ICAO Air Connectivity and Competition

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Connectivity Concept

Capacity of the transport value chain to move passengers, mail or cargo from one point to another, **with minimum transit points**

Which makes trip as shortest as possible

With optimal user satisfaction

At the minimum price possible

Improved connectivity leads to economic growth

Connectivity directly impacts UN Sustainable Development Goals (SDGs)

Airline Competition

- Airline competition has evolved from an era of economic regulation and intervention to an increasing trend towards liberalization.
- This in turn has resulted in the global air transport network transiting from simple networks structures with limited competition and connectivity options of the past to complex structures of today responding dynamically to the changes in regulations and the business opportunities offered by liberalization.

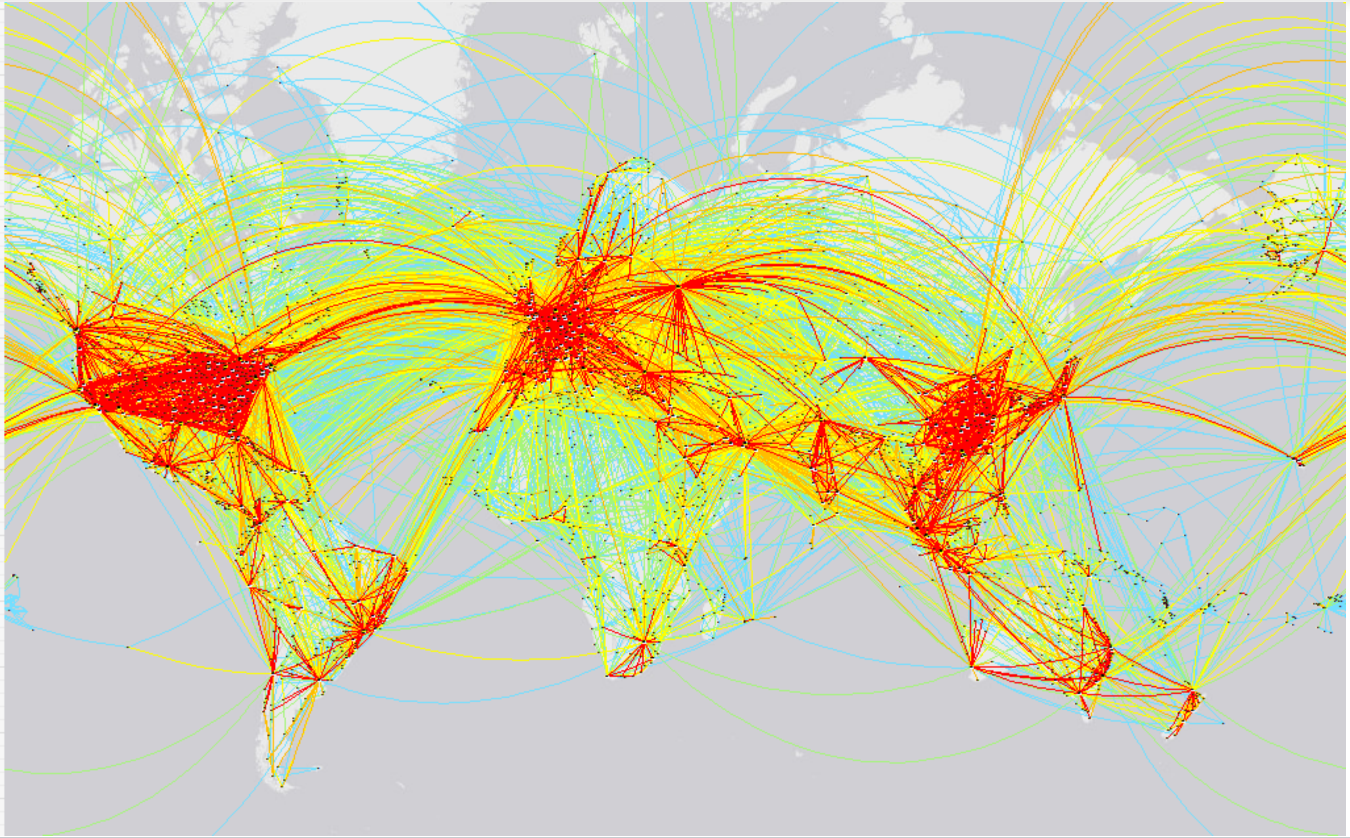
Air Transport Network Characteristics

- The global air transport network is characterized by more connectivity options to customers with a variety of competitive network strategies pursued by the major aviation stakeholders.
- Some of these strategies include decisions related to
  - point to point versus hub and spoke systems
  - yield management to respond effectively to demand through pricing and product differentiation and
  - alliances and mergers.
- These strategies are invariably a trade-off between the most economically efficient path to transport passengers through the various nodes available in the network constrained by real time factors that prevent the network from being the most optimized or efficient

Factors Impacting Route Network

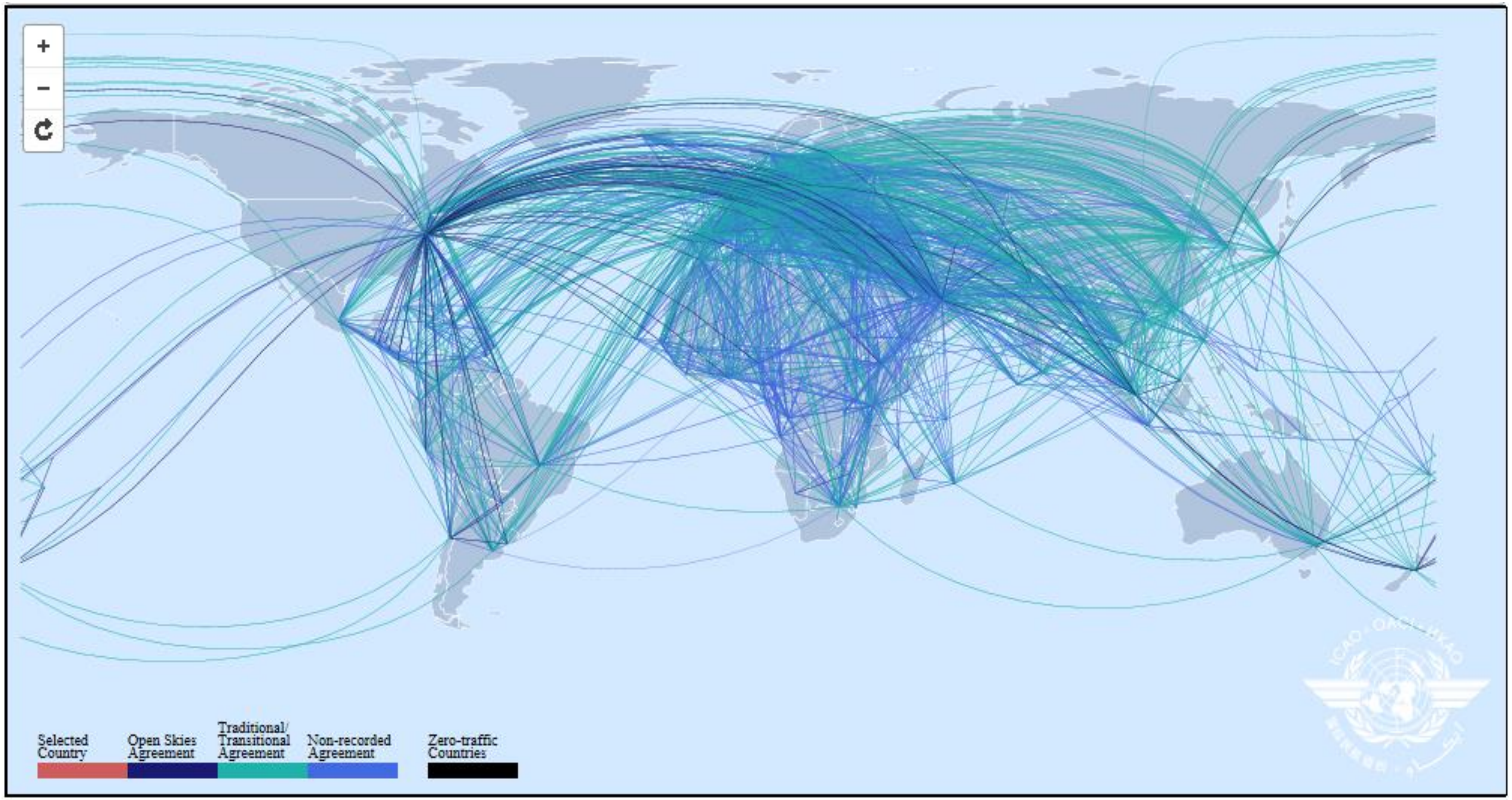
- Size of the market (existing demand) and pricing strategies of existing competitors
- Policy factors –air carrier ownership and control, liberalization and regulation of traffic rights to fly (market access), cross ownerships of aviation verticals, taxation and charging policies.
- Slot availability and other restrictions like lack of infrastructure, night and noise curfews
- Presence of alternative models on a route i.e. low cost carriers versus legacy carriers

Air route network 2015



Source: ICAO

Web of bilateral air services agreements

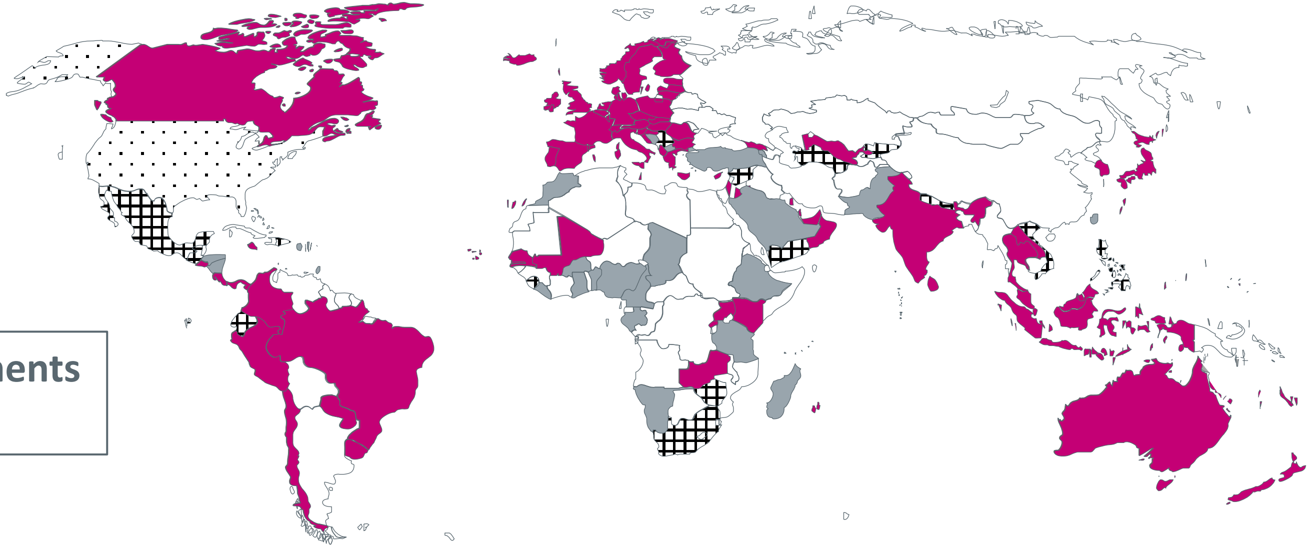


2015 data

Source: *ICAO WASA Map Tool*

Bilateral open skies

- States which signed open skies agreements with both the US and third countries
- States which signed open skies agreements with the US only
- States which signed open skies agreements with the third countries only



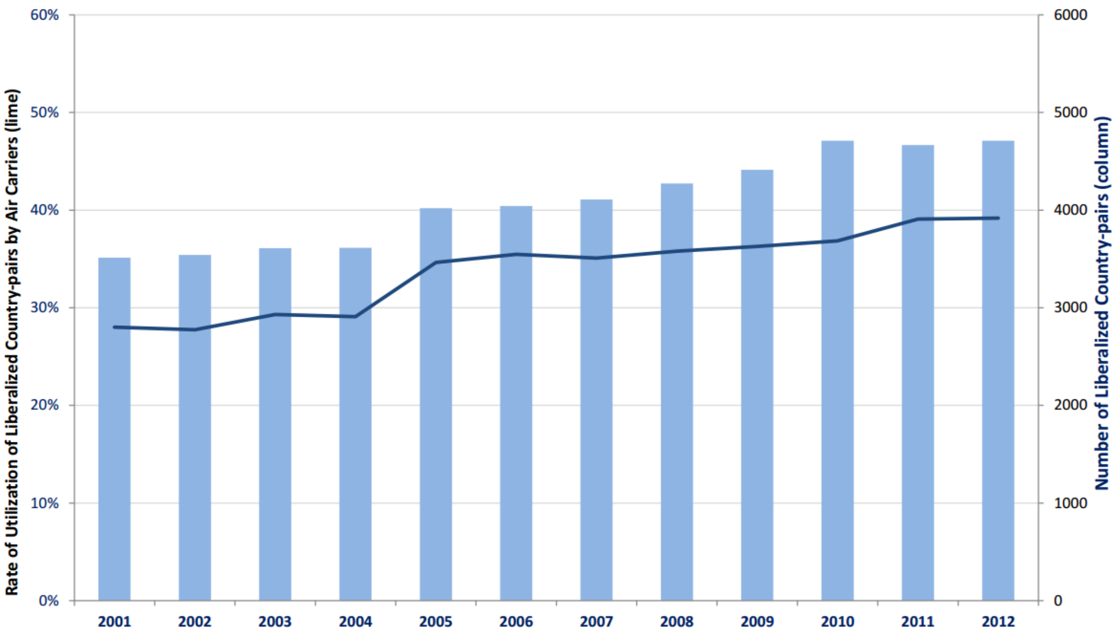
Over 400 Open Skies Agreements involving 146 States

Utilization of air connectivity

Comparing the number of markets made available by air transport liberalization ("available" or "reserved" connectivity) with the number of those markets having actual air services ("real" connectivity)

About 60% of available connectivity opportunities do not have direct flights

A Utilization Rate of Connectivity Opportunities at the Global Level



Source: ICAO

ICAO ECONOMIC DEVELOPMENT

Air Transport Diagnostics Project

Introduction

- ICAO and the Interdisciplinary Centre for Mathematical and Computational Modelling (ICM) of the University of Warsaw have initiated a joint air transport diagnostics project.
- The project aims to better understand the complex dynamics and interlinkages between the various policy factors and market realities that influence the competitive strategies of the aviation stakeholders and the optimization of the global air transport network.
- Outcome of this study could assist policymakers in optimizing connectivity and maintaining sustainable growth of air transport.

Concept of the Project

Decision Support Systems for Informed Policy Making

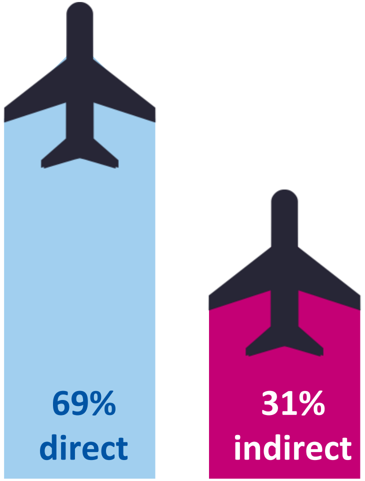
- A visual interactive decision support system (DSS) to ICAO Member States and other stakeholders.
- Indicates areas where the market forces provide potential opportunities to States to further increase connectivity and optimization of the air transport network though appropriate policy initiatives and addresses of constraining factors.

Preliminary Analysis Results

- ICAO and ICM have initially analyzed as a prerequisite for this project, the two major existing factors namely demand and price that influence competitive strategies of the aviation stakeholders and the optimization of the global air transport network.
- A segment of the preliminary analysis based on most recently available data for the year 2015 is presented.

Direct vs indirect flights (Global passenger flow in 2015)

Worldwide Figures



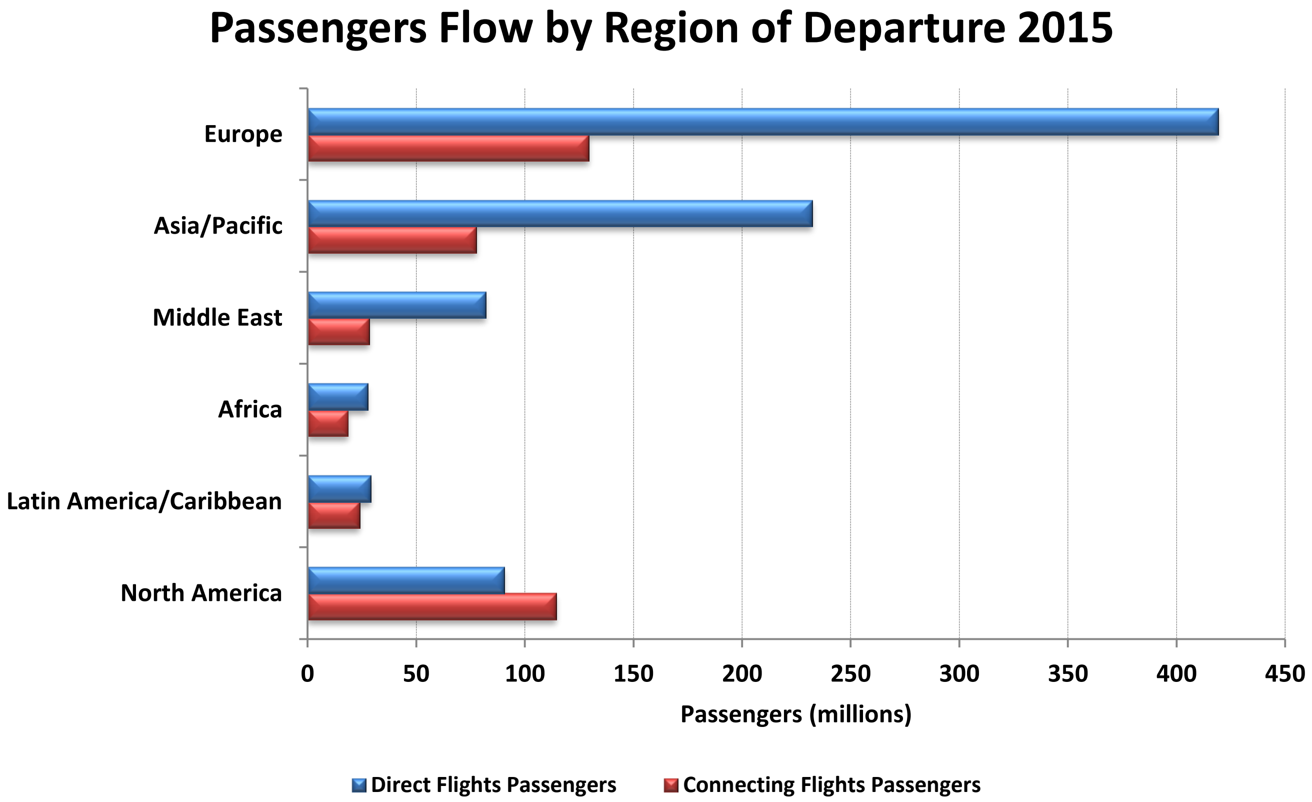
Number of **Total** Passengers
1.3 billion

Number of **Direct** Passengers
880.2million

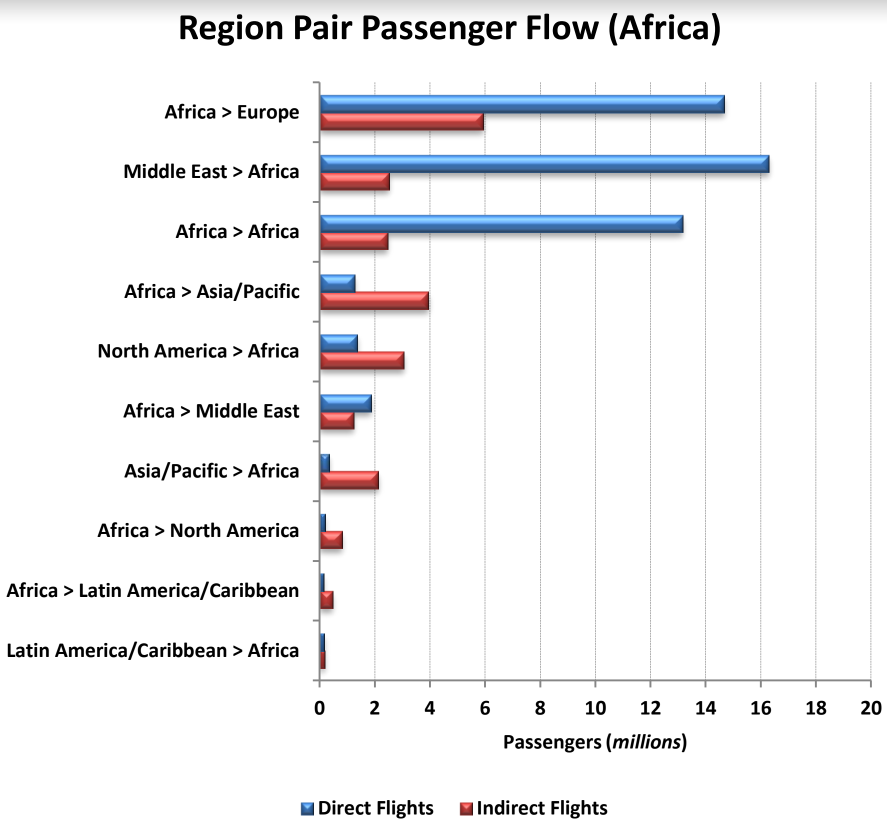
Number of **Indirect** Passengers
391.8 million

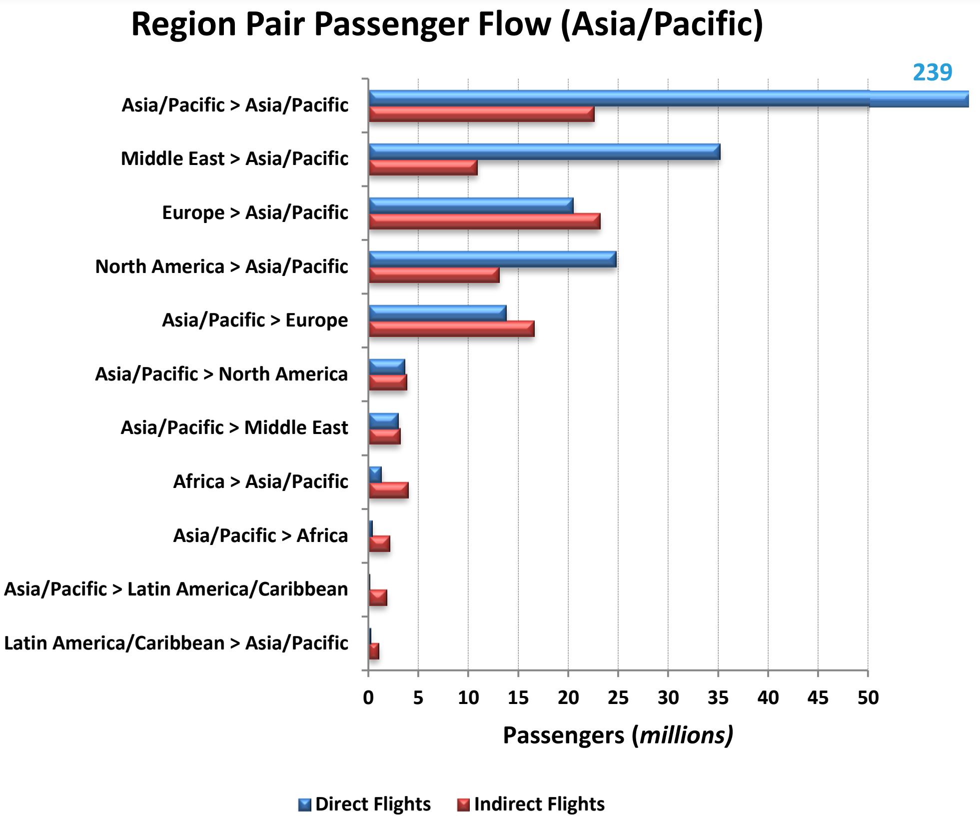
69% of passenger took **direct** flights while **31%** chose **indirect** flights to reach final destinations

Passenger Flow by Region of Departure



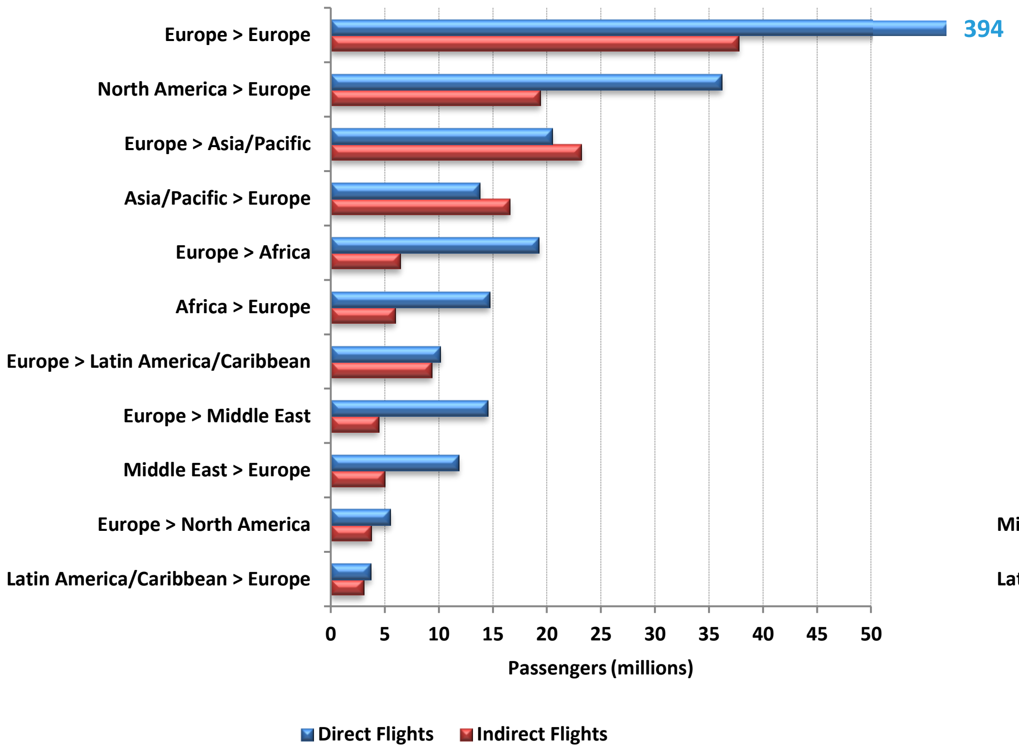
Regional Passenger Flow



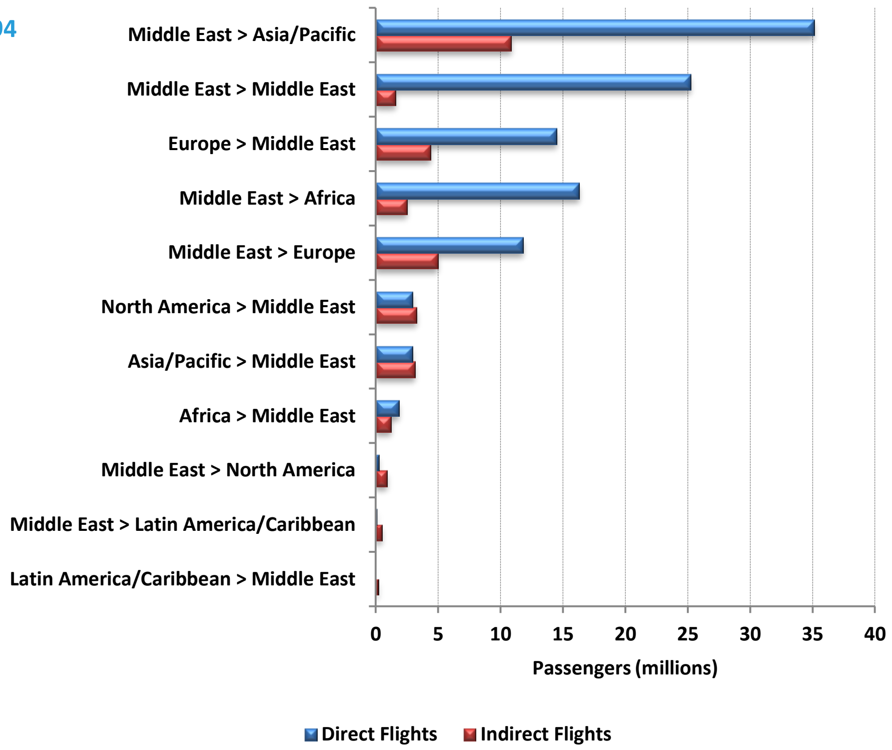


Regional Passenger Flow (continued)

Region Pair Passenger Flow (Europe)

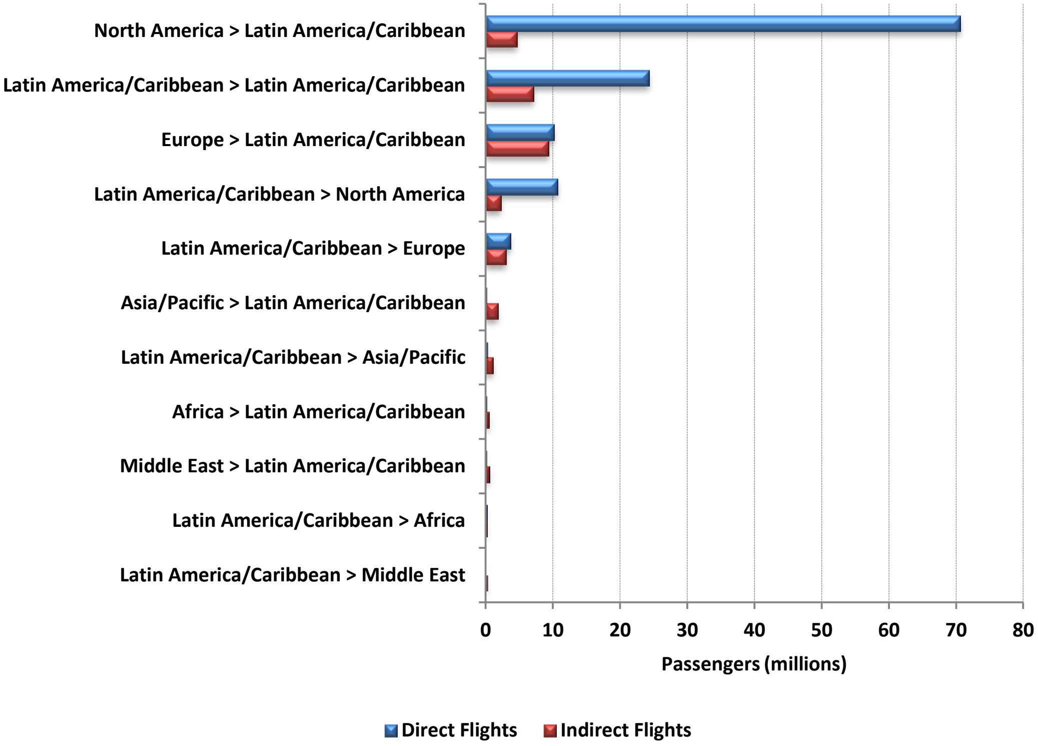


Region Pair Passenger Flow (Middle East)

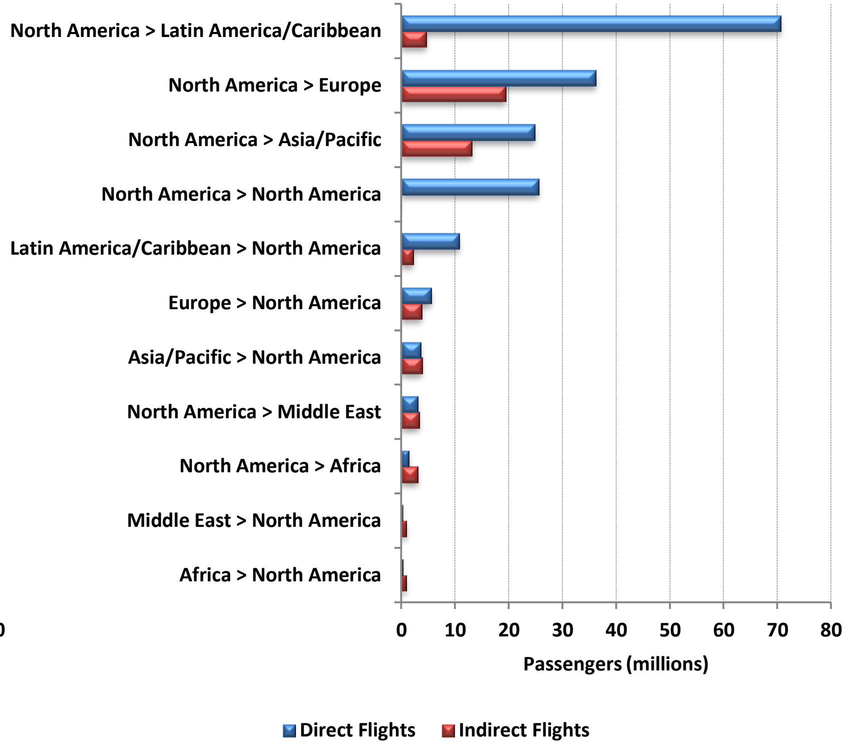


Regional Passenger Flow (continued)

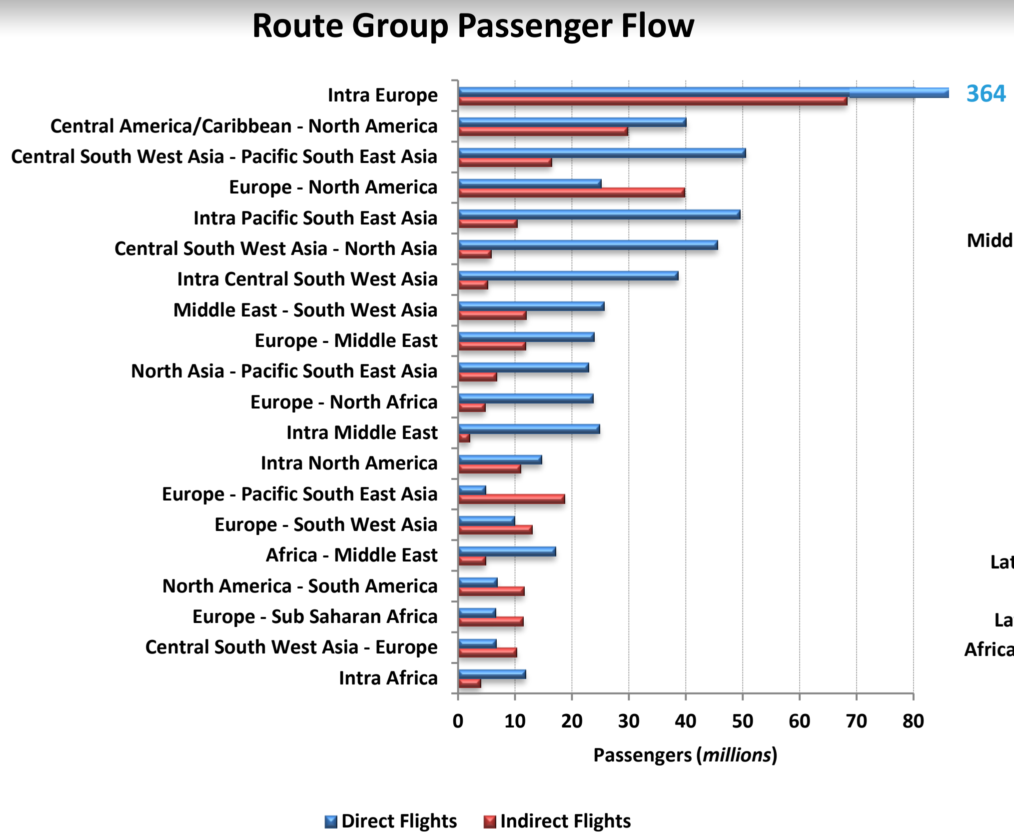
Region Pair Passenger Flow (Latin America/Caribbean)

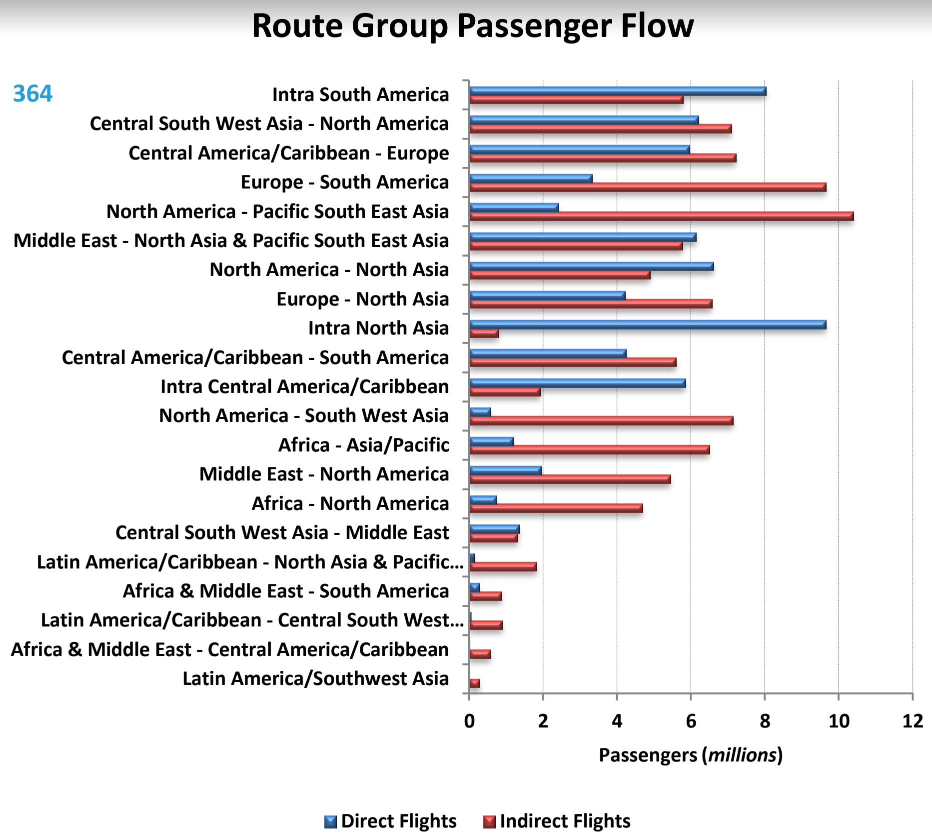


Region Pair Passenger Flow (North America)

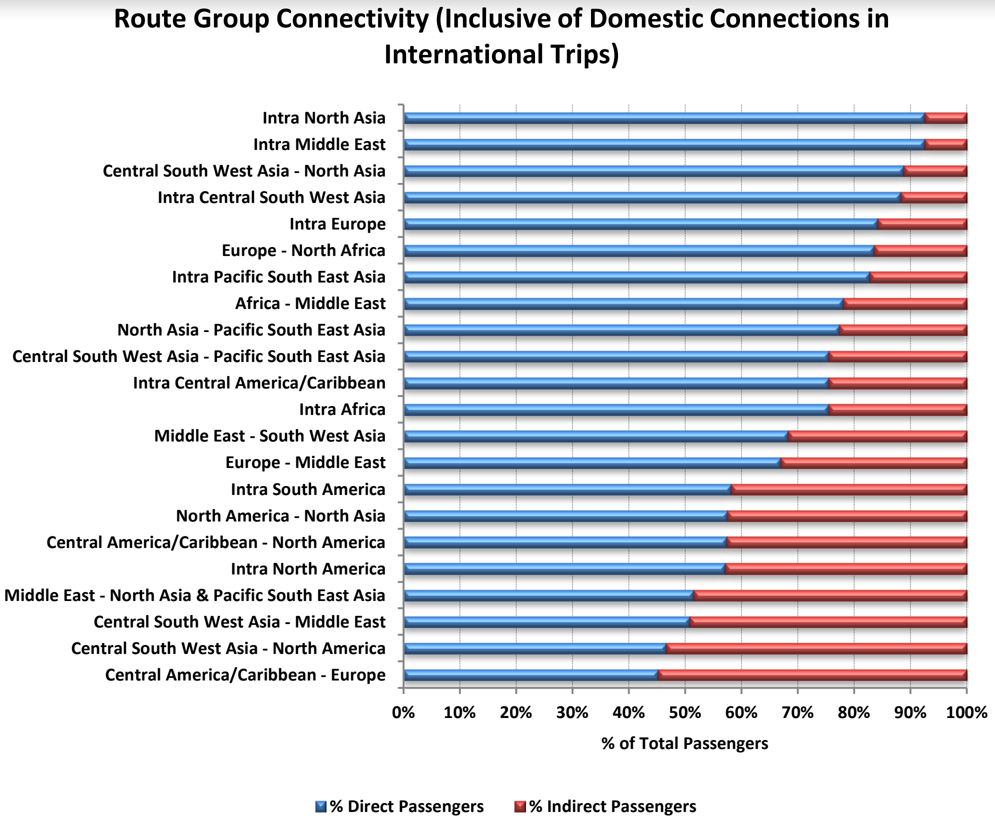


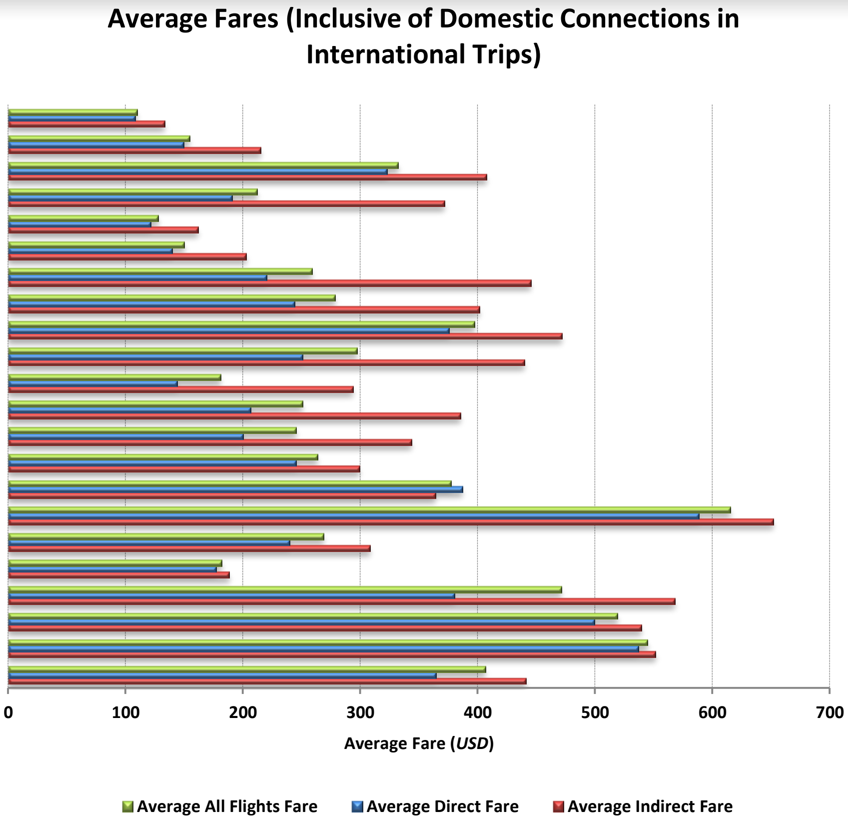
Route Group Passenger Flow



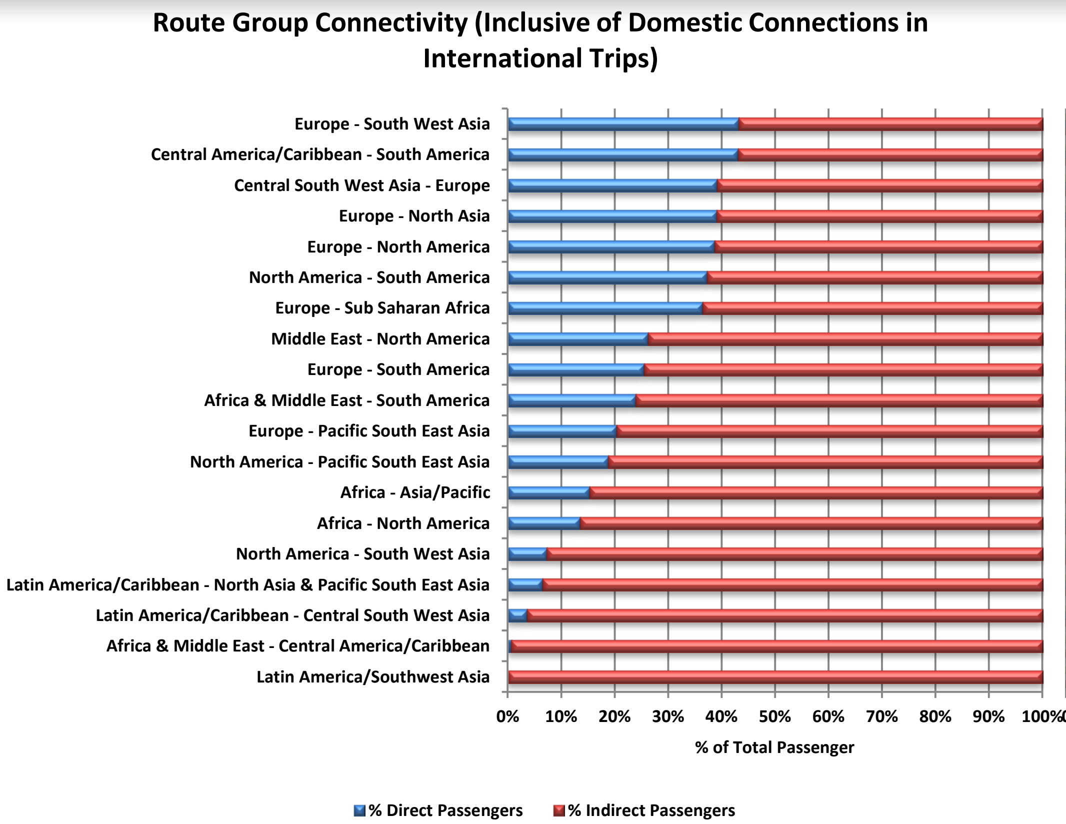


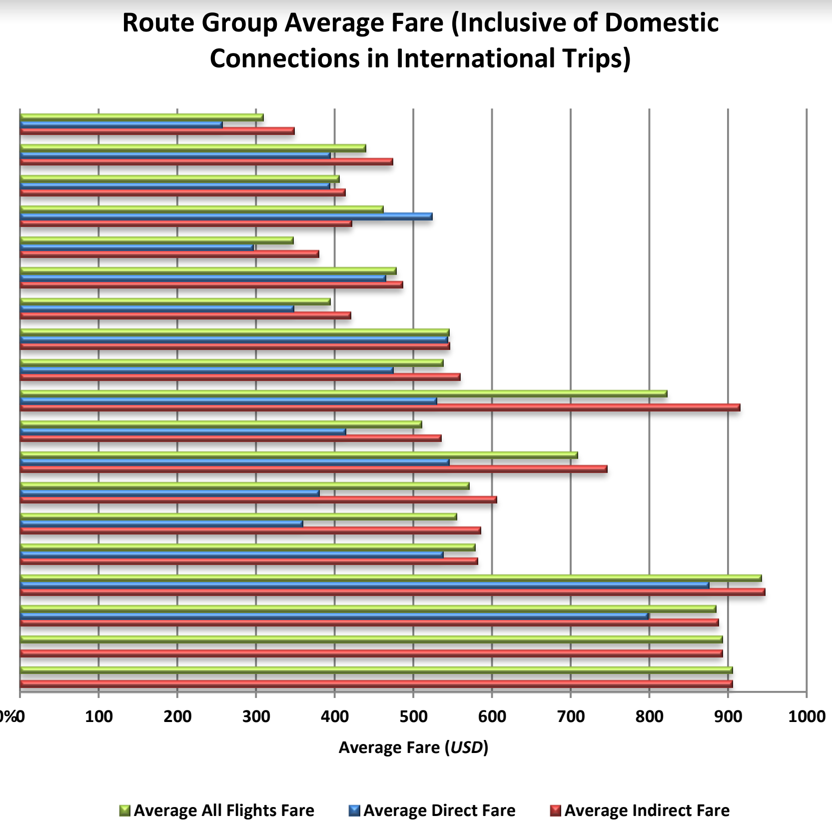
Route Group Average Fares



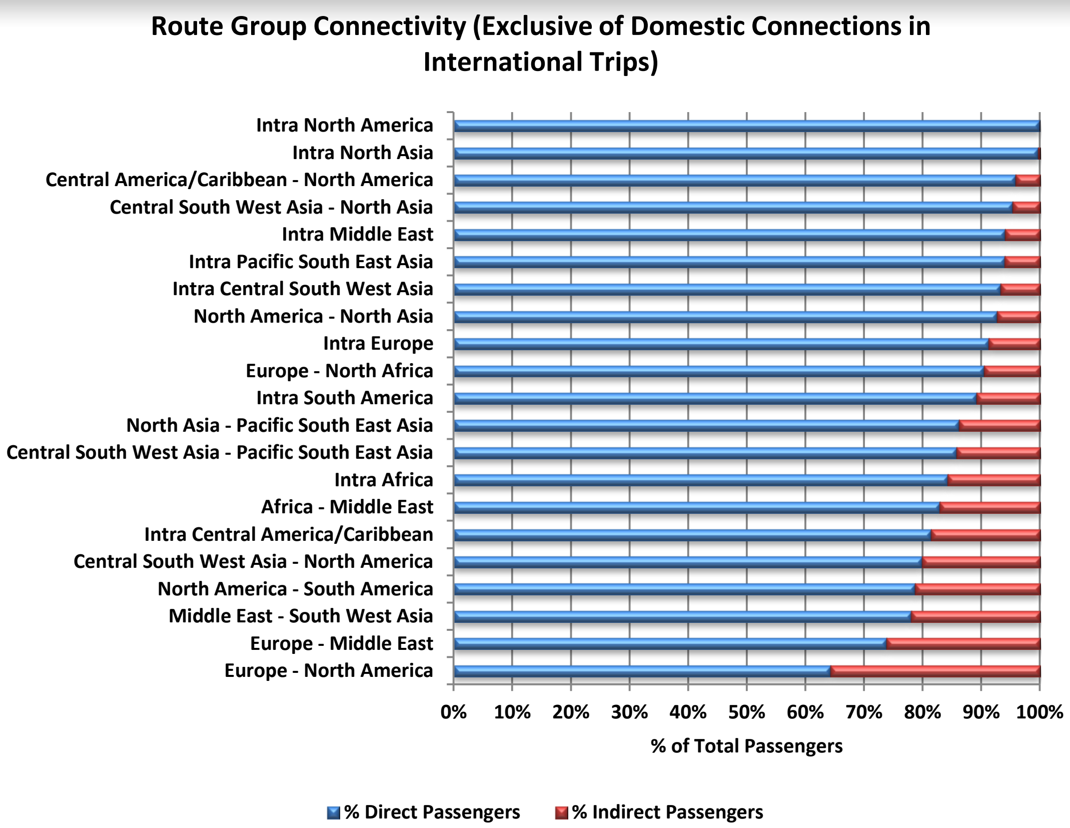


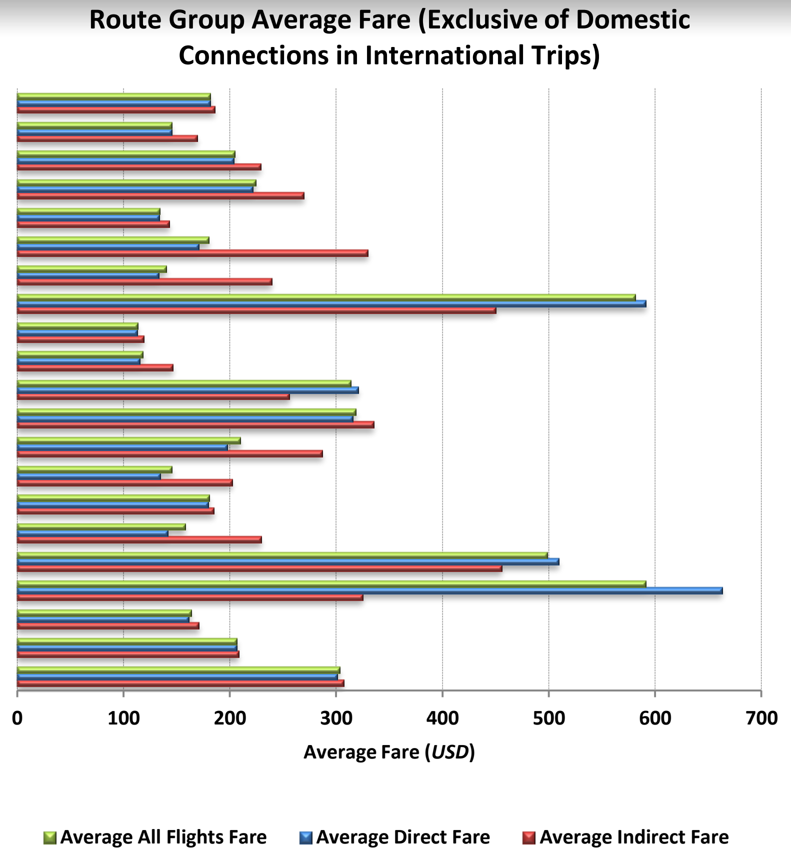
Route Group Average Fares (continued)



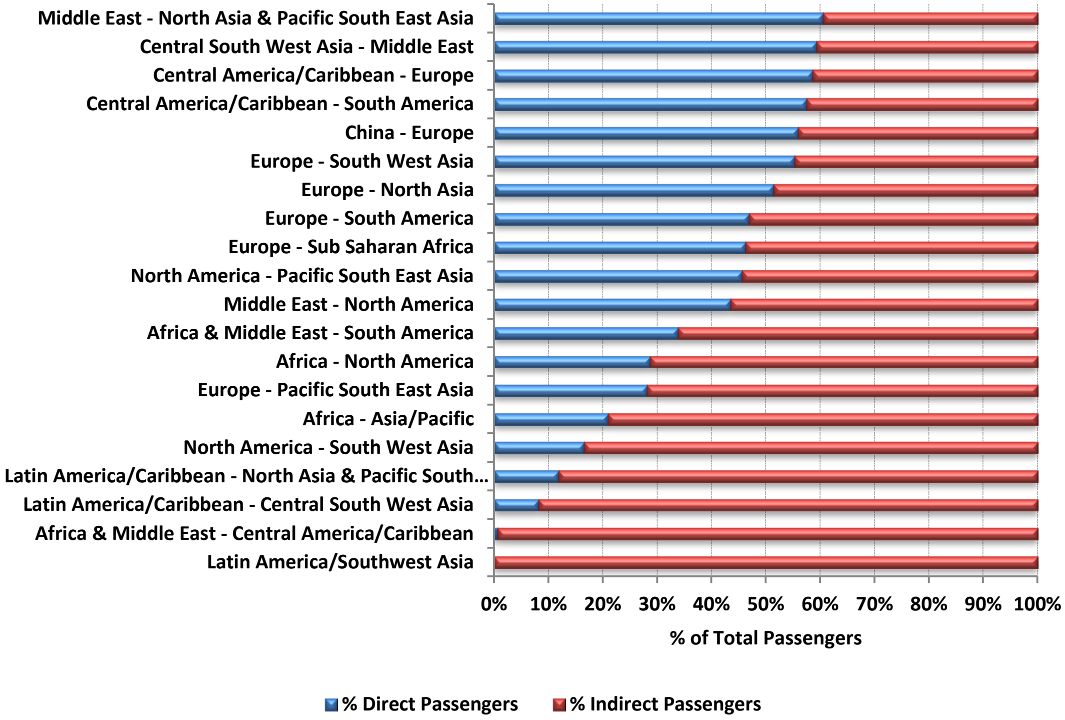


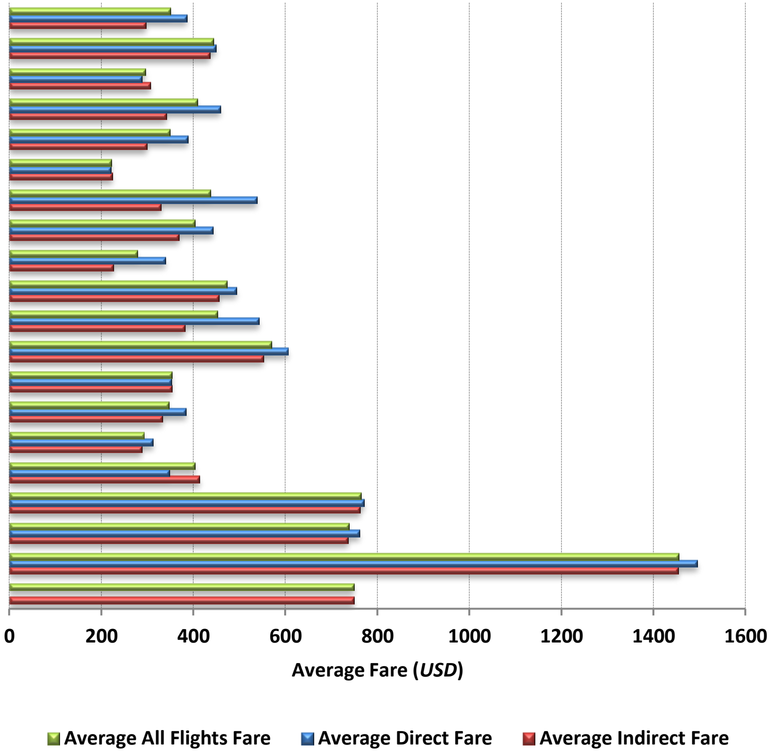
Route Group Average Fares (continued)





Route Group Average Fares (continued)

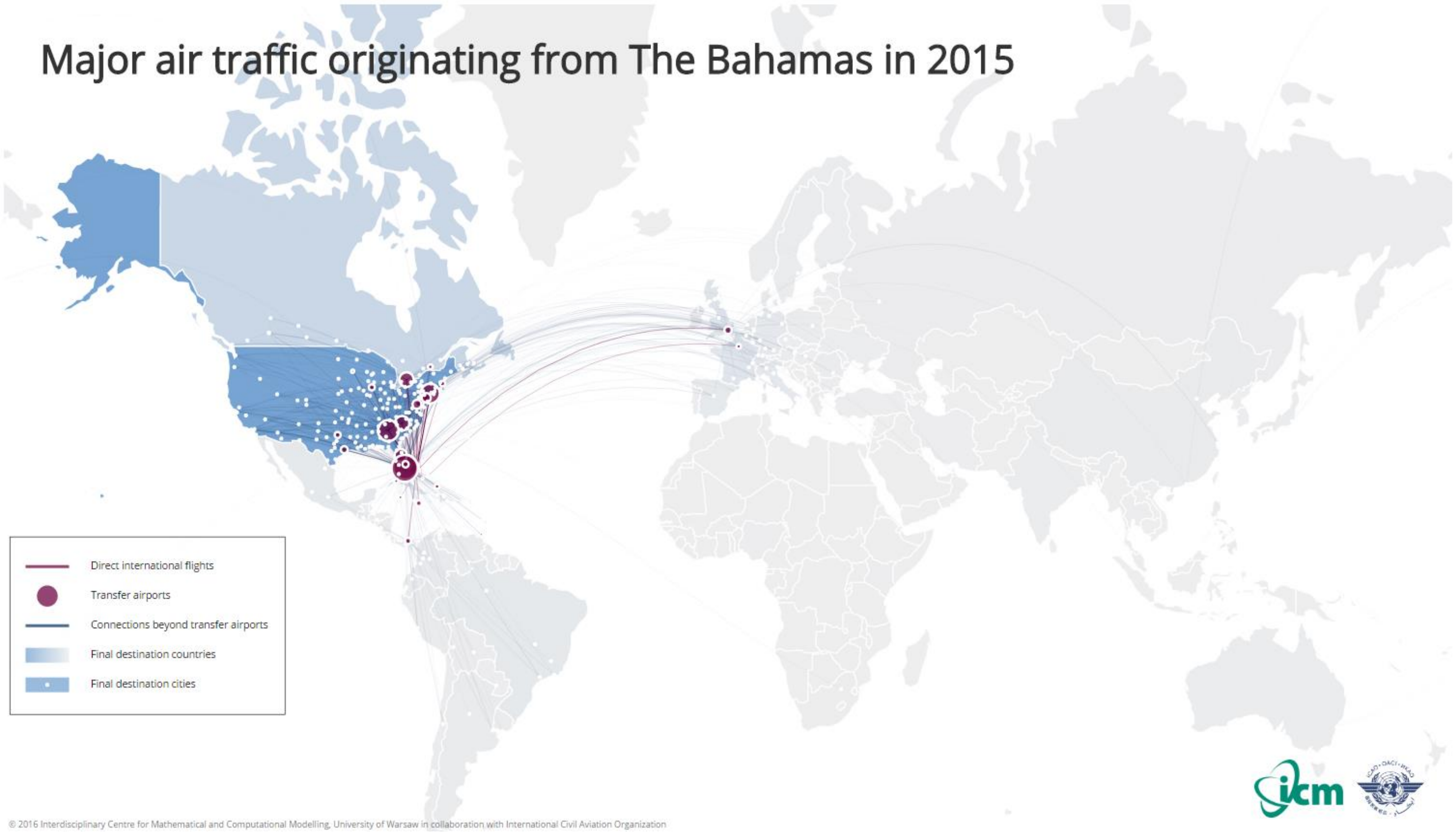




Observations of Preliminary Analysis

- The results of the preliminary analysis encompassing the entire big data set leads to the following overarching observations–
  - With the inclusion of domestic legs on international trips 69% of the passengers in 2015 flew direct to their destination and 31% flew though connecting nodes in the air transport network. Around half of indirect passengers include domestic connections on the international trip.
  - There exists differences in the direct and indirect connectivity at the country pair level which when summarized is reflected at the region pair or route group pair level.
  - Inclusion of domestic legs on the international trip results in higher average indirect fares compared to average direct fares.

Direct vs indirect flights (The Bahamas)

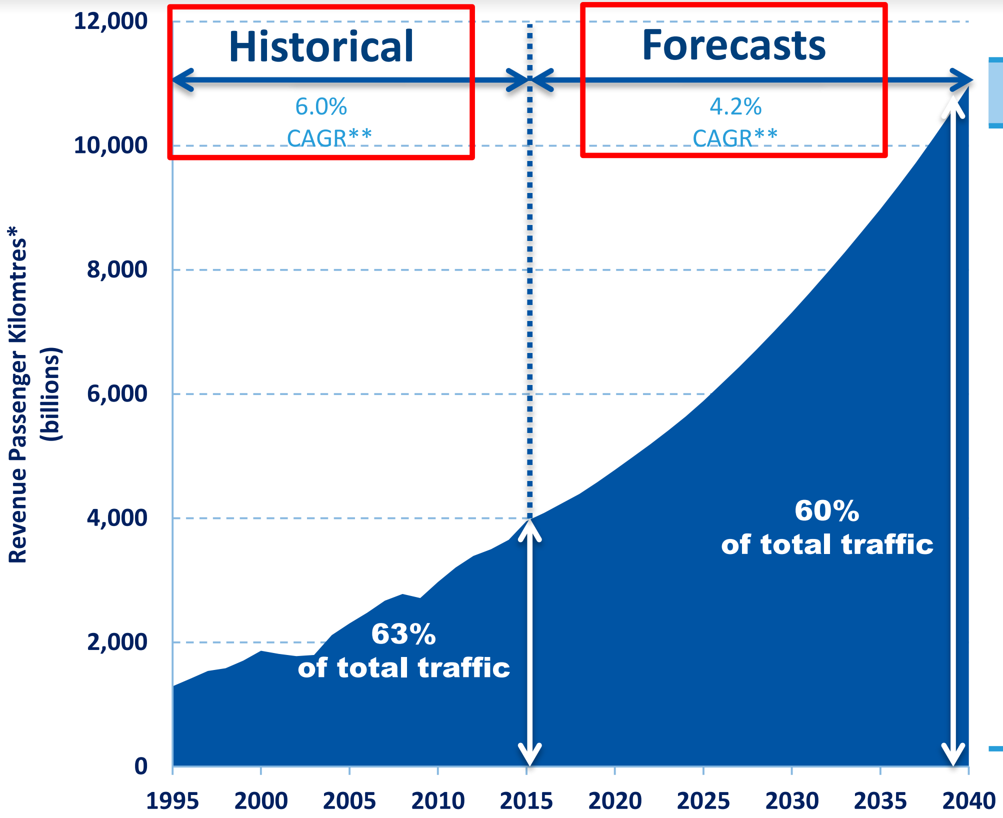


- 103 direct non-stop routes from The Bahamas
- 2,907 O&D city pairs with 773 different connections

Source: *ICAO, ICM University of Warsaw*

Future: Traffic Forecasts

Long-term air traffic forecasts
Scheduled international passenger traffic

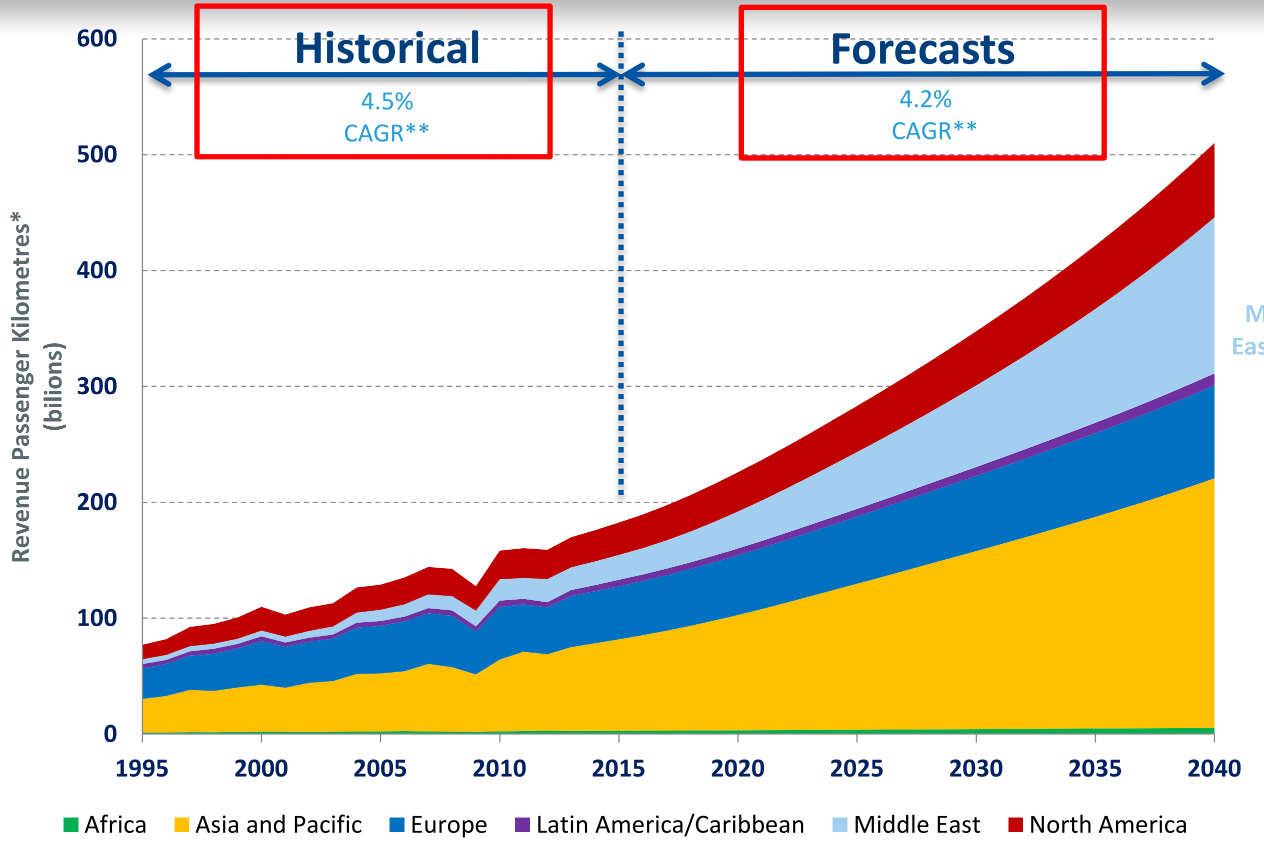


Projected Top 10 Routes 2040

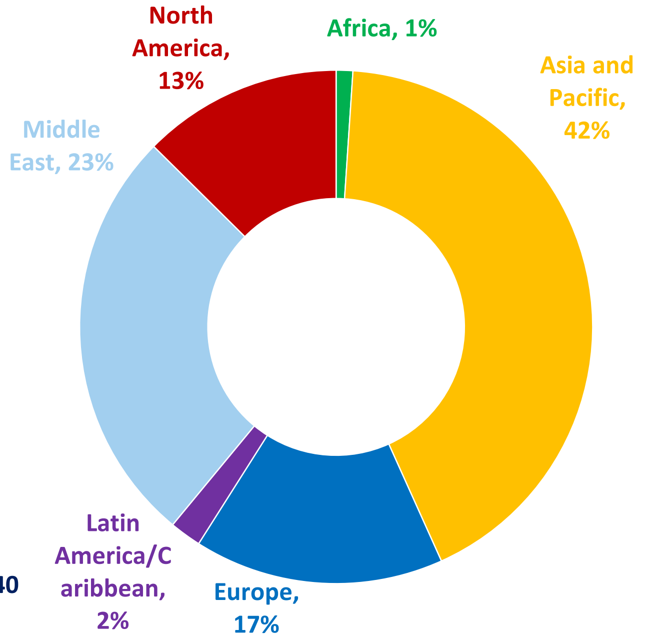
Rank 2040	Rank 2015	Long Term Forecast Route Group	Share 2040	Share 2015
1	4	Central Southwest Asia - Pacific South East Asia	11.9%	5.4%
2	1	Intra Europe	11.5%	15.8%
3	8	Central Southwest Asia - Middle East	11.3%	3.9%
4	2	Europe - North America	9.0%	11.8%
5	3	Central Southwest Asia - Europe	7.3%	5.8%
6	5	Intra Pacific South East Asia	6.1%	4.5%
7	7	Central Southwest Asia - North America	5.9%	4.1%
8	18	Central Southwest Asia- North Asia	4.6%	1.9%
9	6	Europe - Middle East	3.6%	4.5%
10	9	Europe - Pacific South East Asia	3.5%	3.6%

*Scheduled Services **Compound Average Annual Growth Rate

Long-term air traffic forecasts
Scheduled international freight traffic



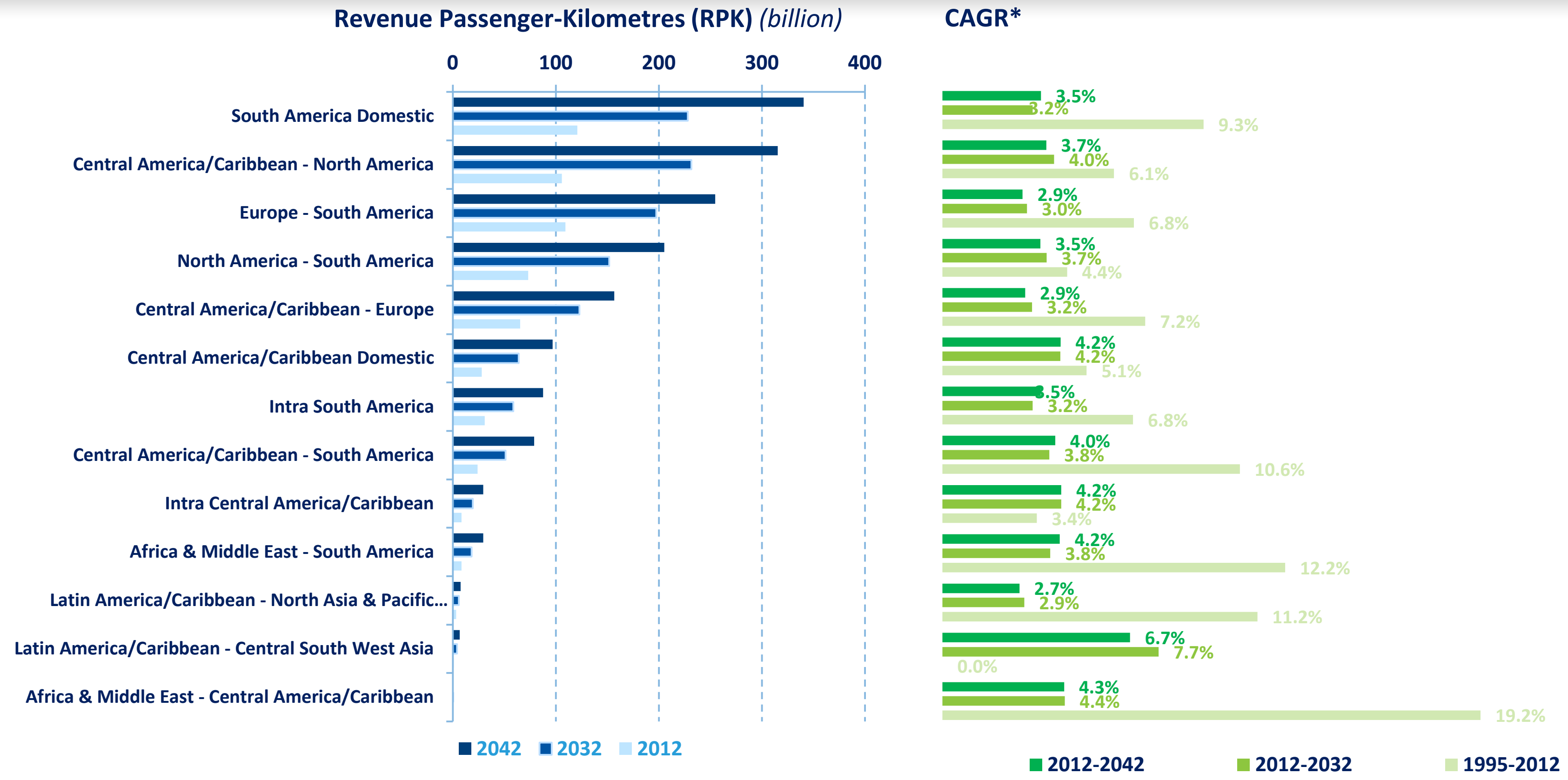
Projected International Freight Traffic Breakdown by AOC 2040



*Scheduled Services **Compound Average Annual Growth Rate

ICAO ECONOMIC DEVELOPMENT

Top route groups in 2032 out of Latin America/Caribbean



Source: ICAO

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THANK YOU