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The Evolution of U.S. Domestic Airline Route Networks since 1990

Clinton V. Oster, Jr.
Indiana University

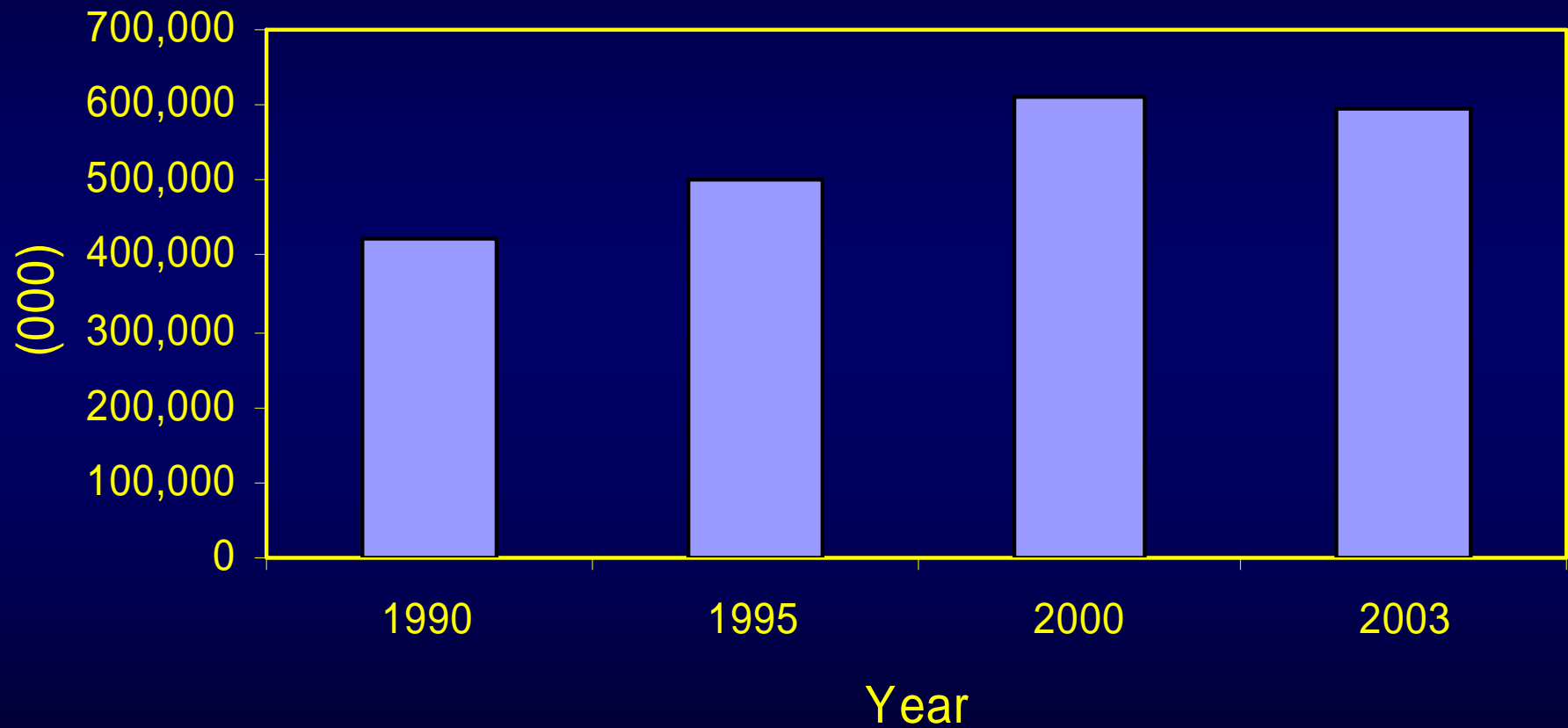
John S. Strong
College of William & Mary

Transportation Research Forum
March 7, 2005

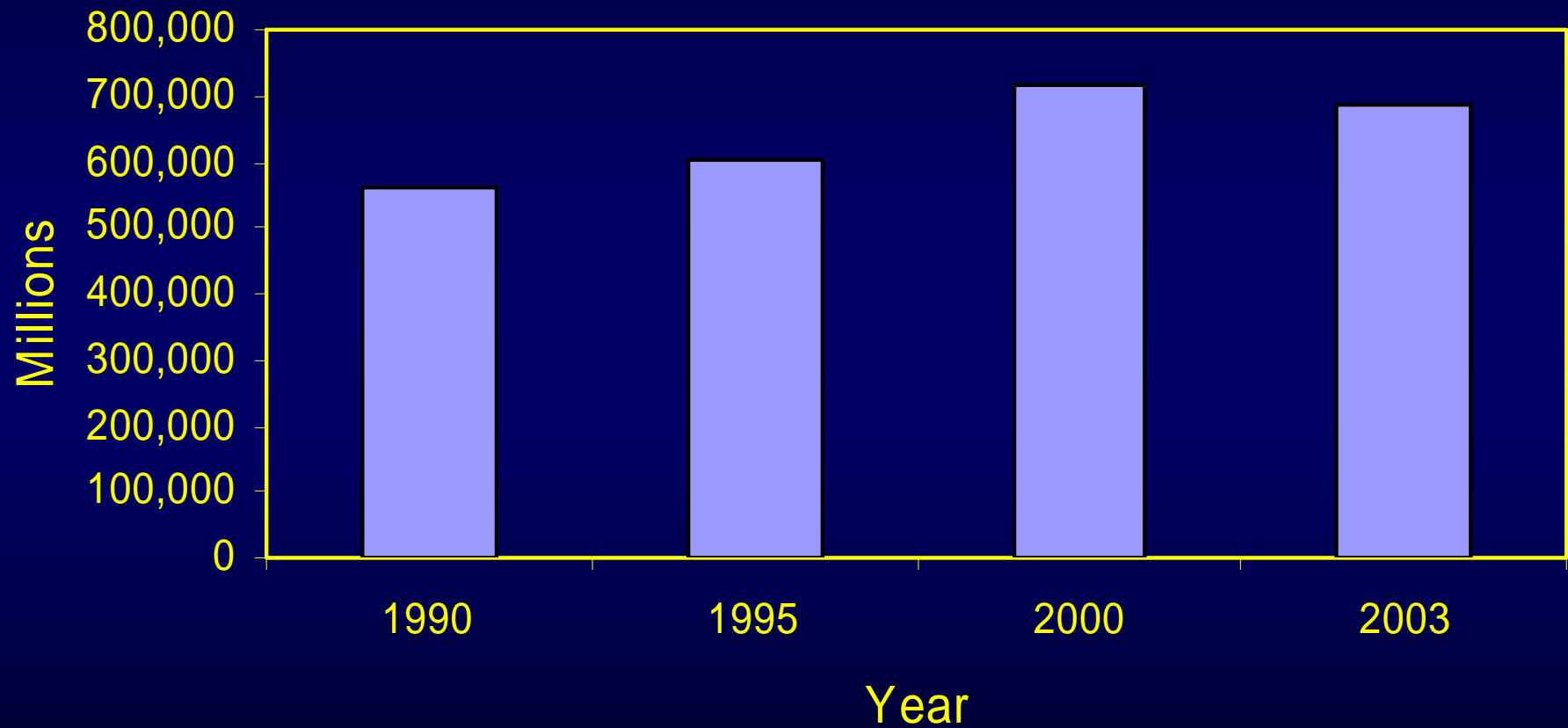
Network Strategy Issues

- Response at main hubs to traffic downturn
- Role of RJs
- Emerging models

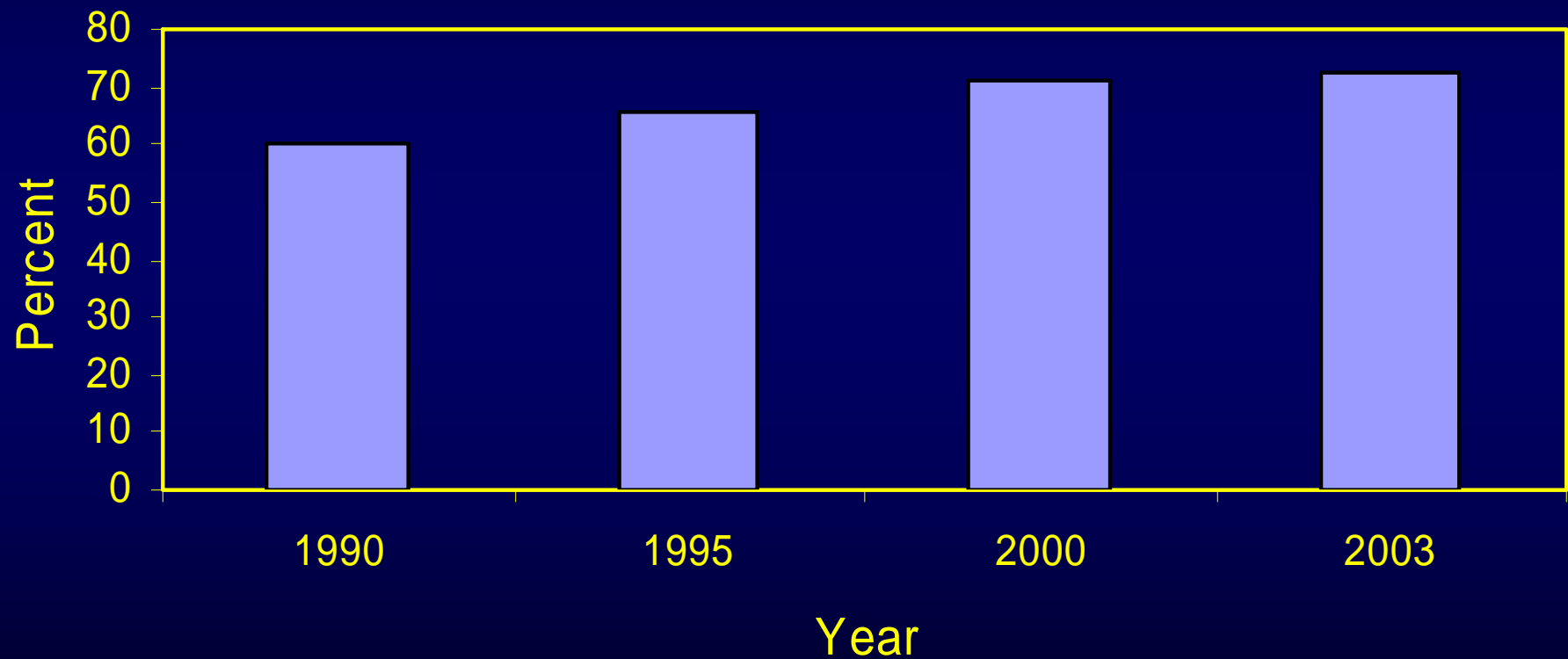
Domestic Enplanements - Major, National, and Regional



Domestic ASMs - Major, National, and Regional



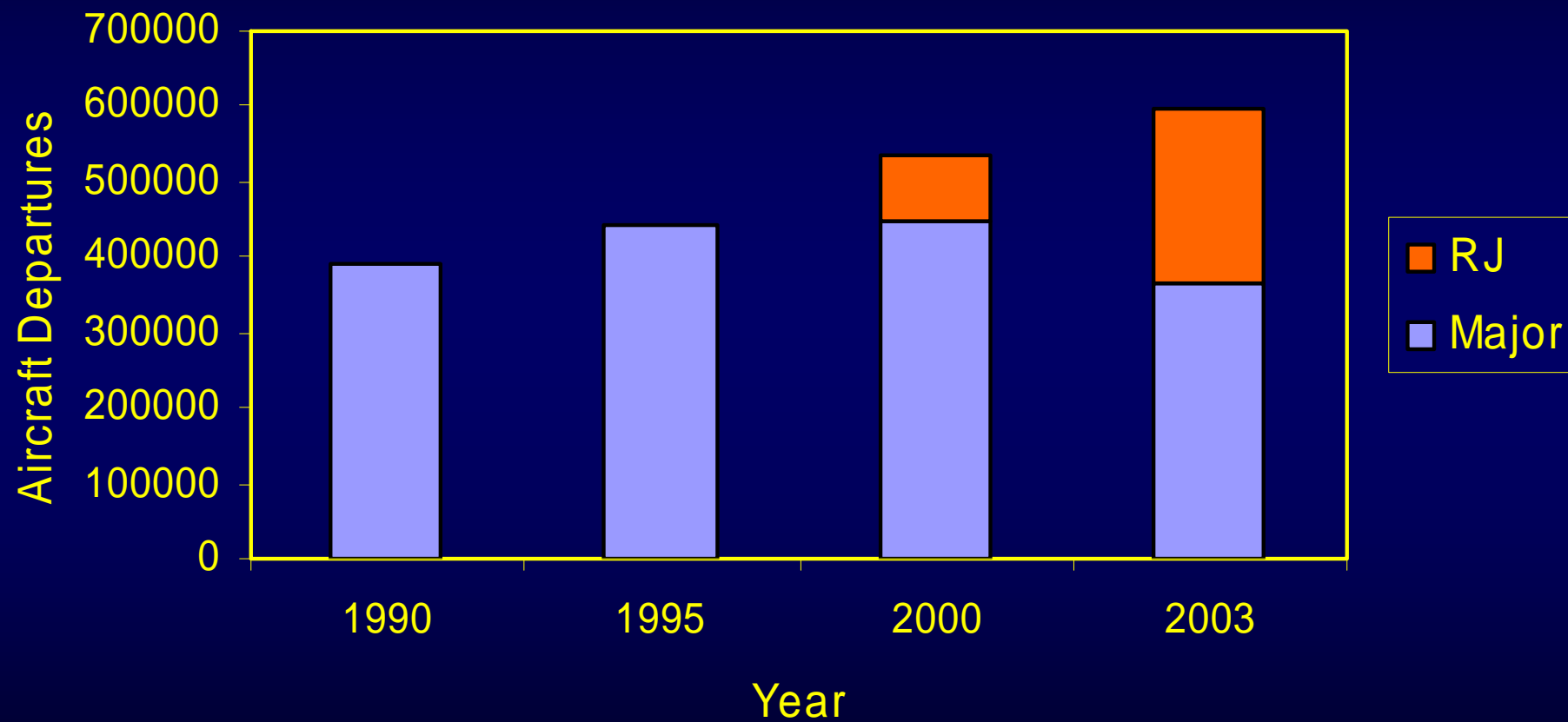
Domestic Passenger Load Factors - Major, National, and Regional



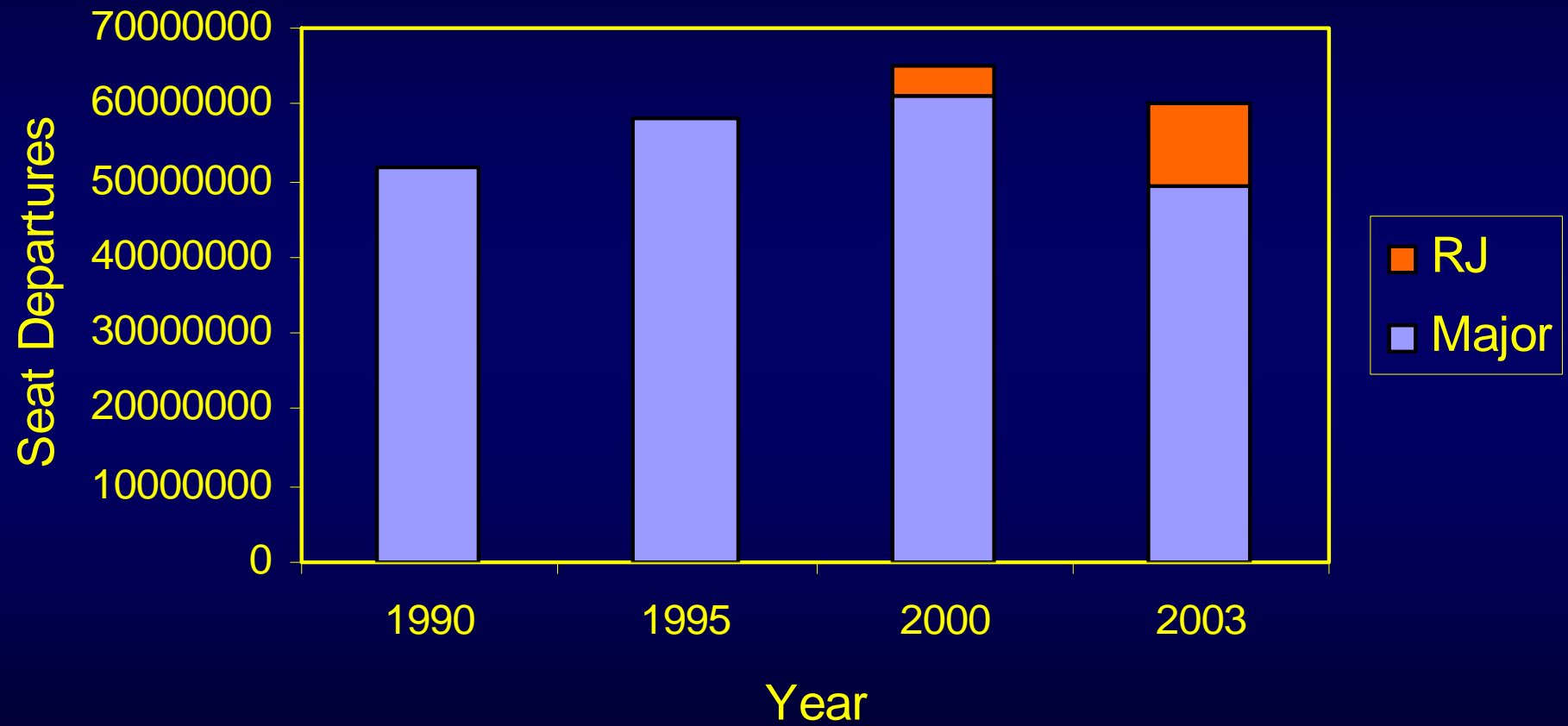
Carriers and Hubs

- America West – Las Vegas and Phoenix
- American – Chicago and Dallas-Fort Worth
- Continental – Cleveland, Houston, Newark
- Delta – Atlanta, Cincinnati, Dallas-Fort Worth, Salt Lake City
- Northwest – Detroit, Memphis, Minneapolis-St. Paul
- United – Chicago and Denver
- US Airways – Charlotte, Philadelphia, Pittsburgh

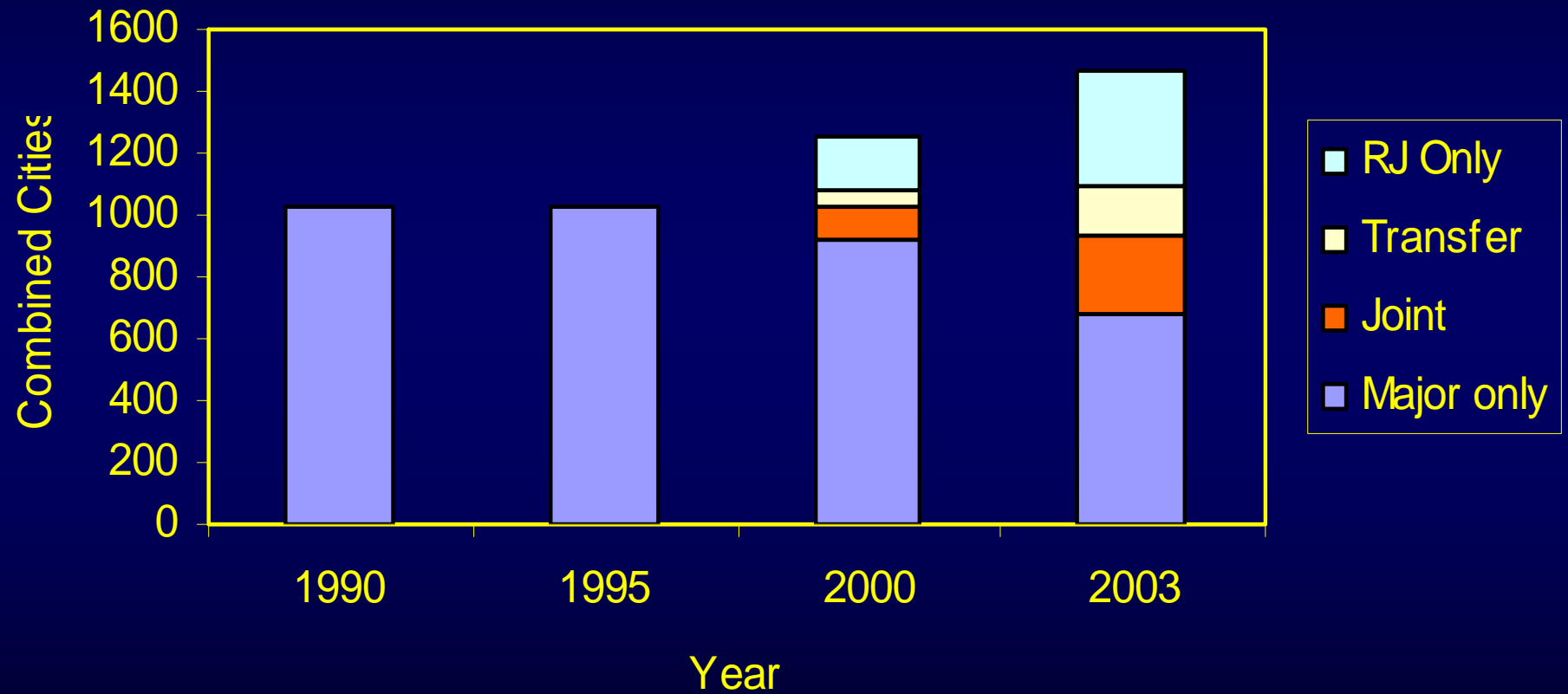
Combined Aircraft Departures from Hubs



Combined Seat Departures from Hubs



Combined Cities Served from Hubs

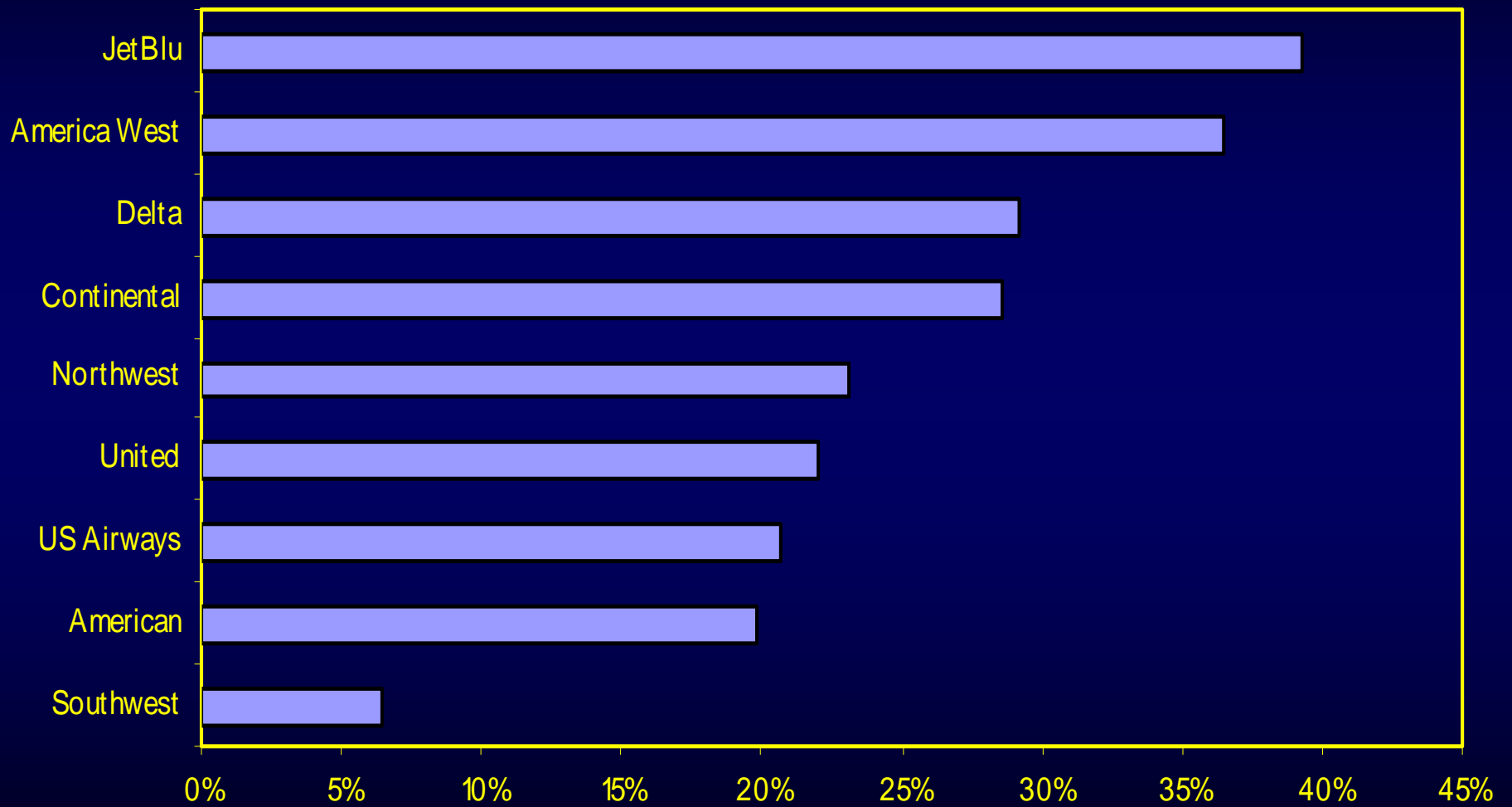


Hub	Average RJ Distance	Daily RJ Departures
Atlanta	280	479
Charlotte	447	100
Chicago	391	415
Cincinnati	431	347
Cleveland	436	163
Dallas	515	320
Denver	577	107
Detroit	362	148
Houston	539	216
Las Vegas	507	6
Memphis	424	142
Minneapolis	493	106
Newark	481	149
Philadelphia	418	74
Phoenix	545	100
Pittsburgh	399	90
Salt Lake City	514	122
Combined Hubs	431	3084

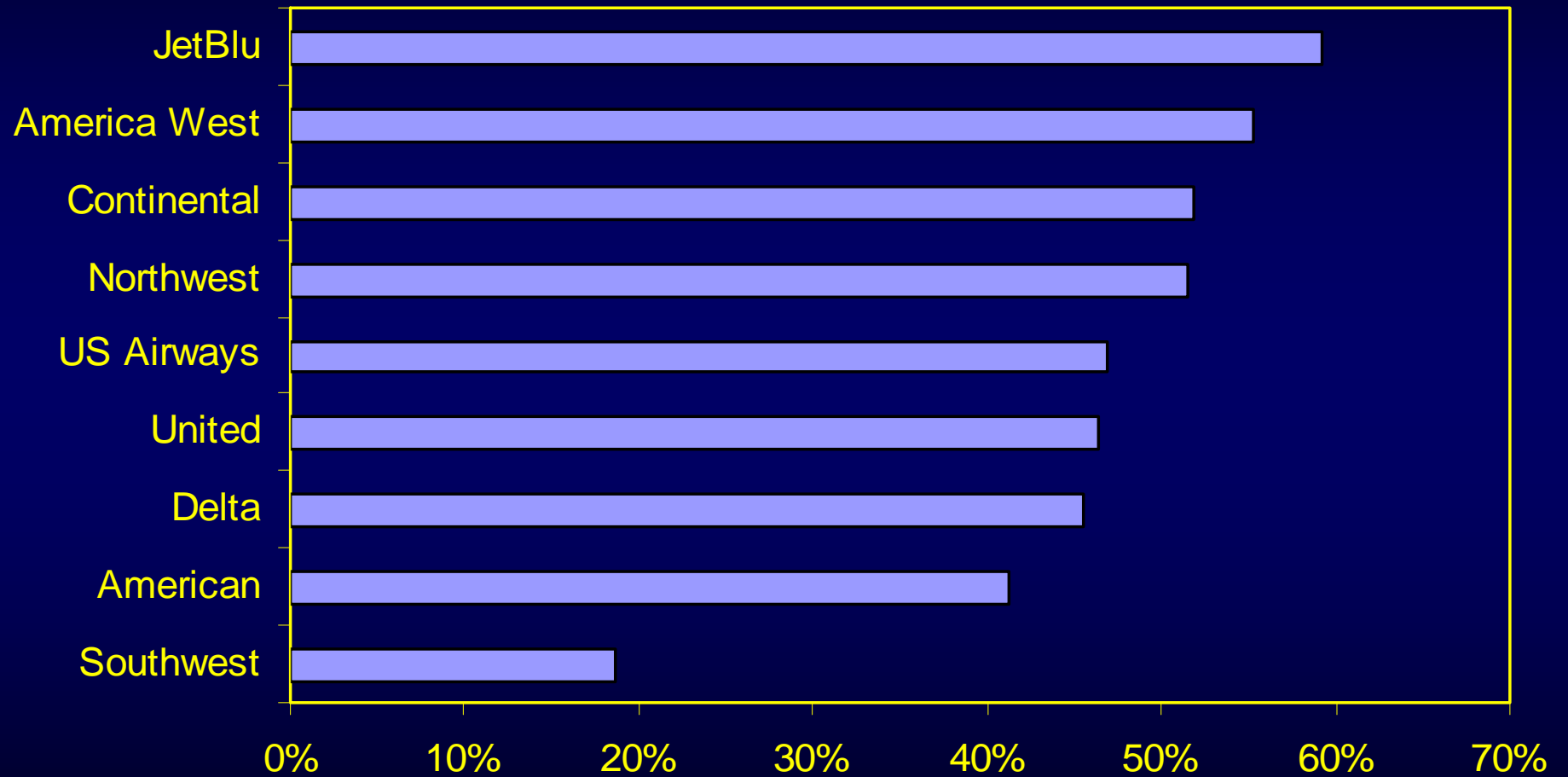
Role of Regional Jets at Hubs -- 2003

Airline	Share of Departures	Share of Seats
America West	23%	12%
American	30%	14%
Continental	52%	27%
Delta	50%	24%
Northwest	30%	15%
United	37%	12%
US Airways	25%	11%

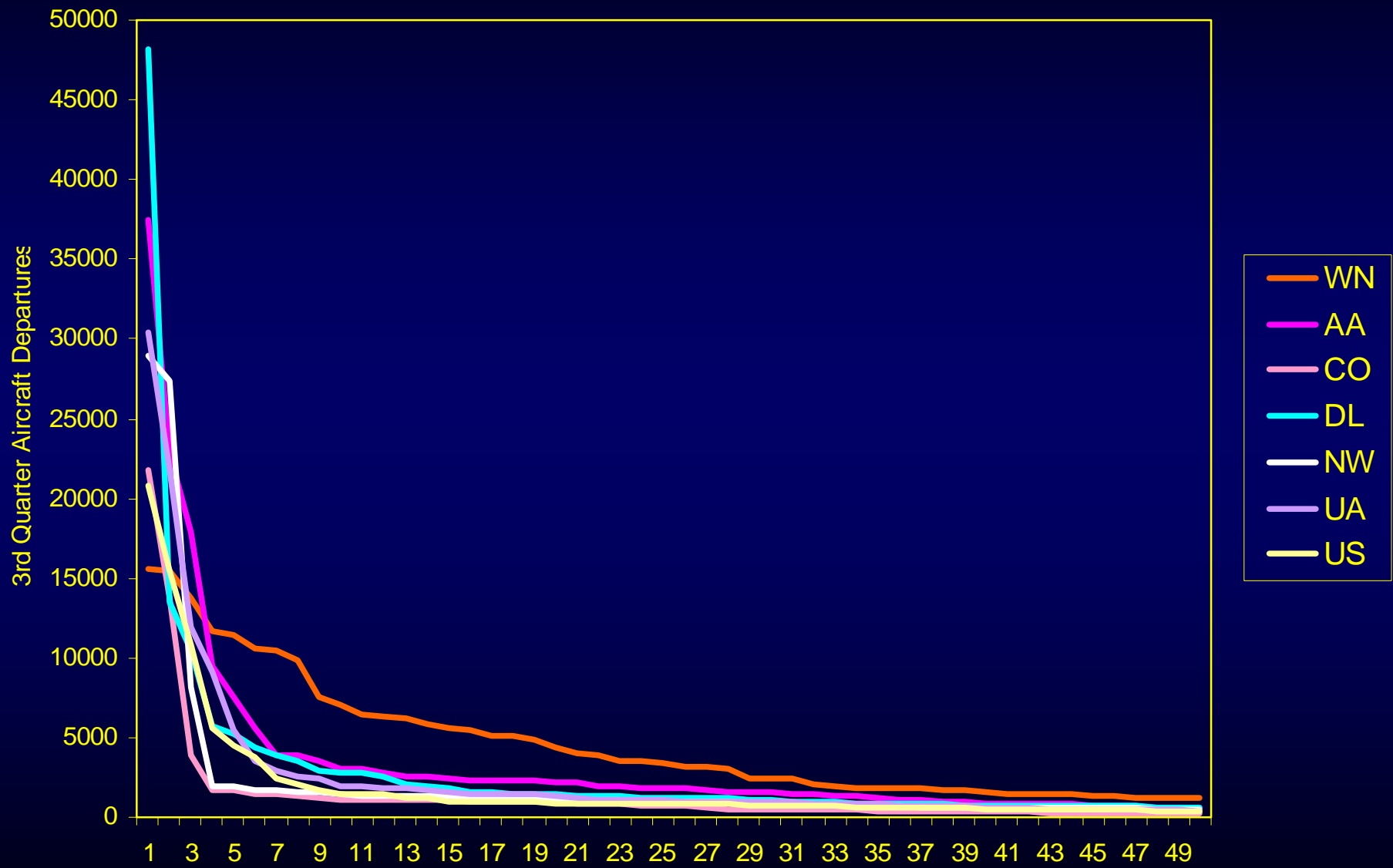
Departure Share of Each Airline's Largest Hub



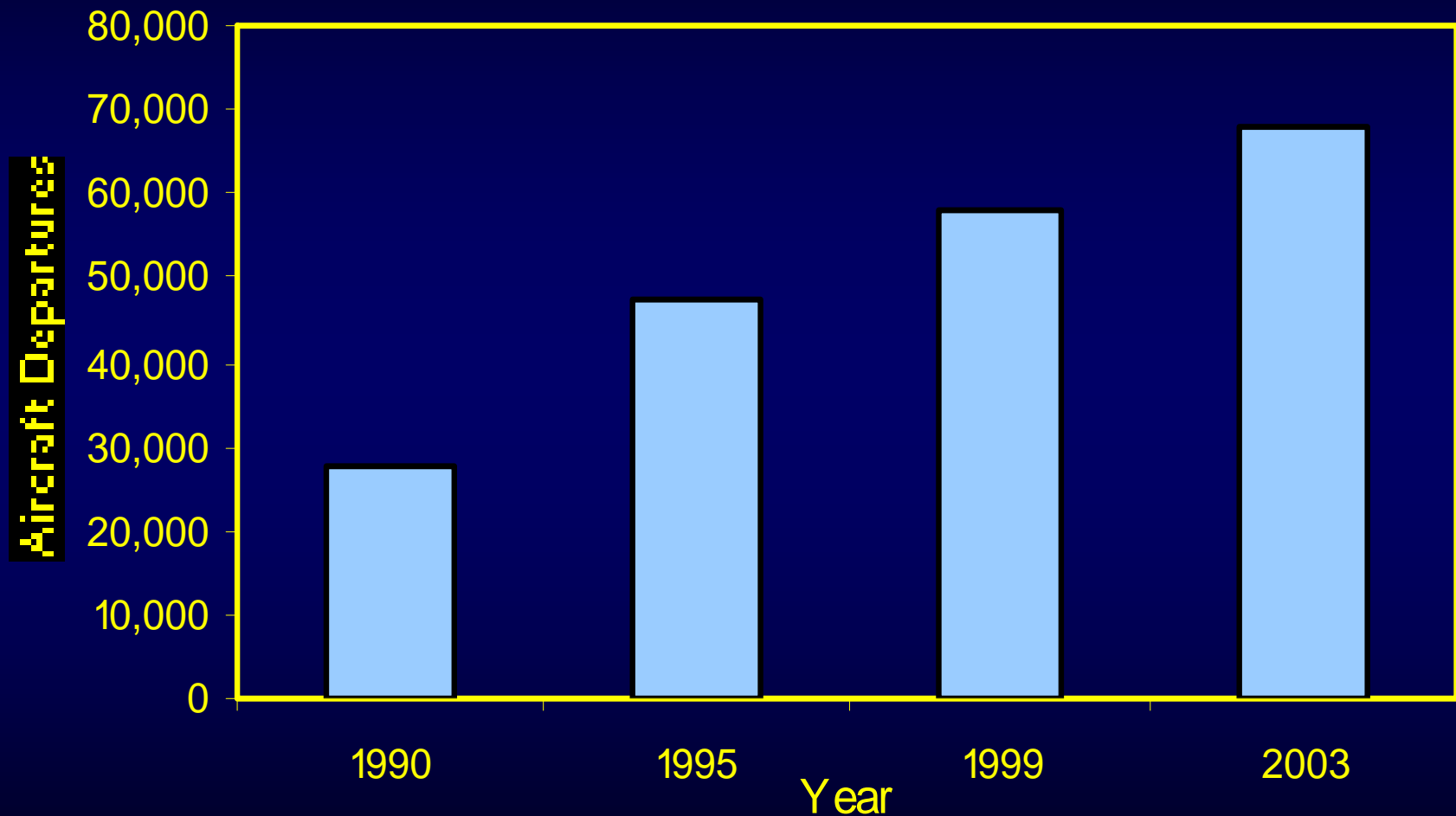
Combined Departure Share of 3 Largest "Hubs" -- 2003



Aircraft Departures by Airline by Airport Rank -- 2003

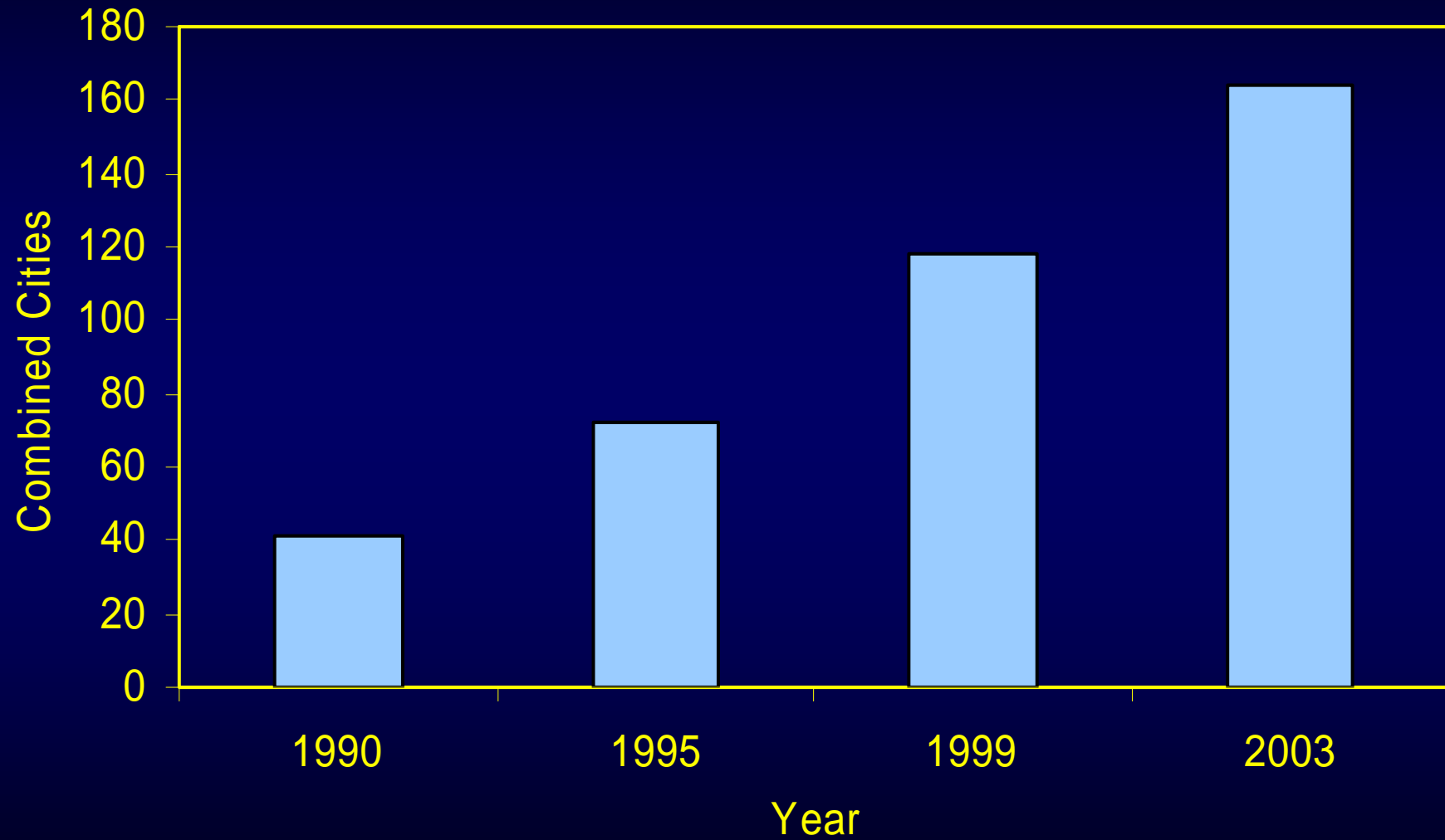


Southwest Combined Aircraft Departures from "Hubs"



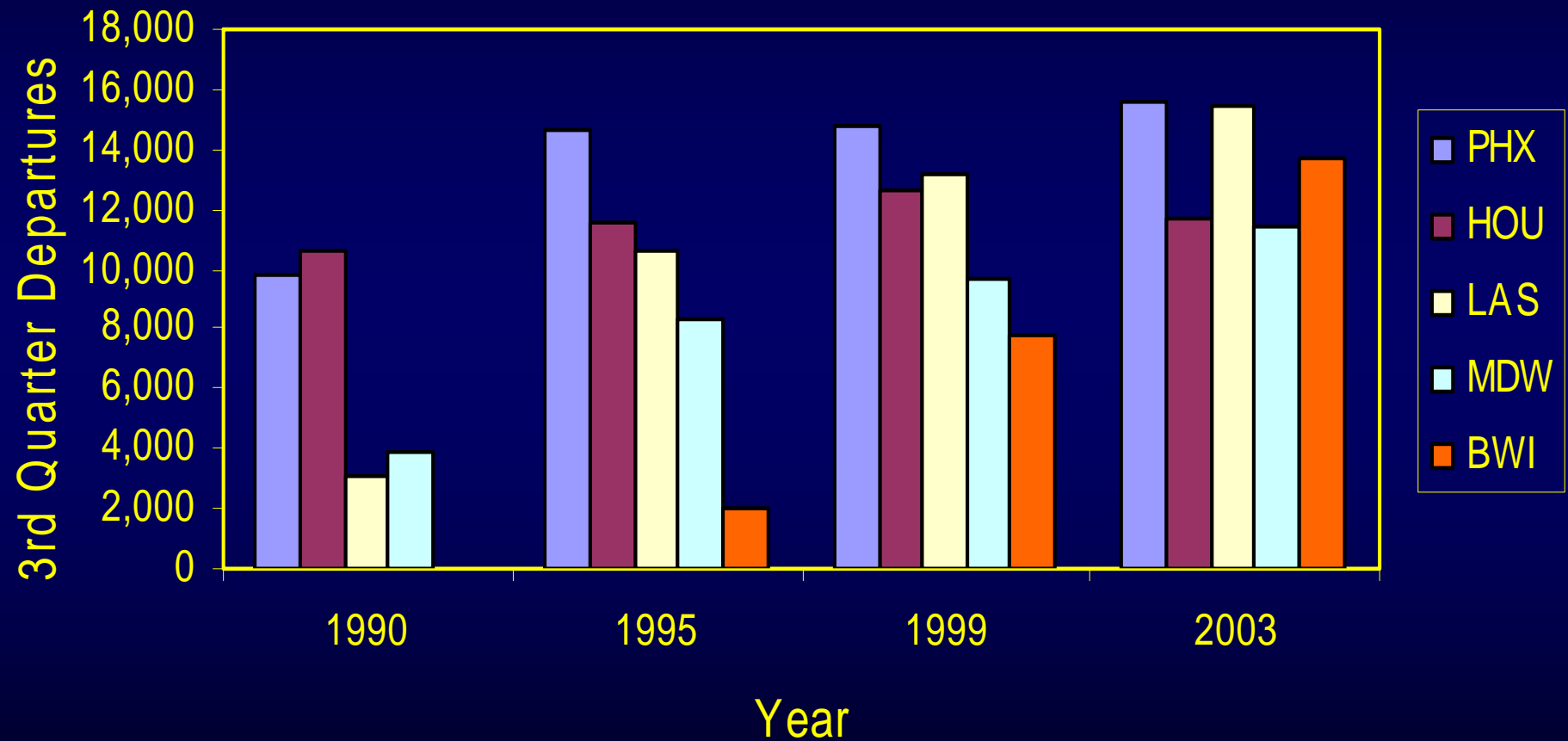
Southwest "Hubs" – Baltimore, Chicago, Houston, Las Vegas, Phoenix

Southwest Combined Cities Served from "Hubs"

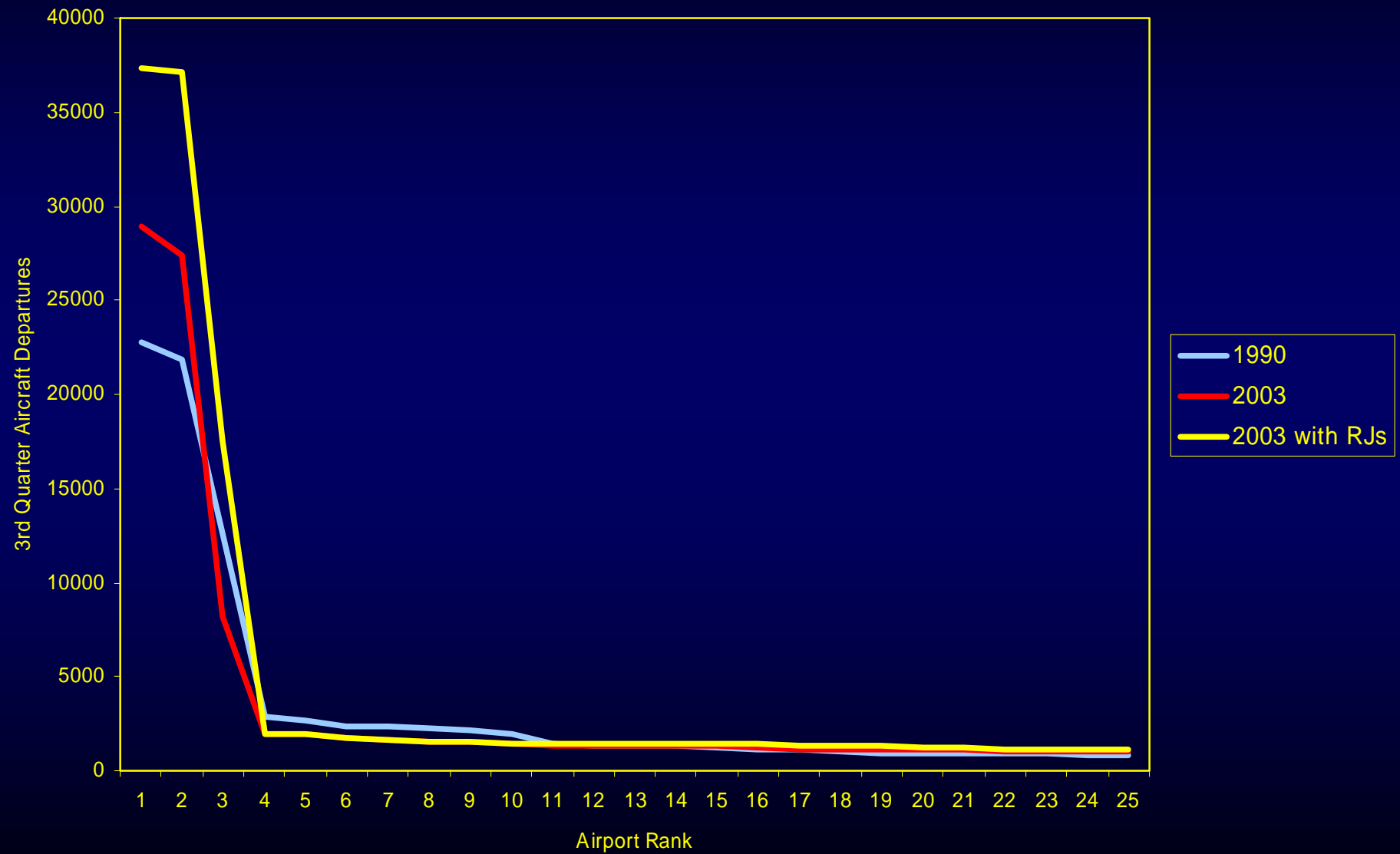


Southwest "Hubs" – Baltimore, Chicago, Houston, Las Vegas, Phoenix

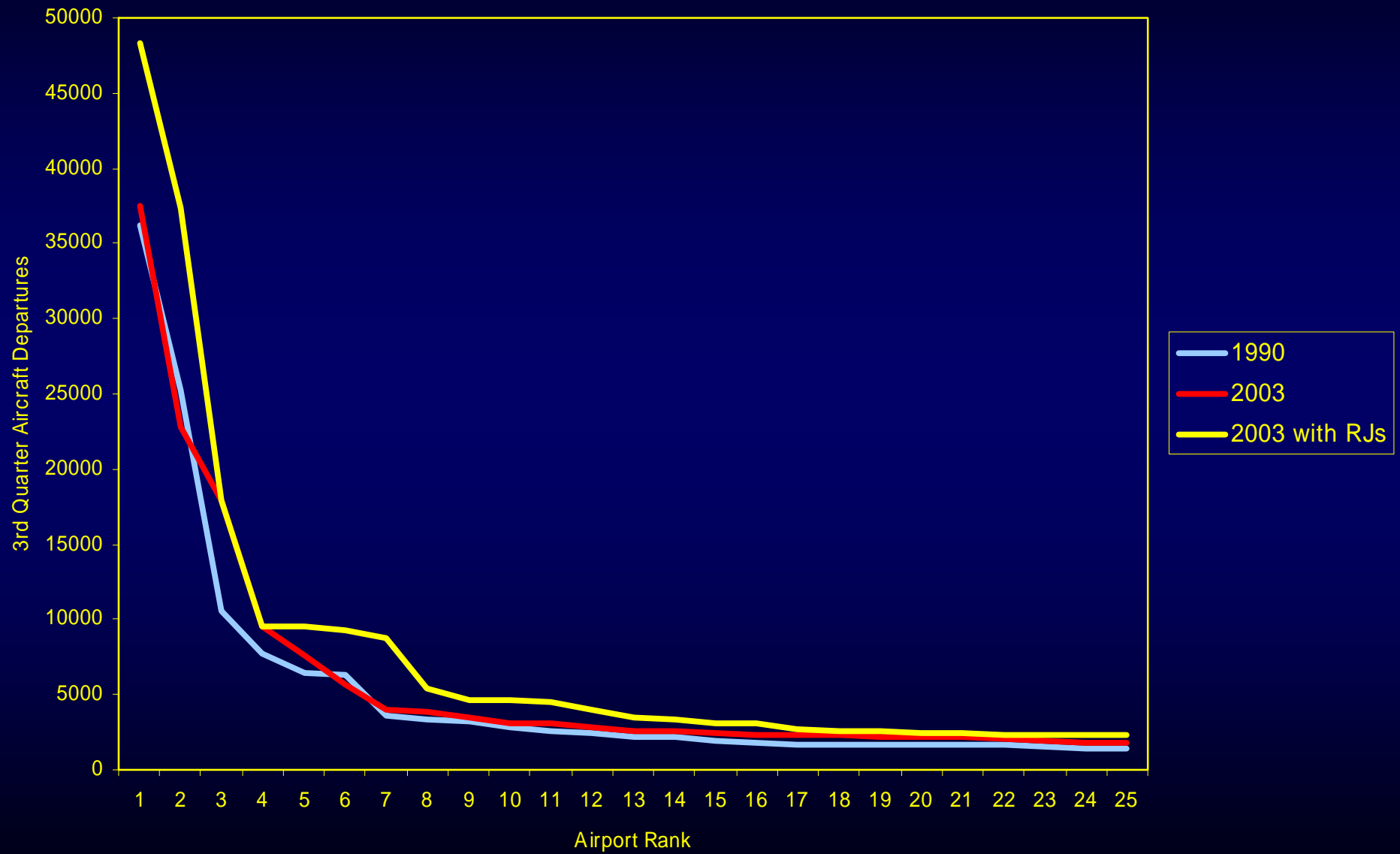
Southwest Aircraft Departures by "Hub"



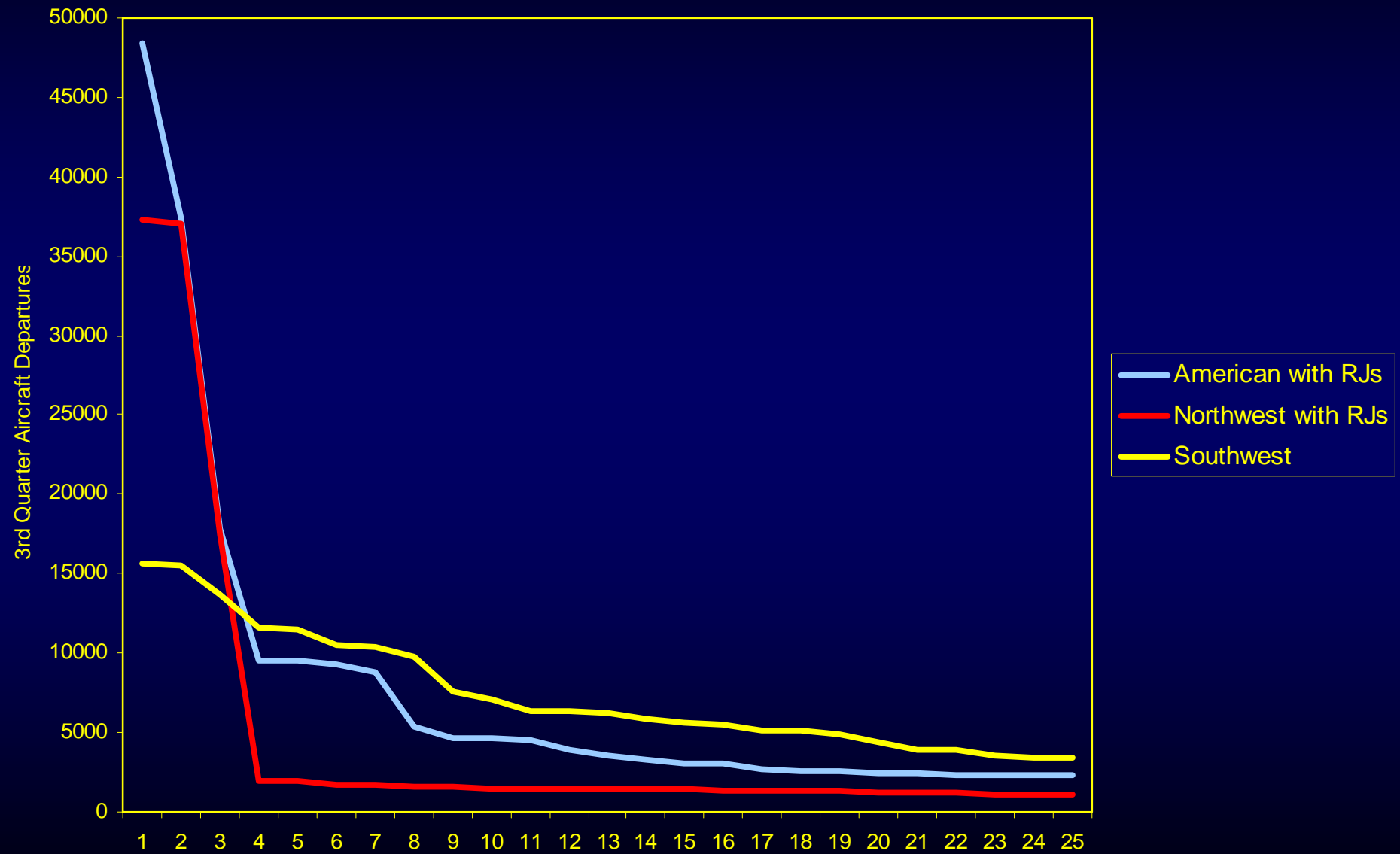
Northwest Airlines Hub Structure Changes



American Airlines Hub Structure Changes



Comparative Hub Structure -- 2003



Conclusions

- De-Hubbing (banks, spokes) limited
- Hub pullback
- Hub substitution and extension
- Southwest hub development model
- Emerging Network Strategies
 - Hill (distributed network)
 - Cliff
 - Shoulders