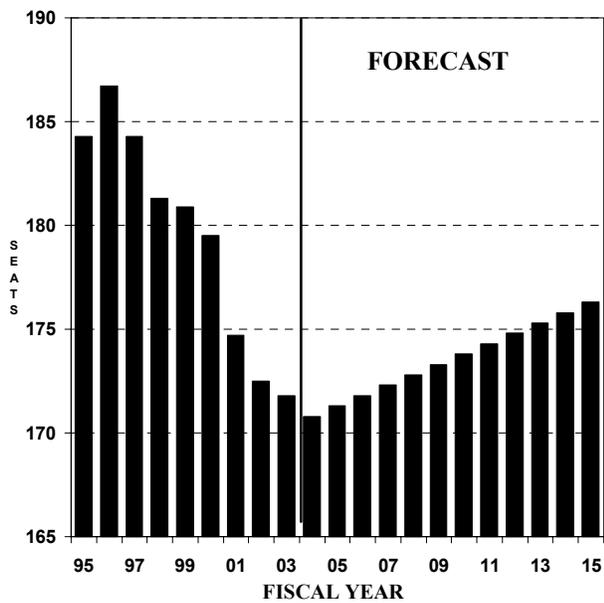


# U.S. COMMERCIAL LARGE AIR CARRIERS: LATIN AMERICAN OPERATIONAL VARIABLES

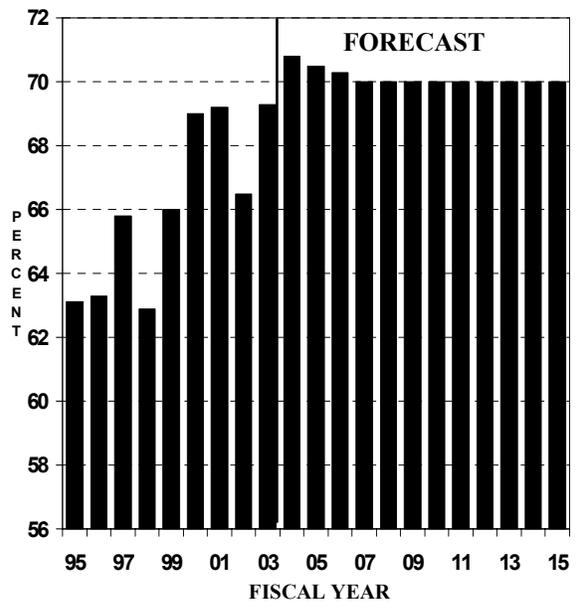
**PASSENGER TRIP LENGTH**



**SEATS PER AIRCRAFT**



**LOAD FACTOR**



## 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 11<sup>th</sup> 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

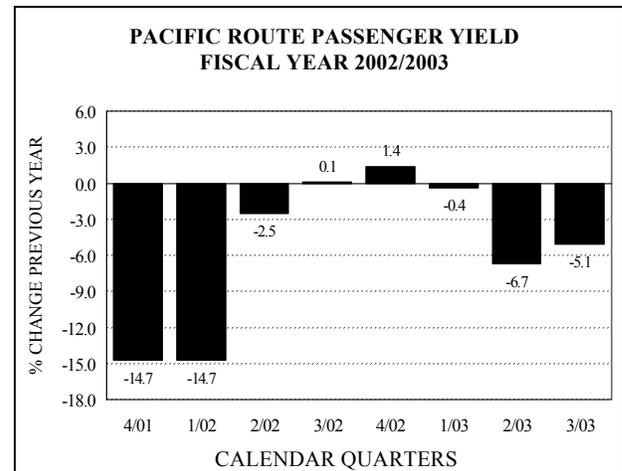
#### Capacity

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 11<sup>th</sup> 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

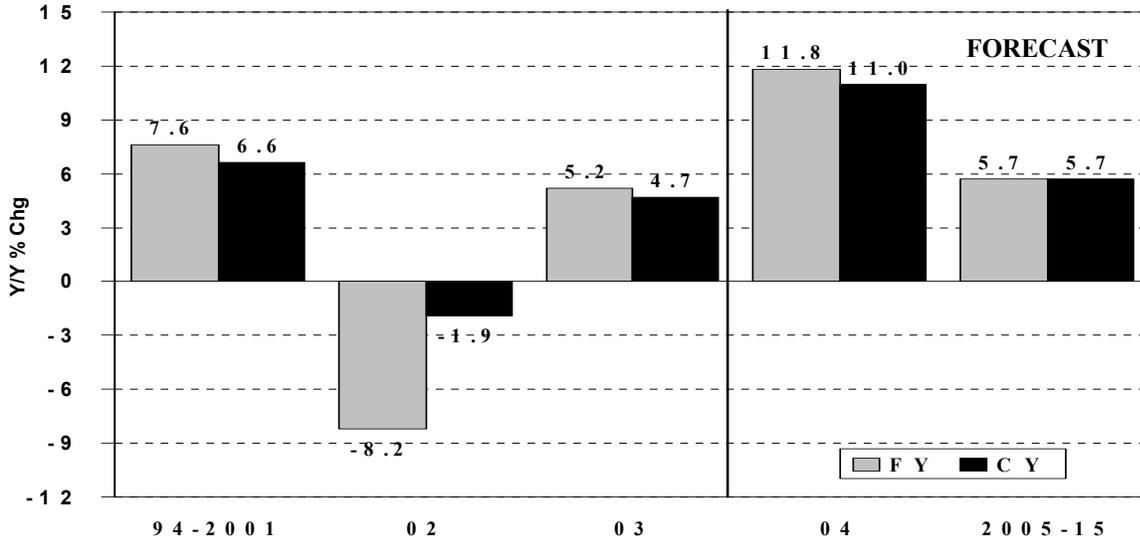
Weakness in demand with the onset of the Iraq war and the SARS epidemic led to a nominal yield decline in the Pacific market of 2.9 percent in 2003. Real yield in 2003 fell 5.1 percent following two consecutive yearly declines of 9.0 percent. After being up 0.6 percent in the first half of the year yield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



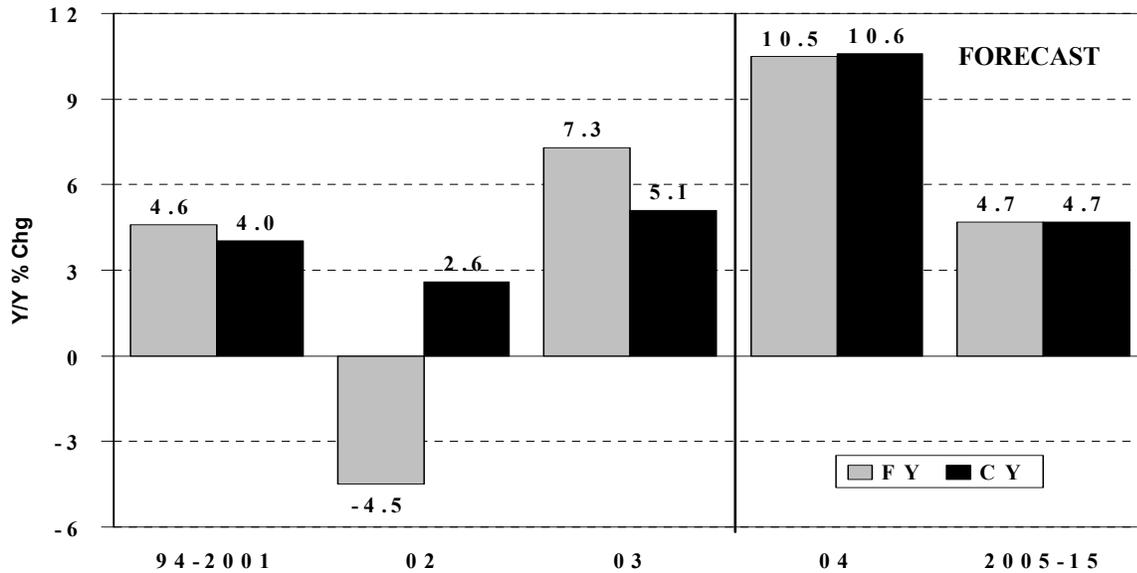
Nominal yield is projected to increase 5 percent in 2004 (3.4 percent in real terms) driven by higher demand and a weaker dollar. The largest increases are projected to occur in the second and third quarters.

# 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<sup>9</sup> 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.

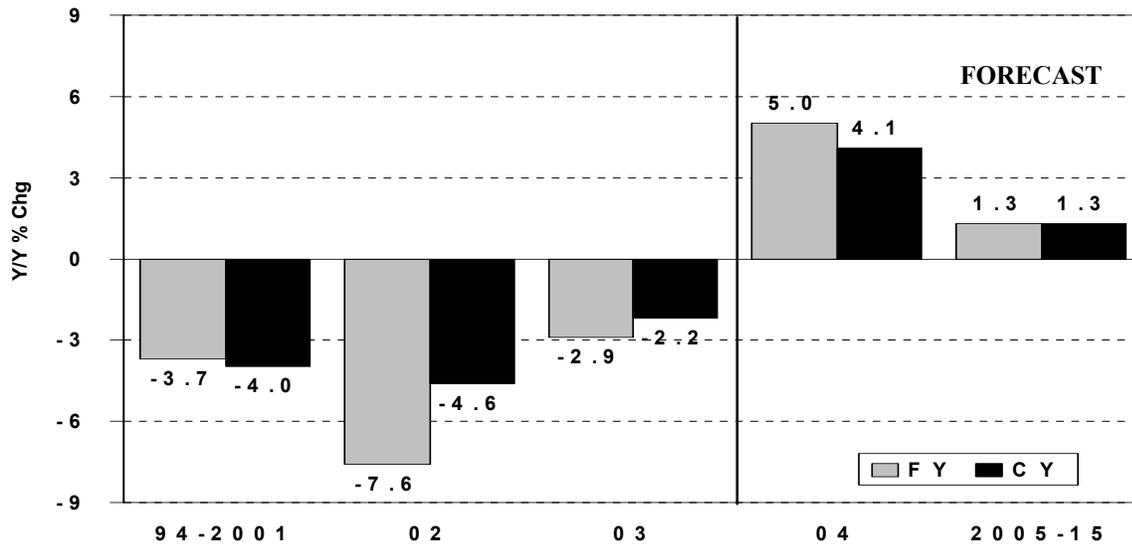
Load factor is forecast to increase sharply to 81.6 percent in 2004 as traffic rebounds from the depressed 2003 levels faster than capacity is added back in the region. Year-over-year load factor increases are projected for all quarters except the last quarter of the year. As traffic growth slows from 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.

---

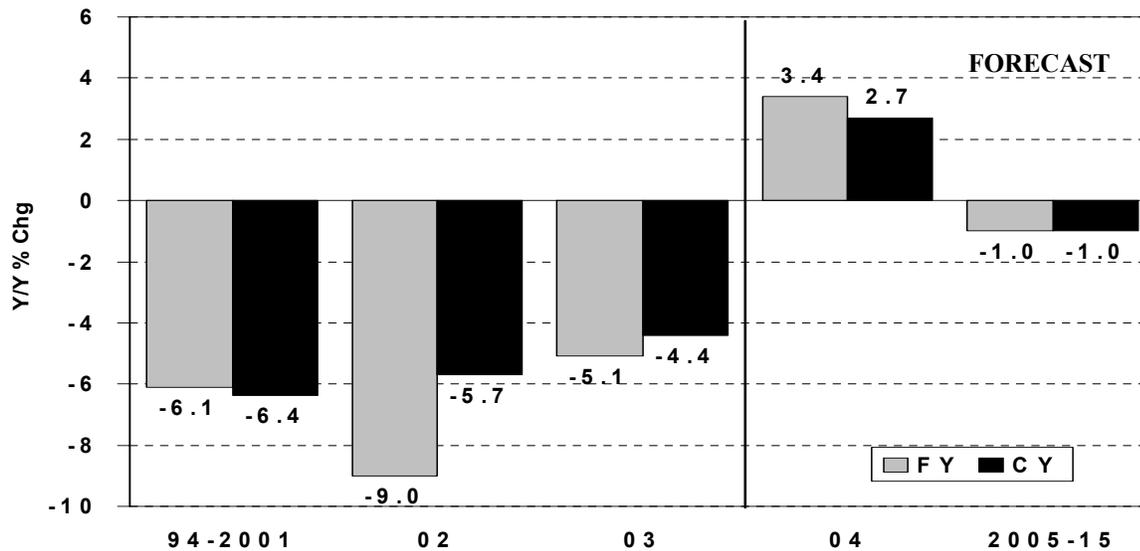
<sup>9</sup> Passenger totals reported by DOT appear low beginning April 1999 through June 2002. Data reported by the ATA do not exhibit the same pattern and show a 1.9 percent drop in passengers and a 164.5mile decline in trip length for FY 2003.

# 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<sup>10</sup>

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

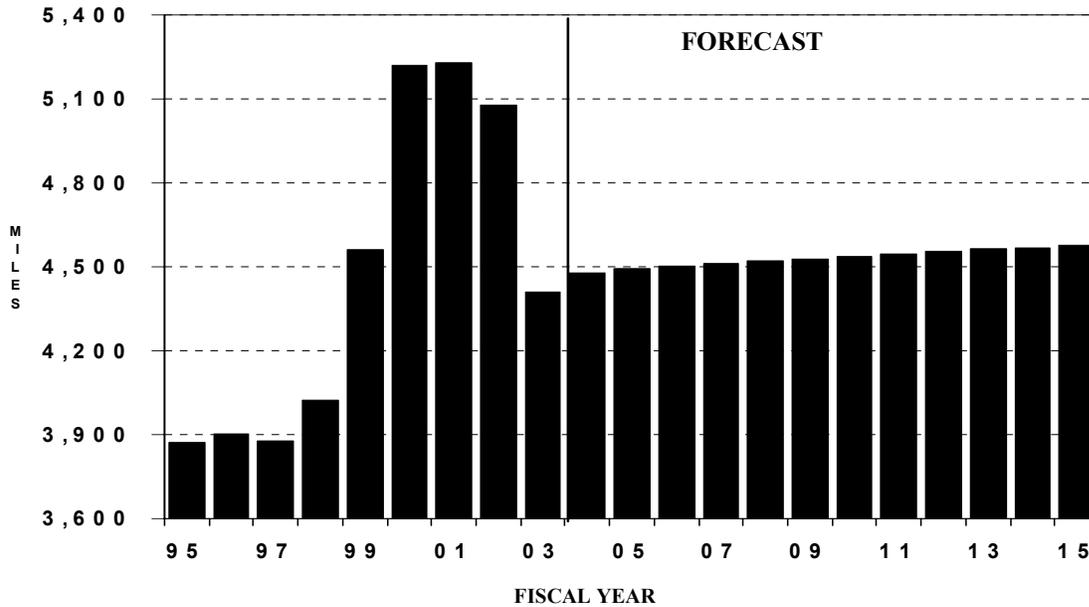
The transborder forecasts shown in this document (Chapter X, Table 7) were developed in conjunction with Transport Canada and FAA's projections of expected growth in this market.

---

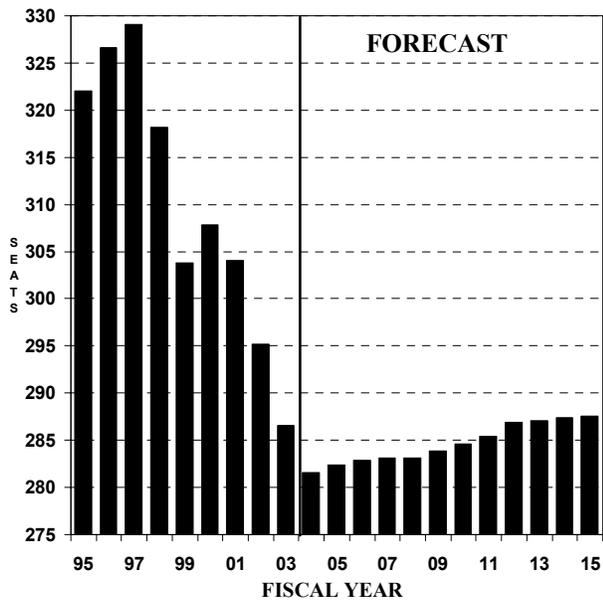
<sup>10</sup> As noted earlier, there appears to be a problem with the data reported by DOT in FY 1999 – FY 2002.

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

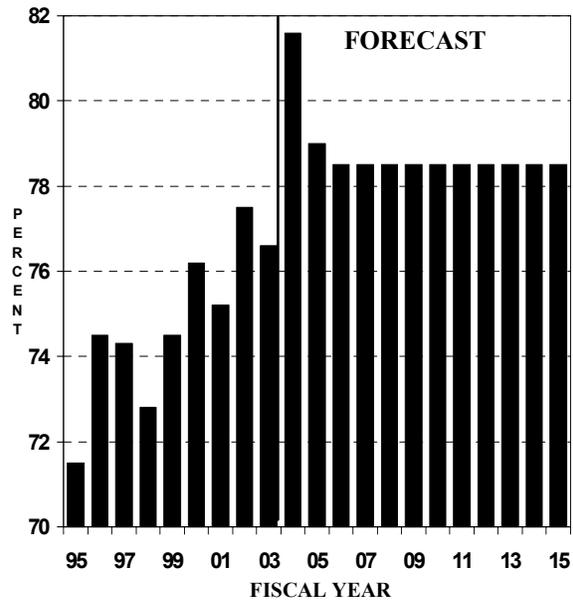
### PASSENGER TRIP LENGTH



### 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<sup>11</sup>, 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).

## 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

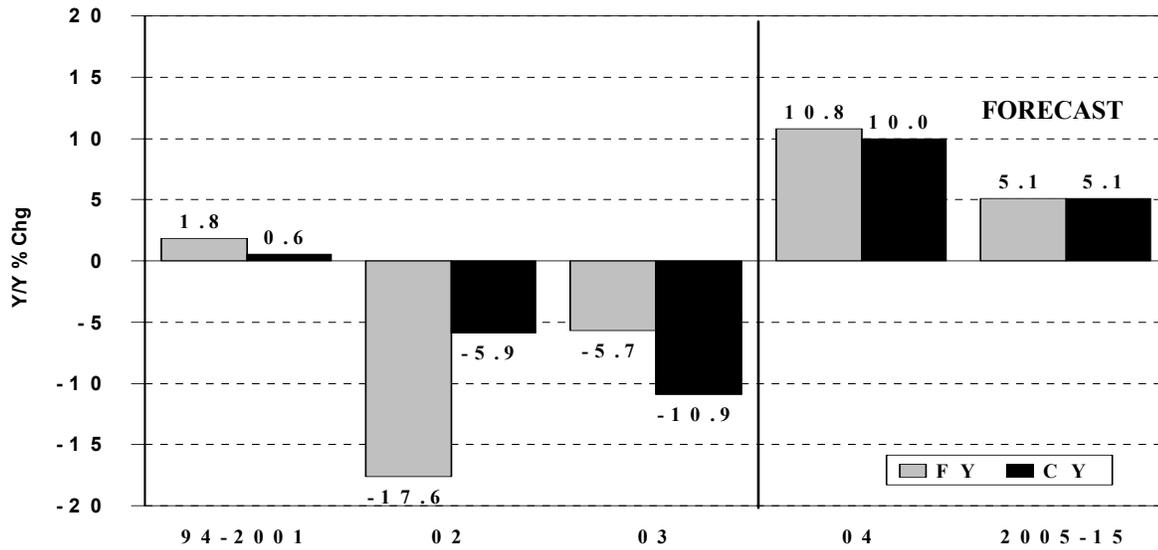
Historically, air cargo activity has been highly correlated with GDP. Additional factors that have affected the growth in air cargo traffic include declining real yields, improved productivity, and globalization. Ongoing trends that could potentially stimulate demand for air cargo include increased market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

---

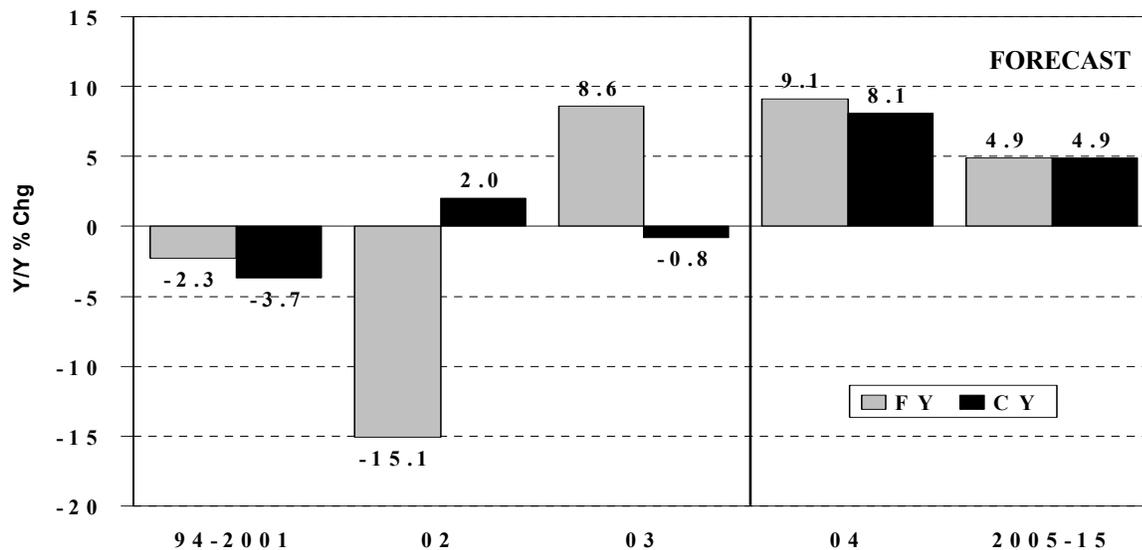
<sup>11</sup> 12 months ending June 2003.

# 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<sup>12</sup>

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.

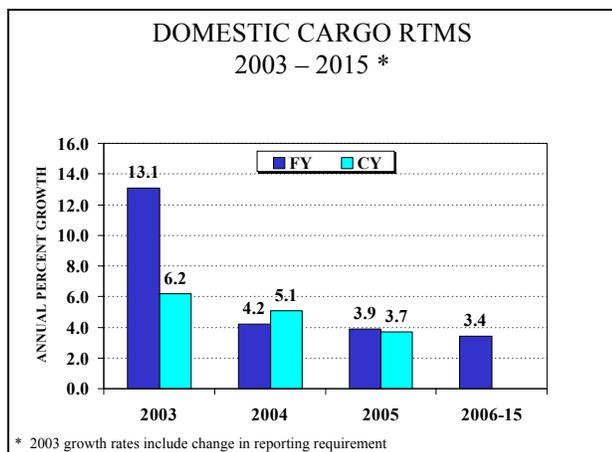
The freight/express component of domestic air cargo is highly correlated with capital spending. Consequently, the growth of this component in the future will be tied to improvements in the economy. The mail component of domestic air cargo will be affected by overall mail volume, which is related to the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

---

<sup>12</sup> 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.<sup>13</sup> 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<sup>14</sup>

Reported international cargo RTMs flown by U.S. commercial air carriers (including the change in reporting of contract service for

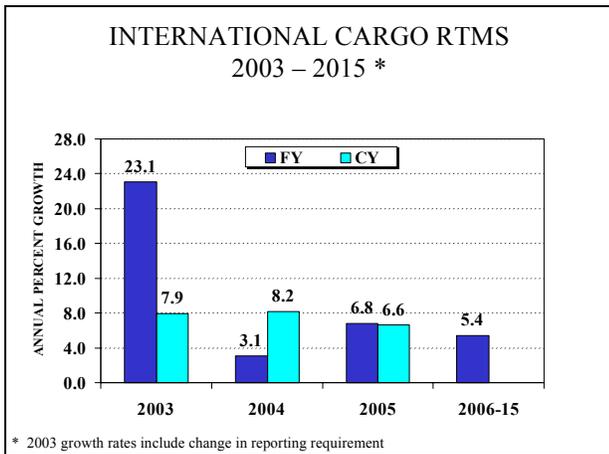
foreign flag carriers) were 18.2 billion in 2003. According to ATA statistics (which do not represent changes in reporting requirements) international cargo RTMs increased 4.1 percent in 2003. This increase was due to the economic growth of world GDP. Increases in reported international cargo activity 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.

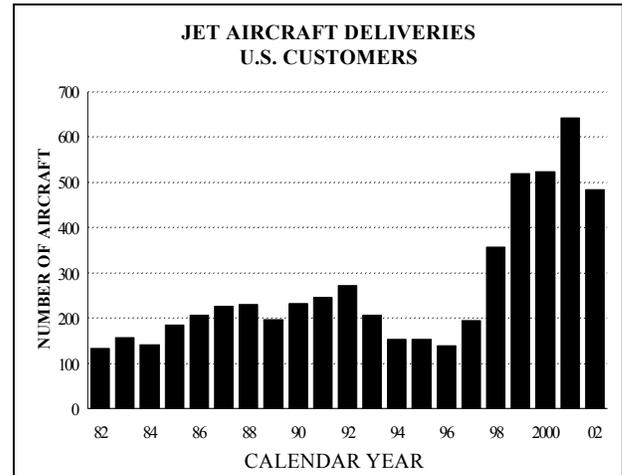
All-cargo carriers increased their share of international cargo RTMs flown from 49.3 percent in 1995 to 55.4 percent in 2002. The all-cargo share increased to 62.6 percent in 2003 due in part to the change in the reporting requirements for contract service. The all-cargo share is forecast to increase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

<sup>13</sup> The 2003 percentage includes Airborne Express.

<sup>14</sup> 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.



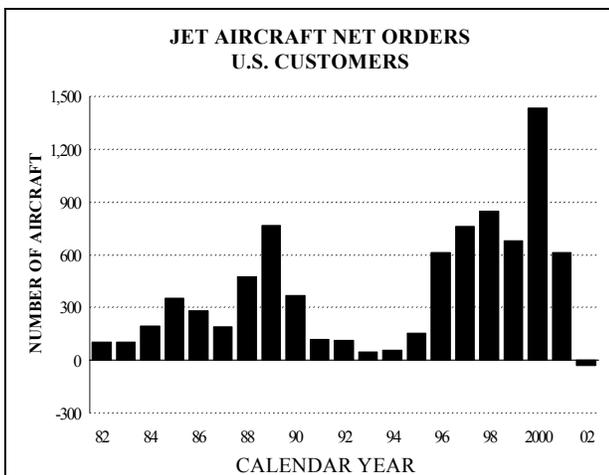
Aircraft manufacturers delivered 484 jet aircraft to U.S. customers in CY 2002—a 24.6 percent decline from the record total in 2001. Of this total, 184 (38.0 percent) were two-engine narrow-body aircraft, 34 (7.0 percent) were for two-engine wide-body aircraft, and 260 were for regional jets (53.7 percent).



## 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 11<sup>th</sup>, 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.



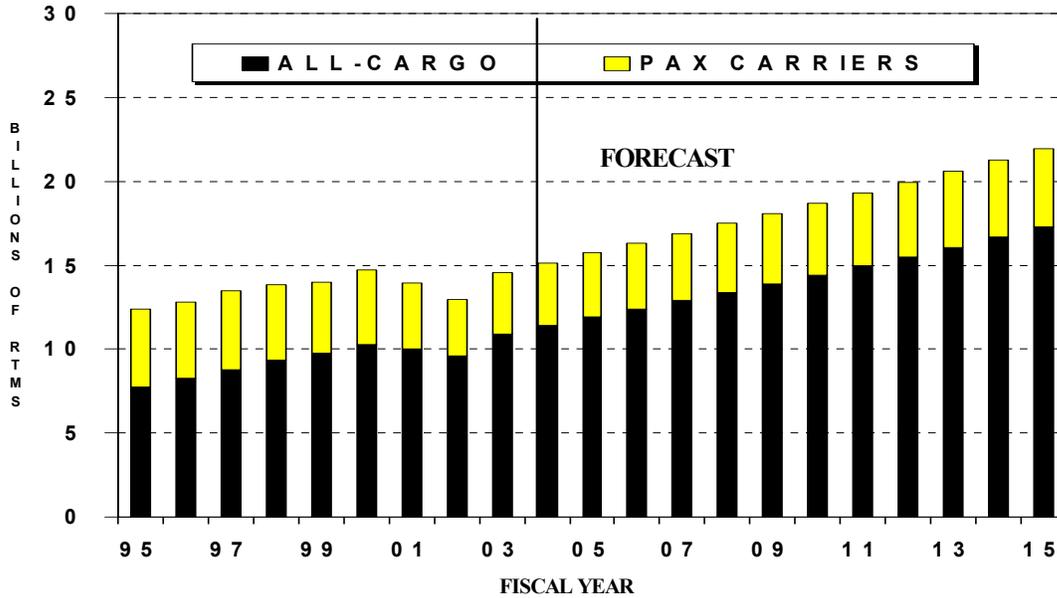
## Passenger Jet Aircraft

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.

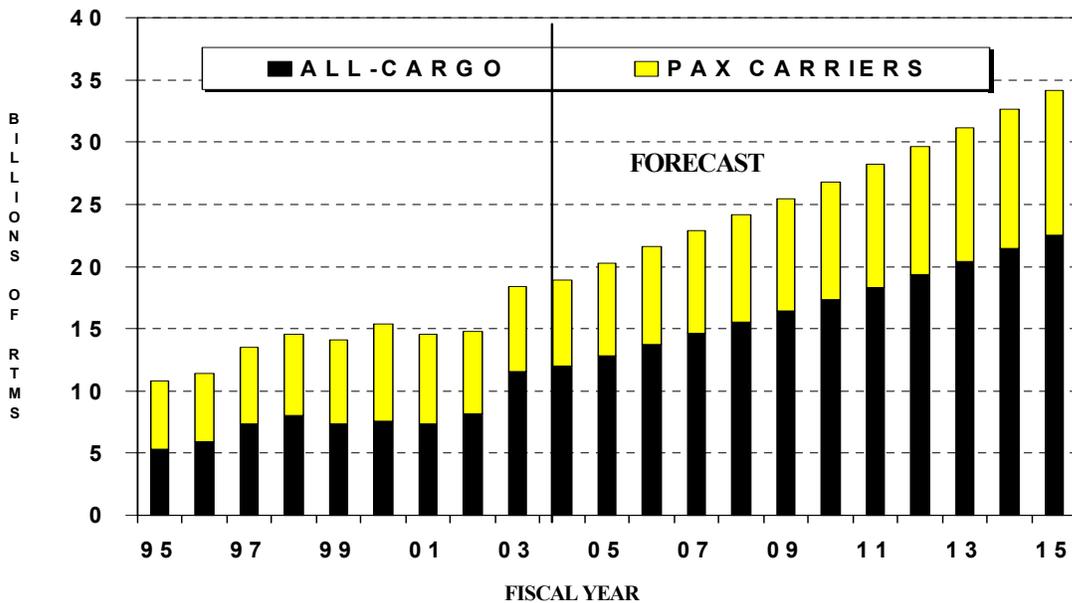
Based on the backlog of aircraft orders and the projections of air carrier traffic, seat capacity, load factors, fleet requirements, and aircraft productivity, the U.S. large commercial air carrier passenger fleet is projected to increase

# 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

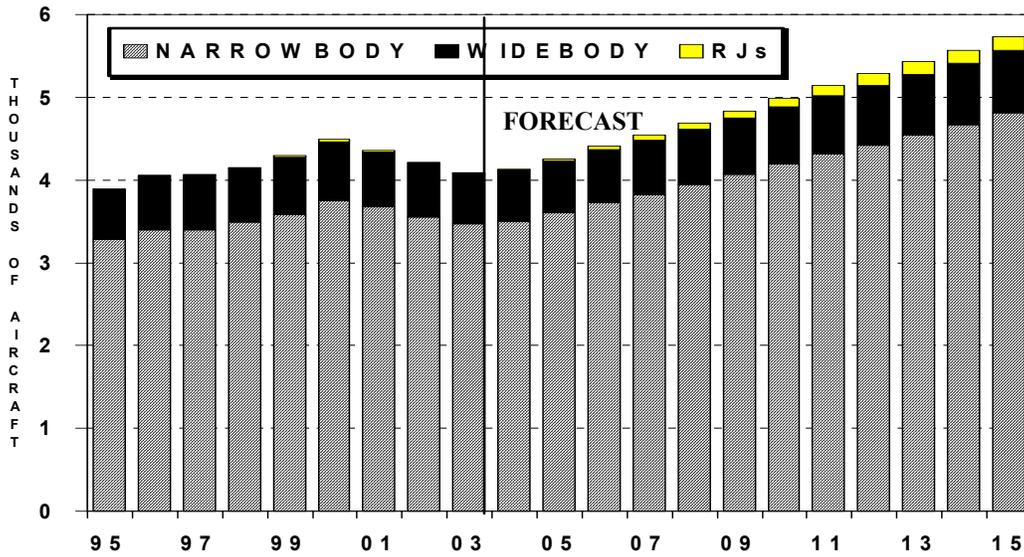
In CY 2003, the jet fleet of U.S. air carrier cargo aircraft decreased by 2.4 percent to 942 aircraft. Based on the backlog of aircraft orders and the projections of air cargo demand, the U.S. commercial cargo fleet is projected to increase to 1,332 aircraft by CY 2015. This involves an average net addition 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.

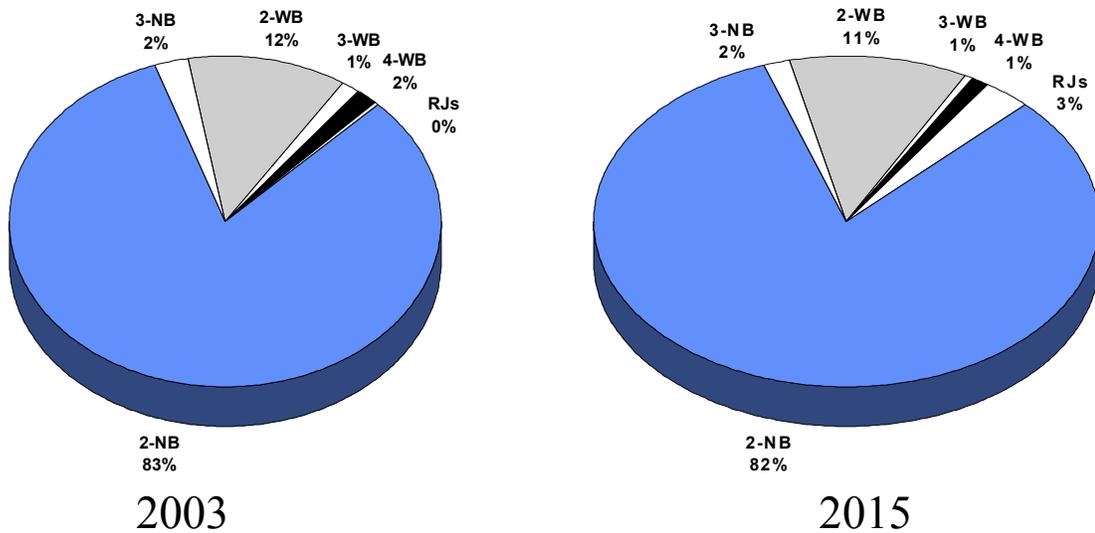
The number of three-engine narrow-body aircraft decreases during the forecast period. Narrow-body three-engine aircraft decrease from 247 aircraft in 2003 to 237 aircraft in 2015.

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.

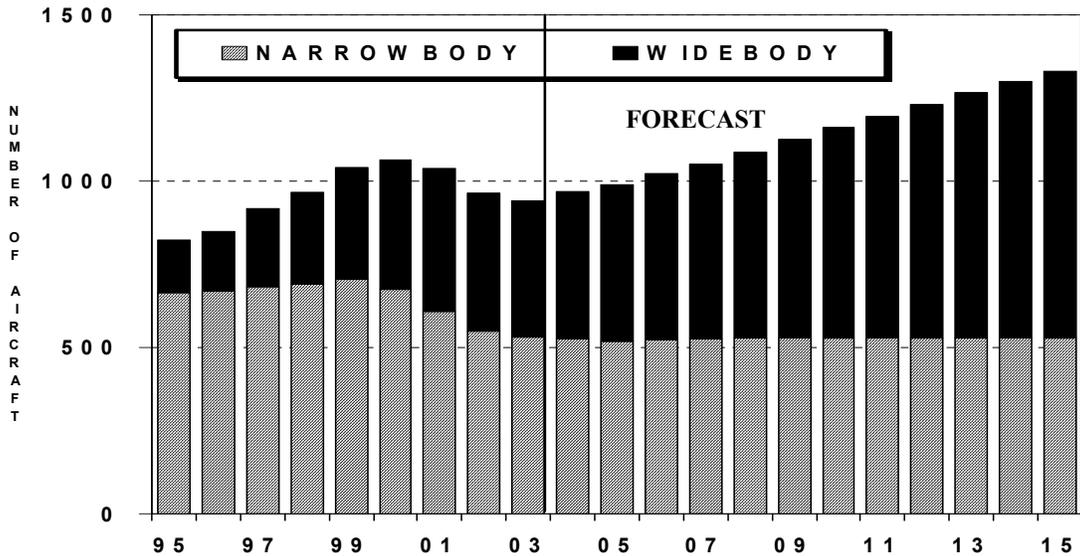
# U.S. LARGE COMMERCIAL AIR CARRIERS: PASSENGER JET AIRCRAFT



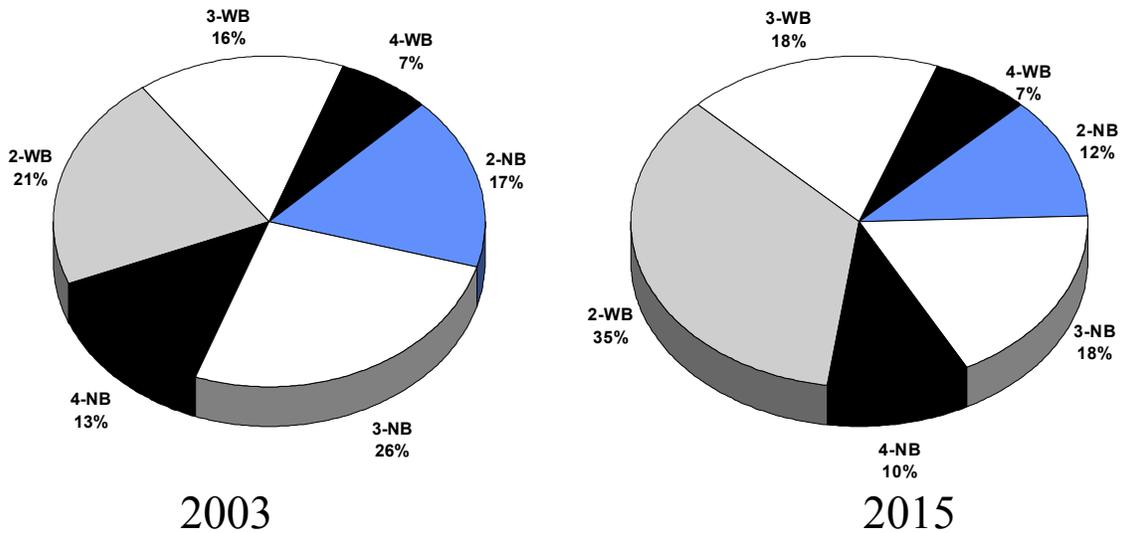
## PERCENT BY AIRCRAFT TYPE



# U.S. COMMERCIAL AIR CARRIERS: CARGO JET AIRCRAFT



## PERCENT BY AIRCRAFT TYPE



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).

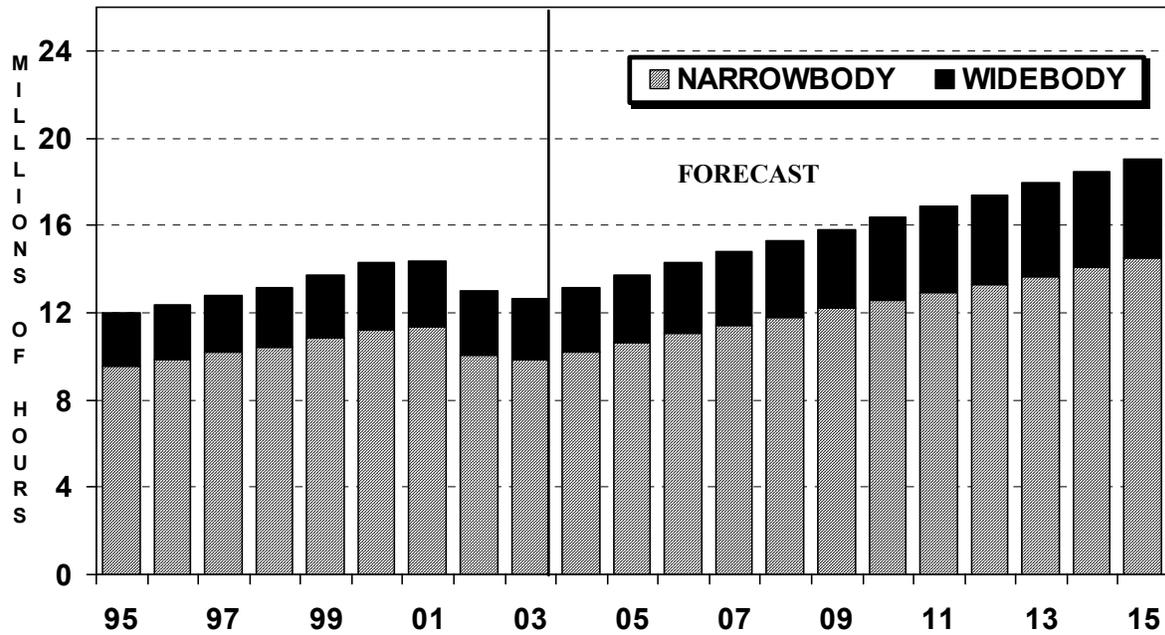
In 2015, the total number of hours is forecast to expand to 19.0 million, an average annual increase of 3.5 percent. Airborne hours are projected to increase 4.3 percent in 2004 to

13.2 million, and then increase 4.5 percent in 2005, to 13.8 million.

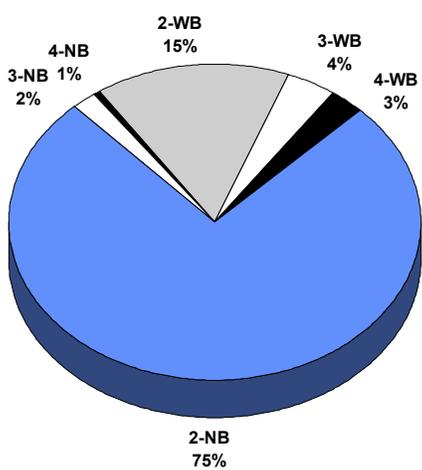
Two-engine aircraft (both narrow-body and wide-body) are expected to account for 92.8 percent of all airborne hours flown in 2015. Narrow-body two-engine aircraft hours, which make up 74.7 percent of total hours in 2015, increase, on average, 3.4 percent per year. Wide-body two-engine aircraft hours,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

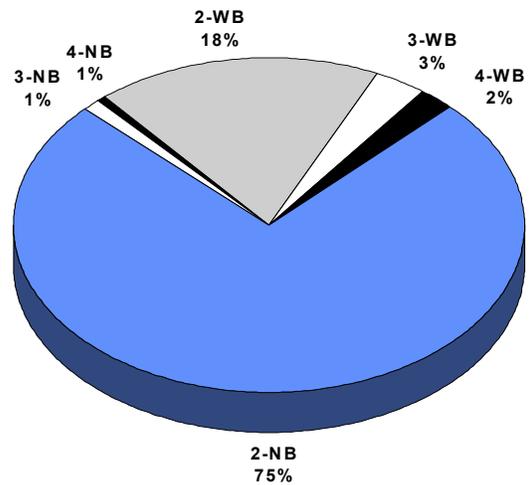
# U.S. LARGE COMMERCIAL AIR CARRIERS: AIRBORNE HOURS 1/



## PERCENT BY AIRCRAFT TYPE



2003



2015

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