Introduction to Transportation Systems

PART III:

TRAVELER TRANSPORTATION

Chapter 29:

Intercity Traveler Transportation: Air

Air Traveler Transportation

- Costs/Financial Situation
- Air Traveler Transportation and the 30 “Key Points”
  - Stochasticity
  - Peaking
  - Selecting Capacity
  - Network Behavior
- Land-side Issues
  - Airport Access
  - Airport Terminal Design
- Important Issues
  - Airport Capacity
  - Hub-and-Spoke Operation
  - Safety
  - Aircraft Technology
  - Yield Management
  - Understanding the Air Traveler Market
- Subsidies -- Air as an example

Airline Costs and Financial Situation

- Labor Costs
- Fuel Costs
- Equipment Costs

Reasons for Air Industry Financial Problems

- *Competition* is the critical element. There are those that would argue that the industry has more capacity than it needs for the demands it serves.
- Earnings in the airline industry are very sensitive to the ratio of filled seats to total seats. Once a seat flies empty, the revenue from that seat is gone forever. And airlines, recognizing that fact, have gone through some *destructive pricing battles*.
- The airline industry finds it difficult to quickly adjust its fleet size and hence its capacity. The time between ordering new aircraft from the manufacturer and delivery to the airline can be several years.

A Trend: Strategic Alliances

Air Traveler Transportation and the 30 “Key Points”

- Stochasticity
- Peaking in Demand
- Selecting Capacity
- Network Behavior

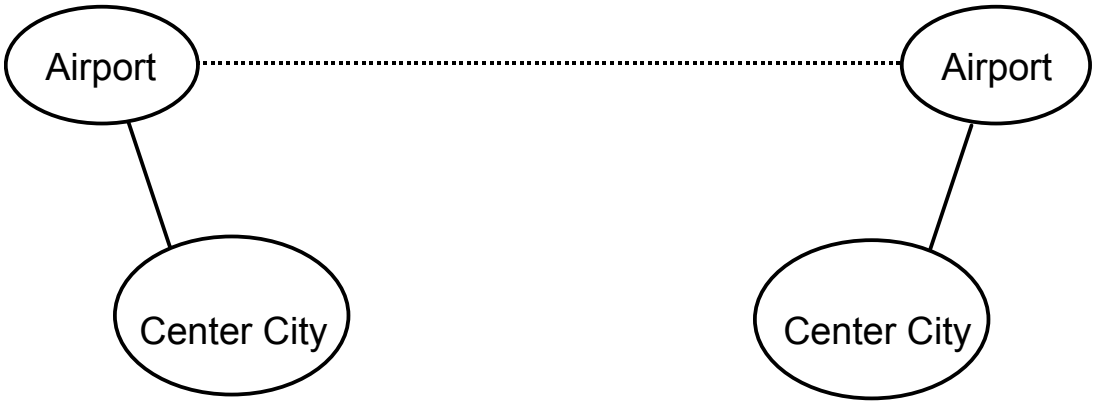
Other Key Points?

CLASS DISCUSSION

Land-Side Issues

- Airport Access

Airport Location



It is door-to-door travel time that matters.

Figure 29.1

Other Points

- Proximity of Airport to Center City
- Rail Access to Airports
- Airport Terminal Design
- Airports as Commercial Carriers

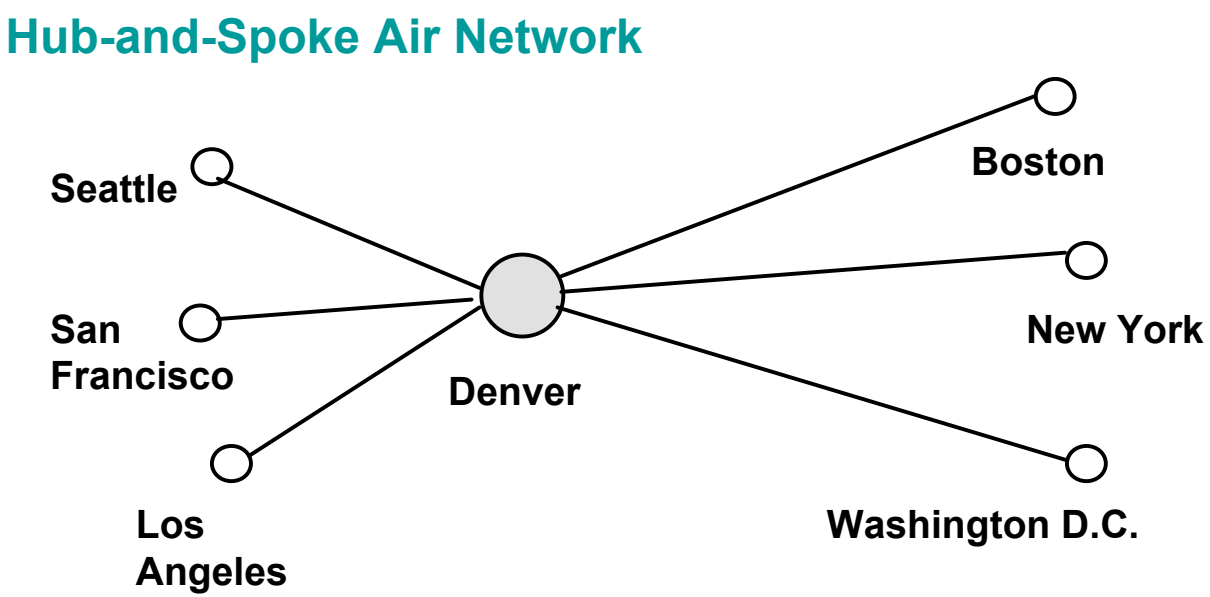
Important Air Issues

- Airport Capacity
- Congestion Pricing at Airports

Review the concept of congestion pricing and then

CLASS DISCUSSION

Hub-and-Spoke Airline Operations



- Hub-and-Spoke as a Cost/LOS Trade-Off
- Hub-and-Spoke Operations and System Stability

Figure 29.2

Safety

- *Safety* is a key level-of-service variable in the airline industry.
- Although substantially safer than automobile transportation, the fact that the accidents that do occur are big and eye-catching makes travelers very sensitive to safety concerns.
- The Federal Aeronautics Administration (FAA) in the U.S. has responsibility for regulating airline safety; they also have a charter to promote the airline industry. Some feel there is an inherent conflict in these two roles.

CLASS DISCUSSION

Aircraft Technology

- Aircraft Size
- Short Take-Off and Landing Aircraft
- Hypersonic Flight
- The “Space Plane”
- Engine and Materials Technology

Yield Management in Air Transportation

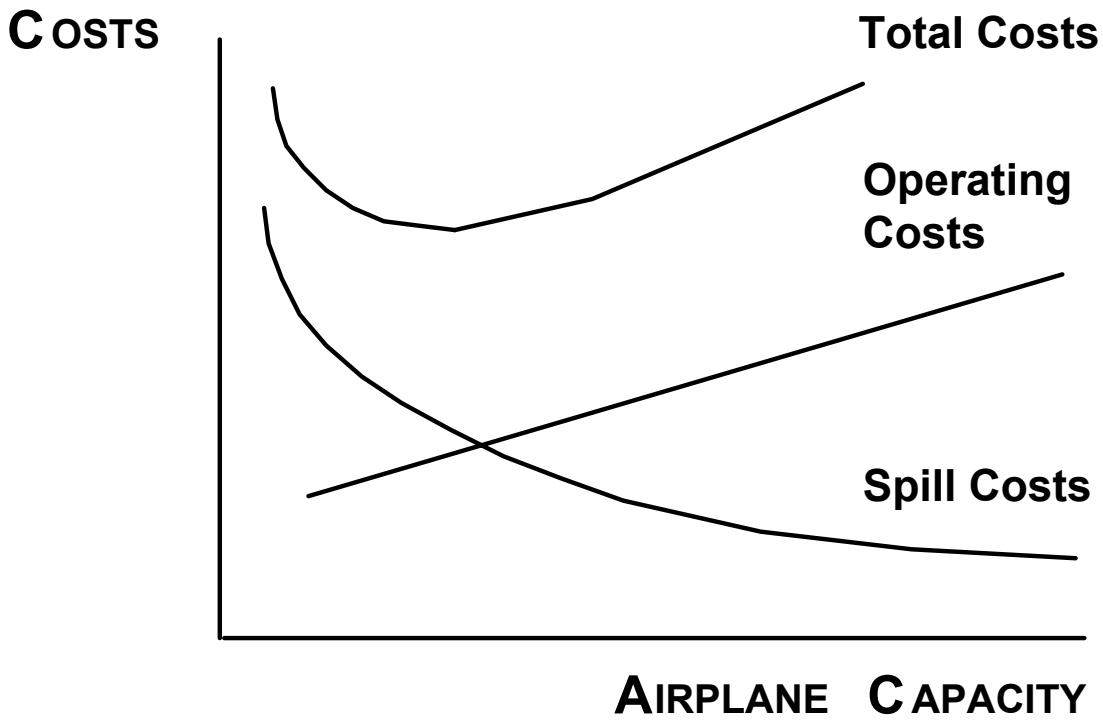


Figure 29.3

Air Transportation as an Example of Subsidies

- Subsidies
  - Between long-distance and short-distance passengers. Cost functions look different for long-distance and short-distance passengers, so there may be cross-subsidies.
  - Between business and non-business travelers. Business travelers require flexibility to make plans on very short notice and change their plans very quickly. The airline industry charges them a premium for this service.
  - Among various origin-destination pairs. Customers on the non-competitive routes subsidize those on competitive routes.

Flows of Funds in Air Transportation

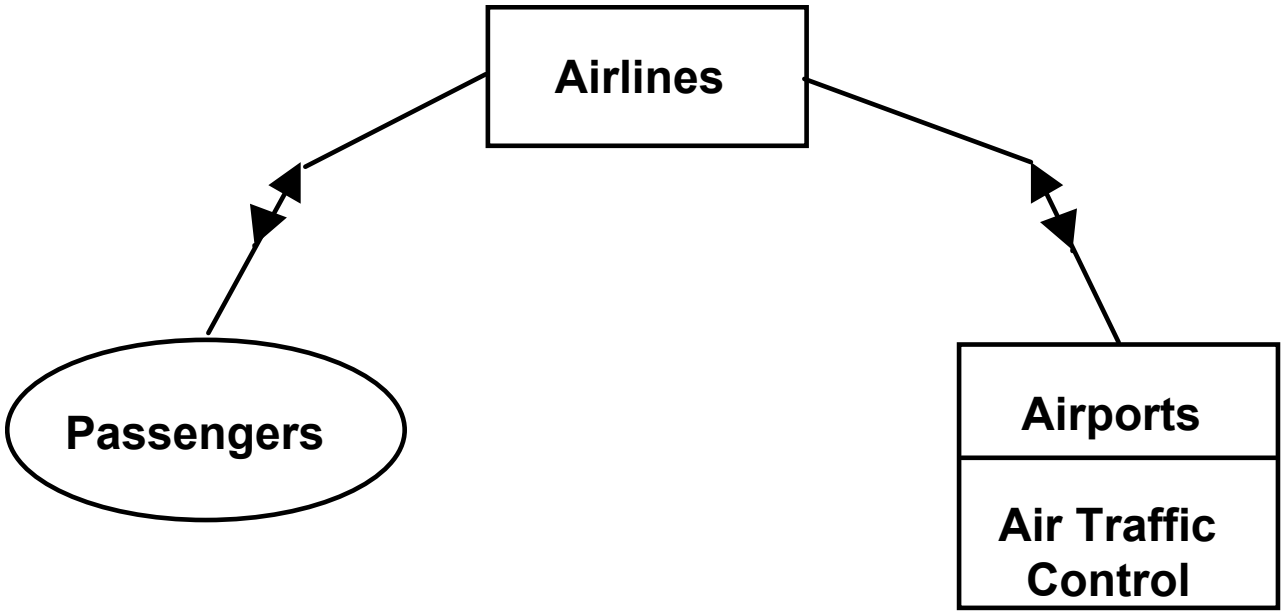


Figure 29.4

Subsidies in Air Transportation

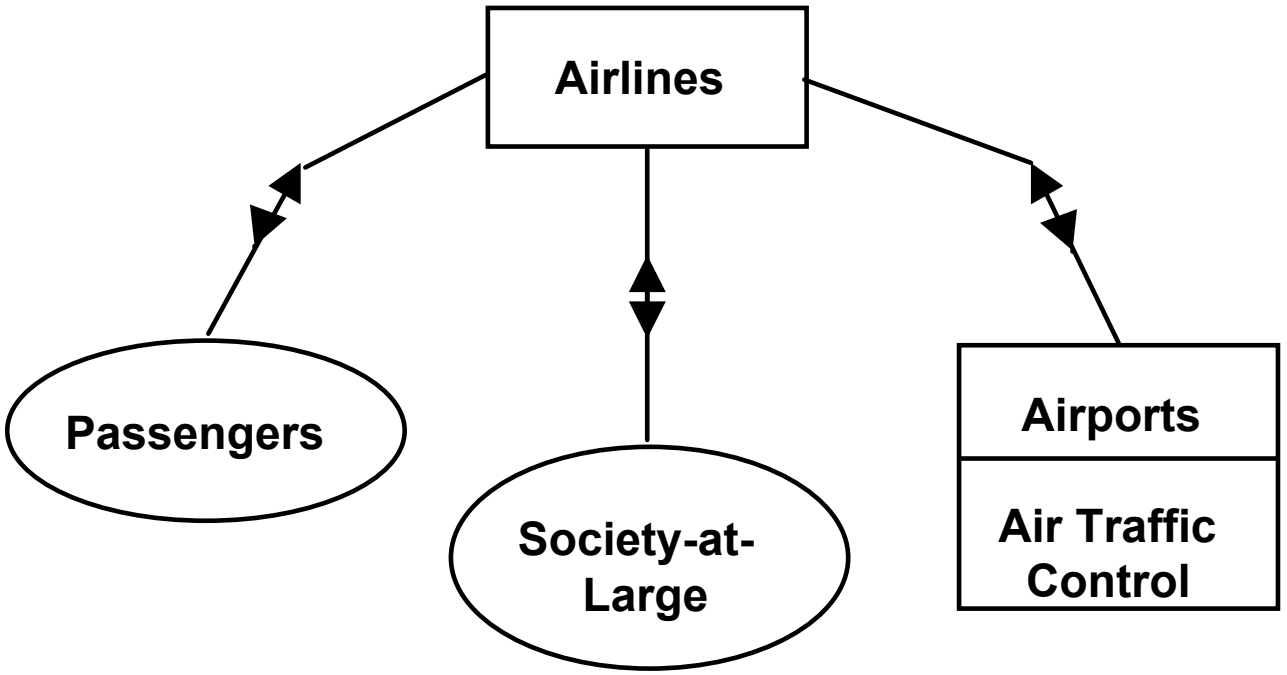


Figure 29.5

- Does Society-at-Large Benefit Enough to Warrant the Subsidy to Air Transportation?

CLASS DISCUSSION