



MIT International Center for Air Transportation

Factors Influencing the Emergence of Secondary Airports in the United States

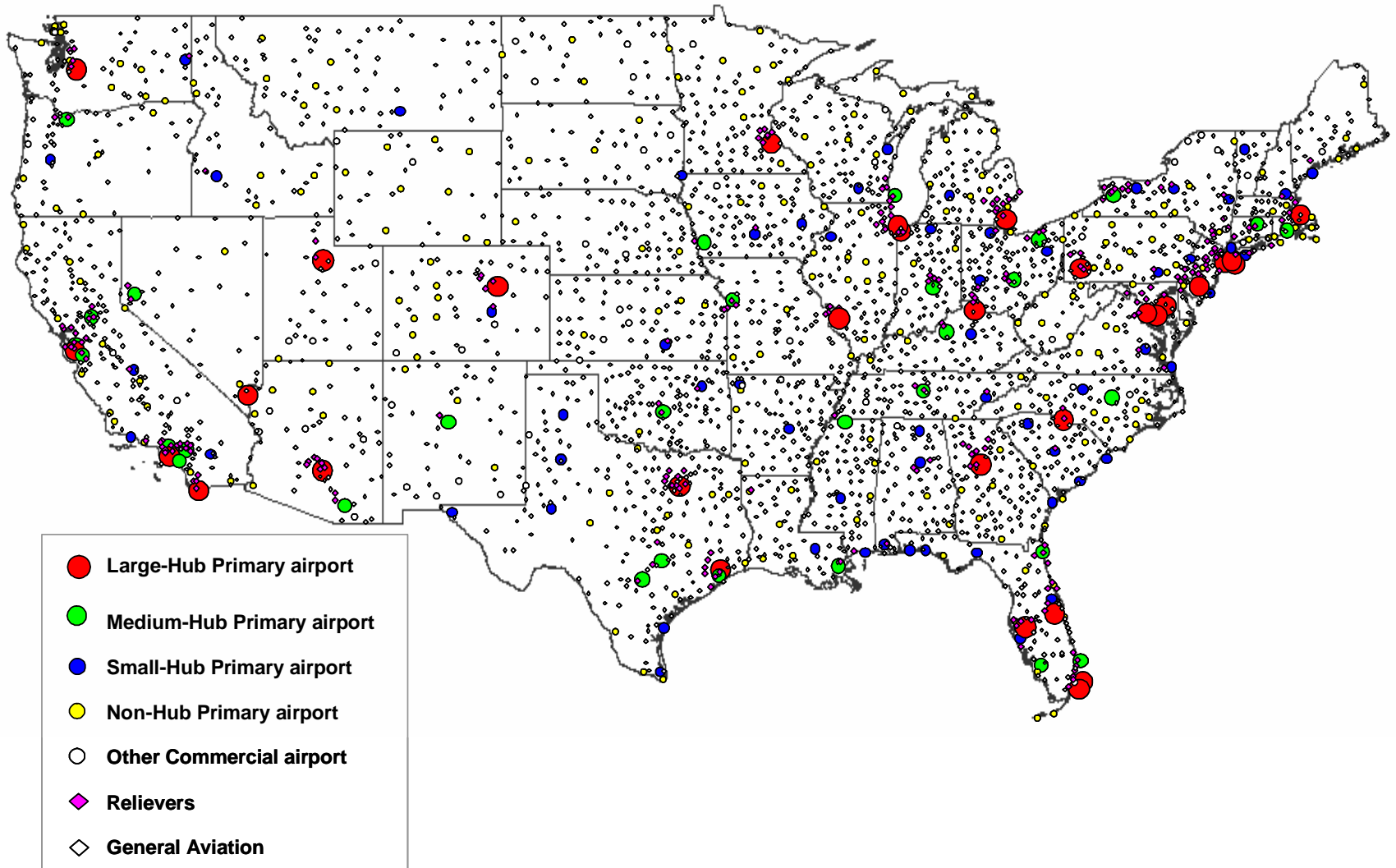
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& Prof. R. John Hansman**

**MIT - Global Airline Industry Program
November 4th 2004**



Motivation

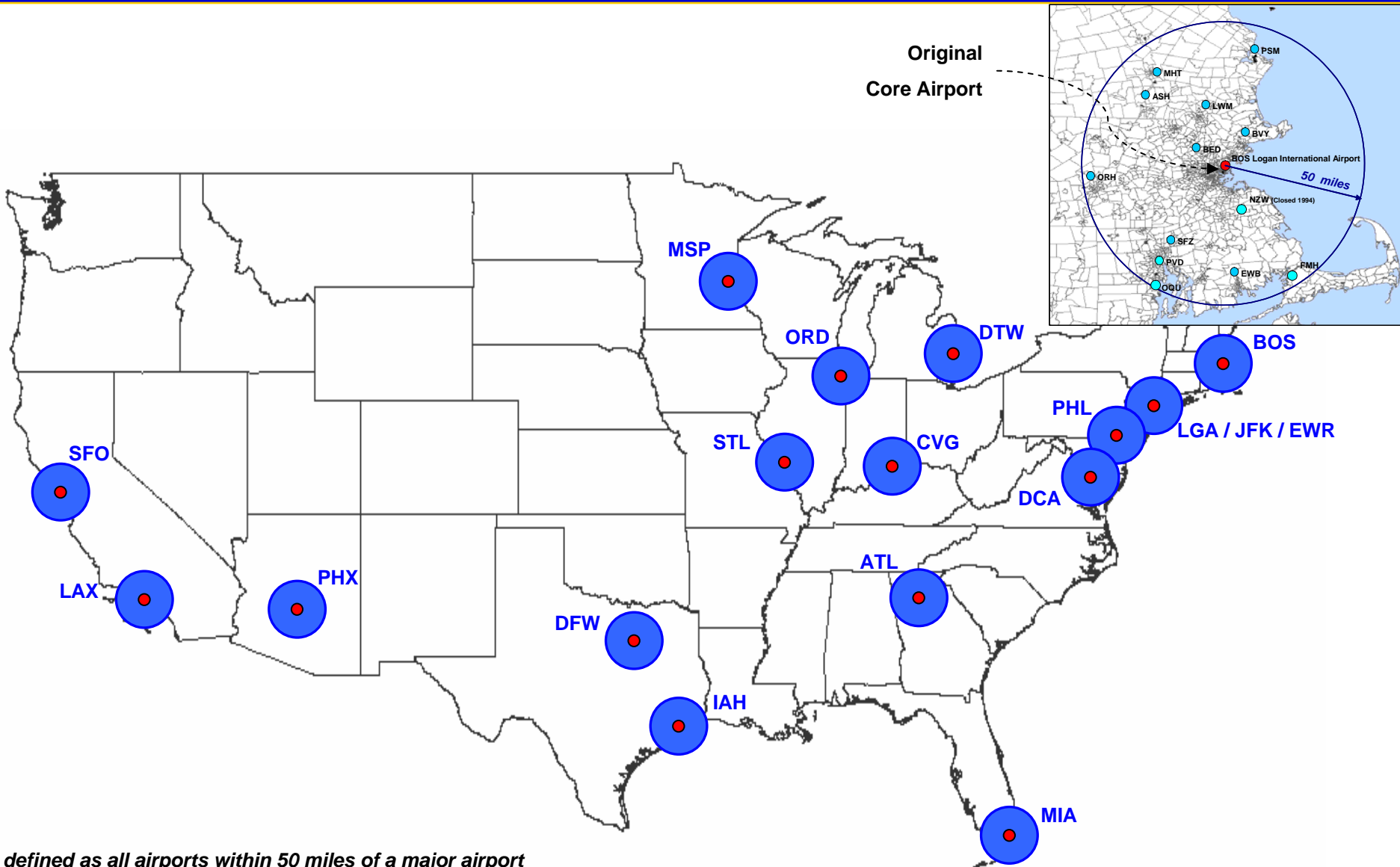
- **Airports** (runways) are key **constraints** in the National Airspace System
(e.g. La Guardia in 2000, Chicago O'Hare in 2003)
- Potential **capacity increase** is **limited** at major airports
Capacity Shortage* is expected over the next 20 years (even with current OEP)
* Reference: FAA, *Capacity Needs in the National Airspace System*, 2004
- **Passenger enplanements will grow** in the upcoming years
- **Decreasing size of aircraft**
- **Greater number of operations** are expected in the **NAS**
- Increasing **pressure on major airports**
- Underutilized **secondary airports** are an **alternative** for accommodating part of the future growth
- **Understand the dynamics of the system** at both the regional and the national level of the emergence phenomenon. Understand **the factors influencing the emergence of secondary airports.**





Airport Systems* Studied

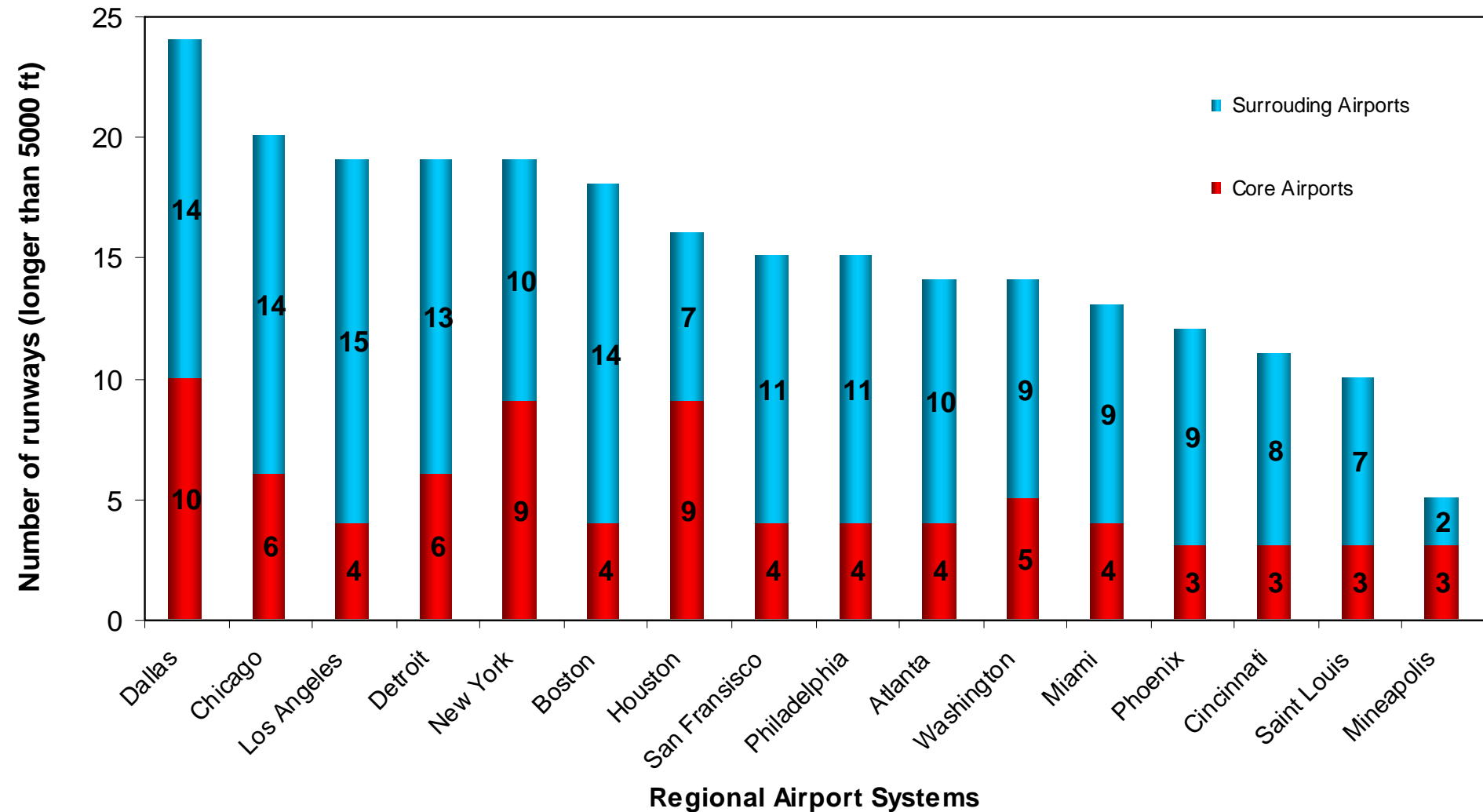
based on the 18 airports that experienced the highest percentage of delayed operations in 2000



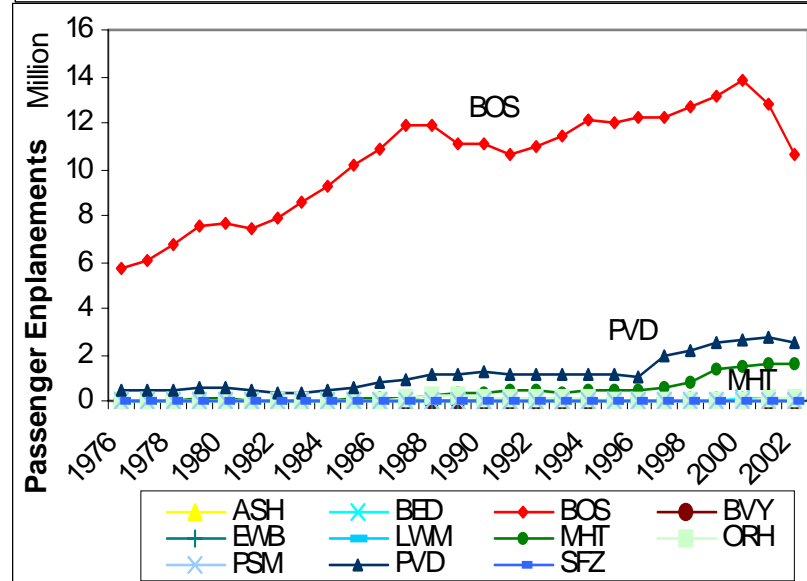
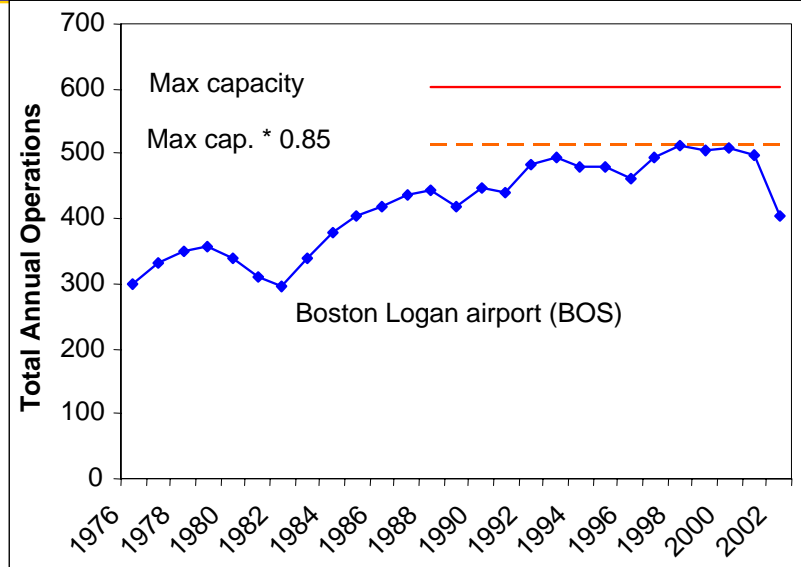
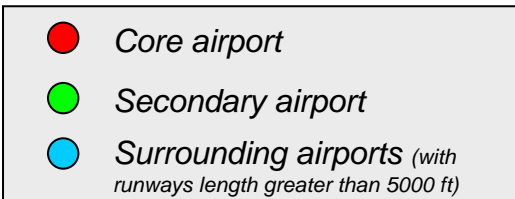
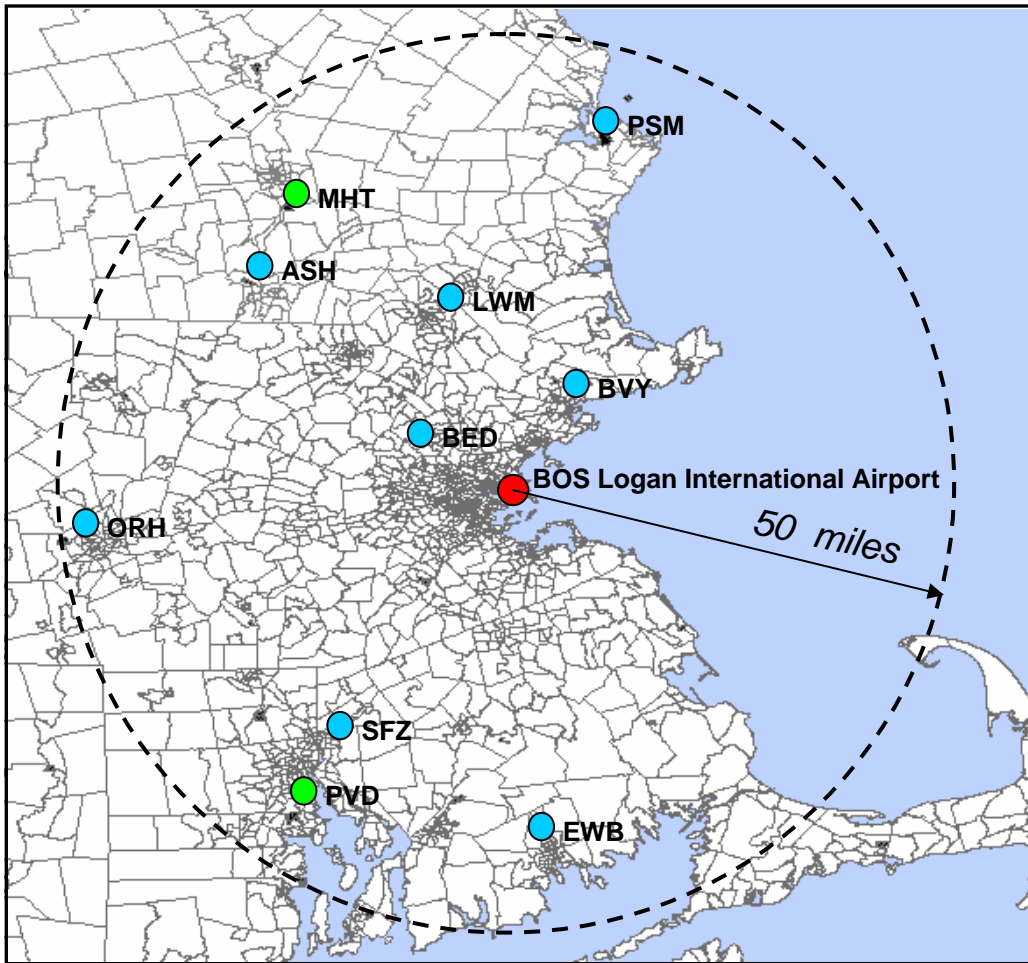
* defined as all airports within 50 miles of a major airport

Availability of Runways at the Regional Level

(runways longer than 5000 ft)



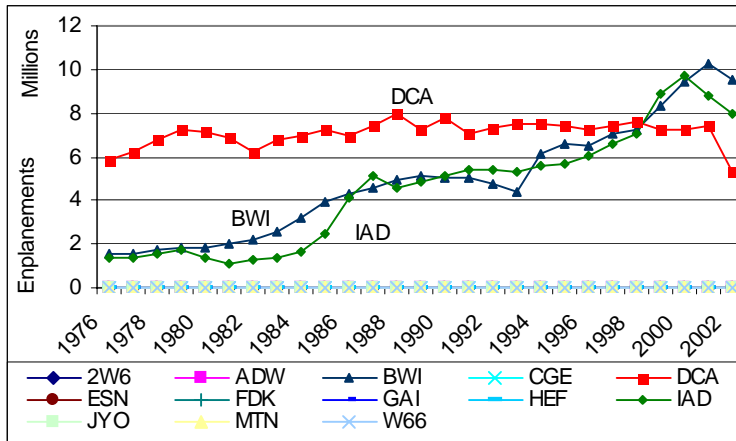
Boston Metropolitan Area Case Study



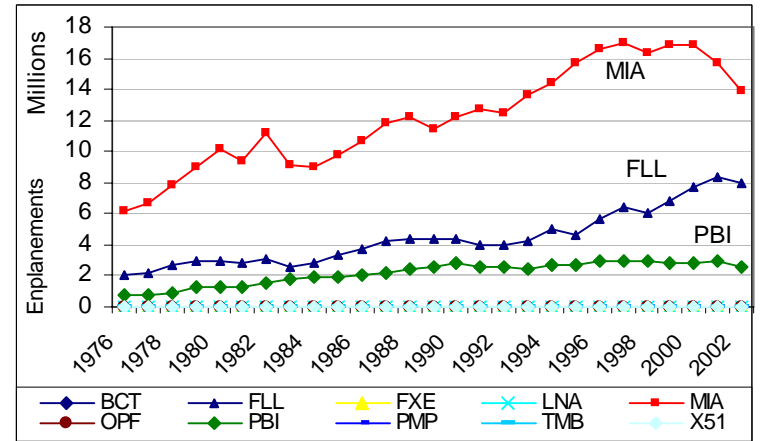
Data source: Historical data from FAA Terminal Area Forecasts



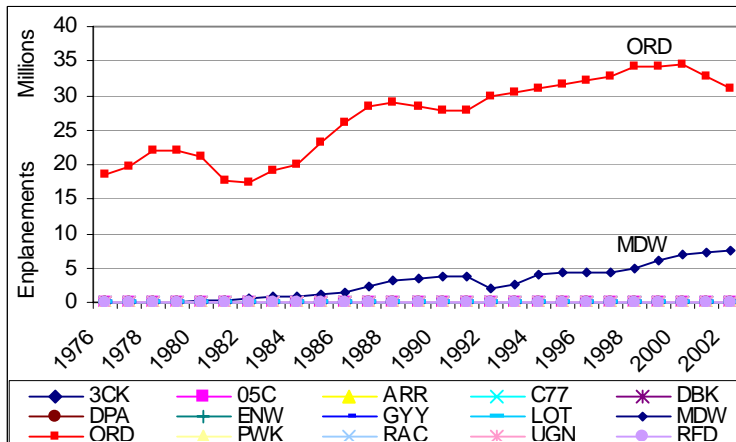
Passenger Enplanements Analysis



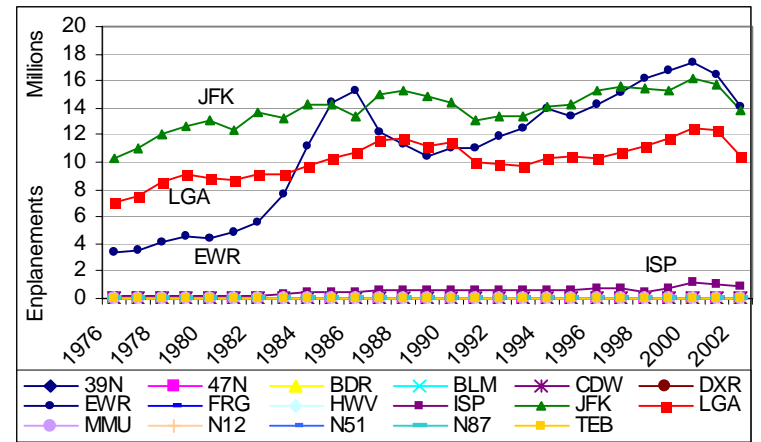
Washington Region



Miami Region



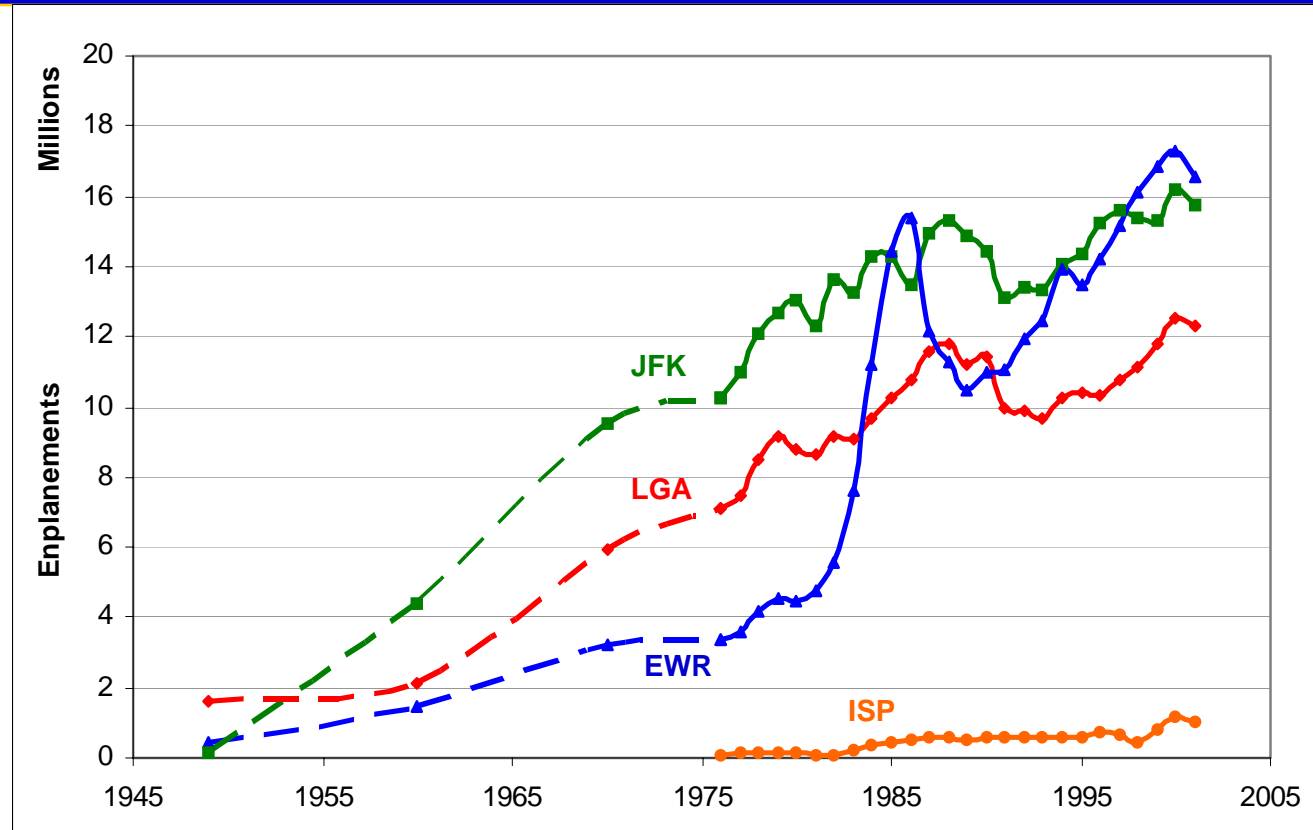
Chicago Region



New York Region



Evolution of the Passenger Enplanements at LGA, JFK, EWR and ISP



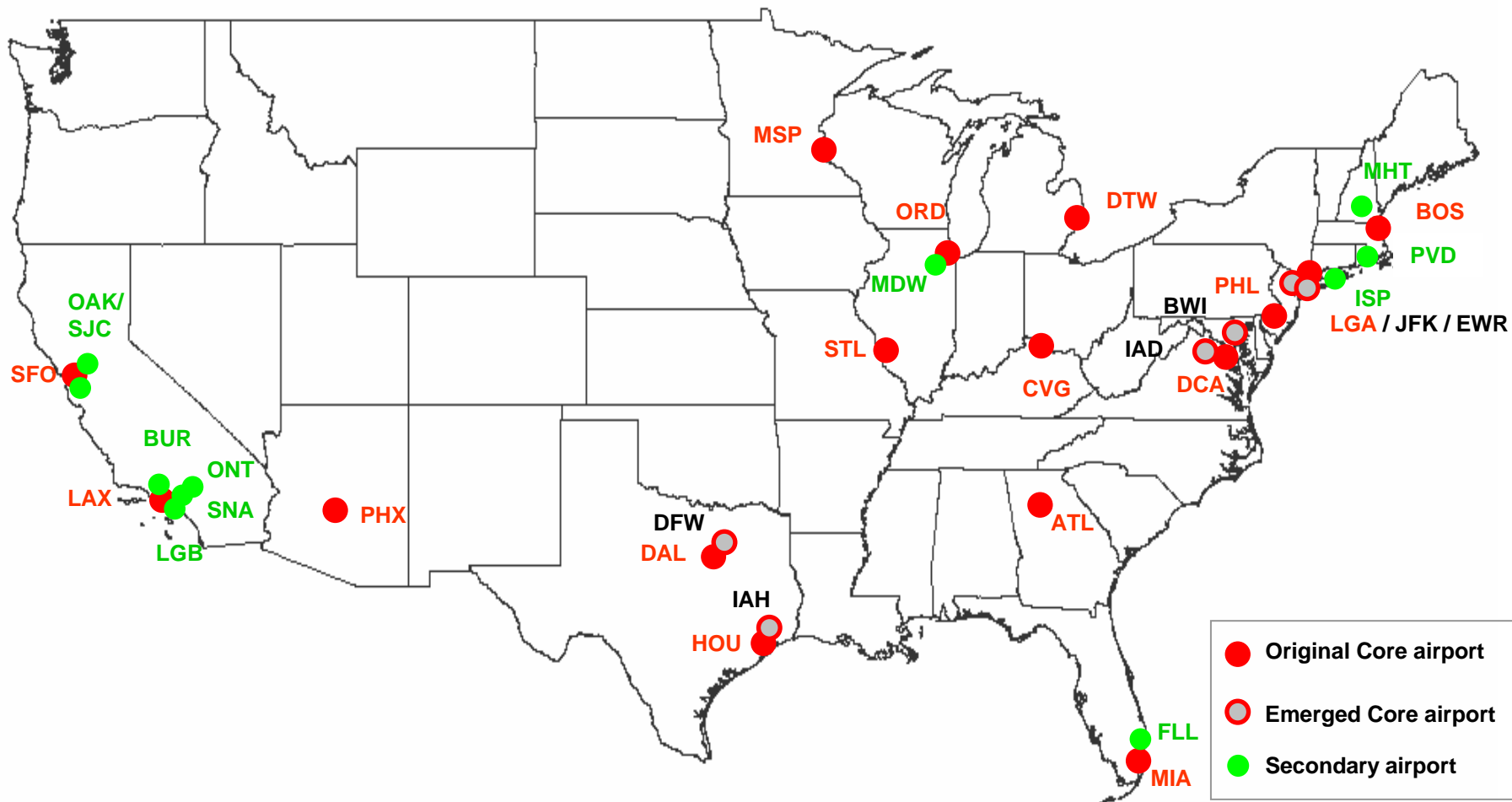
LGA	Original Core Airport	
JFK	Emerging Secondary Airport	Emerged Core Airport
EWR		Emerging Secondary Airport
EWR		Emerged Core Airport
ISP		Emerging Secondary Airport

Data source: From 1949 to 1976: Port Authority of New York and New Jersey (<http://www.panynj.gov>)

From 1976 to 2001: Historical data from FAA Terminal Area Forecasts



Emerging Core Airports & Secondary Airports





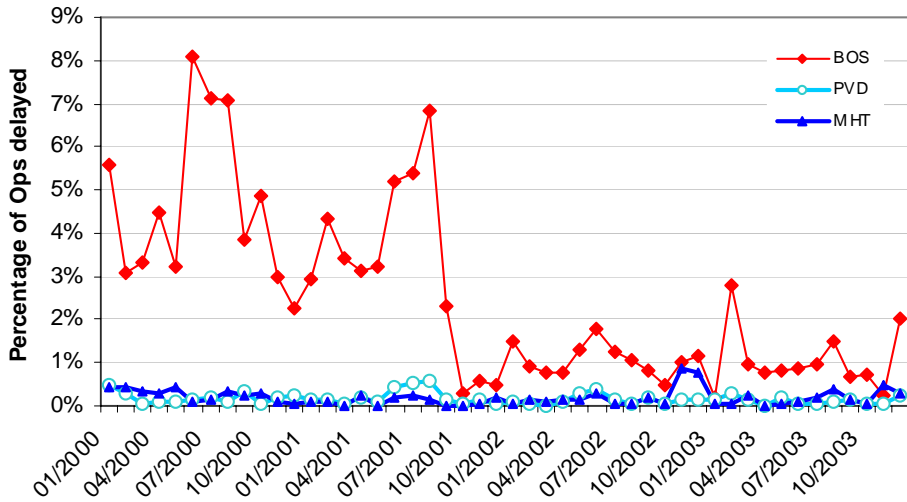
Factors Influencing the Recent Emergence of Secondary Airports

Congestion at a core airport

- Level of Service offered at the core airport



Delays at major and secondary airports



Evolution of percentage of operations delayed at :

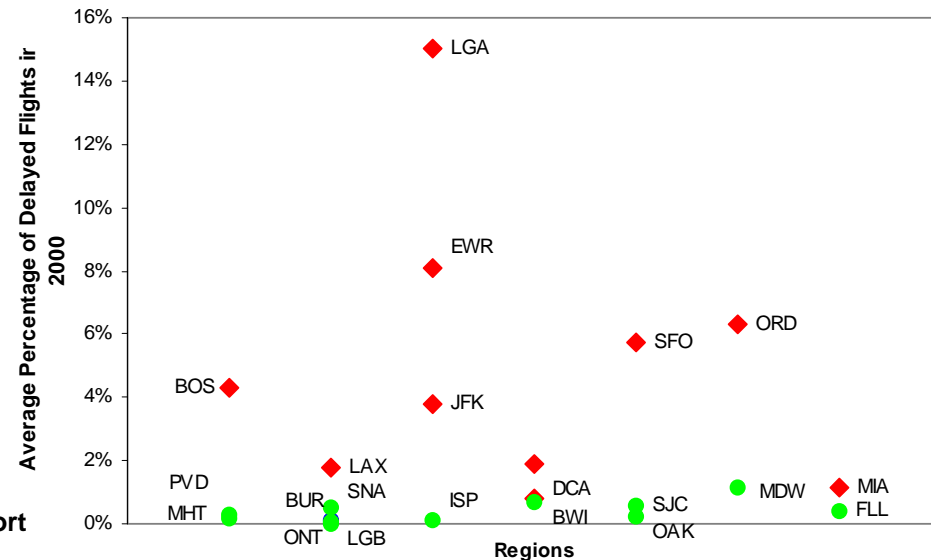
Boston Logan
Manchester
Providence

- Level of delays in 2000 and early 2001
- Impact of 9/11

Analysis of core and secondary airports at 7 regional airport systems

High delays at core airports
⇒ Low level of service

- ◆ Core airport
- Secondary airport





Factors Influencing the Recent Emergence of Secondary Airports

Congestion at a core airport

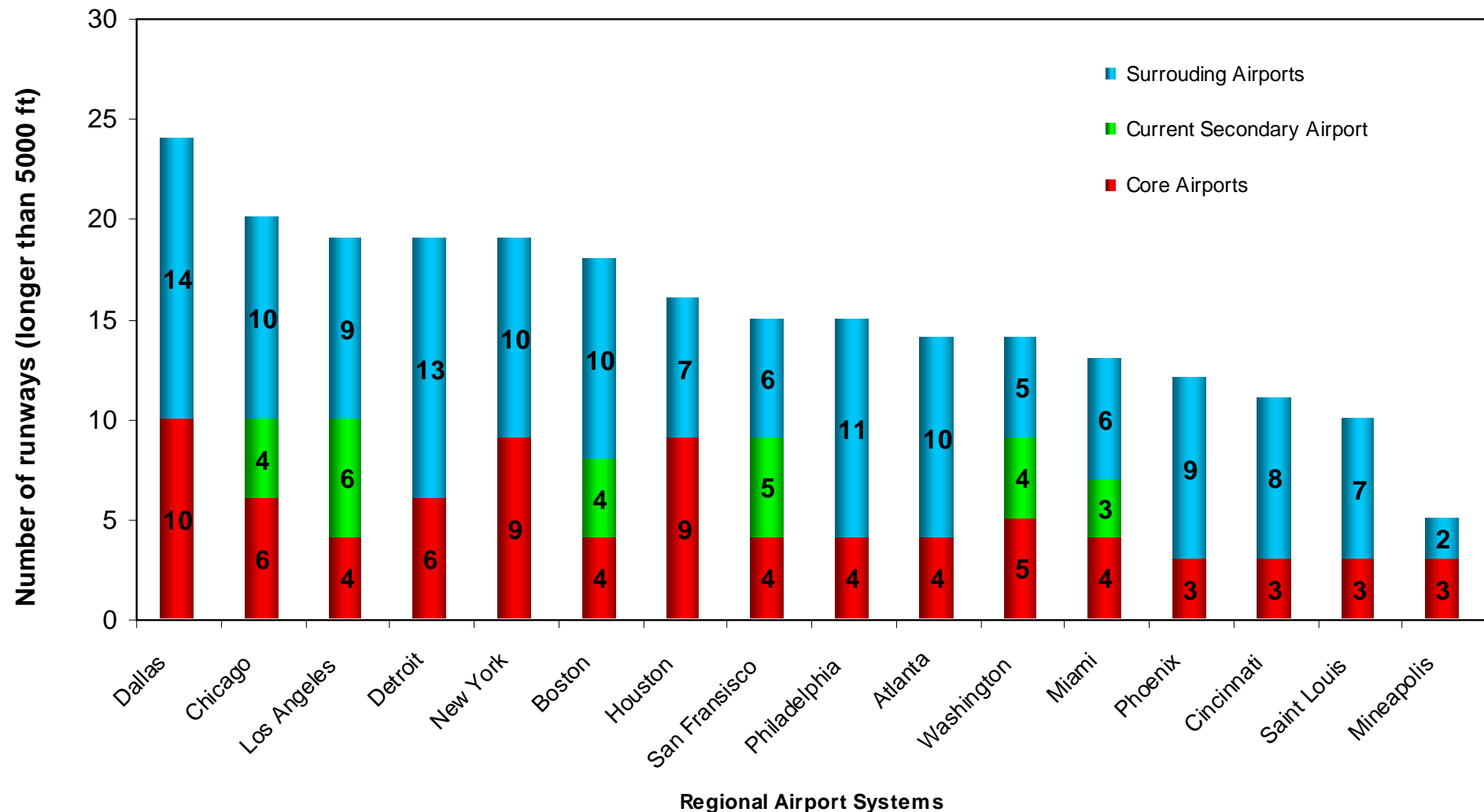
- Level of Service offered at the core airport

Availability of capacity at the regional level



Remaining Availability of Runways at the Regional Level

(runways longer than 5000 ft)





Factors Influencing the Recent Emergence of Secondary Airports

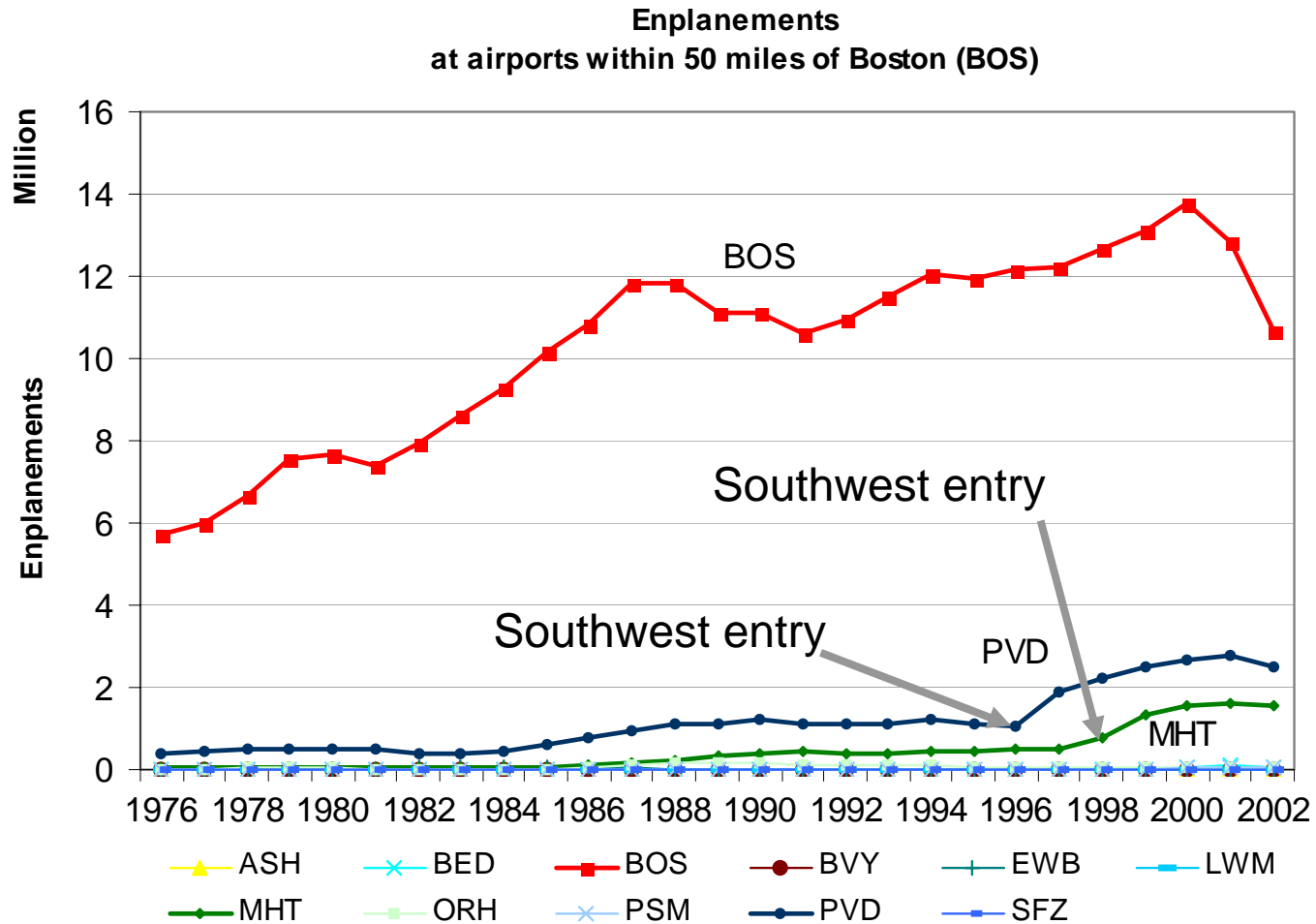
Congestion at a core airport

- Level of Service offered at the core airport

Availability of capacity at the regional level

Entry of a Low Cost Carrier

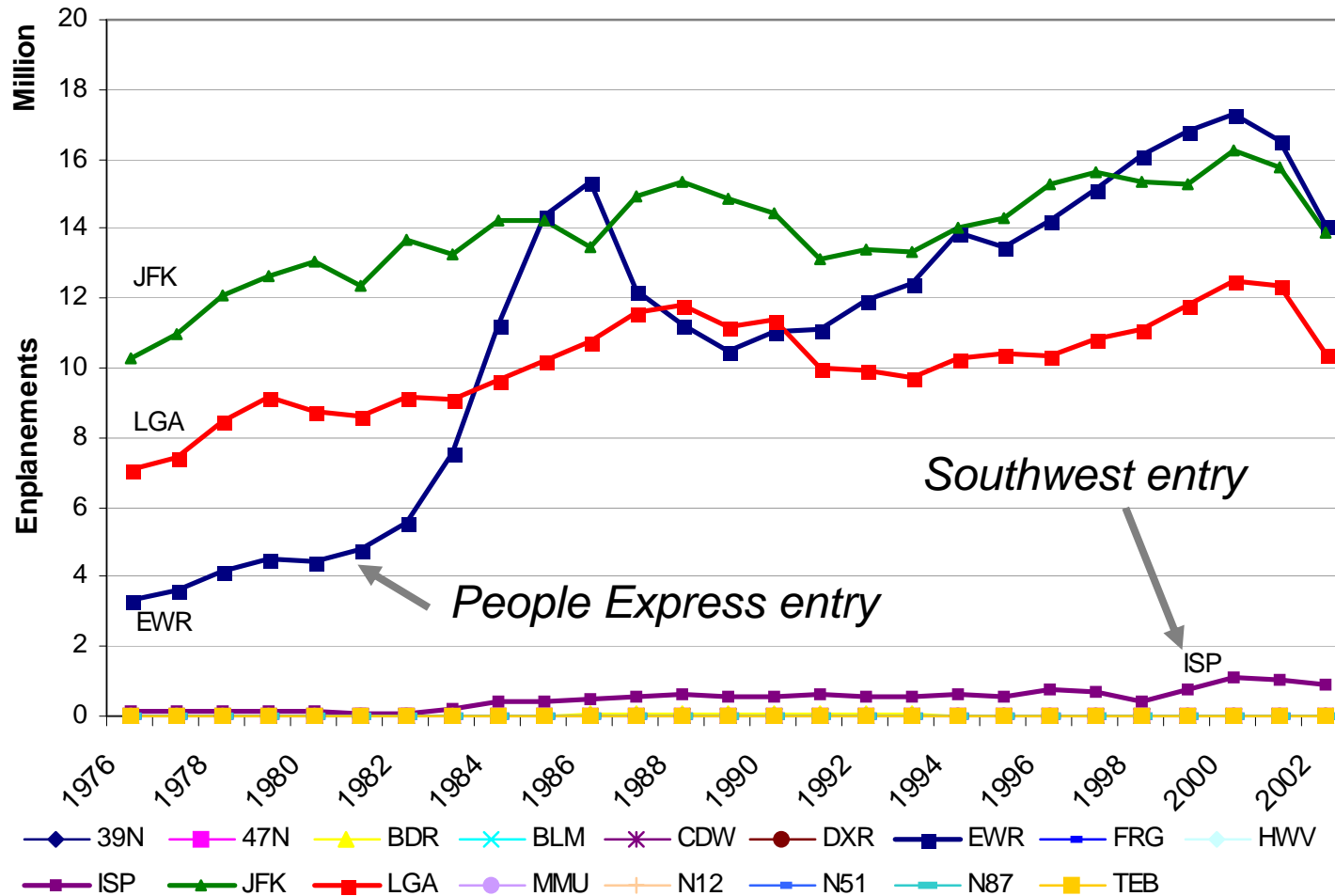
Secondary Airport Emergence is correlated with the entry of Low Cost Carriers





Secondary Airport Emergence is correlated with the entry of Low Cost Carriers

Enplanments
at airports within a 50 miles of La Guardia (LGA)

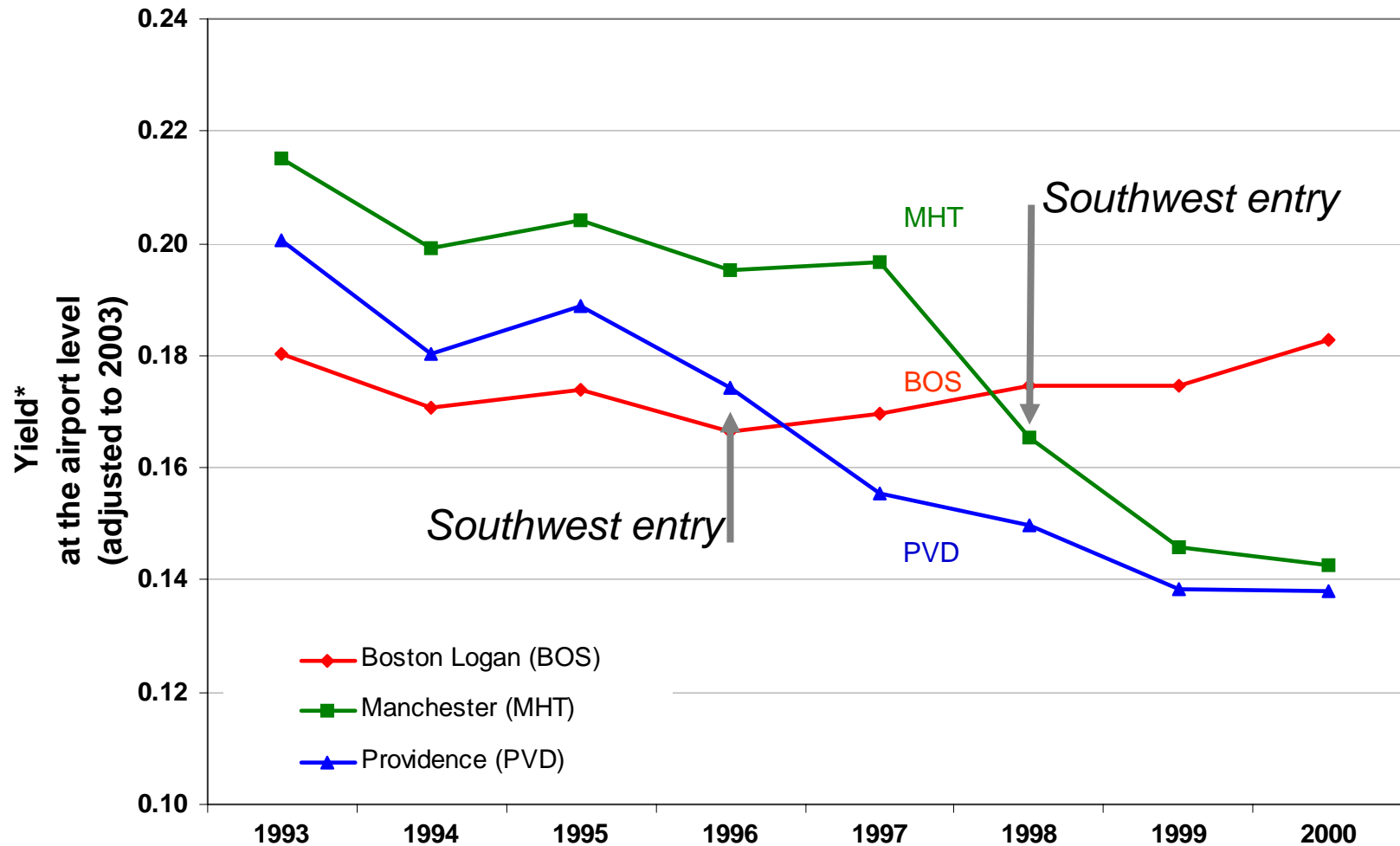


Data source: Historical data from FAA Terminal Area Forecasts



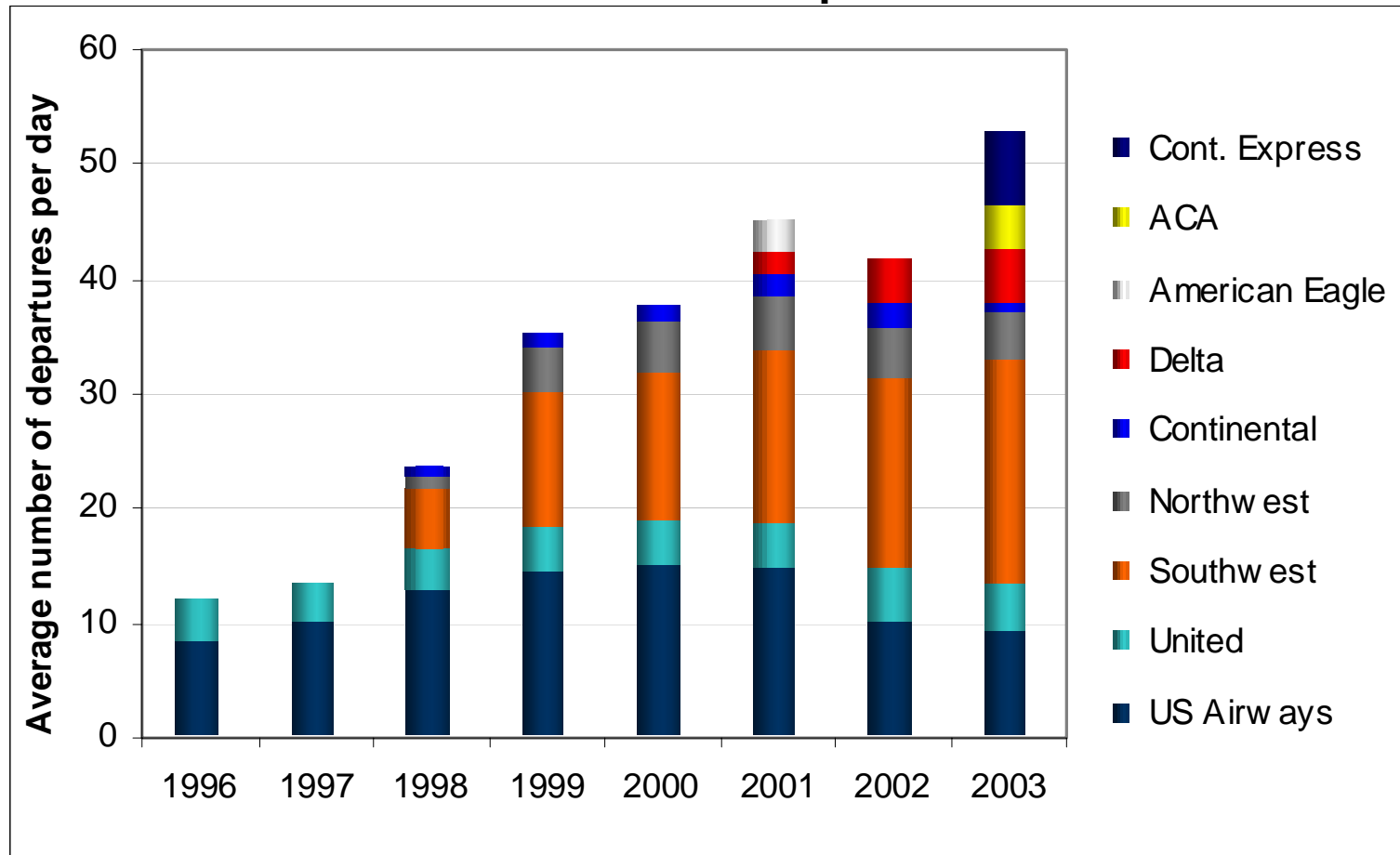
Following the entry of a Low Cost Carrier, fares drop, the market is stimulated : "The Southwest effect"

Impact of the entry of a Low Cost Carrier on the fares (at the overall airport level)



Impact of the entry of a Low Cost Carrier on the level of competition at the airport

Manchester airport



Entry of Major & Low Cost Carriers → Increased competition

Congestion at a core airport

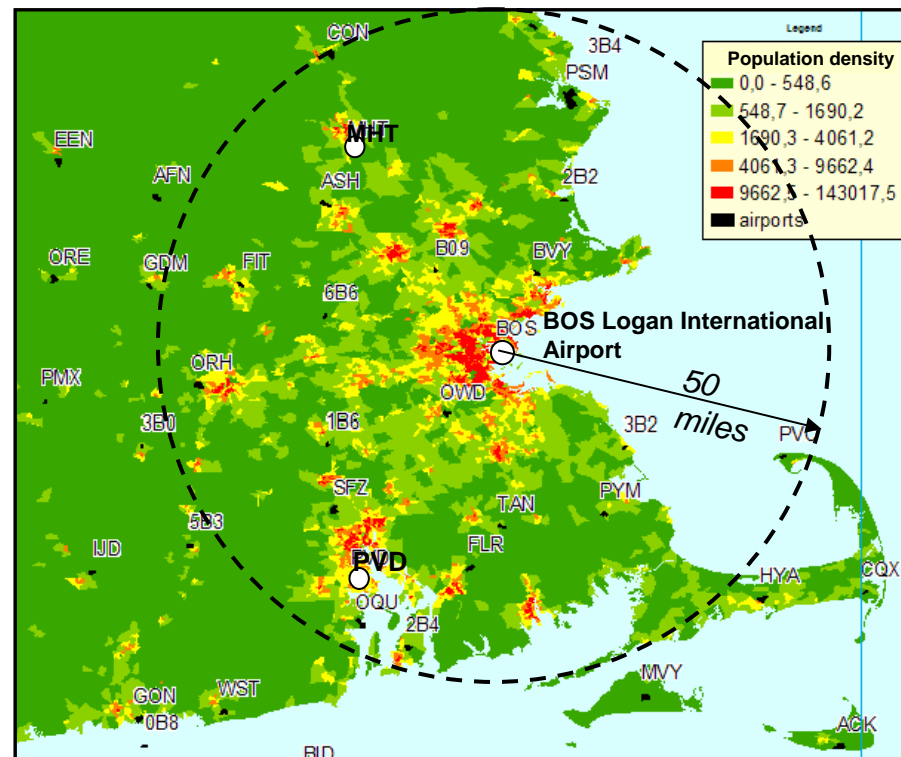
- Level of Service offered at the core airport

Availability of capacity at the regional level

Entry of a Low Cost Carrier

Population

- Distribution
- Size of Basins





Distribution of Population around Core and Secondary Airports (Boston Region)

Core airport

Boston Logan (BOS)

Population within 20 miles: **2 700 000**

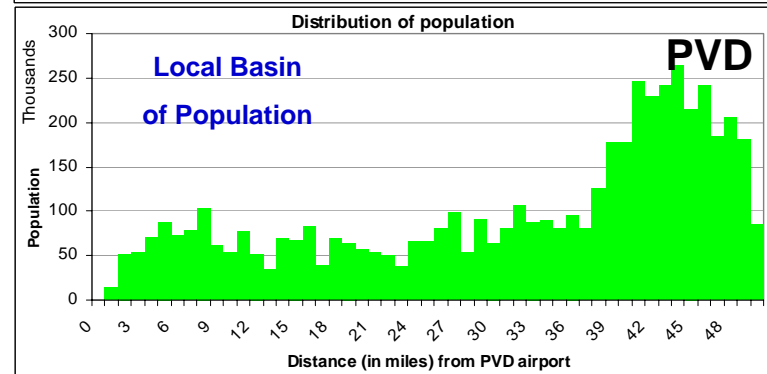
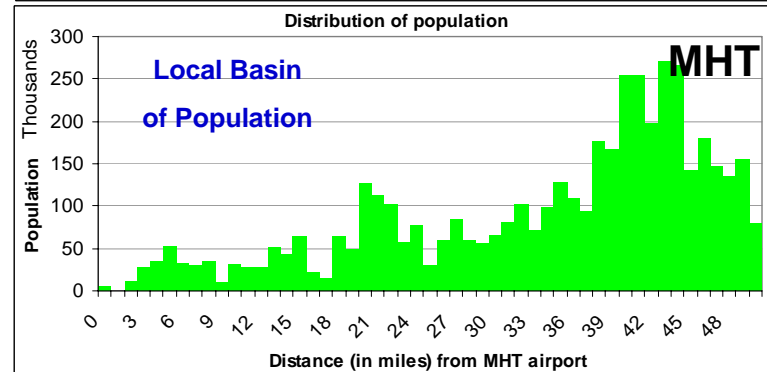
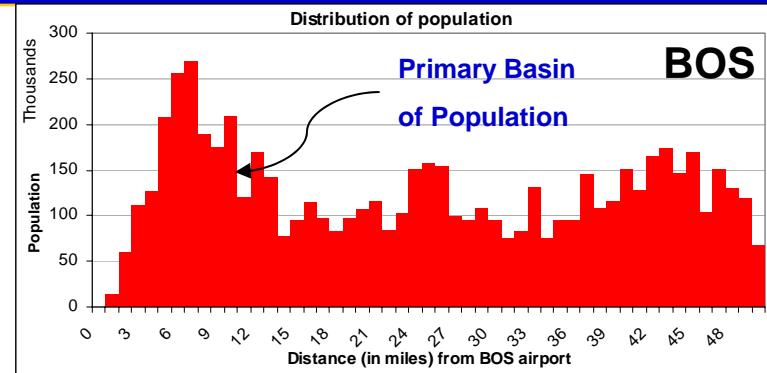
Secondary airports

Manchester (MHT)

Population within 20 miles: **760 000**

Providence (PVD)

Population within 20 miles: **1 250 000**



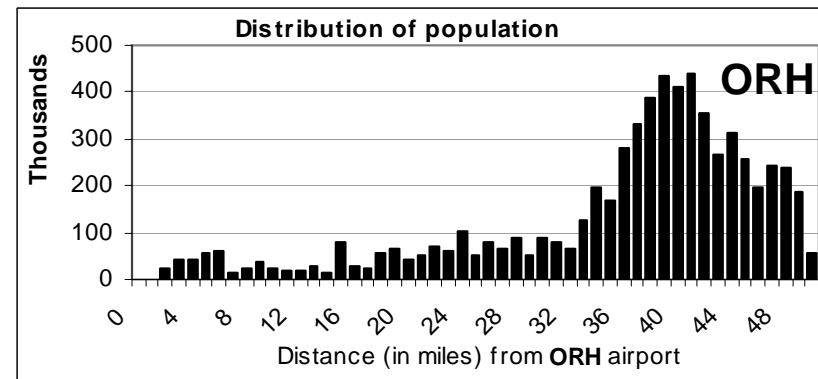
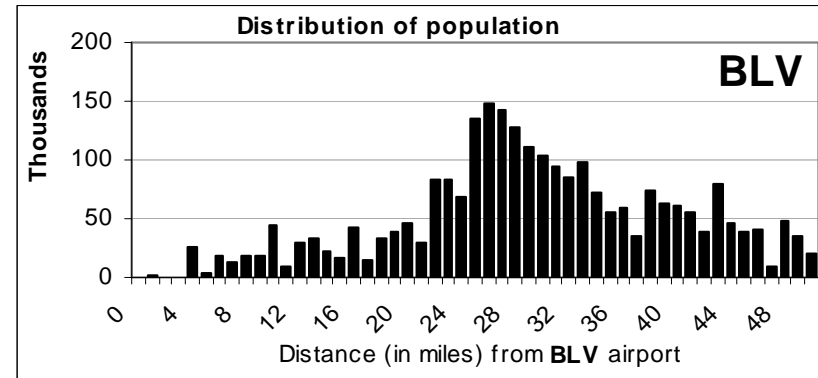
Failed Secondary Airports

Saint Louis Mid America (BLV)

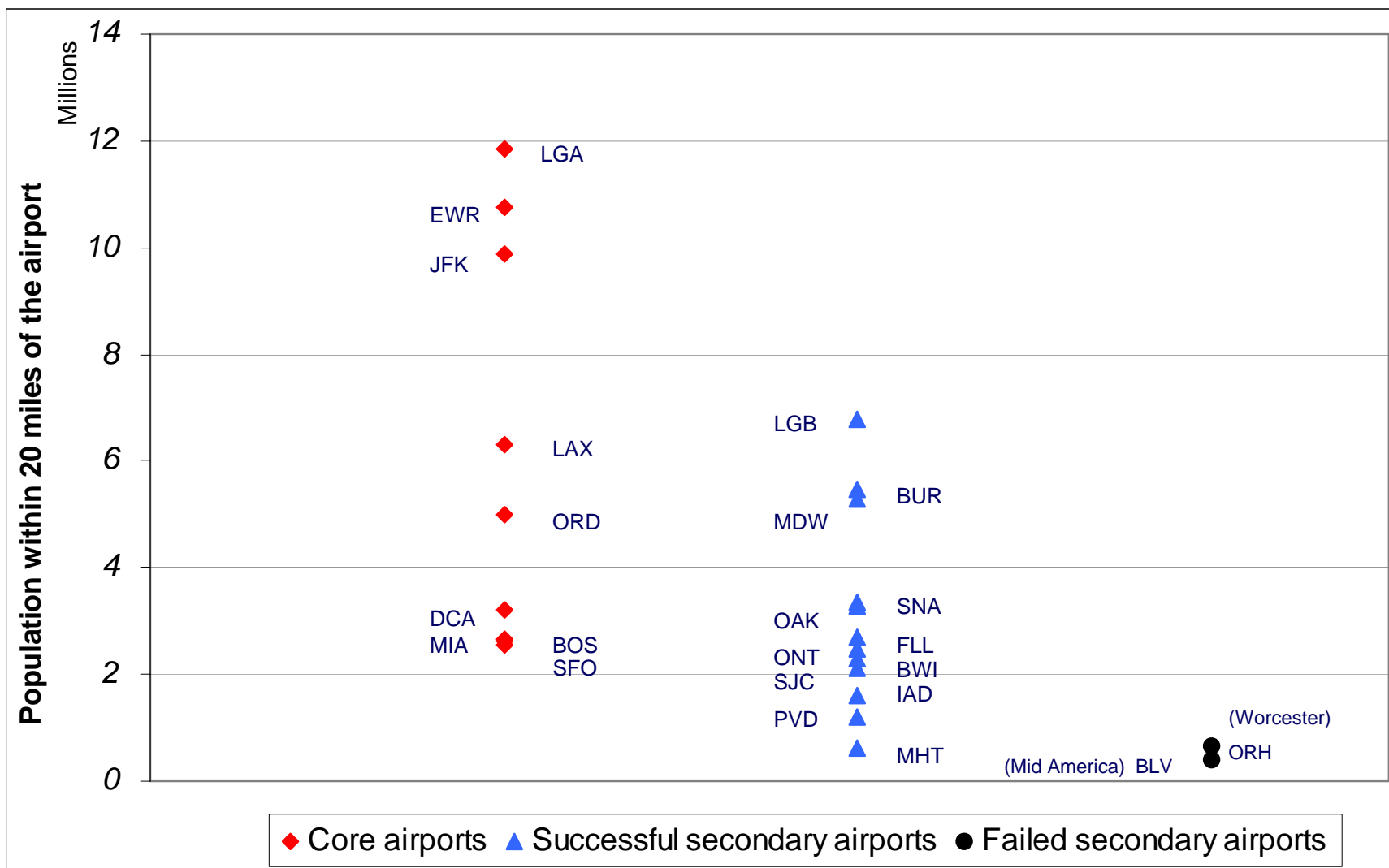
Population within 20 miles: 340 000

Worcester (ORH)

Population within 20 miles: 680 000



Population around Core and Secondary Airports





Factors Influencing the Recent Emergence of Secondary Airports

Congestion at a core airport

- Level of Service offered at the core airport

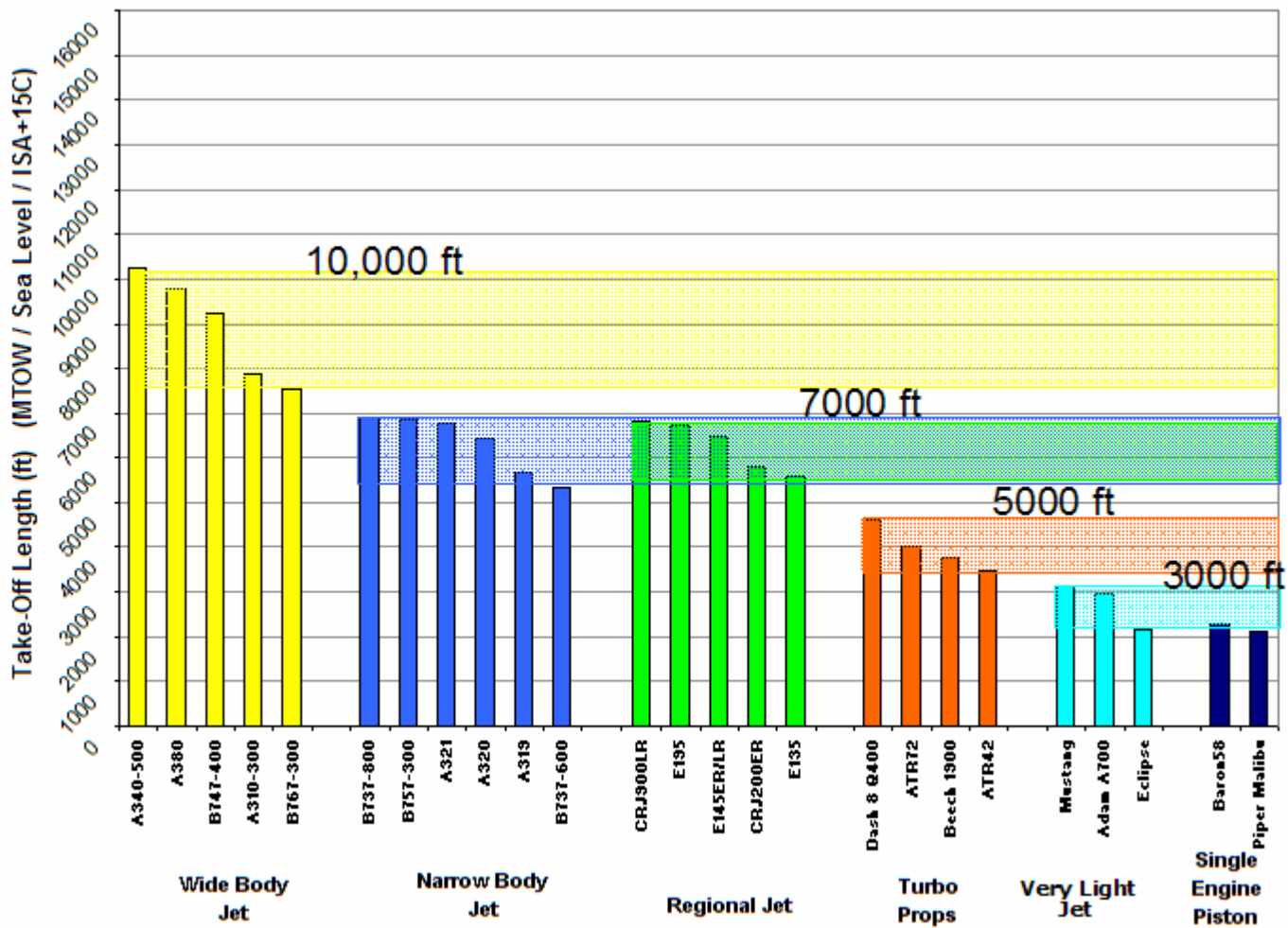
Availability of capacity at the regional level

Entry of A Low Cost Carrier

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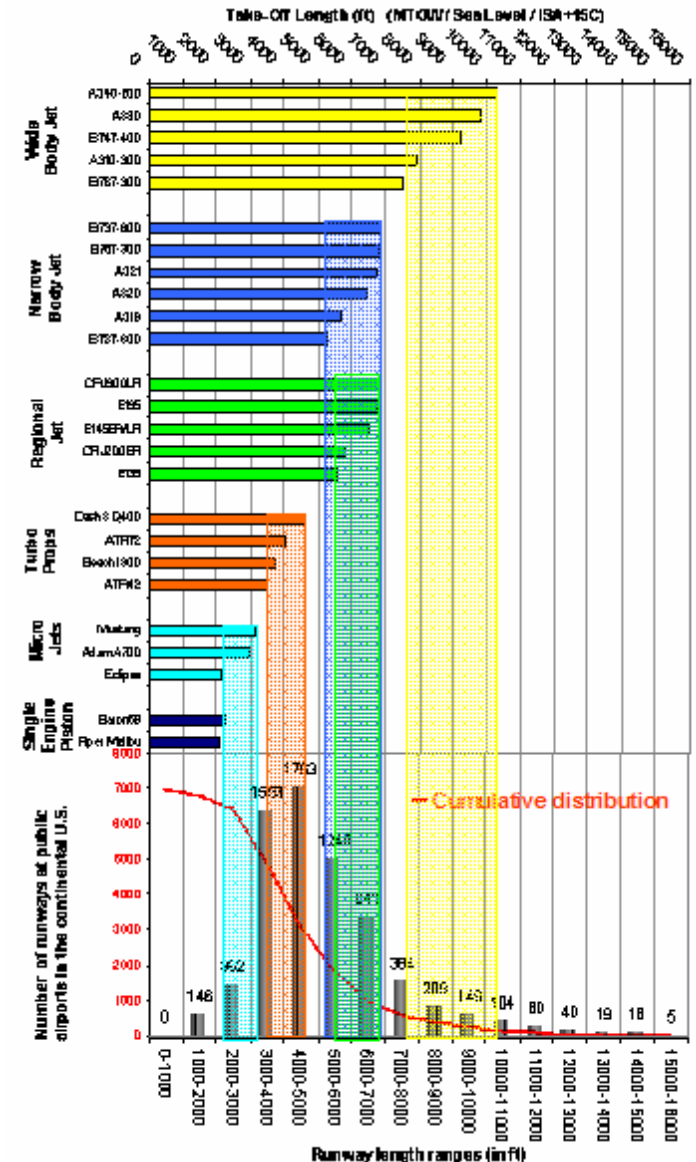
Infrastructure (Runways)

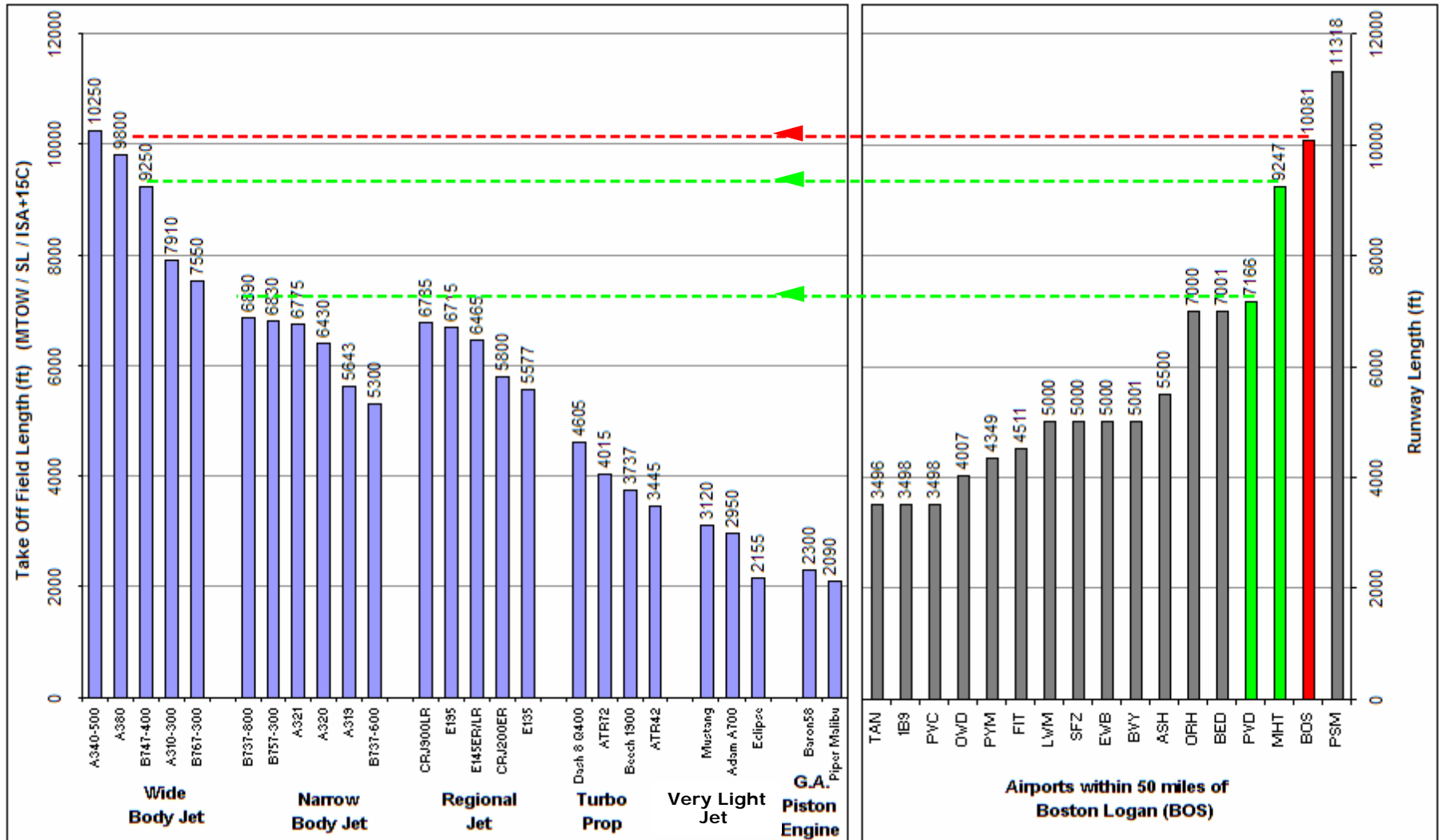


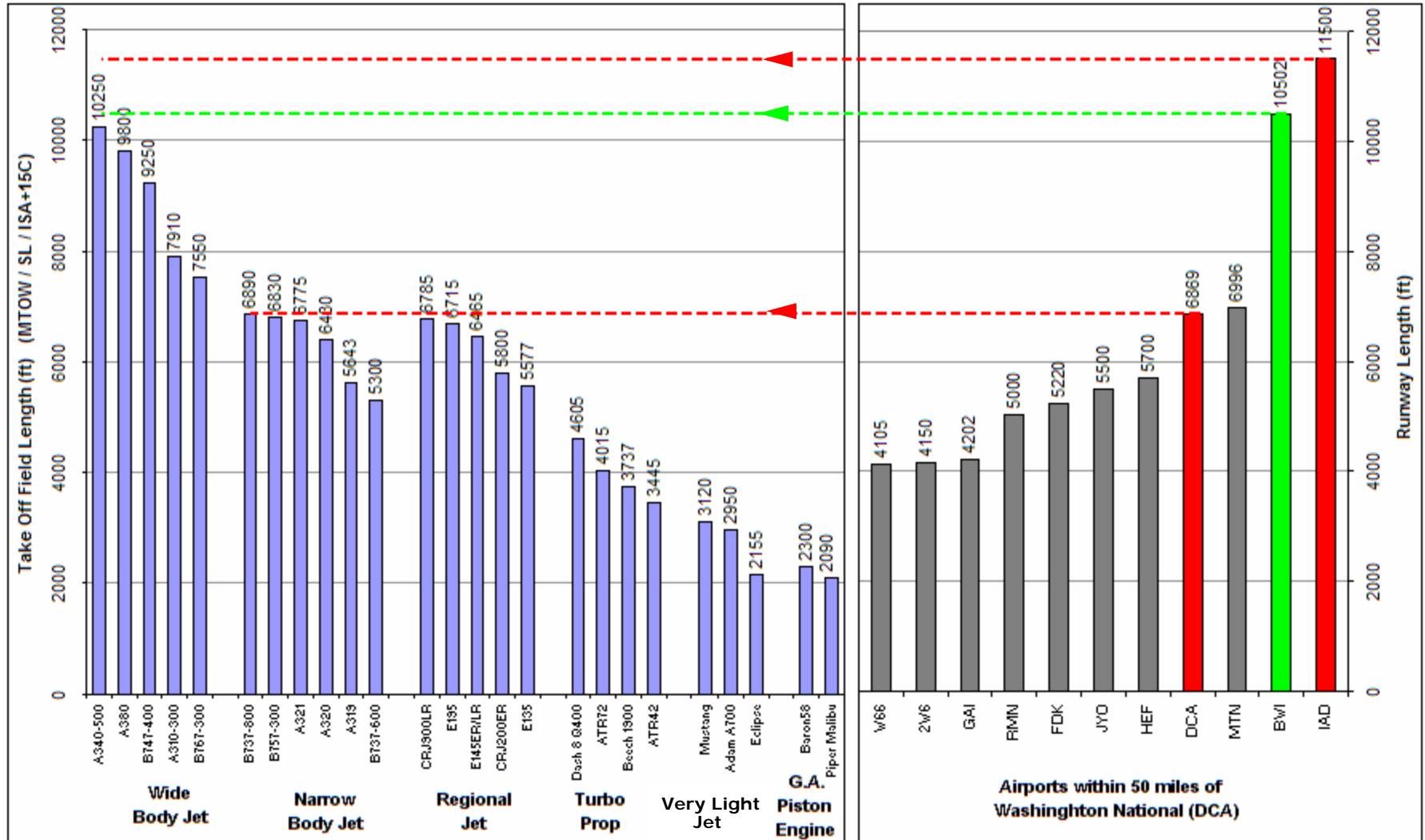
→ Access to runways

At the National Level:

Runway length greater than	Number of runway
7000 ft	986
5000 ft	3075
3000 ft	6431









Factors Influencing the Recent Emergence of Secondary Airports

Congestion at a core airport

- Level of Service offered at the core airport

Availability of capacity at the regional level

Entry of a Low Cost Carrier

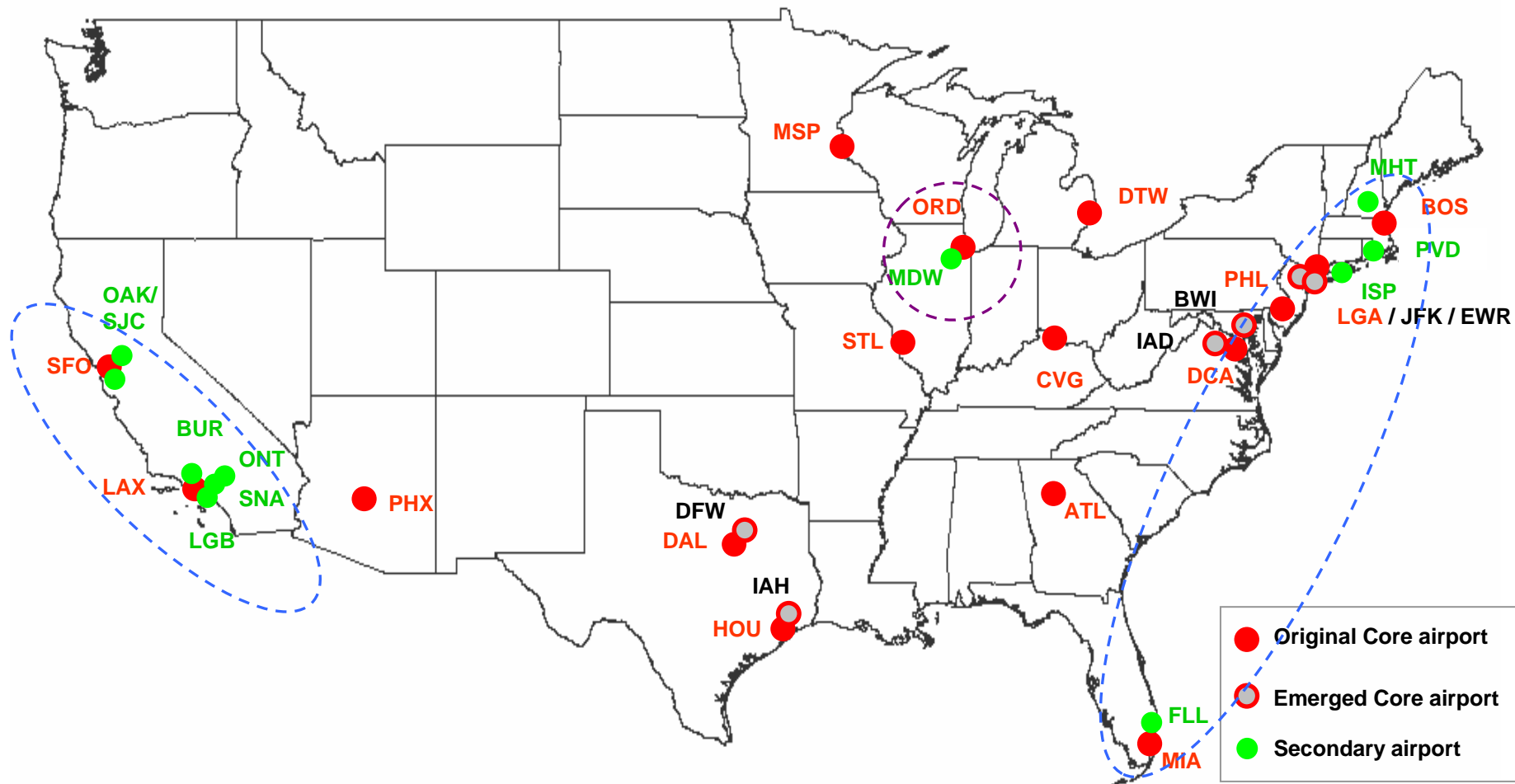
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Infrastructure

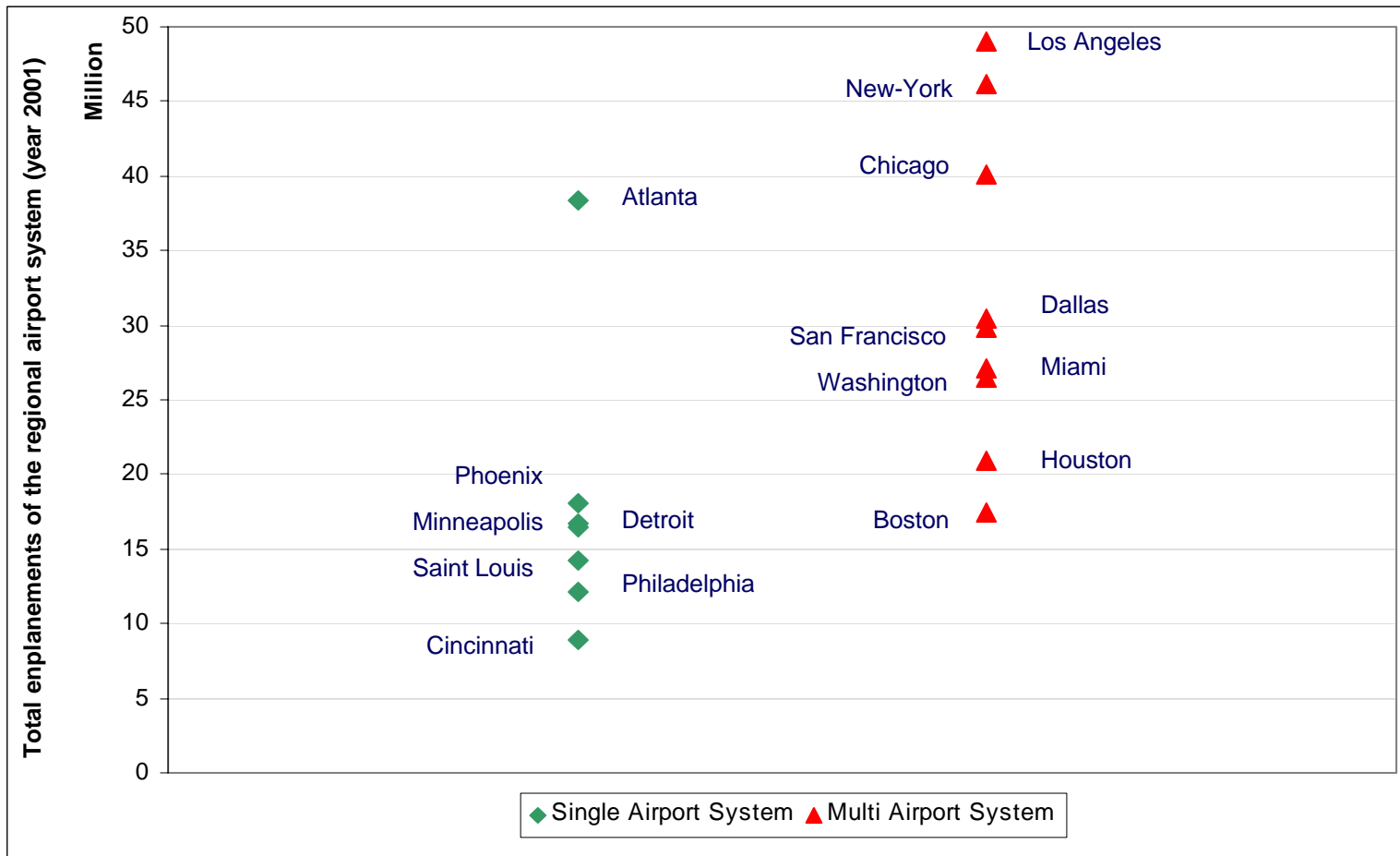
Nature of the Regional Airport System

Role of the Nature of the Regional Airport System





Passenger Enplanements at the Regional Level vs. Type of Regional Airport System





Factors Influencing the Recent Emergence of Secondary Airports

Congestion at a core airport

- Level of Service offered at the core airport

Availability of capacity at the regional level

Entry of a Low Cost Carrier

Population

- Distribution
- Size of Basins

Infrastructure

Nature of the Regional Airport System

Other factors:

- Ground access**
- Political willingness**
- Incentives**



Conclusions (1)

→ Secondary airports that emerged over the last 20 years have shown they were viable options for increasing the capacity of the system.

→ Pressure on major airports in the upcoming years

→ Increasing utilization of secondary airports

Characteristics of future secondary airport candidates

- Located close to a congested core airport
- Proximity of a local basin of population
- Runways length greater than 5000 ft (or possibility of expansion)
- Higher chance of emerging if the core airport is not a transfer hub or if a strong local market exists
- Good ground access
- Ability to attract a low cost carrier (incentives, etc)



Conclusions (2)

→ Implications

Public:

- Alternative travel options
- Low cost alternatives (market stimulation & market displacement)

Airlines:

- Development of parallel networks
 - (e.g. BOS/DCA, PVD/BWI, MHT/BWI, etc)
 - (e.g. 35% of identical destinations between BOS and MHT)
- Increased competition
 - Inter airport (LCC at the secondary airport or/and at the core airport)
 - Intra airport (e.g. Southwest adding flights at MDW to meet Air Tran)
- Decentralized networks (Expansion of parallel networks to small and medium airports)

Infrastructure (Airport & ATC System):

- Investments in additional capacity (Major, Existing and/or Potential Future Secondary airports)
- Interactions between airports at the regional airport system level (e.g. New York airport system)
- Need to include these factors in the NAS and ATC improvements



**Questions
&
Comments**