
BOEING
Boeing Commercial Airplanes
World demand for commercial airplanes
2005
Current Market Outlook
Outlook

Purpose

Welcome to the Boeing Commercial Airplanes *Current Market Outlook 2005*.

For over 40 years, Boeing has published a detailed analysis of the future demand for world air travel and the resulting jet airplane capacity demand. This forecast encompasses passenger and freighter airplanes for incremental growth, replacements for existing airplanes that retire during the forecast period, and freighter conversions from passenger jets. The 2005 Outlook includes discussions on the drivers of air travel, regional differences in air travel and airplane demand, airline strategies that influence airplane selection, and various technical appendices giving traffic, fleet, and deliveries forecast data.

You can easily view and print the Outlook from our web site at www.boeing.com/commercial/cmo. For more information about the Outlook you can send us an e-mail using the Contact Us link on the web site home page, or write to:

Market Analysis
Current Market Outlook
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Current Market Outlook

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Executive Overview

This is a time of rapid change for the air travel industry. Airlines are successfully refining their business models, the Internet is providing efficiencies for passengers and airlines alike, globalization and world trade are thriving, and manufacturers are launching new airplanes that will fly farther at lower cost.

The long-term outlook for air travel is positive. The fundamentals of economic development, globalization, and the need for people to travel will be strong in the coming decades. Although the industry does experience short-term highs and lows, the long-term forecast assumes that these cycles will smooth out over the 20-year period.

Economic growth drives air transportation demand. Increases in gross domestic product (GDP) explain most of air travel growth. The rest of the development of travel worldwide is derived from other economic factors, such as international trade and globalization; and industry trends, including declining fares, more direct service, and increased frequencies.

Liberalization enables airline travel. Governments continue to increase access to the marketplace by removing restrictions on carriers in their own countries and permitting additional levels of service across the globe. A decreasing regulatory burden frees new and existing carriers to improve their networks, innovate their business models, and pursue different strategies. A liberalized environment creates more opportunities for airlines to compete. Competition has historically led to decreasing fares, increasing frequencies, and more routes — all trends that will continue.

20-Year Outlook — 2005–2024

Economic and air traffic growth

- Worldwide economic growth will average **2.9%** per year.
- Passenger traffic growth will average **4.8%** per year.
- Cargo traffic growth will average **6.2%** per year.

Worldwide demand for commercial airplanes

The world fleet will grow to 35,300 passenger and cargo jets and will consist of

- **16%** regional jets.
- **58%** single-aisle airplanes.
- **22%** twin-aisle airplanes.
- **4%** 747-size and larger airplanes.

Total market potential is 25,700 new commercial airplanes worth $2.1 trillion in 2004 U.S. dollars. Airlines will take delivery of

- **3,900** regional jets.
- **15,300** single-aisle airplanes.
- **5,600** twin-aisle airplanes.
- **900** 747-size and larger airplanes.

Airline passenger traffic is forecast to grow at an annualized rate of 4.8 percent. World GDP growth of 2.9 percent explains the majority of air travel growth. During the 20-year forecast period, world regions and traffic flows will have varying growth rates around these norms.

The worldwide fleet will be 35,300 airplanes in 2024, more than double the current size. About 58 percent of the world fleet will be single-aisle jets, and 22 percent will be midsize twin-aisle airplanes. The rest of the fleet will consist of regional jets (16 percent) and some 747-size and larger airplanes (4 percent). The large domestic markets in Europe and North America, along with the strong preference of low-cost carriers, drive the dominance of the single-aisle fleet. A mix of single- and twin-aisle airplanes is more common in geographically diverse regions such as Asia. Twin-aisle jets are the mainstay of intercontinental markets. More than half of the regional jet deliveries will be in North America.

Almost 26,000 airplanes will be delivered over the next 20 years. About 60 percent of the deliveries will be single-aisle jets, making up about 39 percent of the 2.1 trillion delivery dollars (in 2004 numbers). Midsize twin-aisle airplanes will account for about 22 percent of the deliveries and 45 percent of delivery dollars. About three-quarters of the deliveries will go to fleet growth, while the rest will replace retiring airplanes.

The freighter fleet will nearly double over the next 20 years from 1,760 to 3,530 airplanes. Three-quarters of freighter fleet additions, satisfying both market growth and replacement needs, will come from modified passenger and combi airplanes. Half of these conversions will be widebody conversions.

Passengers will avoid itineraries that require multiple hub connections and segments to complete a journey. While the share of 747 and larger airplanes will fall from 6 percent to 4 percent, the percentage of midsize twin-aisle airplanes will increase from 18 percent to 22 percent. Twin-aisle airplanes allow airlines to economically fly the increased frequencies, city pairs, and nonstop flights requested by passengers.

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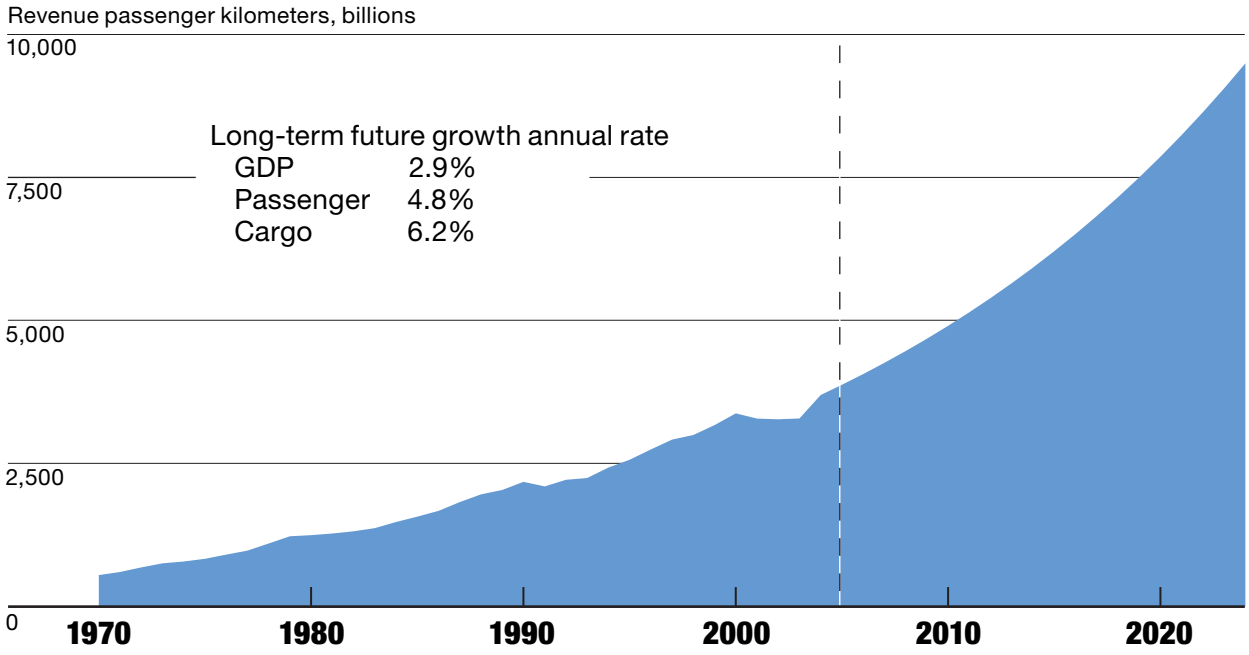
Air Travel Trend

The long-term outlook for air travel is robust. World air travel has shown positive growth for 32 of the past 35 years. Only 1991 and 2001 through 2002 have experienced negative growth. In 2004, following double-digit increases, world air traffic reached a new historical high.

In short-term cycles, air travel demand can fluctuate widely. Consumer confidence and business profits can be strong influences on air travel demand during a business cycle. Travelers treat discretionary air travel much as they treat more durable goods such as computers and automobiles. Visits to friends and relatives, vacations, and even business trips can be canceled or delayed when income is depressed or uncertain. The *Current Market Outlook* forecast smooths these short-term cycles and provides a 20-year trend forecast.

The globalization of world economies and societies continues. Over the 20-year Outlook period, increasing numbers of people will travel to visit friends and relatives, to transact business, and to enjoy leisure and educational opportunities not available close to home. The major determinant of air travel growth will continue to be economic growth. Travel growth is also stimulated by lower fares, additional world trade, and service improvements, such as increased frequencies and more direct service. Deregulation and liberalization enhance airline competition, which in turn fosters lower fares, as well as the additional frequencies and city pairs passengers desire.

World Air Travel Continues to Grow



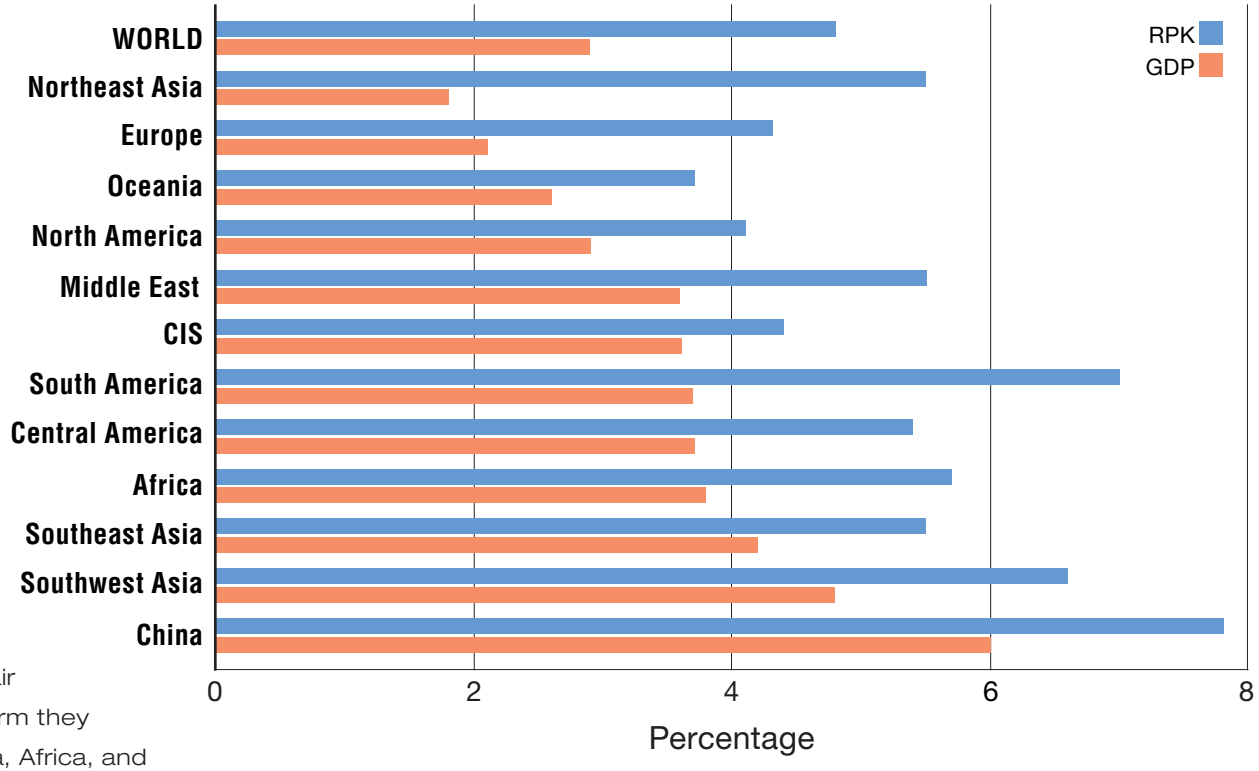
Economic and Traffic Forecast

World GDP is forecast to grow by 2.9 percent annually over the next 20 years. In mature economies, GDP growth will average less than 3 percent per year. By contrast, GDP growth in developing regions may average more than 4 percent. Mature economies rely on productivity gains, service industries, and consumer markets for much of their gains, whereas emerging economies are characterized by expanding labor forces, increased manufacturing, and entry into global capital and trade markets. China is forecast to have the fastest growing GDP, at 6.0 percent, as it continues its successful melding of a centrally planned economy with the world market economy.

World air traffic measured in RPKs will grow 4.8 percent annually over the next 20 years, slightly less than two percentage points greater than GDP. Northeast Asia, South America, and Europe have the largest growth of air traffic in excess of GDP. Europe will experience the continuing positive effects of liberalization. South America will experience increased air traffic through liberalization, international trade, and tourist development. Japan and Korea currently generate less air travel than their wealth would indicate, and in the long term they should show more robust air travel rates. Southwest Asia, Africa, and the Middle East are forecast to grow above the world average over the next 20 years, as their economies and airline industries modernize.

GDP and RPK Growth Varies by Domicile

Annual growth, 2005–2024



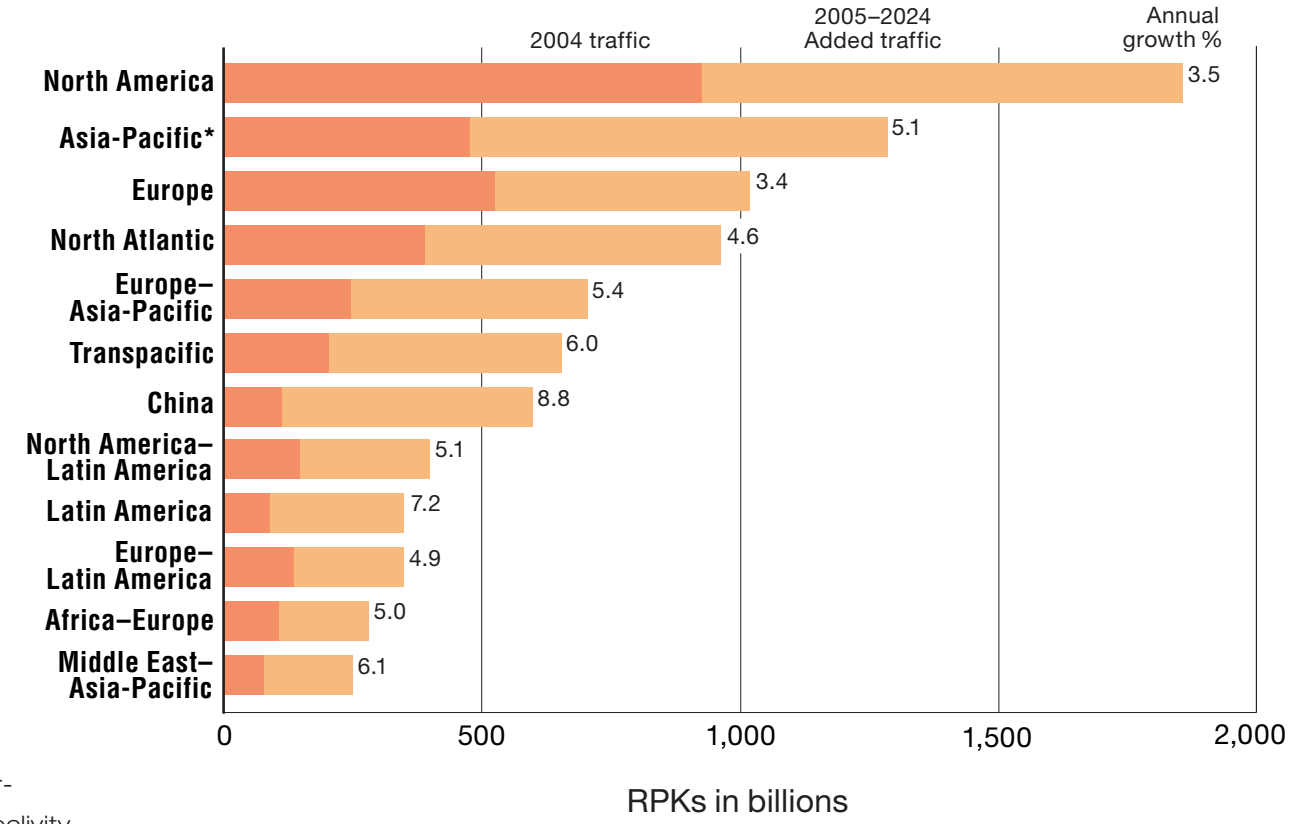
Air Travel Share

Travel growth has two parts. The first part is growth one-for-one with economic growth (GDP). The second part, measured by country air travel share growth, is demand stimulated by lower fares, international trade, and network and service improvements.

The ratio of air travel to GDP is a country's air travel share. The share of GDP spent on air travel by countries with high initial travel shares has tended to grow more slowly than the world average. These countries, such as the United States, have more mature air travel markets. In contrast, GDP share spent on air travel by countries with low historical travel shares, such as India, has tended to rise faster than the world average.

Various factors influence initial air travel share. Poor nations may spend more on air travel than one might assume. Government and business travel is often by air due to speed, security, prestige, or a lack of reliable ground alternatives. Many island and mountainous nations have large air travel markets because of their geography. Conversely, some high-income countries spend less on air travel than one might guess. Government regulation may limit air travel. Small countries with well-developed ground networks such as high-speed rail may offer alternatives to air travel. Moreover, some cultures have a proclivity for vacations close to home, even if their populations have the economic means to travel.

Air Travel Growth Differs by Flow



* Except within China

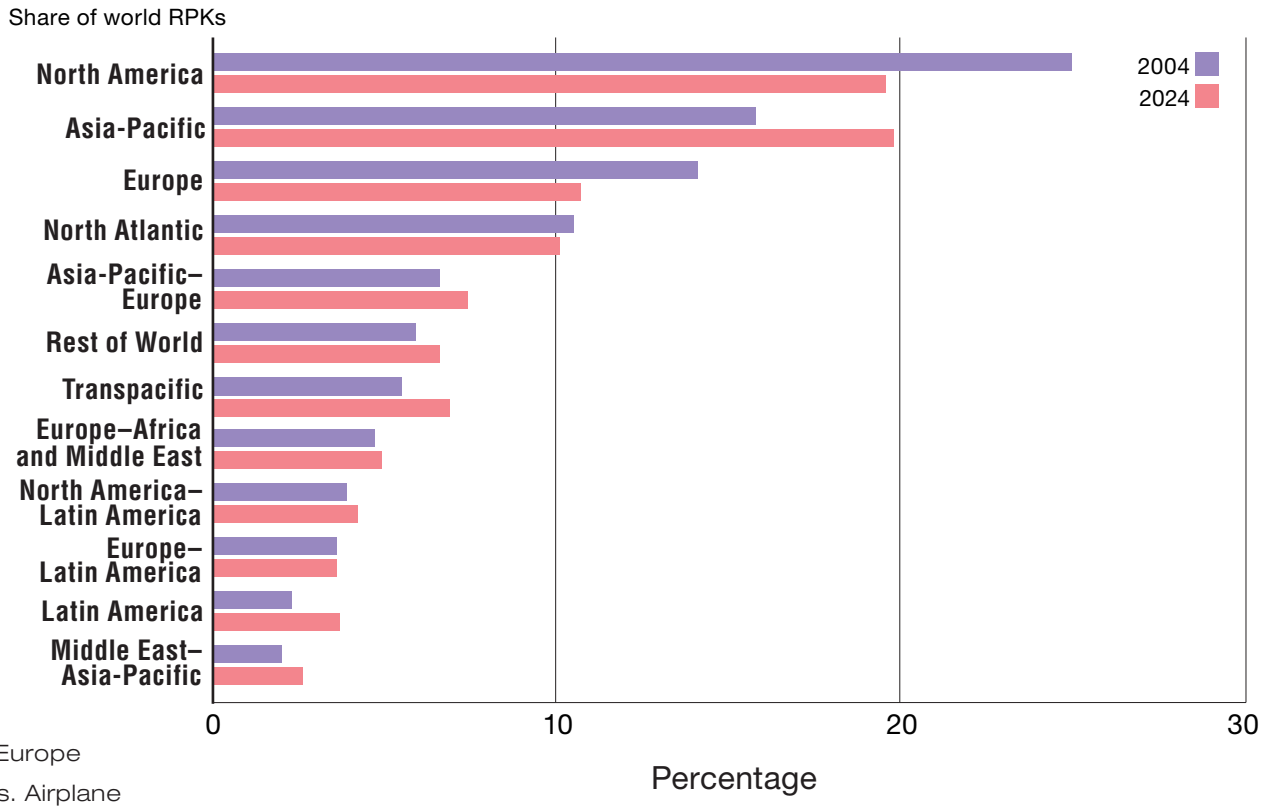
In summary, air service is becoming lower in price, higher in value, and of greater interest to people around the globe. The combined effects explain the continuing growth of air travel over and above that stimulated by GDP growth.

Regional Differences

Because of differences in GDP growth and changes in air travel share of GDP, the mix of regional flows will change over the forecast period. Because of its maturity, the intra-North America market share of world traffic will decline from 25 percent to 20 percent, as less developed markets grow faster. For example, the market share of all intra-Asia-Pacific markets will increase from 16 percent to 20 percent. The North Atlantic market will fall slightly from 11 percent market share to 10 percent, and Europe–Latin America will remain constant at its 4 percent share. Intra-Europe will decline from a 14 percent to an 11 percent market share. Latin America, a small region with only a 2 percent world market share, will increase its share to 4 percent because of a high 7.2 percent traffic growth rate fueled by liberalization and increased world trade.

Another way of looking at air travel is to divide the world into long-haul and short-haul routes. Because of the underlying characteristics of these route types, each has different traffic growth rates and airplane requirements. For example, the mature, short-haul flows within North America and Europe that use mostly single-aisle airplanes will grow more slowly than the long-haul flows between Europe and Asia-Pacific and on the Pacific that use twin-aisle jets. Airplane range capability and economic globalization are two of the factors driving long-haul growth.

More Mature Markets Lose Share



Demand for Commercial Airplanes

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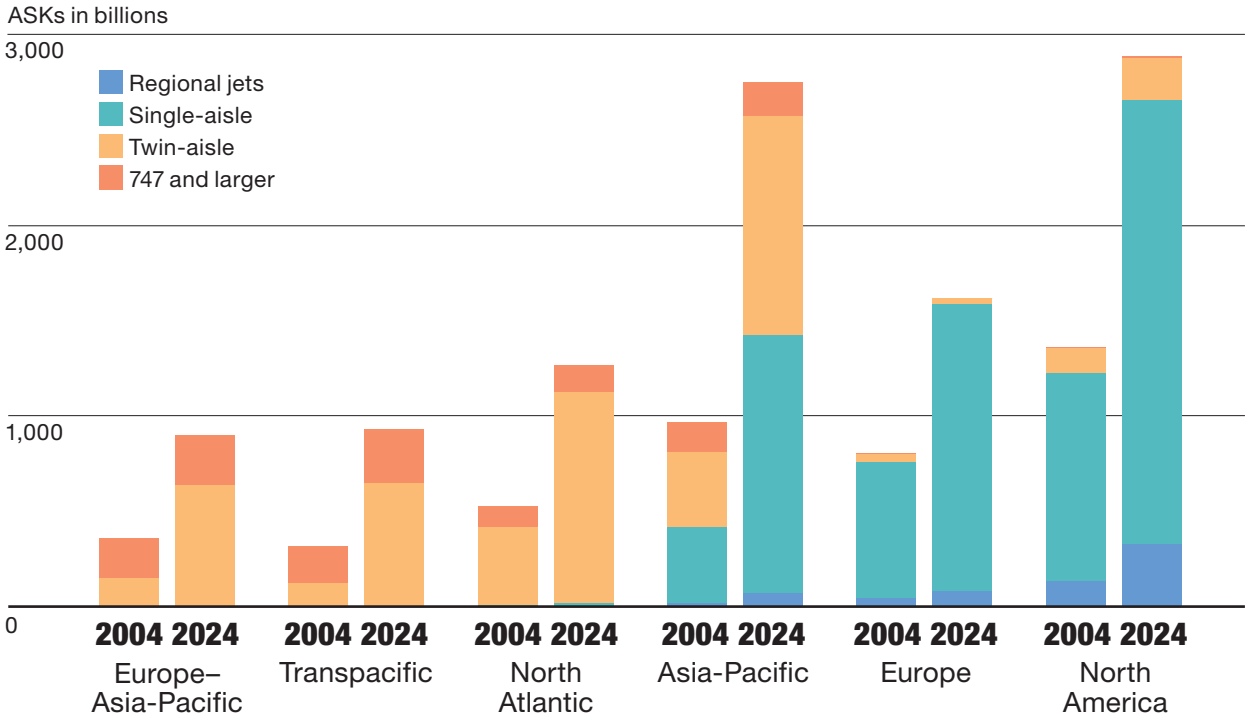
Traffic and Fleet

Airlines purchase airplanes to fly specific routes in response to traffic demand. Route characteristics vary by region. Airlines need large numbers of single-aisle airplanes to fly the many domestic short-haul routes within North America and Europe. In the long-haul transoceanic markets, twin-aisle airplanes will dominate the fleet, providing more frequency choices and nonstop flights.

Within Asia-Pacific, a far-flung region that stretches from Northeast Asia to New Zealand and across to India, a mix of single-aisle and twin-aisle airplanes is required. More than 80 percent of the world's added available seat-kilometers (ASK) generated by 747 and larger airplanes will serve travel to, from, and within the Asia-Pacific region. Because of long routes and the high number of seats on these airplanes, relatively few large airplanes are needed to provide the ASKs that market characteristics require. Asia-Pacific will see single-aisle ASKs more than triple over the forecast period.

Short-haul markets dominate world departures. Nearly 17,400 jets in the under-175-seat categories will be delivered by 2024. In short-haul markets, single-aisle airplanes will continue to dominate and will represent over 92 percent of total world departures. Domestic flying in Europe and North America alone will constitute more than 52 percent of the world's added ASKs for single-aisle airplanes.

Regional Market Evolution Shapes Fleet Requirements



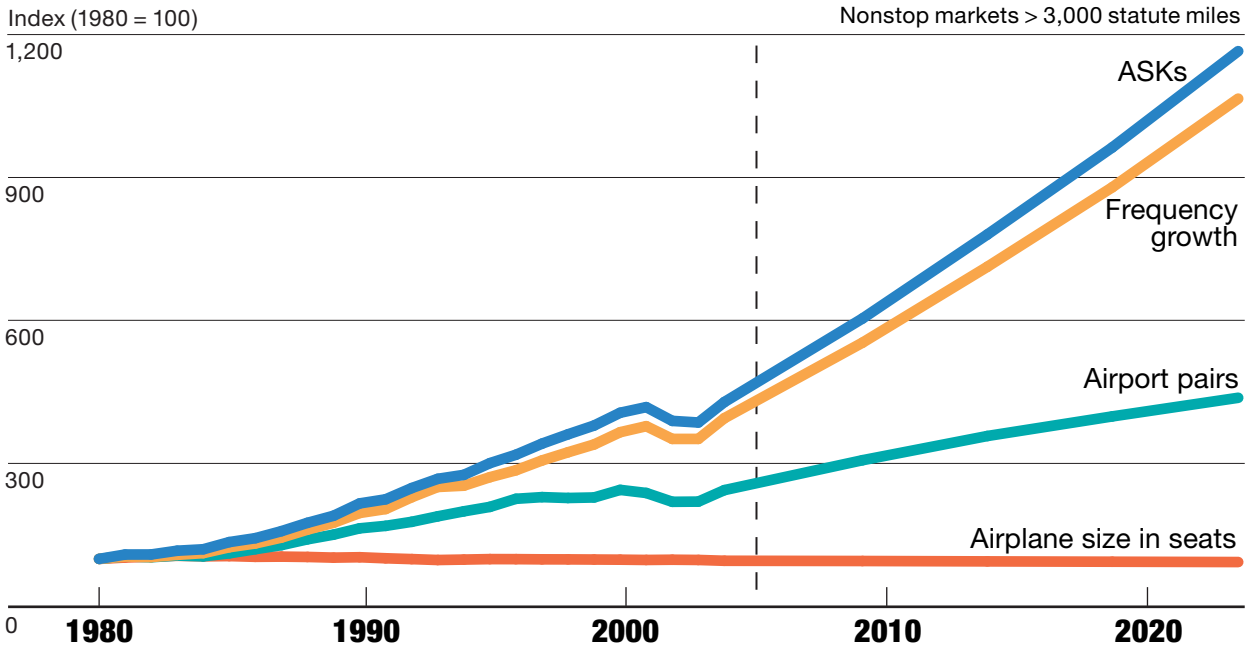
Network Development Strategies

Airlines' network development strategies influence their airplane acquisition decisions. Airlines take into account government regulations, airplane capabilities and economics, passenger requirements, competition from other airlines, alliances, and the maturity of an airline's existing network. Over time, network development strategies have increasingly focused on adding new nonstop services; boosting frequencies on existing routes; competing with other carriers on their routes; and building complementary primary, secondary, alliance, domestic, and gateway hub networks.

Passengers want to reach their destinations quickly. Passengers will avoid itineraries that require several hub connections and numerous segments to complete a journey. Where possible, airlines will provide passengers point-to-point service on busy routes. When this is not economically feasible, passengers will prefer carriers that move them over a single hub with one-stop connecting service to their final destination.

These network strategies generally demand that airlines maintain or reduce airplane size to provide frequent, non-stop service. High-fare customers in particular are sensitive to convenient departure and arrival times. The value they perceive in more flight-time choices outweighs the cost to airlines of offering the added flights.

Airlines Provide Passengers With More Frequencies and Airport Pairs



Airlines also offer more frequencies as a primary form of nonprice competition. In the battle for market share and long-term profitability, competitors almost always match fare reductions. With prices matched, the battle for market share takes place in the service arena, with frequency of service being a deciding competitive factor.

Adapting to Change

Cost reductions and increasing efficiency play an ever-larger role in airline decisions. Although the proliferation of truly low-cost carriers will continue around the globe, almost every airline strives to cut costs and enhance productivity. For some, the goal is to be included among the list of low-cost carriers, while others aim to be the low-cost provider in their particular business models, regions, or niches. The cost-containment mindset is now pervasive and will govern nearly every aspect of the industry for the foreseeable future.

Technology is improving the way airlines do business. The Internet has significantly changed the way airlines can price their seats, market their services, and interact with their customers. Transparency allows for easier and faster comparison of fares and schedules. Many airlines are also shifting their passenger check-in, frequent flyer programs, and other customer contact functions to enhance flexibility and control costs.

Infrastructure develops alongside air travel demand. History shows that, in specific markets, infrastructure supply and air travel demand are often not synchronized. Fortunately, the system adapts through a variety of mechanisms, such as use of secondary airports, scheduling in nonpeak hours, and improvements in air traffic control.

The airline industry has a long history of successfully adapting to change.

Airline Strategies

The economic and operational fundamentals of running an airline are universal, although conditions vary greatly around the world. Airlines may share similar traits in the aircraft they operate, airports they serve, procedures they follow, and organizations they develop. However, individual airlines create unique identities through a wide range of marketing, operational, and corporate choices. For example, a long-haul specialist might focus on carrying European and North American leisure travelers long distances to its beach destinations.

Carriers can be broadly grouped according to the similarities in their business propositions and strategies. Business model examples include global network, low-cost, long-haul specialist, leisure specialist, short-haul network, and regional. Although the low-cost carriers are increasing their market share, much of the world's airline business is still concentrated in the global network carriers. However, many airlines also utilize the strategies and tactics of other models to adapt their businesses in the rapidly changing air transportation marketplace. For example, some low-cost carriers have added a second class of service to their aircraft, and some of the network carriers now offer a single class of service on selected aircraft for additional coach seating or high-yield products.

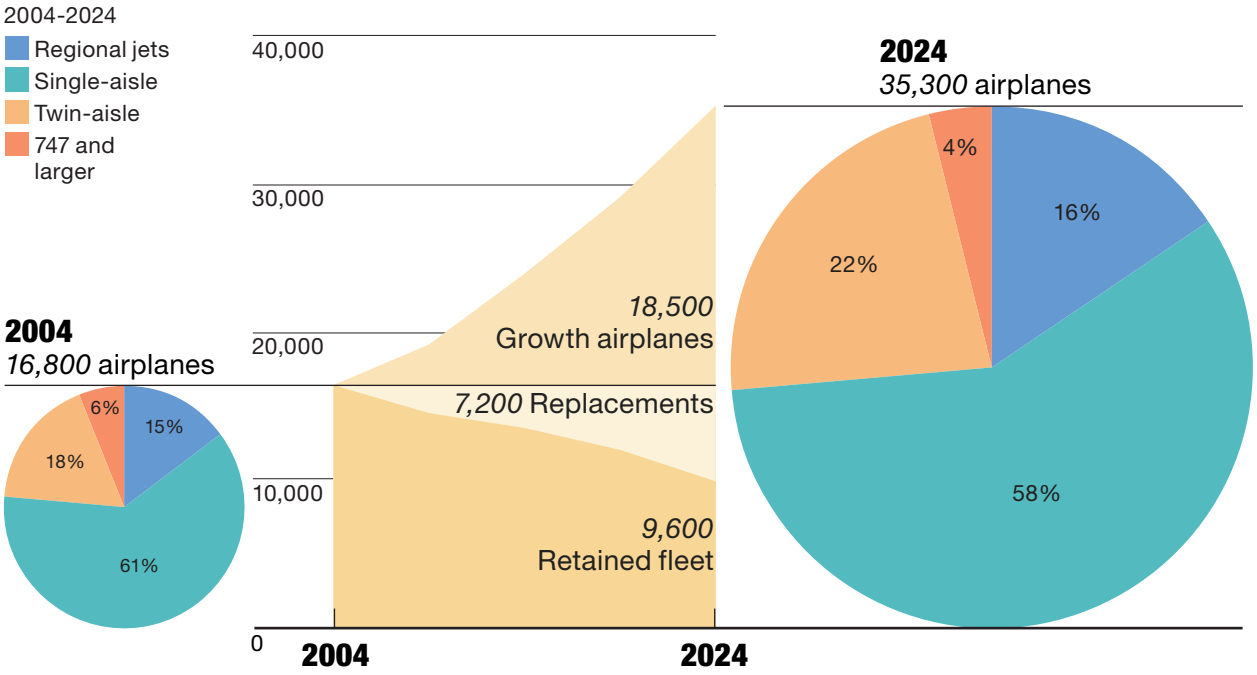
Convergence of business models will continue. Increasing airplane capability and advancing technology allow airlines to continue to do more with their networks and customers. Carriers face cost, yield, and other pressures that push them to continually adapt to the dynamic environment. Leaping across the traditional boundaries between business models has become a logical way of creating the niches that help make airlines more successful. The Outlook forecast assumes that airlines continue to decrease costs and increase services over time.

Fleet Growth

The world fleet is expected to more than double by 2024, growing to 35,300 airplanes. Over the 20-year forecast period, 7,200 airplanes will be retired from active commercial service and will be replaced. An additional 18,500 airplanes will be needed to fill capacity demand. About 57 percent of the fleet operating today (9,600 airplanes) is projected to still be in operation 20 years from now.

New airplanes contribute to growth and replacement. The tally of airplanes added and removed is a straightforward exercise. Defining the number of airplanes attributable to growth and those attributable to replacement is not. The reason is that airplanes are not replaced jet-for-jet, but rather seat-for-seat. The 7,200 airplanes removed from the system will be replaced by some airplanes of equal size, but also by both smaller and larger airplanes. For example, an airline might "replace" its 737-200s (107 seats) with 737-800s (162 seats). On a seat-for-seat basis, only a portion of each 737-800 actually serves as replacement; the remainder may be considered to be growth. The Outlook forecast process converts seats into airplanes.

The World Fleet Will More Than Double



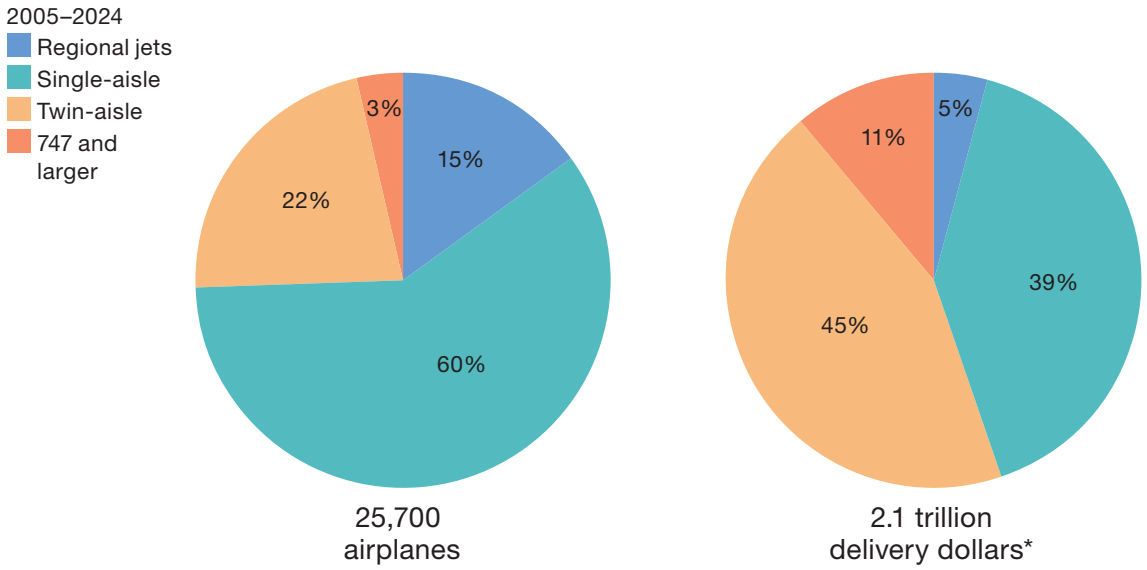
Over the 20-year period, approximately 25,700 new airplanes will be delivered to customers. Twenty-eight percent of the market for new commercial jets can be thought of as replacement for older in-service airplanes. The remaining 72 percent will be required for passenger and cargo traffic growth.

Deliveries

Three-quarters of the fleet in 2024 will be single-aisle and regional jets. More than 19,000 jets in these categories will be delivered by 2024. In short-haul markets, single-aisle airplanes will continue to dominate, although regional jets will play a notable role. U.S. regional airlines are operating smaller jets on new nonstop flights. Regional jets extend the geographic reach of major airline hubs, augment larger jet operations in off-peak hours, replace major airline larger jets on thin routes, and substitute for prop flights. European carriers also will operate large numbers of regional jets, especially in hub-bypass and point-to-point markets. Although not at the high absolute numbers experienced in Europe and North America, other regions such as China and Latin America will expand their use of regional jets over the next 20 years.

Twin-aisle and larger airplanes will generate the majority of delivery dollars. Within Asia-Pacific, a geographically wide region, a mix of single-aisle and twin-aisle airplanes is required. In the long-haul transoceanic markets, twin-aisle airplanes dominate the fleet. While the share of 747 and larger airplanes will fall from 6 percent to 4 percent, the percentage of midsize twin-aisle airplanes will increase from 18 percent to 22 percent. Twin-aisle jets allow airlines to economically fly the increased frequencies, city pairs, and nonstop flights that passengers desire.

Single-Aisle Airplanes Dominate Future Deliveries



* In year 2004 dollars

Demand for Freighter Airplanes

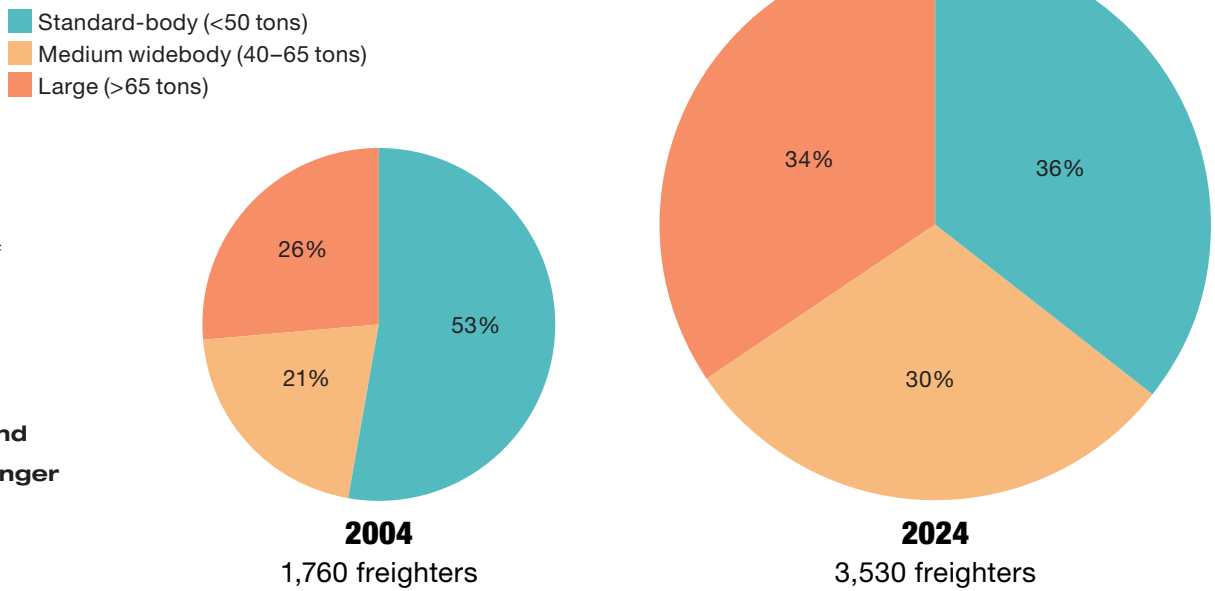
The freighter fleet will nearly double over the next 20 years from 1,760 to 3,530 airplanes. Taking 1,100 retirements into account, almost 2,900 airplanes will be added to the freighter fleet by 2024. Widebody freighters, currently 47 percent of the fleet, will supply more than 60 percent of these additions. The number of widebody airplanes will nearly triple. The shift toward widebody freighters will result in a fleetwide increase in average freighter airplane payload.

Operators such as express carriers often prefer medium widebodies as a replacement for retiring standard-body freighters. Thus, the share of standard-body freighters will decrease from 53 percent to 36 percent over the next two decades. By 2024, freighters of all sizes will provide more than half of the world's total air cargo capacity, a slight increase from today.

Three-quarters of freighter fleet additions during the next 20 years, satisfying both market growth and replacement needs, will come from modified passenger and combi airplanes. Half of these conversions will be widebody conversions.

By 2024, 725 new production freighters will enter the fleet. Although new airplanes will make up a minority of the world freighter fleet by 2024, many airlines do prefer the technical advantages, reliability, and fuel efficiency of new airplanes. The value of all the new freighters totals $155 billion in current U.S. dollars.

Widebody Freighters Dominate the Future Fleet



2004
1,760 freighters

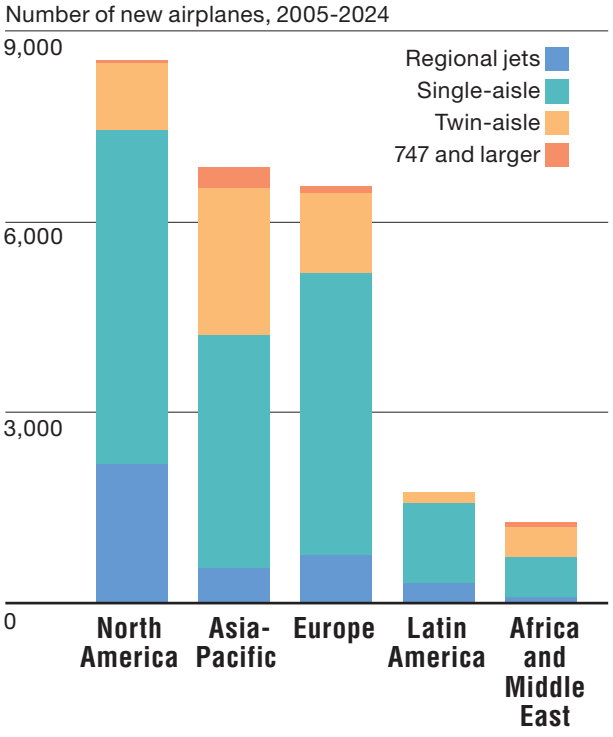
2024
3,530 freighters

Deliveries by Region

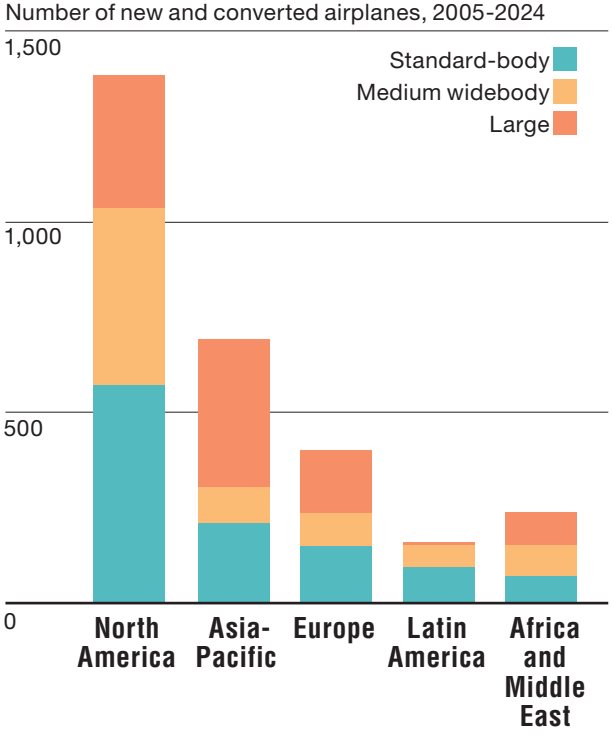
The mix of airplane models and number of deliveries varies widely by region. On the passenger side, the world's airlines will add almost 25,000 new airplanes over the next 20 years. North America, with its large number of experienced travelers and its need to replace an aging fleet, will require the most airplanes. The largest number of regional jet deliveries will be in North America. In Europe, almost 80 percent of deliveries will be single-aisle airplanes and regional jets. Asia will take deliveries of the most 747 and larger airplanes.

The world's airlines will add almost 2,900 new and converted freighters by 2024. As described in the Boeing *World Air Cargo Forecast*, factors such as airline strategies, retirement rates, and varying growth rates of major trade flows and market segments will affect the sizes of new and converted freighters added to each region. For example, large U.S.-based air express systems will add many medium and large widebody freighters for both growth and replacement purposes. Asia-Pacific and European airlines will add many large long-haul freighters, especially new and converted 747s.

Passenger Airplane Deliveries Vary by Region



Freighter Deliveries Vary by Region



Current Market Outlook

Outlook

North America

Economic growth in North America is driven by strong increases in productivity and continuing population growth. GDP is forecast to grow at 2.9 percent annually over the next 20 years.

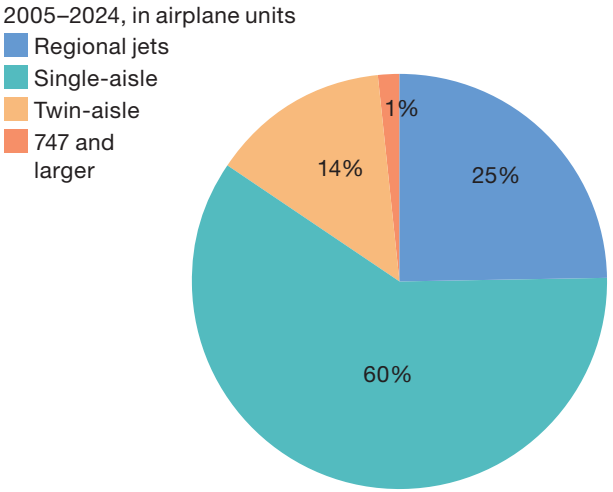
Air travel growth for the region's carriers should average 4.1 percent annually through 2024. North American markets are fully liberalized, and travel levels are already above average for the continent's wealth. However, travel growth beyond the level of GDP growth will still be stimulated by continued efficiencies in airline networks and lower fares. North America will take more airplane deliveries than any other region.

Eighty-five percent of deliveries to North American airlines over the next 20 years are forecast to be in regional jet and single-aisle airplanes. These airplanes will primarily serve domestic United States and Canadian markets, as well as nearby Latin American destinations.

The international market will continue to fragment as more point-to-point service and additional city pairs and frequencies are added. The North America fleet consisting of midsize twin-aisle airplanes will increase from 14 percent to 17 percent to serve growing overseas markets on the Atlantic, on the Pacific, and with Latin America.

North America Deliveries

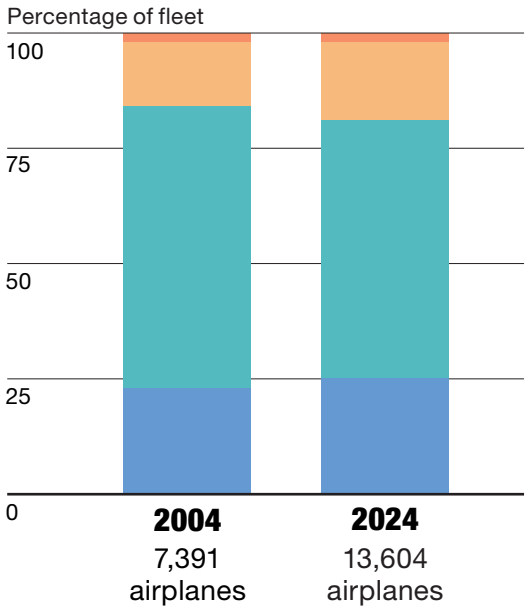
2005–2024, in airplane units



8,799 airplanes
$585 billion*

* In year 2004 dollars

North America Fleet



Latin America

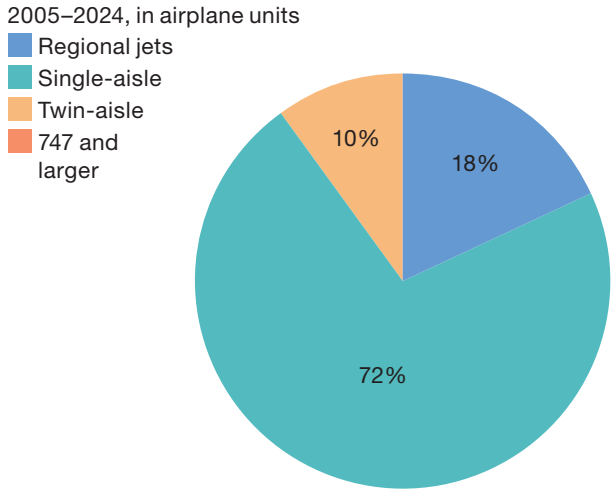
The outlook for economic growth in Latin America is strong, based on continued resource development and competitive global economic policies. GDP growth over the next 20 years is expected to average 3.7 percent for both Central and South America.

Annual RPK growth for the region's carriers is forecast at 5.4 percent for Central America and 7.0 percent for South America over the next 20 years. Tourism to Central America is already quite a mature industry. Visitors, especially from North America and Europe, appreciate the region's historic and cultural attributes, as well as its beaches. South America will grow faster because of its large population, vast geography, and tourist development around its spectacular terrain and archaeological sites. Additionally, a growing Latin American middle class will support travel to Europe and other regions.

Regional jets and single-aisle airplanes are forecast to dominate future delivered capacity to serve local markets. Airlines throughout Central and South America are embracing the low-cost model. Thus, they are increasing frequencies, adding new city pairs, and rationalizing their fleets to encompass newer, efficient single-aisle jets.

Latin America Deliveries

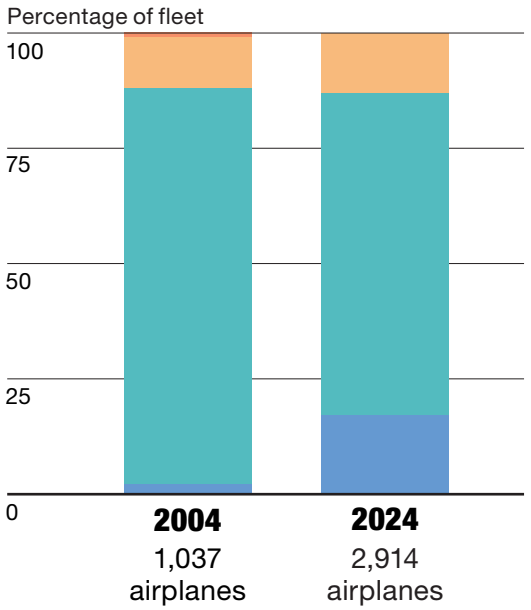
2005–2024, in airplane units



1,743 airplanes
$98 billion*

* In year 2004 dollars

Latin America Fleet



Only 10 percent of deliveries to Latin American carriers will be twin-aisle airplanes. These airplanes will serve more distant intra-Latin American markets and business and leisure travel to and from North America and Europe.

Europe

Europe is a blend of smaller developing economies and larger mature ones. Overall, the 20-year forecast for annual GDP growth is 2.1 percent. Air traffic of the region's carriers is forecast to grow at 4.3 percent, substantially faster than GDP.

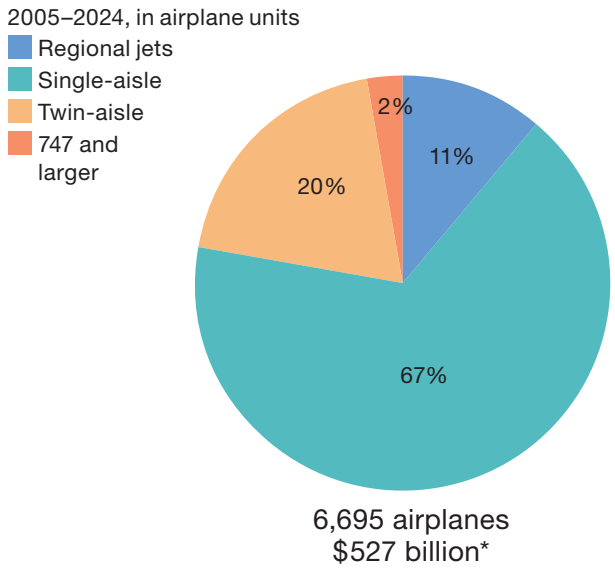
The rise of low-cost carriers continues to generate new travel growth in Europe. European markets have completed their first decade of liberalization, which has rapidly stimulated air travel demand. Lower fares and point-to-point service to many secondary and select hub airports are desirable to air travelers. Inclusive tour charter operators will play a role in delivering air travel for European tourists to a wide variety of destinations, many outside the continent.

Mainline network carriers will grow their international networks largely operating hub-and-spoke systems. Historical and economic ties with many regions worldwide will continue to support this international traffic. In addition, these carriers will also serve the more complex itineraries of intra-Europe travelers.

More than three-quarters of the European fleet will continue to be regional jets and other single-aisle airplanes. These will serve domestic, intra-Europe, and short-haul routes to Africa and the Middle East.

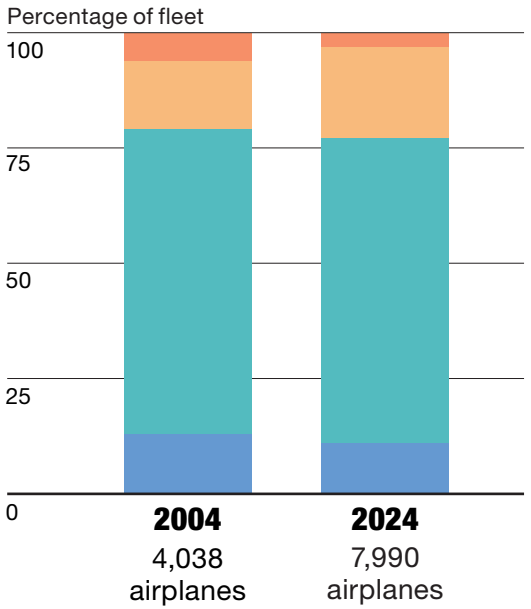
The share of midsize twin-aisle airplanes will increase from 15 percent to 20 percent over the next 20 years. The increase in city pairs and frequencies on the Atlantic and to Asia will drive this trend.

Europe Deliveries



* In year 2004 dollars

Europe Fleet



Africa

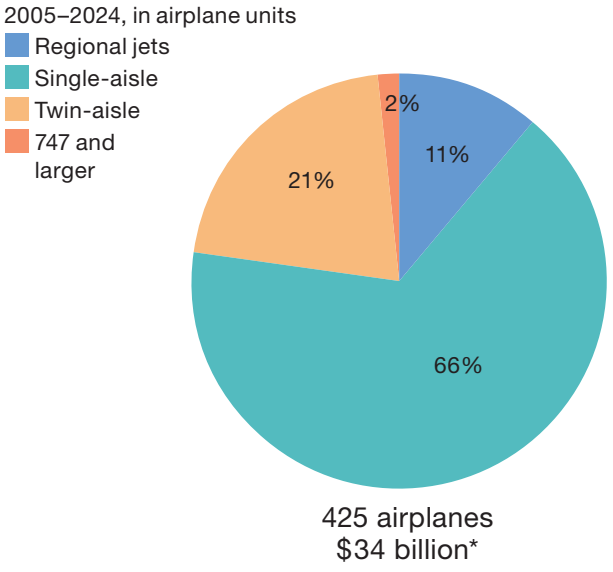
Africa encompasses many economic and geopolitical systems, peoples, and cultures within its vast and diverse geography. On average, air traffic for the region's carriers is forecast to grow at 5.7 percent annually over the next 20 years. This traffic builds from 3.8 percent annual GDP growth, with South Africa accounting for about one quarter of the GDP base.

A number of airlines are embarking on fleet modernization programs, and some governments are looking at privatization options. African nations are beginning to participate in regional and world liberalization, with resultant increases in trade and air travel.

Within Africa, the majority of flight frequencies serve airport pairs in Southern Africa, with the remainder divided fairly evenly between airport pairs in Northern and Central Africa. Although single-aisle airplanes will continue to dominate the African fleet, the percentage of twin-aisle airplanes will almost double to better serve long-haul and larger interregional markets. Traffic from Southern Africa to Europe uses large airplanes.

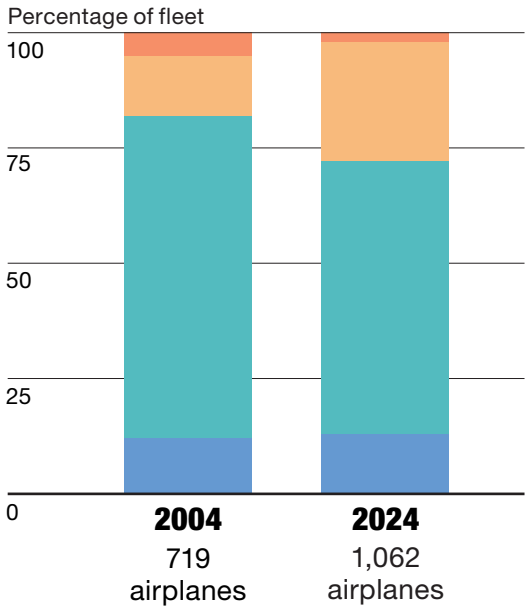
Africa has numerous tourist opportunities, including beach resorts, wildlife and natural wonders, and cultural heritage that will continue to grow demand for air travel. North Africa, especially, is increasing in popularity as a European holiday destination. Leisure, business, and VFR (visiting friends and relatives) traffic is a significant component of Africa-to-Europe flows.

Africa Deliveries



* In year 2004 dollars

Africa Fleet



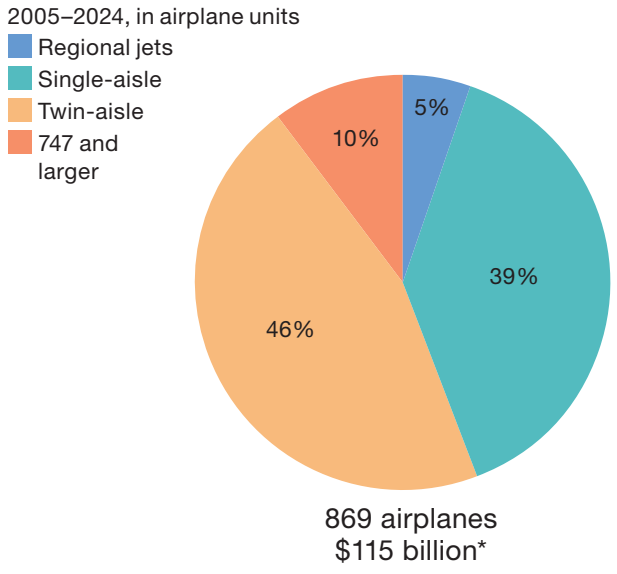
Middle East

GDP growth in the Middle East should average 3.6 percent, and air traffic of the region's carriers should average 5.5 percent annually over the next 20 years. Despite international strife and regional tensions, traffic has continued to grow in recent years for the region's air carriers. Long-term prospects will be helped by forecasts for growth in population and assumptions that oil prices will remain at long-term sustainable levels.

The Middle East is a focus for religious, leisure, cultural, and business travelers. The Haj pilgrimage involves in excess of one million air travelers each year. Among significant economic centers in the region, Dubai boasts some of the best lodging, entertainment, conference facilities, and tax-free shopping available. The liberalization of international air service agreements continues to offer expansion opportunities for the airlines of the region.

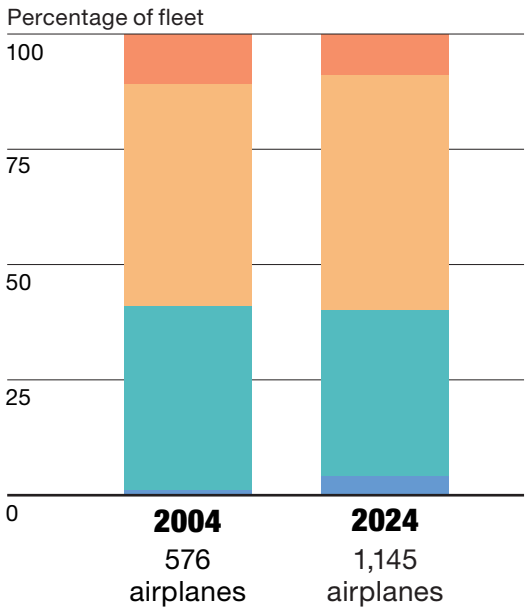
Twin-aisle airplanes will predominate in the fleets of Middle East carriers, although single-aisle airplanes will be domiciled in the region too. Several airlines will follow independent global connectivity business models in order to tap into long-haul markets from hubs in the Gulf States, especially to Asia-Pacific and North America. This strategy will support sizable numbers of twin-aisle and 747-size and larger airplanes. Short-haul flights within the region and to Europe will support smaller airplanes.

Middle East Deliveries



* In year 2004 dollars

Middle East Fleet



Northeast Asia

GDP growth in Northeast Asia is forecast at 1.8 percent over the next 20 years. In common with mature economies, Japan's economy will tend to experience lower growth rates. Korea's developing economy will grow more rapidly as it increases trade with global partners.

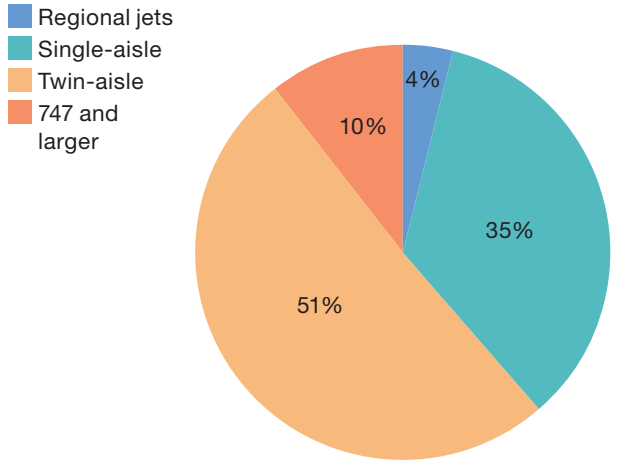
Airline deregulation in Japan, gradual liberalization, and globalization stimulate traffic. Traffic in the region has typically been below the international trend, reflecting a more conservative approach to travel; thus, there is room to grow to meet world air travel share norms. Upgrades and improvements to infrastructure, combined with new airport development, expand markets and allow competition on routes. These activities foster expansion of air travel. Traffic of Northeast Asia carriers is forecast to grow at a 5.5 percent annual rate over the next two decades.

Travel is often distant, for example, to Europe, North America, and Oceania. Japan will reduce its role as a staging post — traditionally the stopping point for flights between North America and far-off points in Asia-Pacific. These markets are increasingly served direct.

The percentage of the Northeast Asia fleet consisting of midsize twin-aisle airplanes will rise from 40 percent to nearly 50 percent over the next 20 years. Single-aisle airplanes will increase from 31 percent to 34 percent of the total fleet. The flexibility of a spectrum of different sized airplanes will enable Northeast Asian airlines to offer more frequent, nonstop services. About 10 percent of deliveries during the forecast period will be large airplanes.

Northeast Asia Deliveries

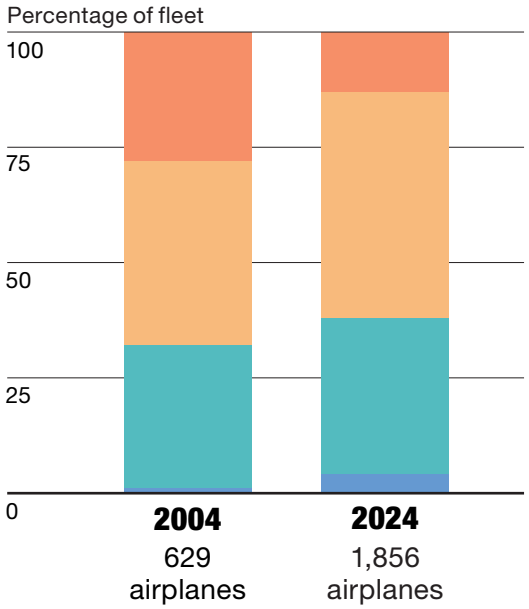
2005–2024, in airplane units



1,664 airplanes
$225 billion*

* In year 2004 dollars

Northeast Asia Fleet



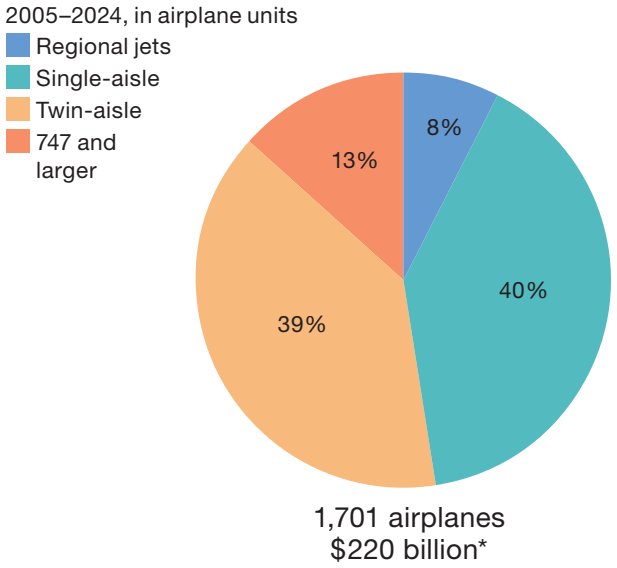
Southeast Asia

The Southeast Asia region is a blend of countries with varying economies. GDP for the region is forecast to grow 4.2 percent annually over the next 20 years, which is above the world average of 2.9 percent. Annual air travel growth is expected to average 5.5 percent, above the world average of 4.8 percent.

A plethora of business models and network strategies exists among the region's airlines. Southeast Asia's terrain varies from significant land masses with dense vegetation and mountains to disparate islands and archipelagos, which shapes airlines' operating plans. For example, Indonesian and Philippine airlines have need of significant numbers of single-aisle airplanes. Conversely, Singapore has a requirement for more twin-aisle jets to serve its significant intercontinental markets. Carriers throughout this region will use ultra-long-range airplanes to serve European and North American cities nonstop. Low-cost carriers will challenge incumbents and stimulate traffic across the region.

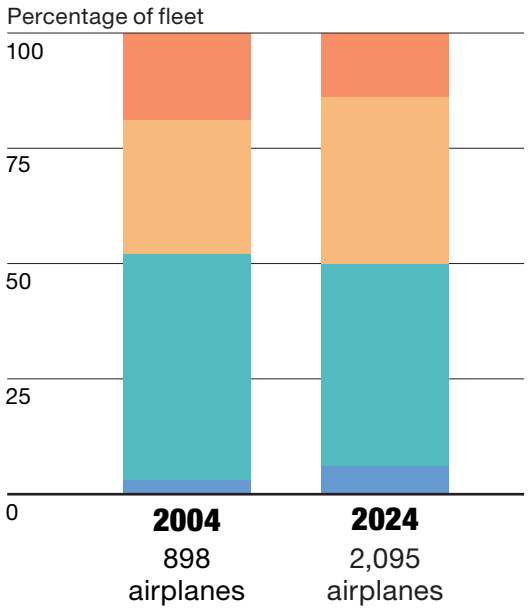
The share of the fleet represented by midsize twin-aisle airplanes will climb from 29 percent to 36 percent. As high-density long-haul routes become increasingly contested, the share represented by 747-size and larger airplanes will fall from 19 percent to 14 percent over the 20-year horizon. This reflects the assumption that airlines will choose to compete in these markets using midsize twin-aisle airplanes in order to offer more frequencies and city pairs. Thus, midsize twin-aisle jets will account for 39 percent of new deliveries during the forecast period. Single-aisle airplanes will make up 40 percent of deliveries and will be used across a variety of airline business models.

Southeast Asia Deliveries



* In year 2004 dollars

Southeast Asia Fleet



Southwest Asia

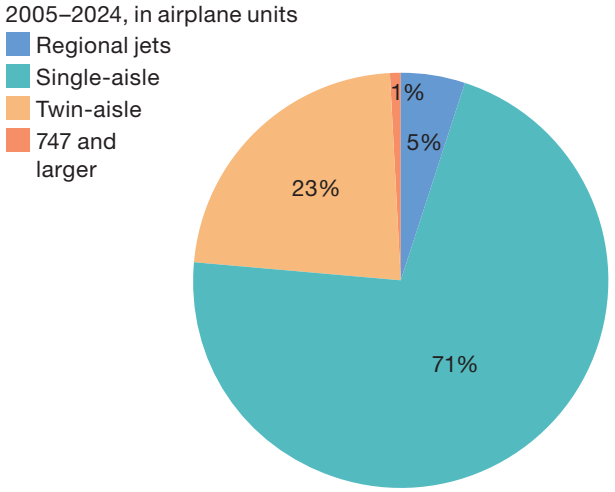
The outlook of 4.8 percent annual GDP growth over the next 20 years assumes that Southwest Asia will continue its current focus on more liberal policies. These include development of infrastructure and tourism in addition to airline privatization. Overall traffic growth of the region's carriers will average 6.6 percent annually over the next 20 years. As evidenced by remarkable numbers of new entrant airlines in India, the anticipated intra-regional traffic growth will be one of the world's highest at an estimated 8.0 percent on average.

A large and growing middle class that travels for business, leisure, and religious purposes is reflected in the travel within Southwest Asia and internationally. Travel to and from the nearby Middle East supports pilgrimage flights and foreign worker trips. The region's rich cultural heritage attracts Western tourists. VFR (visiting friends and relatives) represents a significant portion of traffic to the region by a globally mobile population that has settled across many regions in North America, Europe, the Middle East, and Asia-Pacific.

Just over 70 percent of all jet deliveries in the region will be single-aisle airplanes. A large number will be used domestically, especially in India, where deregulation has accelerated at a fast pace in domestic, regional, and international markets. The use of twin-aisle airplanes will also increase over the next 20 years. Some airlines with previously constrained fleet growth will now be able to reenter and serve new markets. Services to Asia-Pacific and Europe, as well as new direct services to North America, will use a variety of twin-aisle airplanes.

Southwest Asia Deliveries

2005–2024, in airplane units

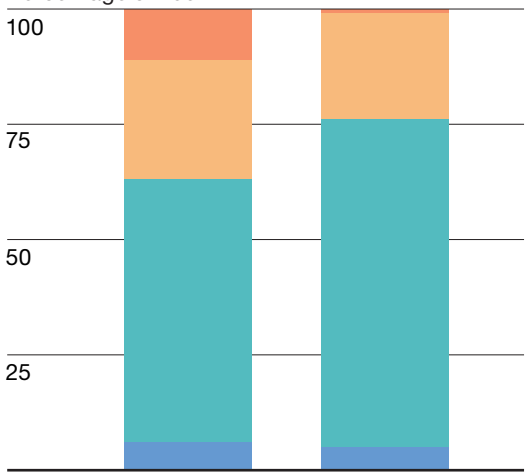


759 airplanes
$62 billion*

* In year 2004 dollars

Southwest Asia Fleet

Percentage of fleet



2004
269 airplanes

2024
860 airplanes

China

The 20-year China GDP is forecast to grow 6 percent per year and continues to lead the world. The growth of China's aviation sector in particular will significantly outpace growth of other world regions. The domestic China market is expected to grow an average 8.8 percent annually. Air travel for all markets to, from, and within China is forecast to expand 7.8 percent annually for the region's carriers.

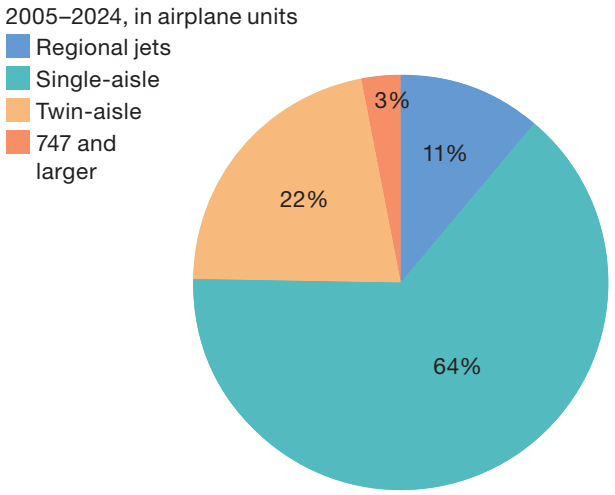
This traffic forecast is enhanced based upon the accelerated pace of liberalization over the past few years. China's many new "open skies" agreements will stimulate traffic, healthy competition, and more partnerships between China's own airlines and foreign operators. China's domestic aviation sector will more rapidly expand through continued liberalization, investment in aviation infrastructure, and policies promoting new low-cost carriers for underserved markets.

In the next 20 years, China's air carriers will take delivery of over 2,600 new airplanes. The China fleet will grow to over 3,200 units, more than tripling in size. Three quarters of airplane deliveries will be regional jets and single-aisle airplanes serving domestic and regional Asian markets.

Midsize twin-aisle airplanes will comprise 22 percent of new deliveries and will serve most of China's international routes in the future. China's airlines will compete most effectively by offering international passengers more frequent, nonstop services. Larger airplanes will make up only 3 percent of the total new airplanes added to the China fleet. Most of these will serve China's long-haul markets. More than one third of these will be freighters.

China Deliveries

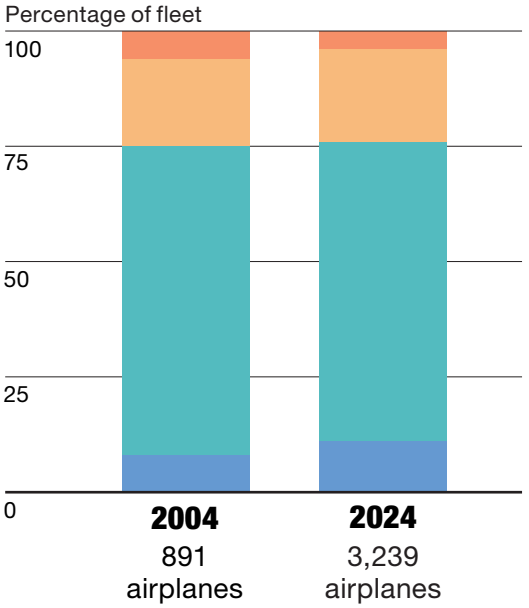
2005–2024, in airplane units



2,612 airplanes
$213 billion*

* In year 2004 dollars

China Fleet



Oceania

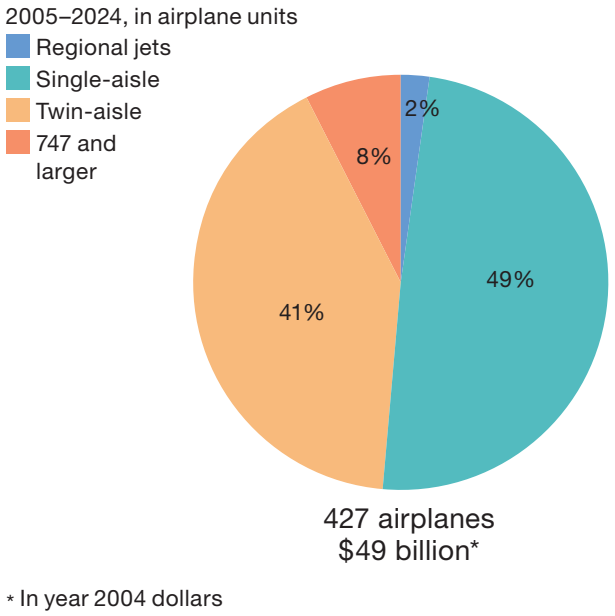
The 20-year GDP growth rate for Oceania is expected to average 2.6 percent annually. Historically, rich natural resources, agriculture, and farming have driven regional wealth. Commercial activity associated with general business and services will most probably characterize growth potential.

Forecast traffic growth of 3.7 percent annually for the region's carriers reflects a relatively mature air travel market. Intra-Oceania traffic is projected to grow more slowly than the interregional traffic touching Oceania. Inbound tourism is attracted by the unique natural wonders and culture the region has to offer.

Significant growth is expected in the midsize twin-aisle airplane fleet, which will almost double its share from 19 percent to 36 percent. As a result of the opening up of air services agreements, there will also be growing competitive long-haul offerings by airlines outside of the domicile.

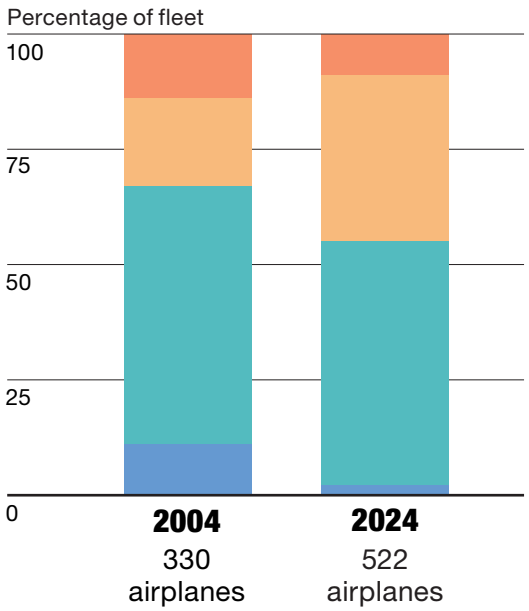
Single-aisle jets will provide almost half the deliveries and make up just over half the fleet by 2024. These airplanes are expected to be most attractive to airlines that face domestic and regional market contests with low-cost carrier competition. At either end of the size spectrum, 747 and larger and regional jets, fleet shares will fall in relation to the gains made by the midsize twin-aisle and single-aisle sizes.

Oceania Deliveries



* In year 2004 dollars

Oceania Fleet

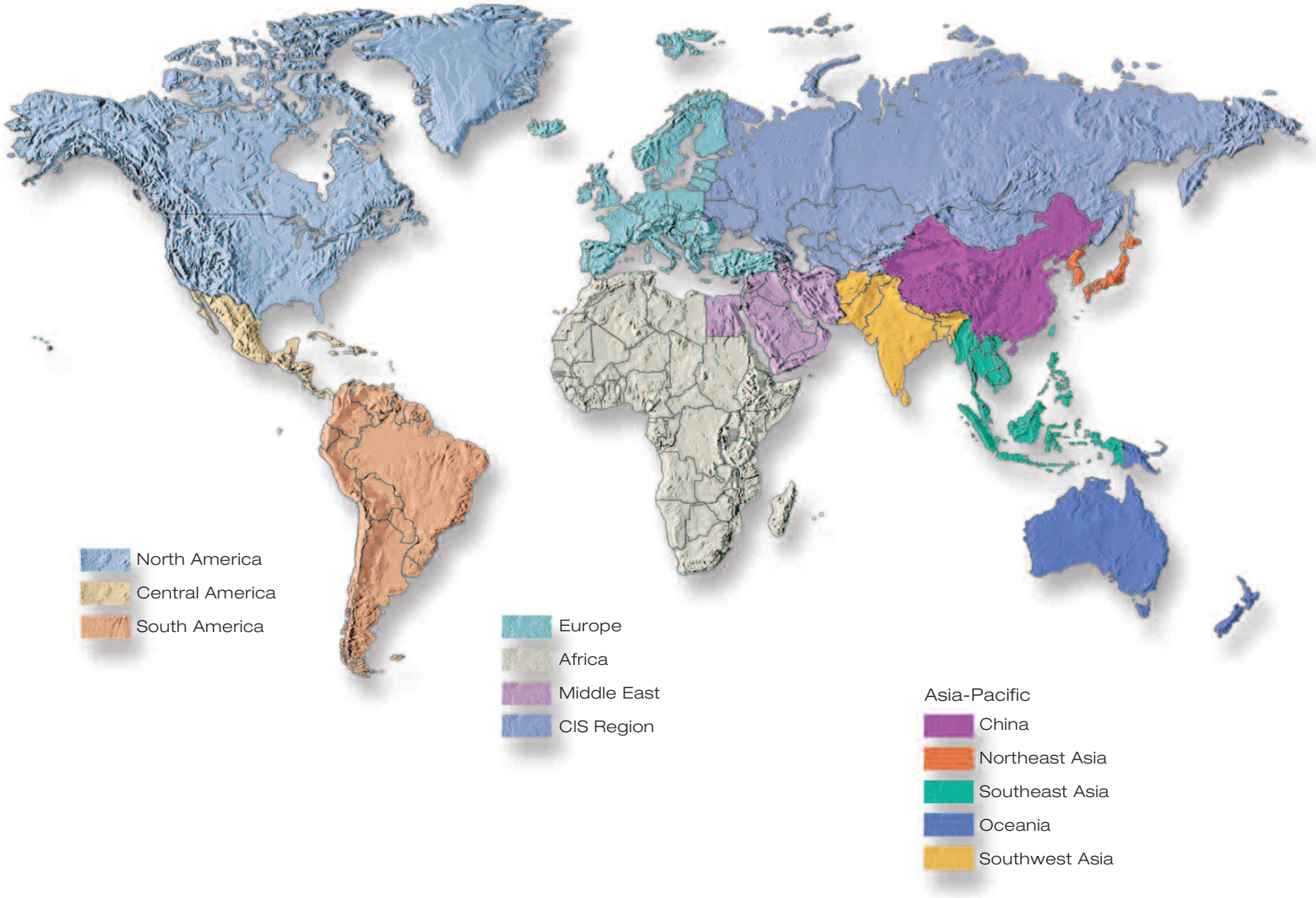


Current Market Outlook

Outlook

Market Outlook Regions

Market Outlook regions have been formed to best illustrate major world traffic flows. They do not always exactly match political or geographic regions.



World Traffic by Regional Flow

RPKs in billions	1985	1990	1995	2000	2001	2002	2003	2004	2014	2024	2005-24 %/year
Africa–Africa	13.540	14.689	14.775	19.422	19.947	21.203	22.475	23.868	54.278	78.086	6.1
Africa–Europe	43.037	47.732	57.178	99.407	96.226	97.188	99.132	105.179	191.719	278.757	5.0
Africa–Middle East	5.156	7.394	6.479	9.811	10.596	13.192	13.852	13.921	29.939	44.252	6.0
Africa–North America	1.220	1.298	2.640	4.416	4.615	4.292	4.378	3.765	12.093	18.153	8.2
Africa–Southeast Asia	0.280	0.909	3.226	3.244	3.357	3.623	3.650	3.858	9.173	15.799	7.3
Central America–Central America	12.820	14.306	18.267	23.950	23.016	23.382	24.785	25.504	57.648	98.674	7.0
Central America–Europe	17.868	27.647	44.193	66.361	69.750	68.120	69.800	75.733	113.100	167.090	4.0
Central America–North America	43.339	63.714	71.097	90.050	88.609	87.723	92.000	104.880	155.060	234.559	4.1
Central America–South America	3.287	3.499	4.271	7.256	7.169	7.097	7.147	8.219	16.820	28.067	6.3
China–China	8.436	18.254	56.624	73.634	84.630	97.198	95.254	110.209	290.939	596.341	8.8
China–Europe	9.577	16.927	26.611	40.093	40.173	42.583	34.492	45.184	91.351	148.863	6.1
China–North America	7.807	13.434	21.630	33.171	36.179	33.212	24.909	33.222	80.015	154.144	8.0
China–Northeast Asia	6.754	10.916	15.998	19.434	18.423	24.503	20.092	26.321	48.665	81.184	5.8
China–Oceania	3.002	5.810	9.234	12.130	12.434	13.180	10.609	15.011	22.239	32.772	4.0
China–Southeast Asia	8.081	14.489	23.032	29.330	31.677	36.903	27.677	41.150	68.307	109.418	5.0
CIS Region–CIS Region	175.814	224.240	63.395	39.442	43.465	46.942	50.228	54.749	85.208	119.026	4.0
CIS Region–International	15.863	24.098	33.918	42.904	48.052	51.416	56.403	63.002	112.151	169.349	5.1
Europe–Europe	170.048	258.346	306.836	440.104	449.306	453.799	474.700	523.119	729.993	1017.708	3.4
Europe–Middle East	43.436	41.512	44.920	65.011	59.810	58.613	58.906	67.742	126.156	181.997	5.1
Europe–North America	158.599	230.688	278.895	419.961	373.765	345.955	349.471	387.913	660.518	960.947	4.6
Europe–Northeast Asia	17.025	29.347	46.550	63.587	55.829	53.317	48.252	57.833	119.520	180.184	5.8
Europe–South America	12.250	22.309	32.930	53.162	52.098	49.233	49.479	57.890	111.465	178.954	5.8
Europe–Southeast Asia	26.600	46.386	65.884	95.756	95.948	96.428	94.982	104.480	180.767	268.162	4.8
Europe–Southwest Asia	11.859	17.470	20.666	26.227	27.486	27.568	29.498	35.692	64.041	105.532	5.6
Middle East–Middle East	17.685	19.462	20.713	27.834	27.138	27.545	28.096	32.029	55.445	80.659	4.7
Middle East–North America	5.012	6.560	10.309	16.053	12.040	10.354	9.629	12.228	29.612	44.125	6.6
Middle East–Northeast Asia	0.069	0.071	0.328	1.452	1.162	1.220	1.202	2.230	7.724	15.523	10.2
Middle East–Oceania	0.000	0.000	0.000	0.001	0.001	0.432	1.189	4.102	14.953	24.105	9.3
Middle East–Southeast Asia	15.136	10.980	20.584	23.960	22.858	24.001	26.401	29.200	56.661	84.742	5.5
Middle East–Southwest Asia	14.505	16.583	23.194	29.414	29.855	31.050	33.844	35.604	69.681	110.478	5.8
North America–North America	470.633	589.055	670.470	857.471	812.763	783.481	828.273	925.181	1273.262	1856.806	3.5
North America–Northeast Asia	46.880	95.162	121.512	140.150	127.536	121.159	102.985	106.989	224.193	303.398	5.3
North America–Oceania	11.008	18.972	24.135	29.950	27.554	26.452	25.922	30.055	43.131	65.196	3.9
North America–South America	14.460	19.615	35.885	47.248	44.791	42.686	37.564	40.569	98.439	162.511	7.2
North America–Southeast Asia	8.013	15.324	25.886	32.050	29.326	30.499	26.839	32.030	75.315	130.774	7.3
North America–Southwest Asia	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.330	1.855	16.402	13.4
Northeast Asia–Northeast Asia	32.273	50.016	67.404	79.032	80.217	85.031	86.136	83.552	155.004	232.803	5.3
Northeast Asia–Oceania	6.055	12.879	31.823	24.066	22.502	24.505	22.789	26.115	48.838	72.326	5.2
Northeast Asia–Southeast Asia	15.998	32.512	44.335	48.515	47.787	54.430	45.721	56.237	103.597	161.338	5.4
Oceania–Oceania	18.614	26.241	42.671	49.244	50.721	50.214	55.486	64.919	76.097	100.208	2.2
Oceania–Southeast Asia	12.233	24.286	33.065	46.190	47.576	46.625	41.962	49.599	78.896	115.263	4.3
South America–South America	29.477	33.841	39.670	53.523	50.793	52.673	47.932	52.556	128.472	220.882	7.4
Southeast Asia–Southeast Asia	17.665	29.881	53.811	53.650	57.030	60.566	59.355	71.820	133.885	213.785	5.6
Southeast Asia–Southwest Asia	5.658	5.804	8.104	10.935	11.591	12.576	12.513	14.890	27.174	45.896	5.8
Southwest Asia–Southwest Asia	10.471	11.602	15.205	16.010	16.618	17.416	17.712	21.254	53.611	99.145	8.0
Rest of the World	5.614	7.242	8.862	13.716	14.880	15.225	15.839	18.784	37.151	72.577	7.0
World Total	**1573.158**	**2181.501**	**2567.213**	**3378.330**	**3287.300**	**3274.810**	**3289.560**	**3699.717**	**6224.160**	**9496.962**	**4.8**

Passenger and Freighter Fleet Development

Appendix B1

Seat category*	Year-end 2004	2005–2024 new deliveries	Removed from service	Year-end 2024
Single-aisle				
Regional jets	2,513	3,891	864	5,540
90-175	8,149	13,478	4,693	16,934
>175	1,231	1,771	679	2,323
Twin-aisle				
Small	1,435	3,005	941	3,499
Medium	970	2,234	436	2,768
Large	723	591	617	697
Total passenger airplanes	15,021	24,970	8,230	31,761

	Year-end 2004	2005–2024 new deliveries	Removed from service	Converted to freighter	Year-end 2024
Freighter					
Standard-body	929	27	767	1,066	1,255
Medium widebody	365	178	85	605	1,063
Large	463	519	251	477	1,208
Total freighter airplanes	1,757	724	1,103	2,148	3,526
Total	**16,778**	**25,694**	**9,333**	**2,148**	**35,287**

* Categories based on 36-/32-inch mixed-class configuration.

World Airline Fleet Distribution

Appendix B2

Seat category*	Models	2004 year-end Units	2004 year-end Percent	2024 year-end Units	2024 year-end Percent
Single-aisle					
Regional jets	F28/F70 RJ70/RJ85; BAe146-100/-200 Other regional jets, including from Bombardier and Embraer	2,514	15.0	5,540	15.7
90-175	717-200 727 737-100 through 737-800 A318/A319/A320 DC-9 MD-80/MD-90 F100 RJ100/BAe146-300 E190/E195	8,741	52.1	17,803	50.5
>175	737-900 757 707 A321 DC-8-50/-60/-70	1,567	9.4	2,709	7.7
Twin-aisle					
230-310 (181-249)	767 787 A300 A310 A330-200 DC-10 L-1011	1,800	10.7	4,562	12.9
311-399 (250-368)	777 A330-300 A340 MD-11	1,161	6.9	3,326	9.4
Large					
747 and larger (>400)	747 A380	995	5.9	1,347	3.8
Total		**16,778**	**100.0**	**35,287**	**100.0**

* Categories based on 36-/32-inch mixed-class configuration (includes freighter and combi airplanes in appropriate passenger category; the twin-aisle and large categories also include typical three-class configurations).

Delivery Distribution, Future 2005-2024

Appendix B3

Seat category*	Models	2004 dollars (billions)	Percent	Units	Percent
Single-aisle					
Regional jets	Regional jets, including from Bombardier and Embraer	93.2	4.4	3,891	15.1
90-175	717-200 737-600/-700/-800 A318/A319/A320 E190/E195	700.9	32.9	13,505	52.6
>175	737-900 757 A321	132.4	6.2	1,771	6.9
Twin-aisle					
230-310 (181-249)	767 787 A300 A330-200	471.9	22.2	3,183	12.4
311-399 (250-368)	777 A330-300 A340	492.8	23.1	2,437	9.5
Large					
747 and larger (>400)	747 A380	238.2	11.2	907	3.5
Total		**2,129.4**	**100.0**	**25,694**	**100.0**

* Categories based on 36-/32-inch mixed-class configuration (includes freighter and combi airplanes in appropriate passenger category; the twin-aisle and large categories also show typical three-class configurations).

Results by Region of the World

Appendix C

	Africa 2005–2024	Asia–Pacific 2005–2024	Europe 2005–2024
Traffic Growth			
to/from:	**%/year**	**%/year**	**%/year**
Africa	6.1	6.3	5.0
Asia–Pacific	6.3	6.0	5.4
Europe	5.0	5.4	3.4
Middle East	6.0	6.1	5.1
Latin America	8.8	8.8	4.9
North America	8.2	6.0	4.6
Airplane Deliveries			
Number of airplanes			
Single-aisle and regional jets	329	4,223	5,217
Twin-aisle	90	2,430	1,310
747 and larger	6	510	168
Total	**425**	**7,163**	**6,695**
Delivery dollars, billions (2004)			
Single-aisle and regional jets	17.1	218.5	266.1
Twin-aisle	15.7	420.4	217.0
747 and larger	1.4	131.3	44.3
Total	**34.2**	**770.2**	**527.4**

	Middle East 2005–2024	Latin America 2005–2024	North America 2005–2024
Traffic Growth			
to/from:	**%/year**	**%/year**	**%/year**
Africa	6.0	8.8	8.2
Asia–Pacific	6.1	8.8	6.0
Europe	5.1	4.9	4.6
Middle East	4.7	—	6.6
Latin America	—	7.2	5.1
North America	6.6	5.1	3.5
Airplane Deliveries			
Number of airplanes			
Single-aisle and regional jets	386	1,569	7,443
Twin-aisle	395	174	1,221
747 and larger	88	—	135
Total	**869**	**1,743**	**8,799**
Delivery dollars, billions (2004)			
Single-aisle and regional jets	21.5	68.8	334.6
Twin-aisle	69.5	28.7	213.3
747 and larger	24.0	—	37.2
Total	**115.0**	**97.5**	**585.1**

About the Data

The sources used in the preparation of the Boeing *Current Market Outlook* include:

- Airclaims
- Air Transport Association (ATA)
- Association of Asia Pacific Airlines (AAPA)
- Association of European Airlines (AEA)
- Boeing primary research
- Global Insight
- International Air Transport Association (IATA)
- International Civil Aviation Organization (ICAO)
- Jet Information Services
- Official Airline Guide (OAG)
- ROM Associates
- US Department of Transportation Form 41

Historical data are estimates based on Boeing analyses. Data for 2004 are preliminary.

Glossary

ASK: Available seat-kilometers — the number of seats an airline provides multiplied by the number of kilometers they are flown; a measure of airline capacity.

CIS: Commonwealth of Independent States — states of the former Soviet Union.

GDP: Gross domestic product — the total output of goods and services produced within a country; the broadest measure of economic output with the exception of GNP (gross national product), which includes a country's nationals who work in other countries.

Load factor: Revenue passenger-kilometers divided by available seat-kilometers.

RPK: Revenue passenger-kilometers — the number of passengers multiplied by the number of kilometers they fly.

Travel share: A ratio measuring the portion of GDP that a country devotes to air travel.

Yield: Revenues divided by revenue passenger-kilometers; it represents an aggregate of all the airfare and airline charges and is measured on a per-kilometer basis.

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