



THE VALUE OF AIR TRANSPORT **IN MEXICO**

CHALLENGES AND OPPORTUNITIES FOR THE FUTURE





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- Aviation is a very important enabler of economic and social development facilitator, contributing US\$ 38,000 million to Mexico's GDP and generating more than one million jobs in the country. Moreover, it is not just about the quantity of jobs that air transport supports. Quality of employment is also important, with jobs in the aviation sector on average 4.4 times more productive than in the economy as a whole.

- Air connectivity supports tourism and facilitates trade, as well as promoting the exchange of knowledge and ideas and bringing families and friends closer together. Air connectivity supports economic competitiveness, increased productivity, improved efficiency and promotes innovation.

- The aviation market in Mexico has great potential to grow more, particularly in terms of domestic connectivity and diversifying direct international connections. However, to achieve this it is essential to maintain the competitiveness of Mexico's air transport sector. While Mexico's aviation sector faces many challenges, infrastructure is the principal impediment to growth, both in terms of airspace and particularly airport capacity. Mexico City's primary airport was designed for 32 million passengers per year, but in 2018 it handled almost 48 million, 50% more than its design capacity.

- A major new hub airport to serve Mexico City (NAIM) was scheduled for completion in 2020. With total design capacity of more than 120 million passengers per year this would have enabled the growth of aviation's contribution to the Mexican economy for several decades. Without the new airport there is an expected shortfall in capacity of 20 million passengers per annum in 2035 that needs to be covered. Failing to cover the gap would impose a significant cost to the Mexican economy with US\$ 20 billion less in air transport's contribution to GDP and see 200,000 fewer jobs supported in 2035. The Government's alternatives to NAIM should ensure that Mexico's hub status is maintained, and that air travel continues to be accessible to the Mexican population.

AVIATION: THE BUSINESS OF FREEDOM

The air transport sector makes a major contribution to the Mexican economy and society, creating jobs and stimulating economic and social activity:

- Airlines, airport operators, airport on-site enterprises (restaurants and retail), aircraft manufacturers, and air navigation service providers employed 278,000 people in Mexico according to the most recent available data. The industry also supported a direct contribution of US\$14 billion to Mexican GDP;

- In addition, by buying goods and services from local suppliers the sector supported another 345,000 jobs and US\$ 7 billion in GDP. On top of this, the sector is estimated to have supported a further 122,000 jobs and US\$ 2.5 billion through the wages paid to employees, some or all of which is spent in the wider economy.

- Almost half (48%) of all international visitors to Mexico arrive by air. The money that they spend in the local economy supports a further 667,000 jobs and contribute US\$ 13.3 billion to the Mexican economy.

The figures above demonstrate that the benefits of air transport in Mexico go far beyond the narrow confines of the sector itself and indeed many of those who gain from Mexico's air connectivity may not yet be regular travelers themselves.

In addition to tourism, air transport also allows Mexican companies to sell their goods and services around the world and helps attract foreign investment.

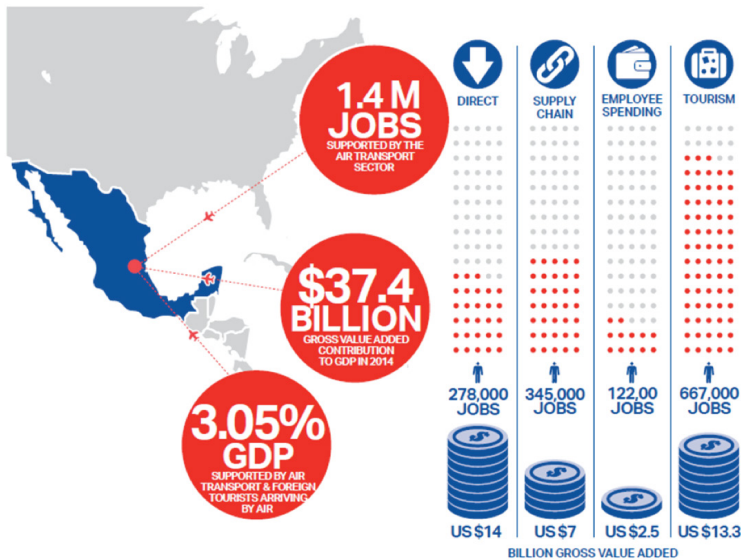


Figure 1: The contribution of air transport to Mexican employment and GDP
Source: Oxford Economics

- 35% of world trade by value is sent by air. Air freight is particularly important for perishable shipments, such as fish, fresh fruit and vegetables or pharmaceutical products. Air connectivity is also of vital importance for companies that seek to access and integrate the global value chains;

- Similarly, air connectivity is important for companies competing to attract foreign direct investment. For example, for multinational companies seeking to establish a regional headquarter in Latin America, it is important to take into account the ability to serve the rest of the region from a single center, with the breadth and depth of the network to allow travel of the same day to many places.

All these benefits will be reinforced and magnified if Mexico is able to maintain and enhance its role as a regional aviation hub. Acting as a hub allows airlines to offer a wider network with a higher frequency of services than would otherwise be possible. In order to have an efficient hub, adequate airport infrastructure is needed, especially to be able to operate flight arrival and departure banks, which generates demand peaks. The importance of hub connectivity is discussed in more detail further on in the next section.

THE IMPORTANCE OF AIR CONNECTIVITY

Air Connectivity is a measure of the potential to deliver economic and social benefits. The more a country is connected by air, the more its citizens will be able to enjoy the opportunities that air transport makes possible.

Figure 2 shows how the number of air passengers has more than doubled over the past decade as air travel has become increasingly more accessible to Mexican citizens due to increased competition and purchasing power.

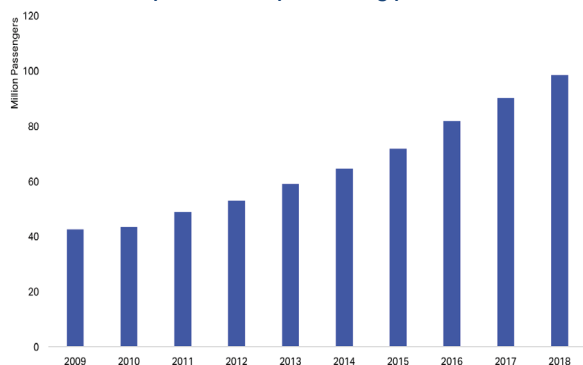


Figure 2: Growth in Air Passengers (2009-2018)
Source: IATA Economics based on PaxIS

As Figure 3 illustrates, in the case of Mexico, most of the direct services are between Mexico and North America or connecting Mexico with Latin America and Europe. With its advantageous geographic location and its potential to act as a regional hub, there is room to diversify Mexico's network of international connections.

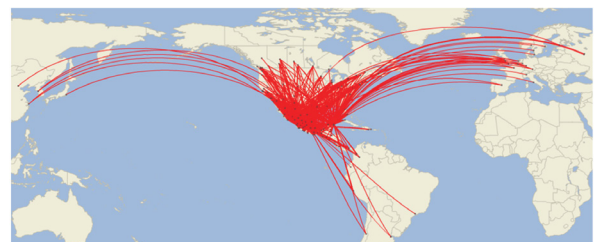


Figure 3: Direct Connectivity from Mexico
Source: SRS Analyser (February 2019)

How to measure connectivity?

Air connectivity has many dimensions including: the number of routes, the frequency of service, the number of seats available and the importance of the destinations. For indirect connections, the length of the connection and the degree of deviation from a direct routing are also important as they affect total journey time.

There are 3 main types of air connectivity: direct, indirect and hub connectivity. Each is set out below:

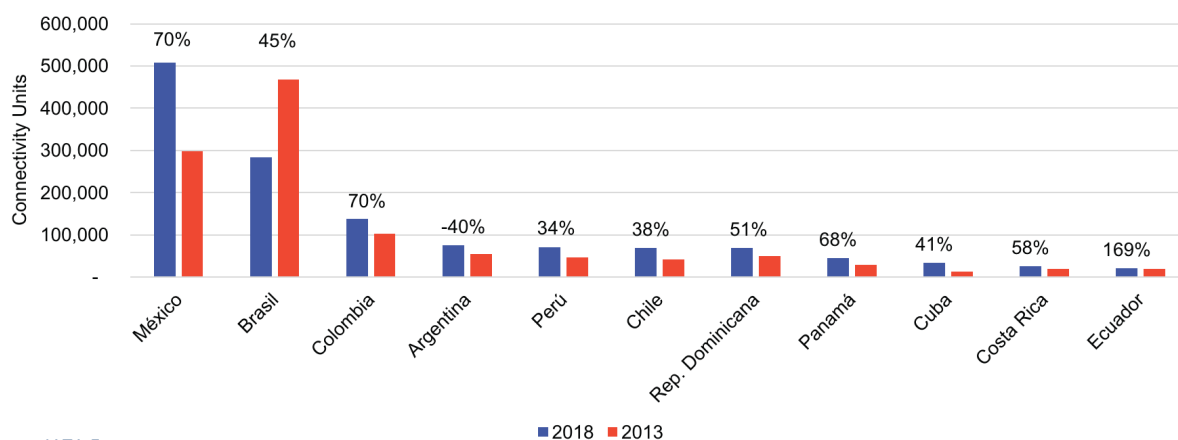
- 1. Direct connectivity:** reflects the direct air services available from a city or country. It can be measured not only in terms of the number or economic importance of the destinations, but also in terms of frequency. For example, a city with 5 daily flights to another city would register a score higher than one with only 4 daily flights;
- 2. Indirect connectivity:** measures the number of destinations to which you can fly, through connecting flights at hub airports from a private airport. For example, for a flight between Oaxaca and Mexico City, the large number of connections available from Mexico City expands the range of destinations available to passengers from Oaxaca. Indirect connections can be weighted according to their quality, depending on the connection time and related deviation. In this last aspect, an itinerary from Oaxaca to New York through Mexico City is considered better than an alternative route through Bogotá or Panamá;
- 3. Hub connectivity:** For a hub airport, this reflects the number of connecting flights that can be provided by the airport taking into account the minimum and maximum connection times. Along the same lines as for indirect connectivity, the connections at the hub can be weighted according to their quality in terms of the deviation involved and the connection times.

Based on the above, IATA has developed a connectivity indicator to measure countries' level of integration within the global air transport network. It is a qualitative measure based on: the number of destinations served and their economic importance; the frequency of service to each destination and the number of forward connections available from each destination. The connectivity measure rises with an increase in the number of destinations served, the frequency of services and / or destinations to larger hub airports.

By way of illustration, **Figure 4** shows the connectivity index in 2018 for a selection of Latin American countries, also showing how connectivity has evolved in the last 5 years.

Mexico emerges as the best-connected country in Latin America ahead of Brazil and Colombia and its air connectivity has increased by an impressive 70% in the last 5 years, considerably above the world average, and also higher growth than that experienced in countries like Chile (68%), Panama (58%) and Peru (51%).

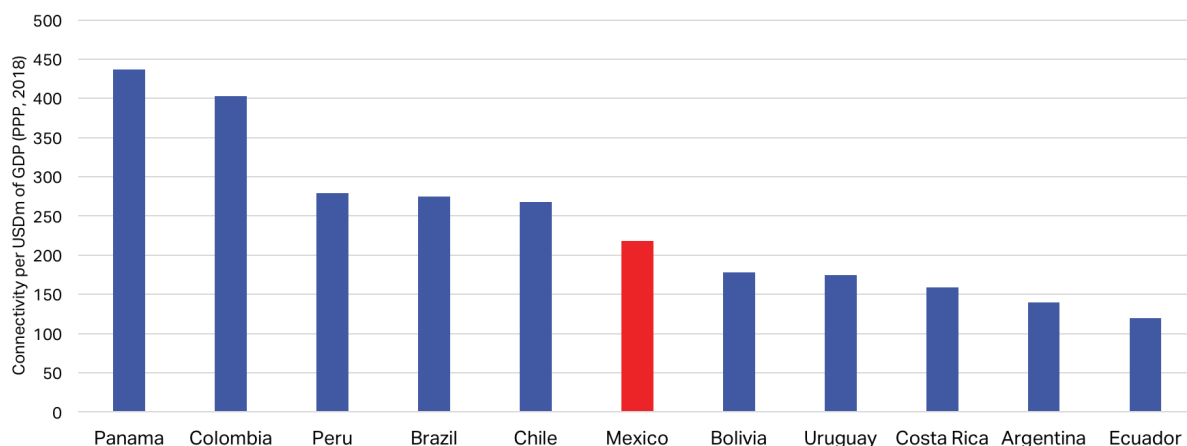
Figure 4: Connectivity 2018 vs 2013, selected countries



Source: IATA Economics

The level of connectivity depends, to some extent, on the size of a country's economy and the number and size of the companies served by its air transport sector. Naturally, larger economies are connected to more destinations and have more seats available, but quantity is not necessarily a measure of quality. Therefore, another key measure that must be examined is the level of connectivity relative to the Gross Domestic Product (GDP) in terms of its relation to productivity and economic growth. Using this definition, Mexico ranks behind a number of regional peers, including rival regional hubs such as Panama, Colombia and Peru.

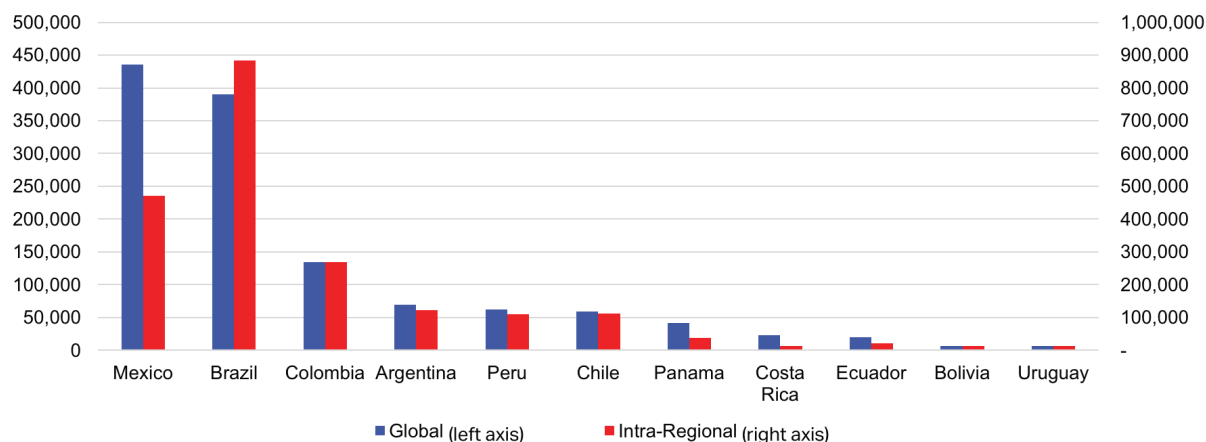
Figure 5: GDP-adjusted Air Connectivity (selected countries)



Source: IATA Economics

Connectivity can also be measured at the intra-regional as well as the global level, as shown in **Figure 6** comparing global connectivity with connectivity within Latin America. Mexico has higher scores in terms of global connectivity reflecting its proximity to the key United States market. In contrast, Brazil has greater relative connectivity within Latin America with geography again playing an important role.

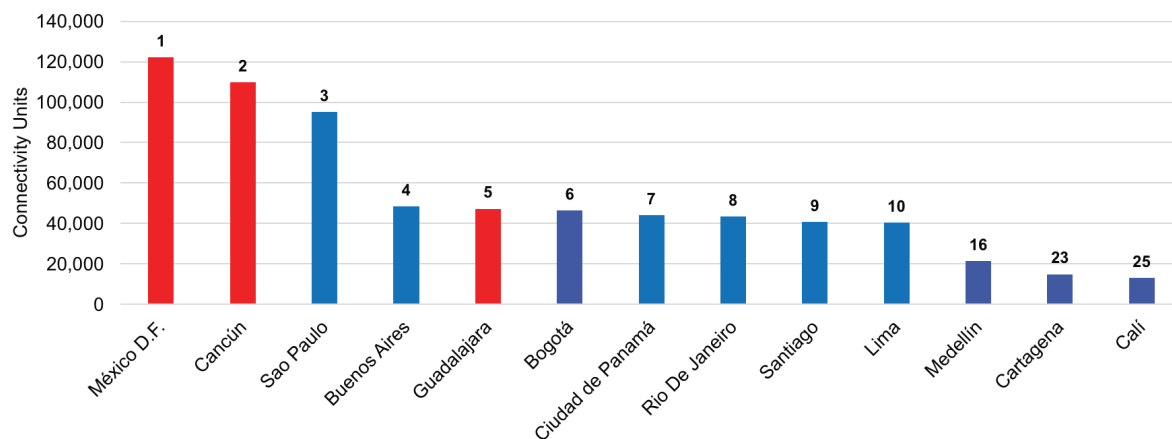
Figure 6: Global vs Intra-regional connectivity (selected countries)



Source: IATA Economics

Finally, connectivity can be measured at the city level to see how Mexican cities compare with other large cities in Latin America and the rest of the world in terms of their integration into the global air network. As shown in **Figure 6**, Mexico City is ranked as the best-connected city in Latin America ahead of Cancún, São Paulo, Buenos Aires and Guadalajara. The fact that 3 Mexican cities feature among the Top 5 in Latin America highlights the advantage of proximity to the North American market.

Figure 7: City Connectivity (selected cities)

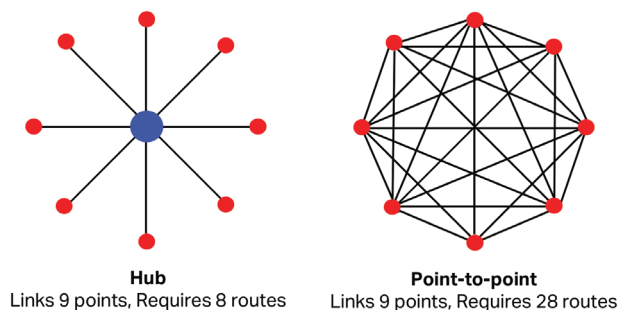


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The importance of hub connectivity

Hub networks work to create economies of scale by pooling demand from a range of different routes. At Mexico City International Airport (AICM), passengers can travel with 29 different airlines to 106 destinations in 24 countries – with transfer passengers being the key to making these flights viable. Travelers in Mexico City benefit from more direct travel options than would be viable based on local origin-destination demand alone. Passengers from the rest of Mexico benefit from being able to use AICM as a stepping stone to destinations around the world.

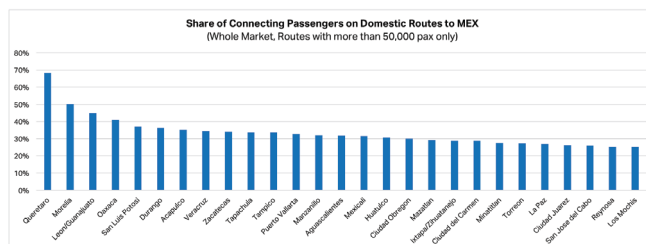
Figure 8: A hub is an efficient way to deliver connectivity



As **Figure 8** shows, a hub-and-spoke system is an extremely efficient way to construct a network. In the first diagram, 8 points can be connected through a hub with only 8 individual routes. To connect all of these points directly would require 28 separate routes, with a requirement for more flights many of which would not be commercially viable due to lack of demand.

Figure 9 illustrates how transfer passengers at a hub help make routes viable by enabling airlines achieve breakeven load factors more easily.

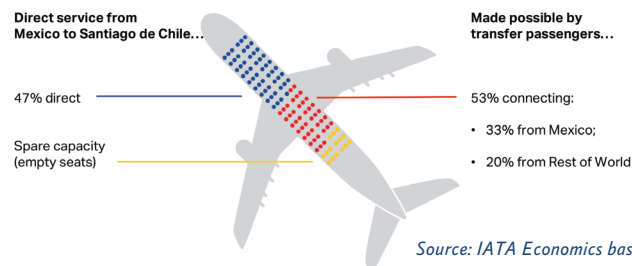
Figure 10: The importance of the AICM hub for domestic connectivity



Source: IATA Economics

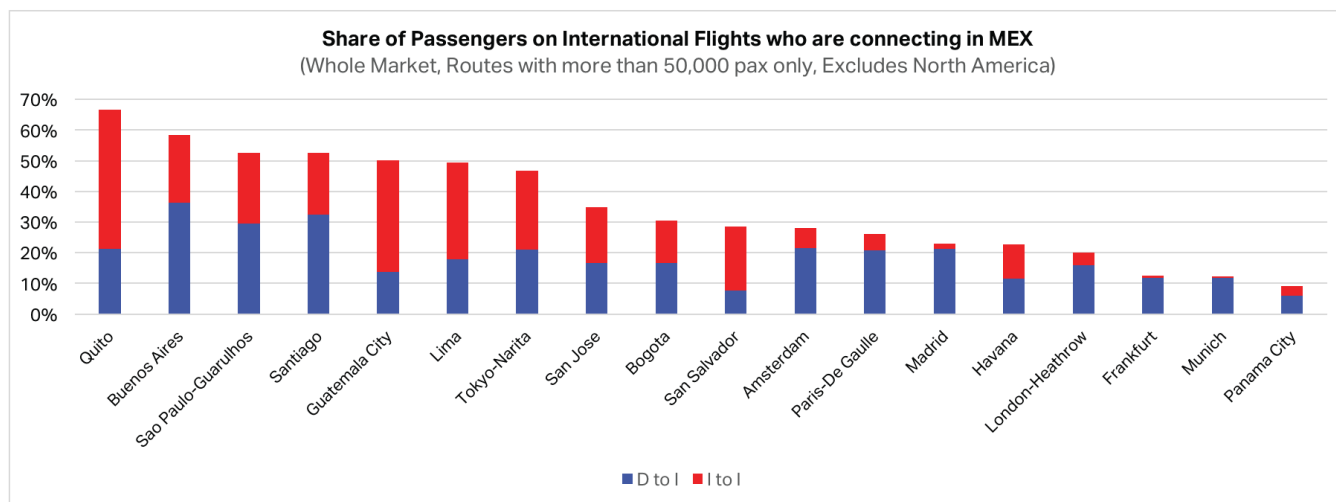
Figure 10 shows the importance of onward connections on key domestic routes between cities across Mexico and AICM. In the case of Queretaro, almost 70% of passengers on flights between the capital and Mexico City are connecting in the capital to a variety of destinations around the world.

Figure 9: How transfer passengers make routes viable



Source: IATA Economics based on DDS. 2018 data for all carriers operating the route

Figure 11: The importance of the AICM hub for international connectivity



Source: IATA Economics

Figure 11 shows that a similar situation is at play with regard to international routes, with more than 50% of passengers on flights between Mexico City and a number of destinations across South America having connected at AICM, either from points of origin within Mexico or transferring between international flights. This further highlights Mexico's ability to leverage its advantageous geographical location to act as a regional hub connecting North and South America.

Hubs work by pooling demand from leisure passengers, international transfer passengers, business passengers and freight to make more routes and regular flights viable. Two hub 'solutions' don't work as they fragment this demand, making fewer routes and flights viable. At the same time, airline costs increase due to the requirement to support operations from two airports.

Equally, split-hub solutions are also difficult to make work. Network carriers compete for connecting traffic based on being able to attractive connection time, ideally 60 minutes or less.

Competitive minimum connection times are almost impossible to achieve with a change of airports – for example there is very little connecting traffic between JFK and La Guardia airports in New York or between Heathrow and Gatwick in London. It could be argued that São Paulo suffers a connectivity deficit due to the difficulty of connecting between the domestic airport of Congonhas and the primarily international airport of Guarulhos.

Moreover, hub status is not a given. There is a considerable 'graveyard' of hubs that have lost their hub status, most commonly because of policy failures that complicate the operations of the major network carriers. Connecting passengers are very 'footloose' regarding their choice of connecting airport and will generally use the option that offers the best combination of price and convenience (shortest overall journey time). The likes of Atlanta, Dallas and Houston to the North and Bogota, Lima and Panama to the South stand ready to take traffic away from Mexico City if its ability to operate as an effective hub diminishes. De-hubbing has generally been shown to be irreversible, in that it is hard to regain hub status once it has been lost. This has implications for the connectivity enjoyed by travelers and shippers in the catchment area of the de-hubbed airport.

An interesting example is New York. While it is often considered that New York has 3 hub airports, in reality the only genuine hub is Newark where United is the anchor carrier. JFK and La Guardia operate much more as point to point airports.

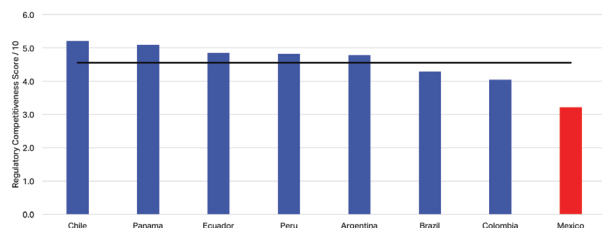
The benefits of a hub are non-linear, in that each successive additional route that is added creates more benefit than the previous one. This is because an additional route gives you not just a connection to the hub, but all the routes that are served from the hub. Unfortunately, the same works in reverse. Removing a flight at a hub also reduced connecting traffic for other flights. For example, removing a route between Queretaro and AICM doesn't just eliminate the local traffic between those two cities, it also eliminates passengers travelling from Queretaro to Amsterdam, London, Paris etc. With fewer connecting passengers, the viability of these routes becomes more marginal. If these routes are cut, or frequency reduced, then this further reduces connecting traffic on the rest of the network, and so on.

INFRASTRUCTURE AND THE CHALLENGE OF COMPETITIVENESS

Increased air connectivity - and the improvements in productivity and GDP growth it can provide - can also help increase a country's competitiveness. In a globalized world, many of the industries that depend on aviation and that provide the demand that sustains air connectivity are highly mobile with many options: tourists have alternative destinations to visit and companies have multiple markets to sell their products or base their business. As such, ensuring competitiveness is paramount and aviation is a key component.

IATA has developed a set of Regulatory Competitiveness Indicators for air transport. This toolkit provides an important insight into the extent to which the country favors the development of its air sector. The toolkit incorporates many of the factors necessary to develop connectivity and create greater economic benefits in terms of productivity and economic growth. The indicators offer countries a measure of how they are classified in each factor and how far they compare with neighboring countries or other peers.

Figure 12: Air Transport Regulatory Competitiveness (selected countries, maximum = 10)

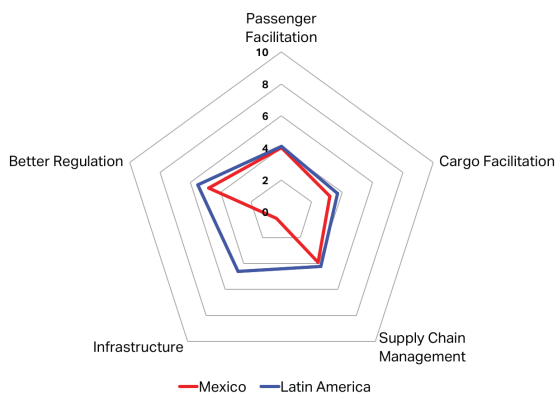


Source: IATA Economics

Figure 12 shows how Mexico compares with several of its regional neighbors in Latin America. As can be seen, Mexico is located behind all of its main neighbors and, in particular, those with whom it competes for the role of regional aviation center.

Figure 13 breaks down the general ranking of Mexico into the different indicators that make up the elements of the regulatory competitiveness index. It shows how Mexico (red) compares with other countries (Latin America average in blue) in the region to highlight key issues that represent a comparative and competitive strength or weakness. In the diagram, a higher score for an indicator is represented by being further out towards the perimeter with a poor score reflected by being close in to the center.

Figure 13: Regulatory Competitiveness by indicator



Source: IATA Economics

Mexico has a similar score to its regional neighbors for 4 of the 5 indicators. However, for the infrastructure pillar Mexico is in last place, not only among the countries of the region, but among all the countries in the index. The infrastructure pillar captures both physical airport capacity (runway and terminal) as well as the efficiency of the processes to manage capacity allocation where scarcity exists, as is the case at AICM.

The analysis of the previous sections of this report has already shown that the contribution of the aviation sector to the Mexican economy is significant and growing. Passenger demand more than doubled in the decade from 2008 to 2018.

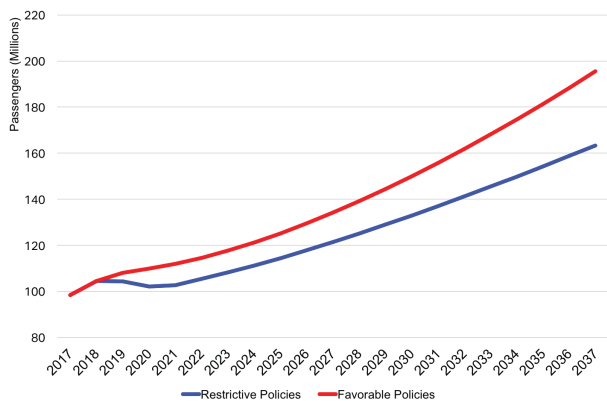
In order for this traffic growth to continue, it is necessary to invest in airport infrastructure, along with an increase in the capacity of seats in new or developing routes. The priority is to address the capacity crunch in Mexico City in a way that encourages the continued development of both domestic and international connectivity and supports Mexico’s status as a regional hub. The Government, the airport operator, the air community and other stakeholders should continue to work together to ensure that the existing capacity bottleneck is unlocked in the manner which best promotes both connectivity and competitiveness.

To understand the importance of addressing the lack of airport capacity in Mexico, IATA, in collaboration with ALTA and ACI-LAC, commissioned a study to evaluate the economic impact of capacity constraints in Latin America. The analysis is based on two forecasts of the "restricted" passenger growth scenario. The scenarios consider the potential impact of limitations on terminal and runway capacity. However, the results and implications of the analysis apply to any restriction on the growth of passengers, whether regulatory, tax, environmental or other measures that limit the capacity of the sector as a whole to respond to consumer demand. The study found that capacity constraints alone could reduce overall demand for travel by more than 20 million passengers per year over the next 20 years. In such a scenario it would be likely that the most price-sensitive passengers would be the ones crowded out of the market, along with the most marginal routes which may serve a valuable social lifeline function.

THE VALUE OF AIR TRANSPORT: TURNING POTENTIAL INTO REALITY

Demand for air travel to, from and within Mexico is forecast to more than double over the next 20 years. However, for this to happen requires a favorable regulatory policy and operating environment with adequate airport infrastructure in place where passengers and shippers require it.

Figure 14: Demand growth under alternative policy scenarios (2017-37)

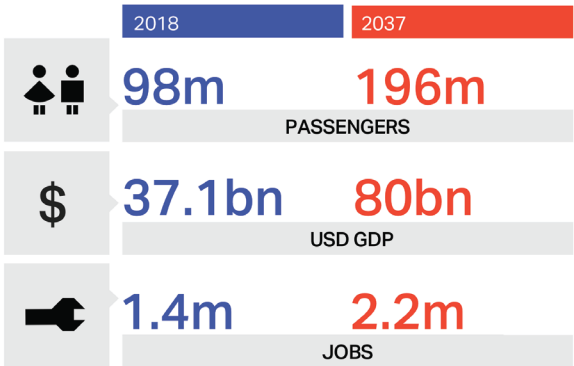


This growth in demand would not only benefit the aviation sector in Mexico. Stimulating traffic and allowing national and international connectivity to reach its full potential would also provide a great boost to the Mexican economy and its competitiveness, as well as making air transport more accessible to an even greater share of Mexican citizens.

Source: IATA / TE Long-term passenger demand forecasts

Figure 15 shows that the economic impact of investing in adequate airport infrastructure and creating a favorable operating and regulatory environment would in turn increase the total number of jobs supported by aviation to more than 2 million by 2037 and the contribution to GDP up to US\$ 80 billion.

Figure 15: Potential value of air transport with favorable policies



Source: IATA Economics



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