



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

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

Clinton V. Oster, Jr.  
Indiana University

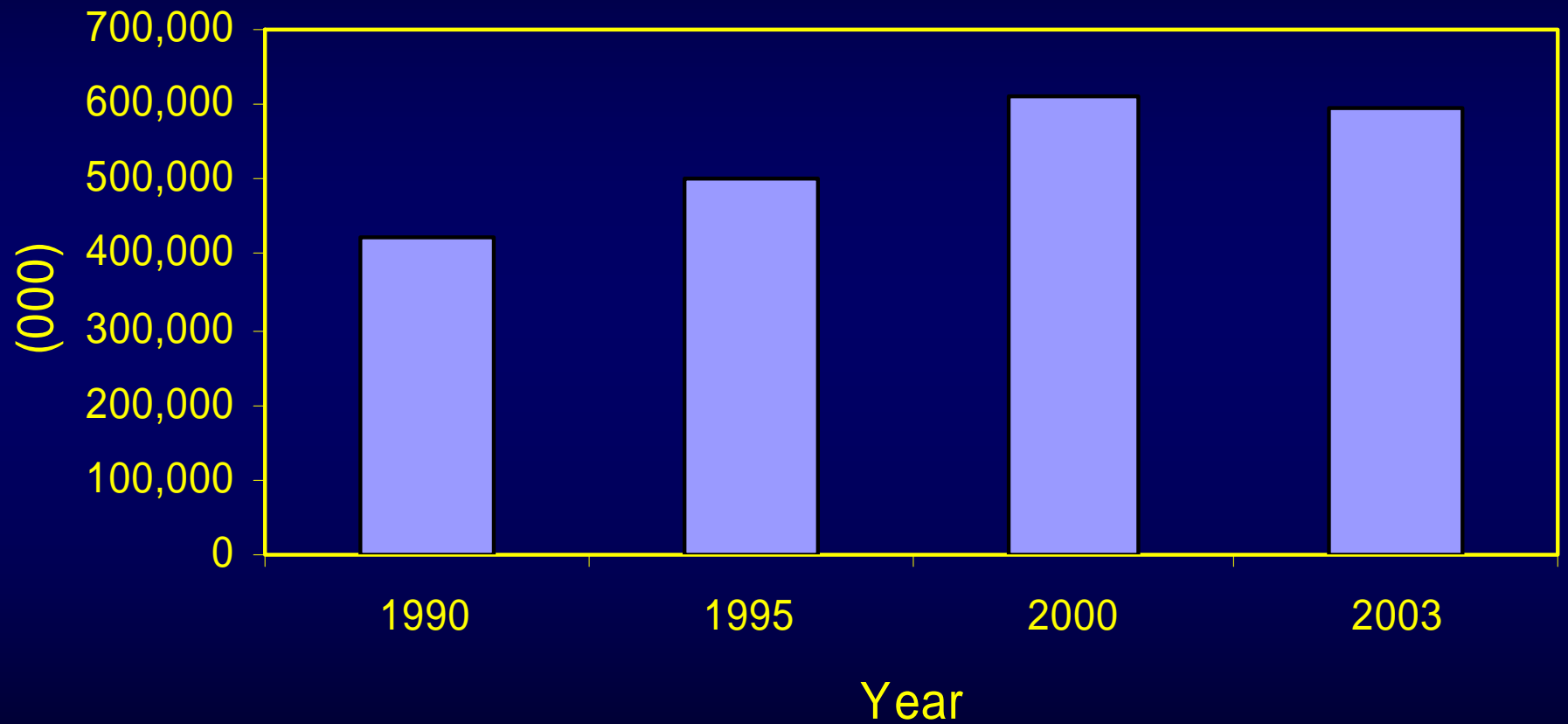
John S. Strong  
College of William & Mary

Transportation Research Forum  
March 7, 2005

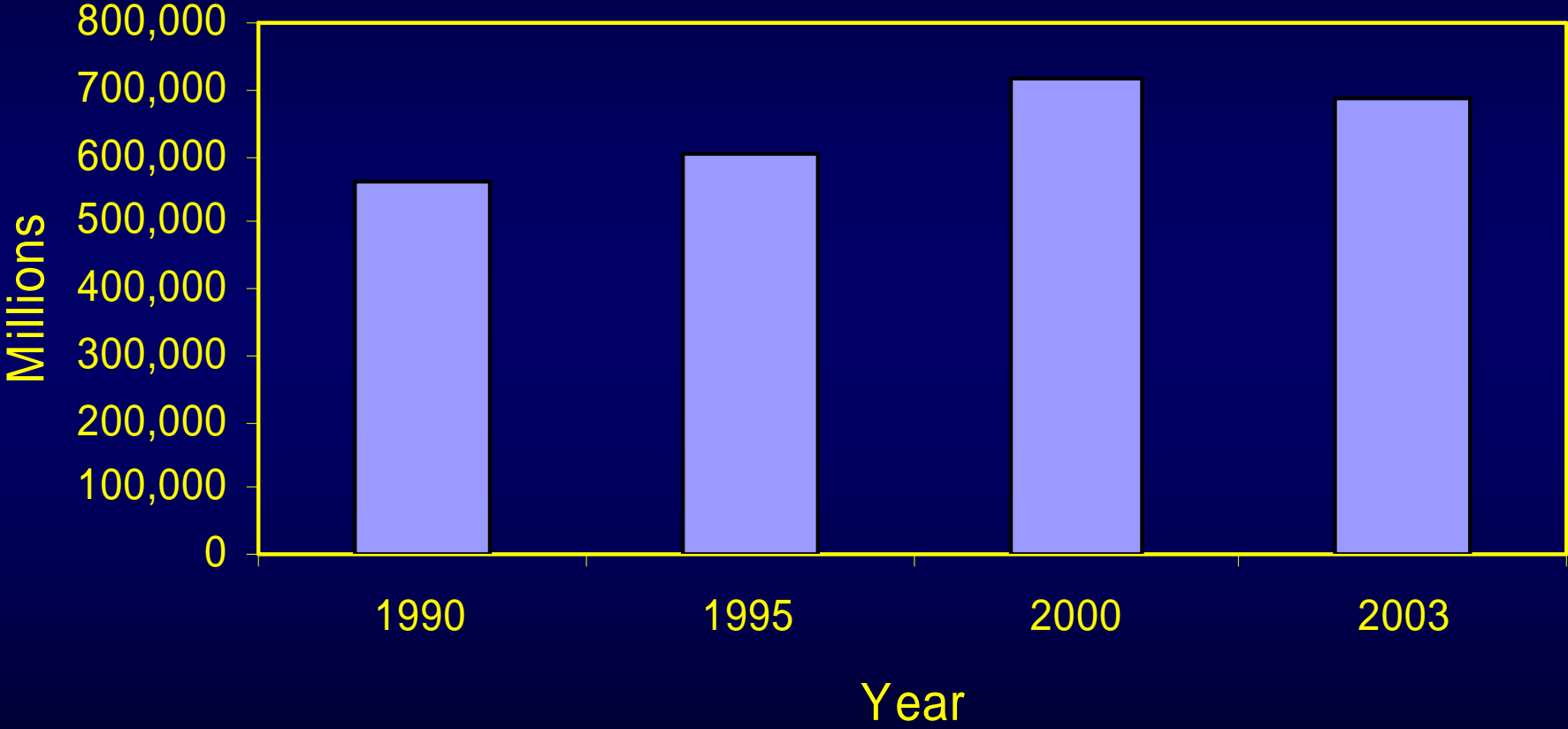
# Network Strategy Issues

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

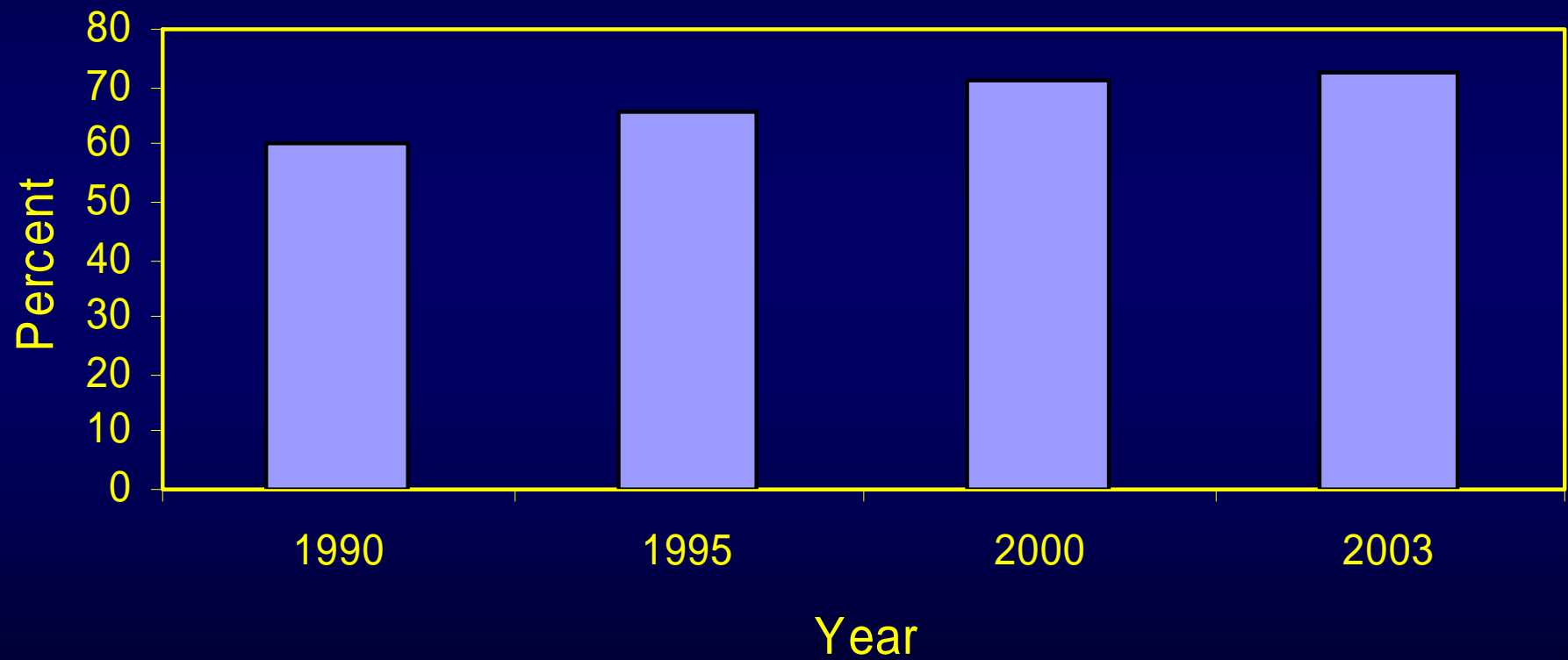
## Domestic Enplanements - Major, National, and Regional



# Domestic ASMs - Major, National, and Regional



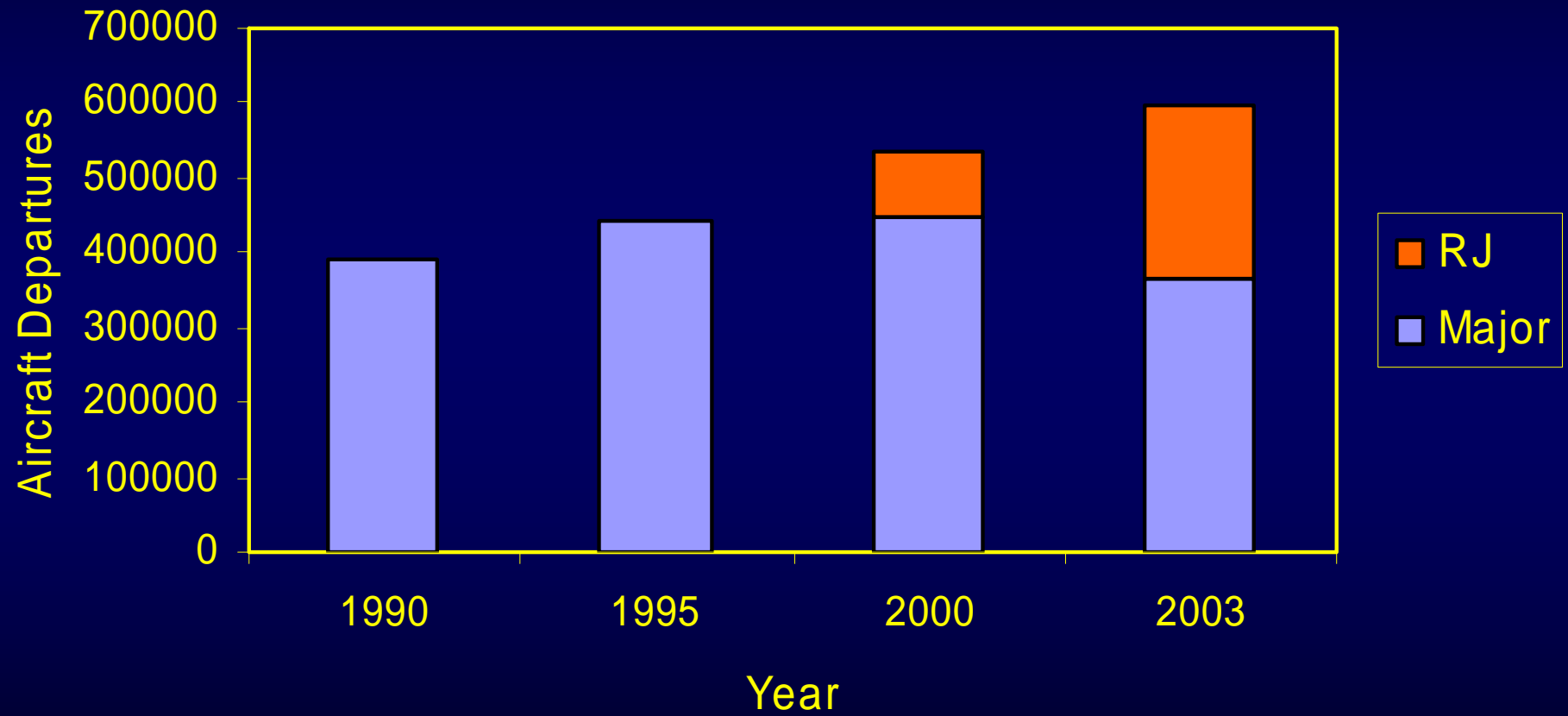
# Domestic Passenger Load Factors - Major, National, and Regional



# Carriers and Hubs

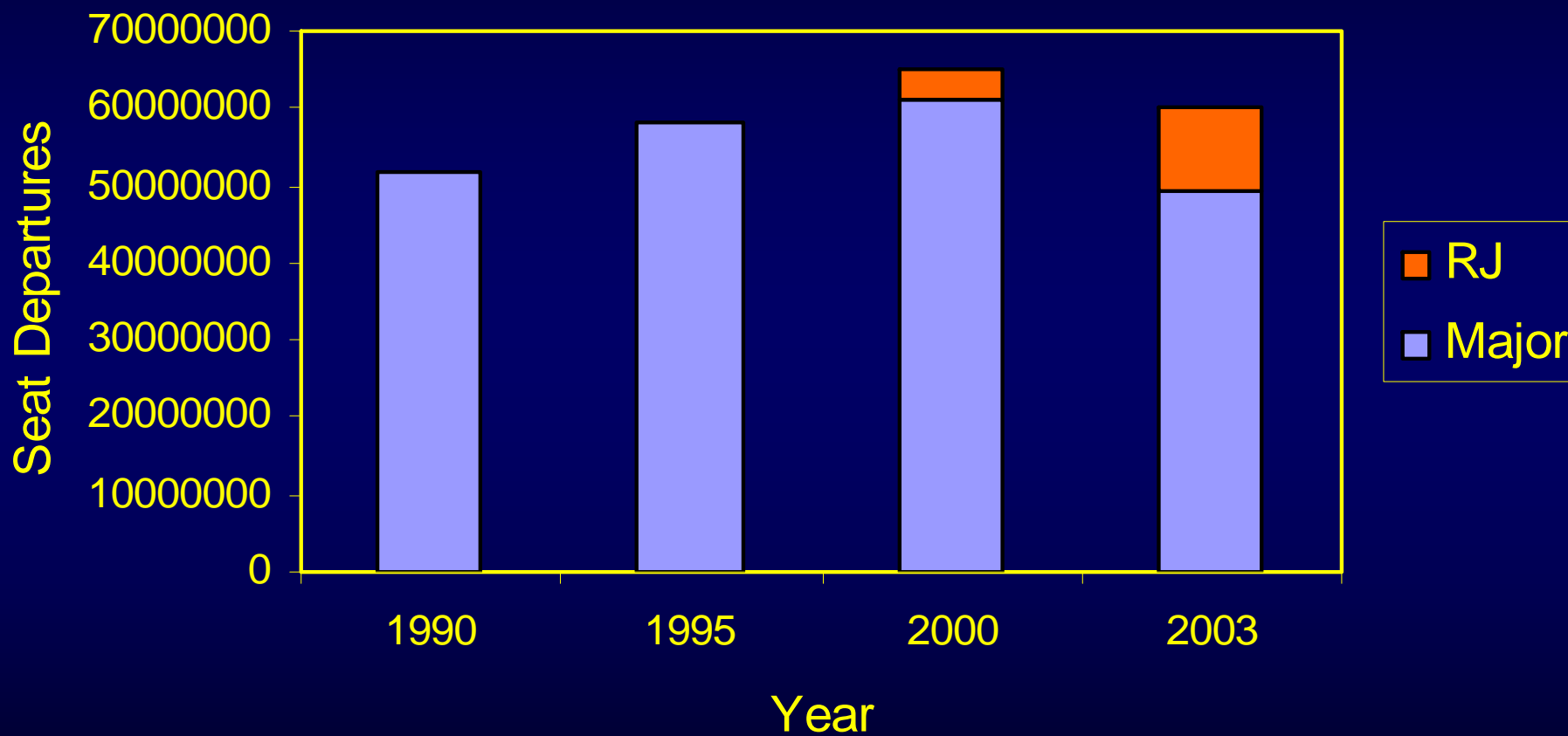
- America West – Las Vegas and Phoenix
- American – Chicago and Dallas-Fort Worth
- Continental – Cleveland, Houston, Newark
- Delta – Atlanta, Cincinnati, Dallas-Fort Worth, Salt Lake City
- Northwest – Detroit, Memphis, Minneapolis-St. Paul
- United – Chicago and Denver
- US Airways – Charlotte, Philadelphia,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

## Combined Aircraft Departures from Hubs

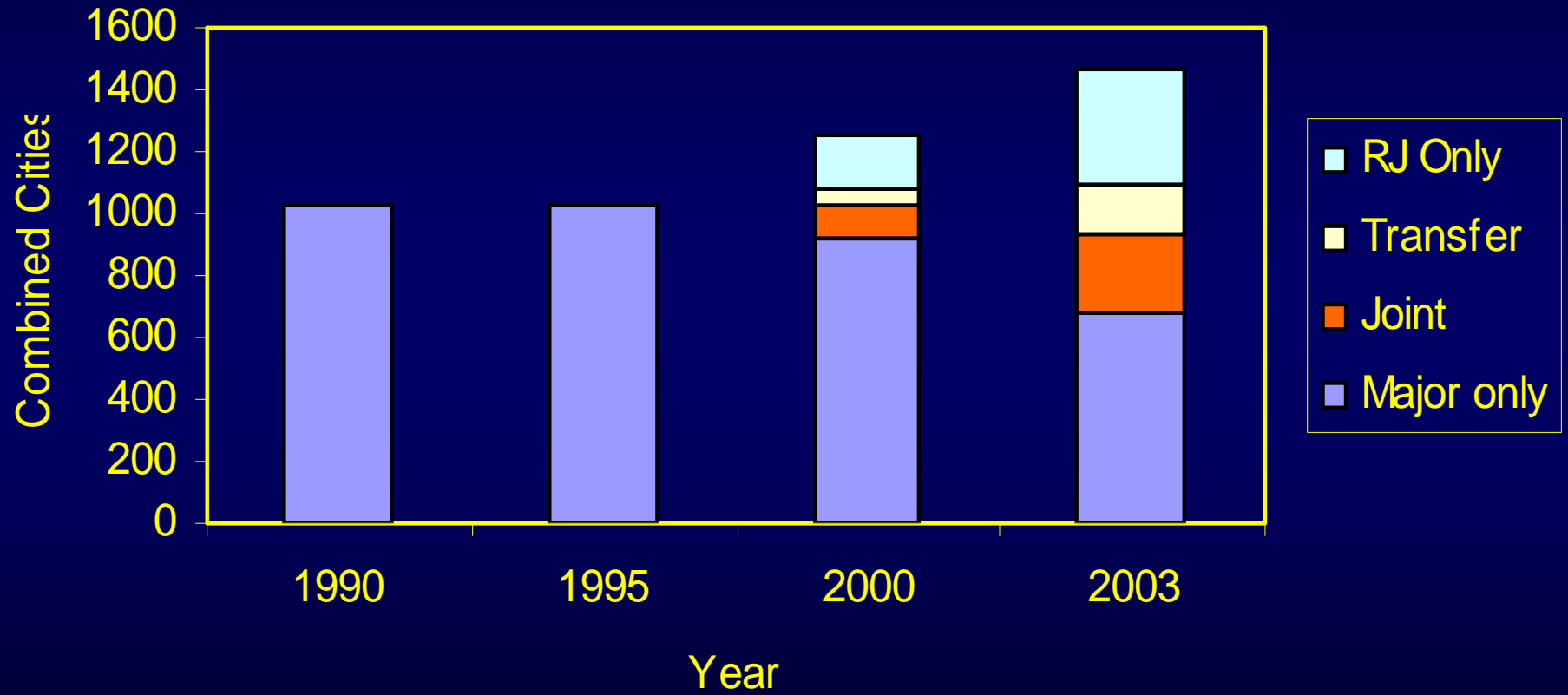




## Combined Seat Departures from Hubs



## Combined Cities Served from Hubs

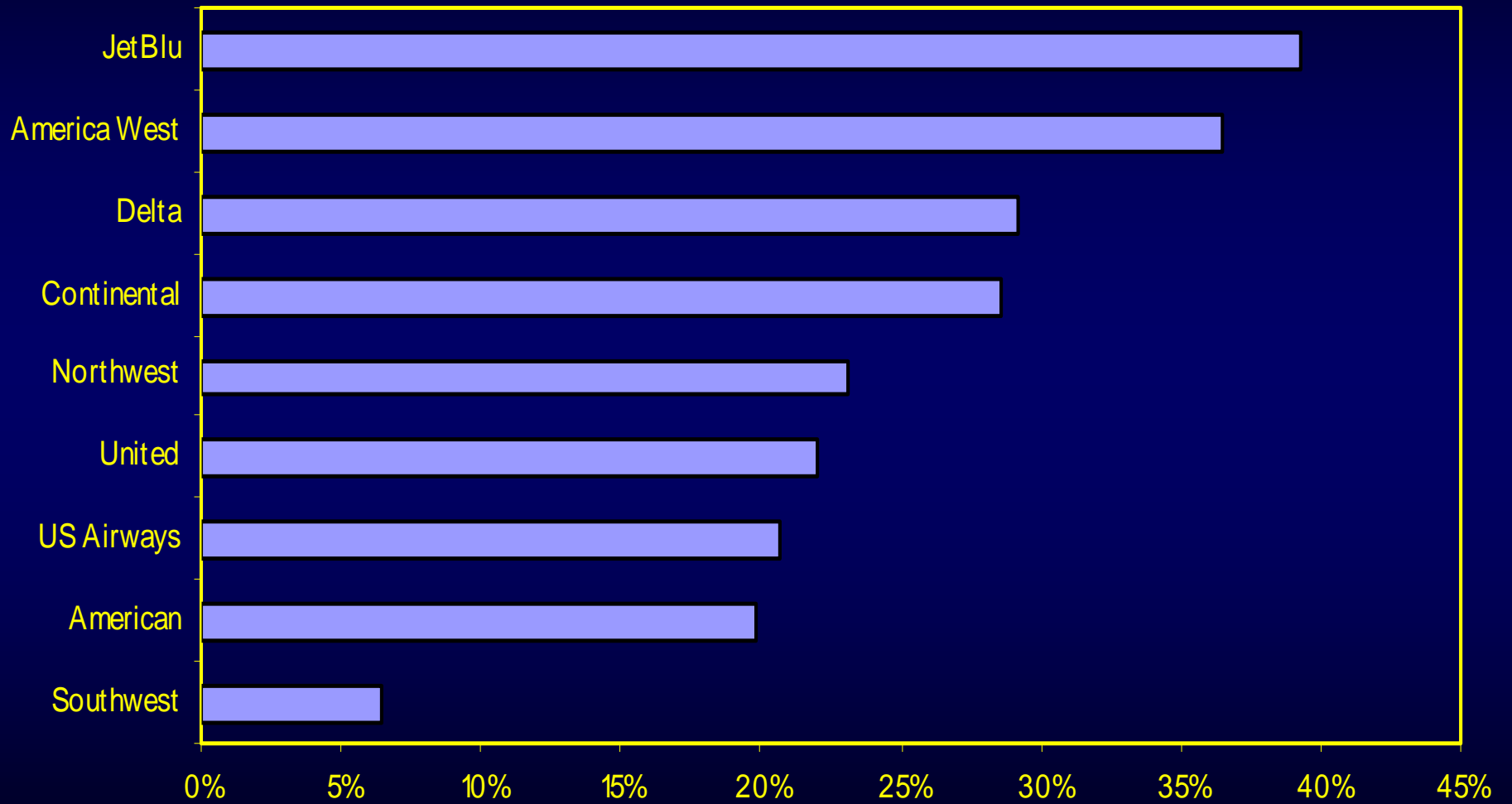


Hub	Average RJ Distance	Daily RJ Departures
Atlanta	280	479
Charlotte	447	100
Chicago	391	415
Cincinnati	431	347
Cleveland	436	163
Dallas	515	320
Denver	577	107
Detroit	362	148
Houston	539	216
Las Vegas	507	6
Memphis	424	142
Minneapolis	493	106
Newark	481	149
Philadelphia	418	74
Phoenix	545	100
Pittsburgh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

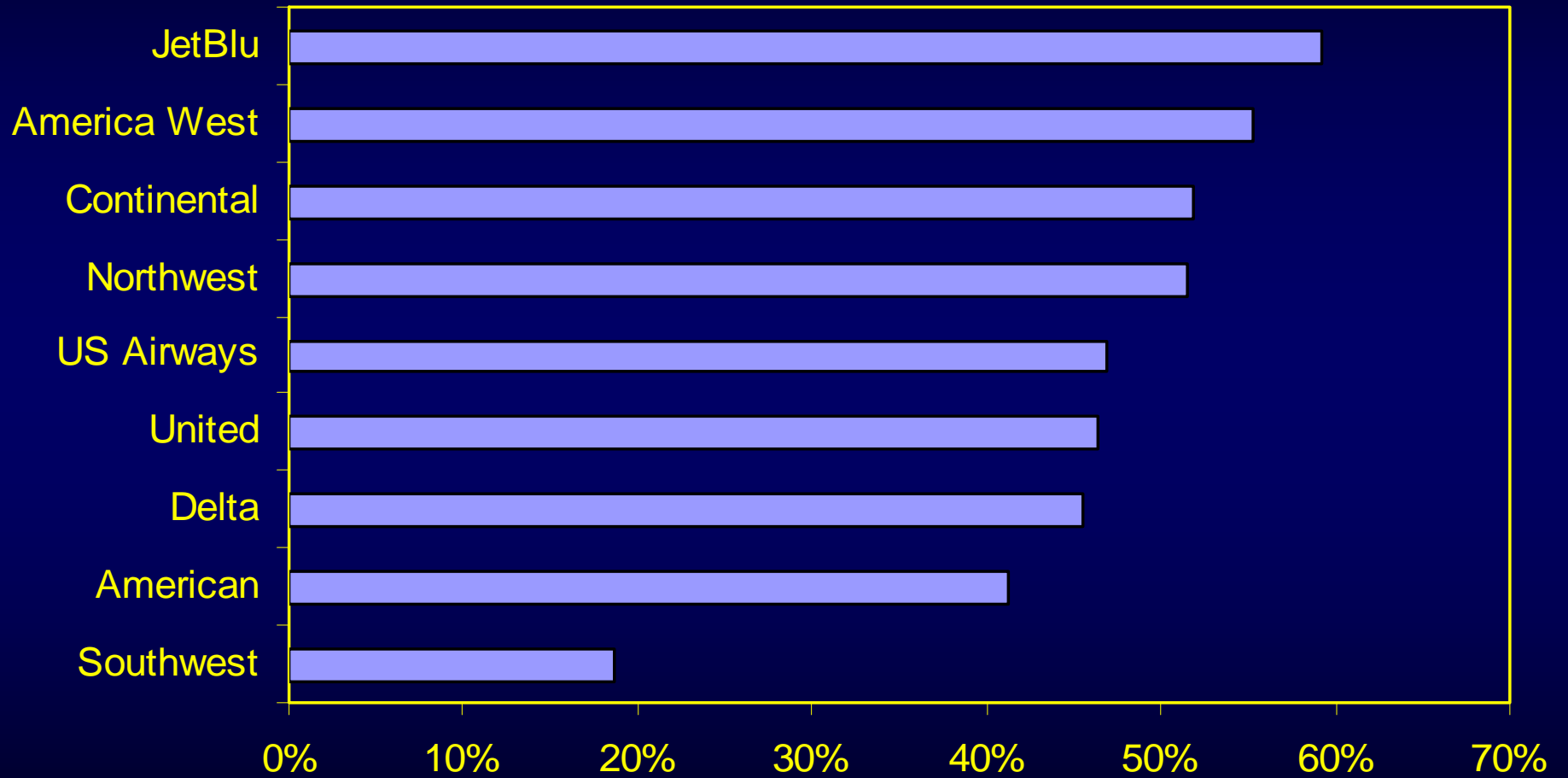
## Role of Regional Jets at Hubs -- 2003

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%

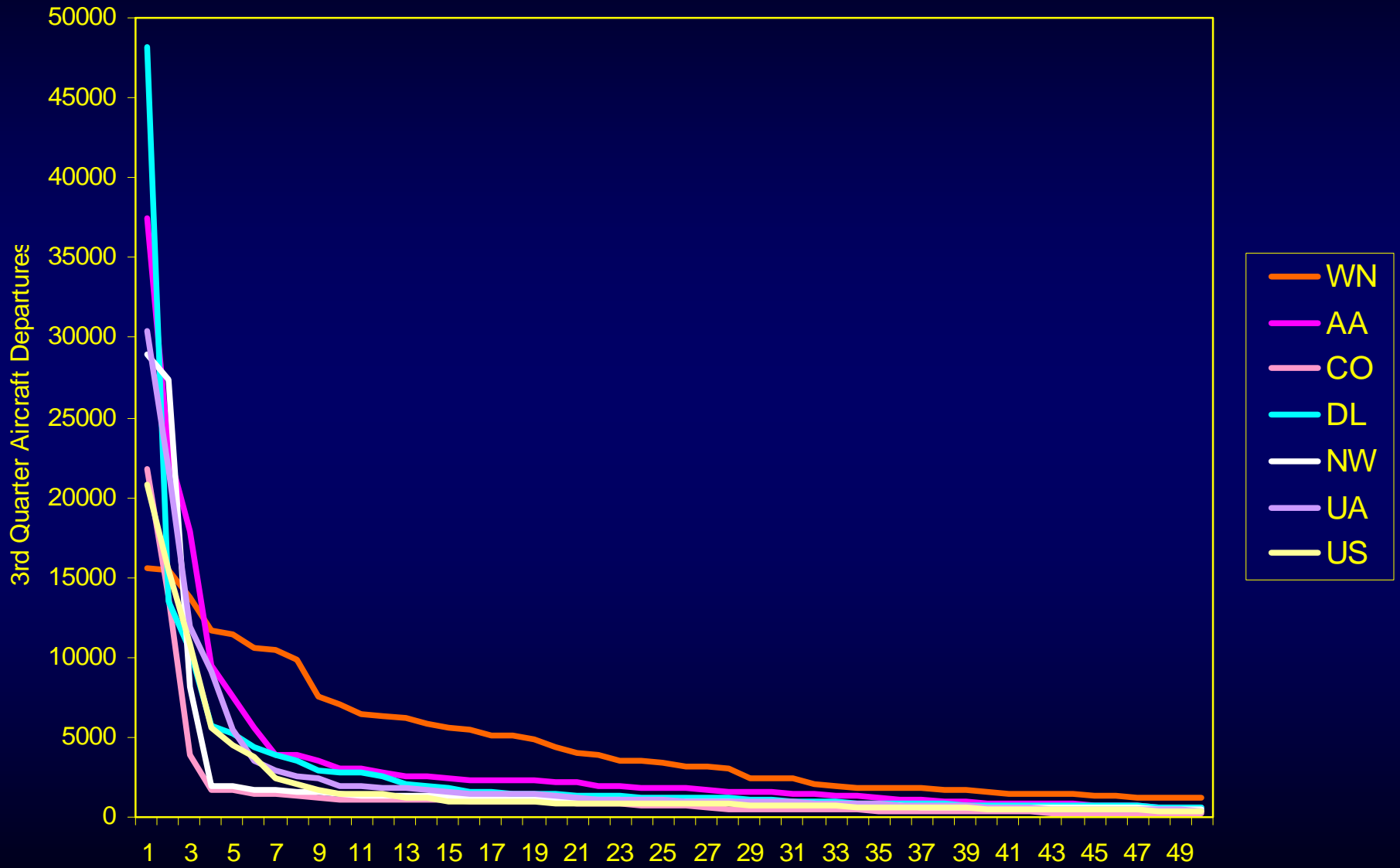
## Departure Share of Each Airline's Largest Hub



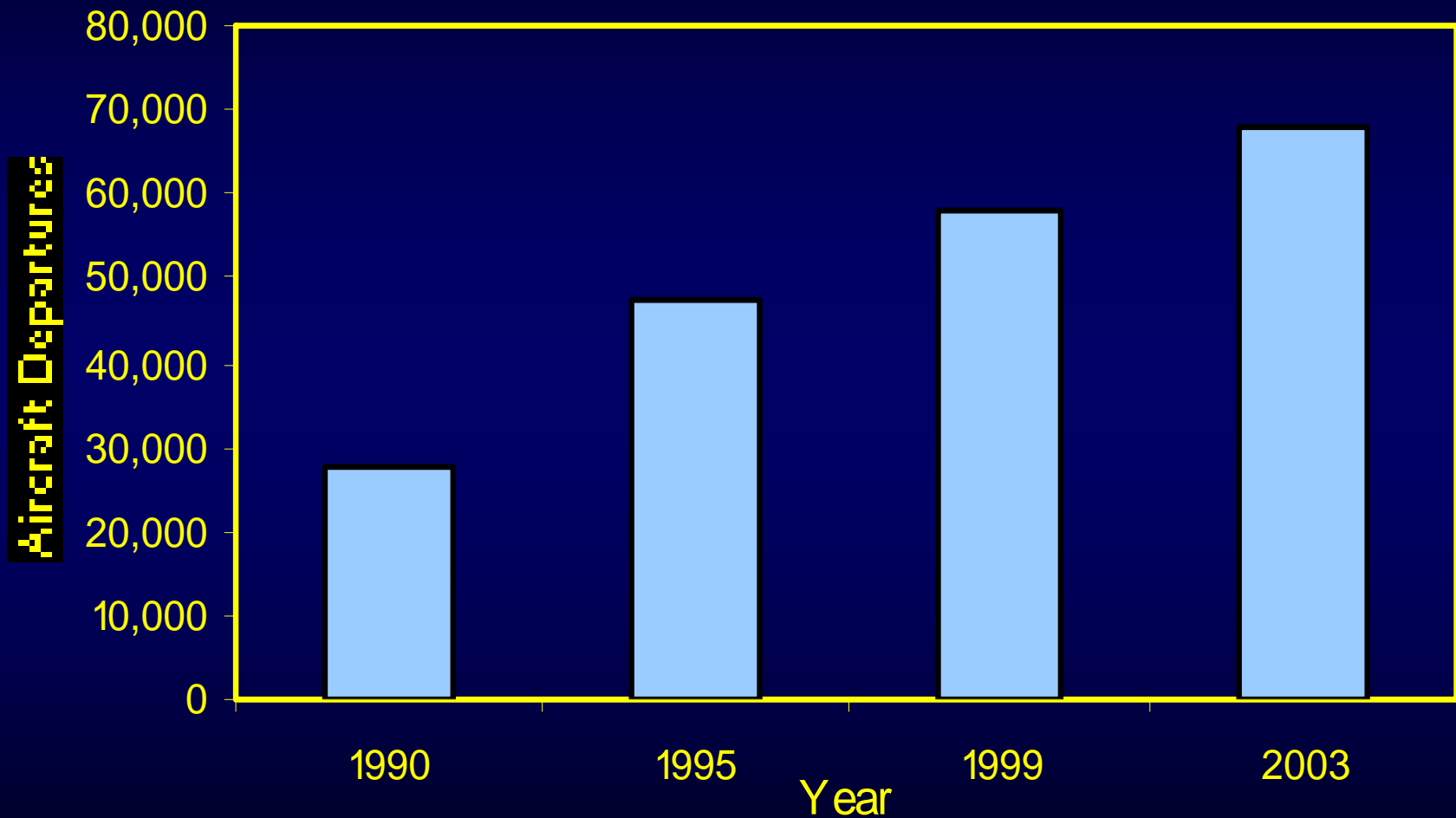
Combined Departure Share of 3 Largest "Hubs" -- 2003



# Aircraft Departures by Airline by Airport Rank -- 2003



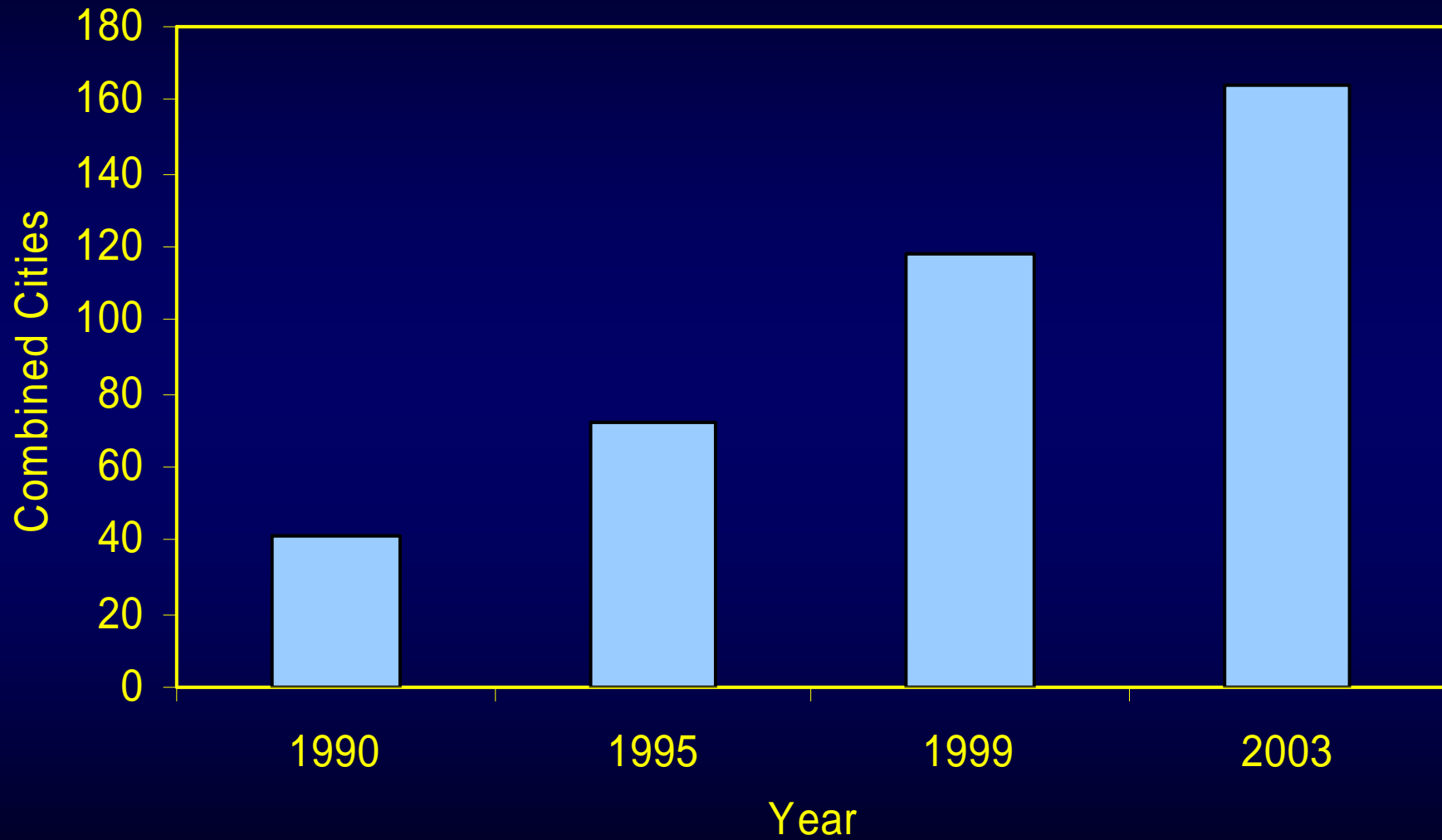
## Southwest Combined Aircraft Departures from "Hubs"



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

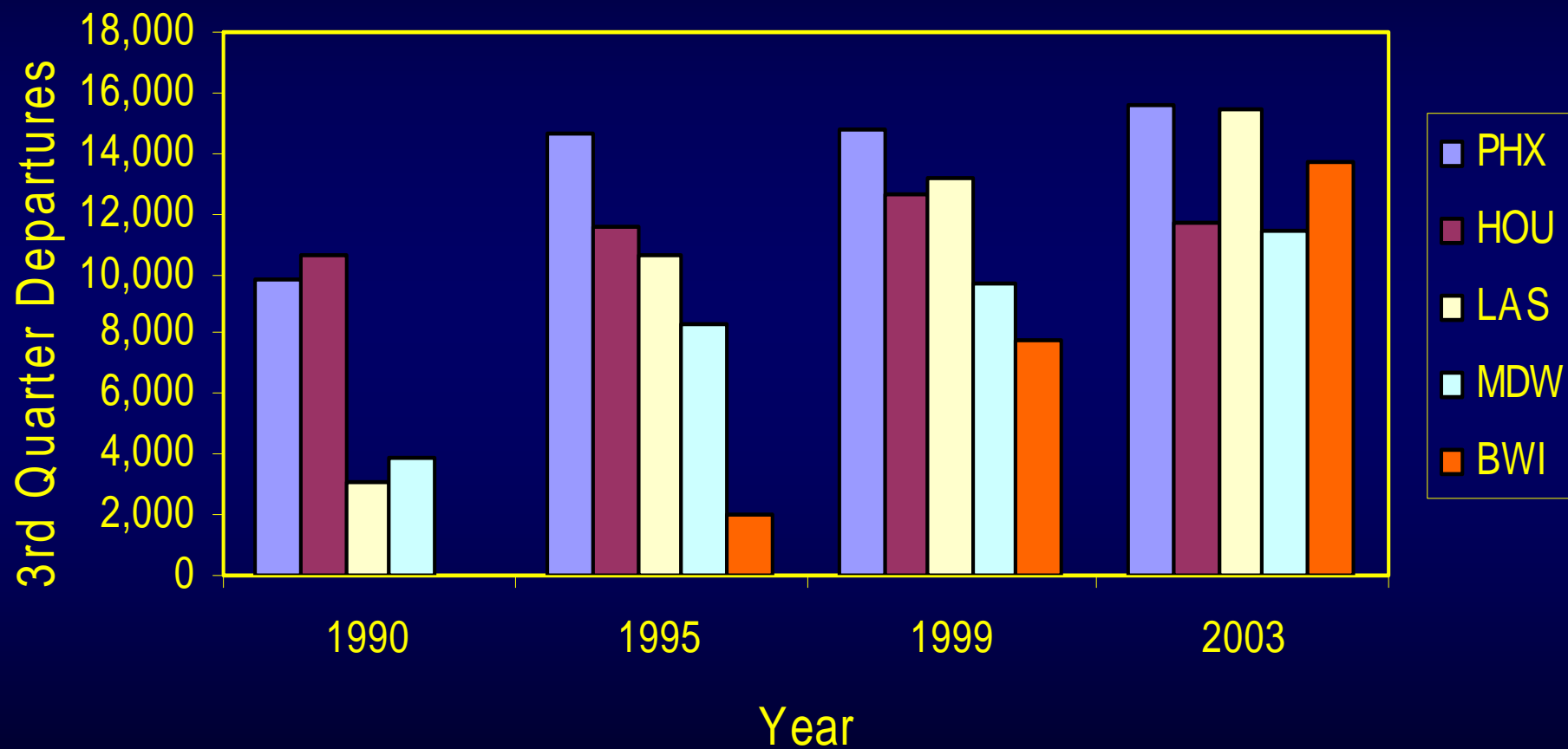


## Southwest Combined Cities Served from "Hubs"

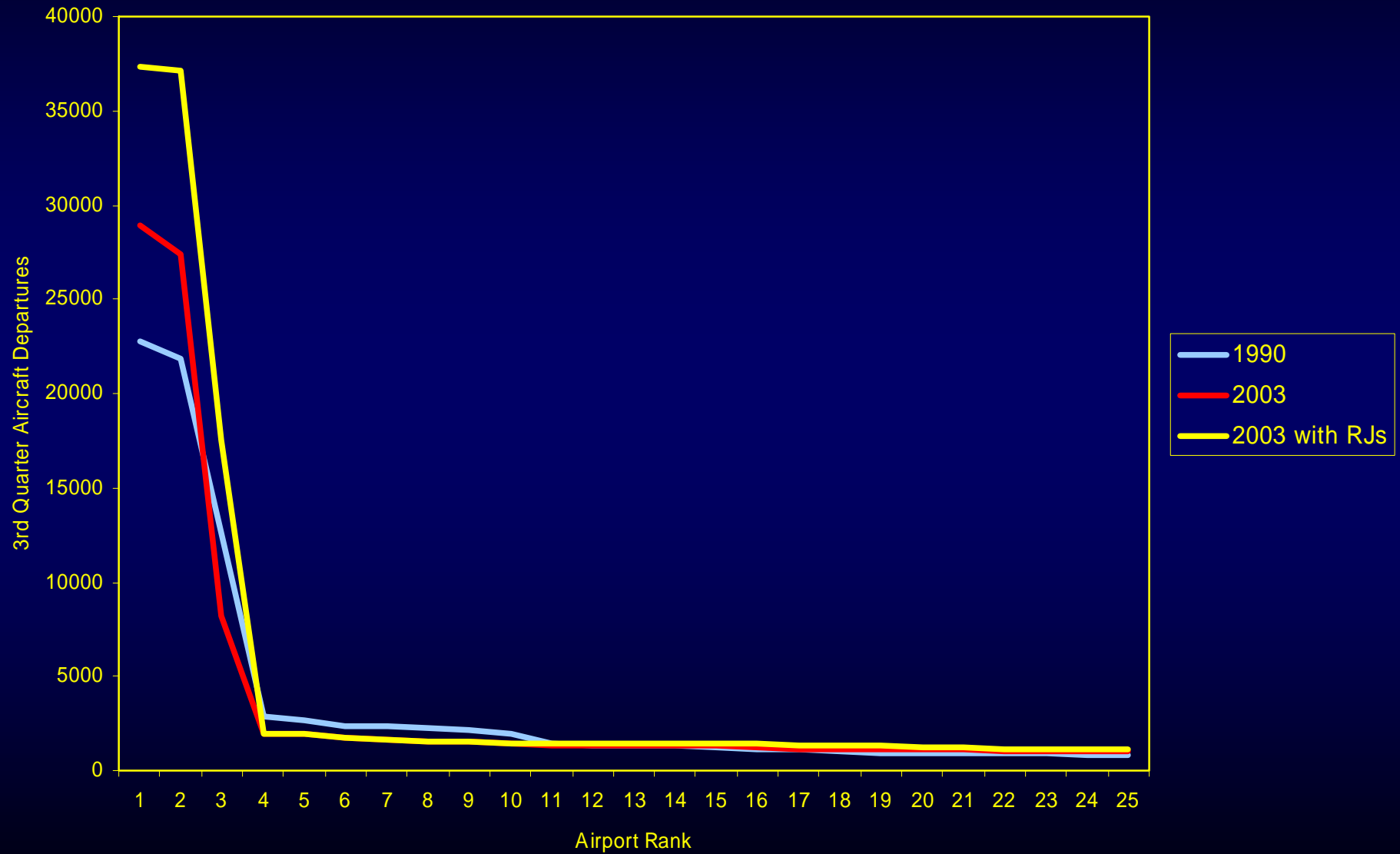


Southwest "Hubs" – Baltimore, Chicago, Houston, Las Vegas, Phoenix

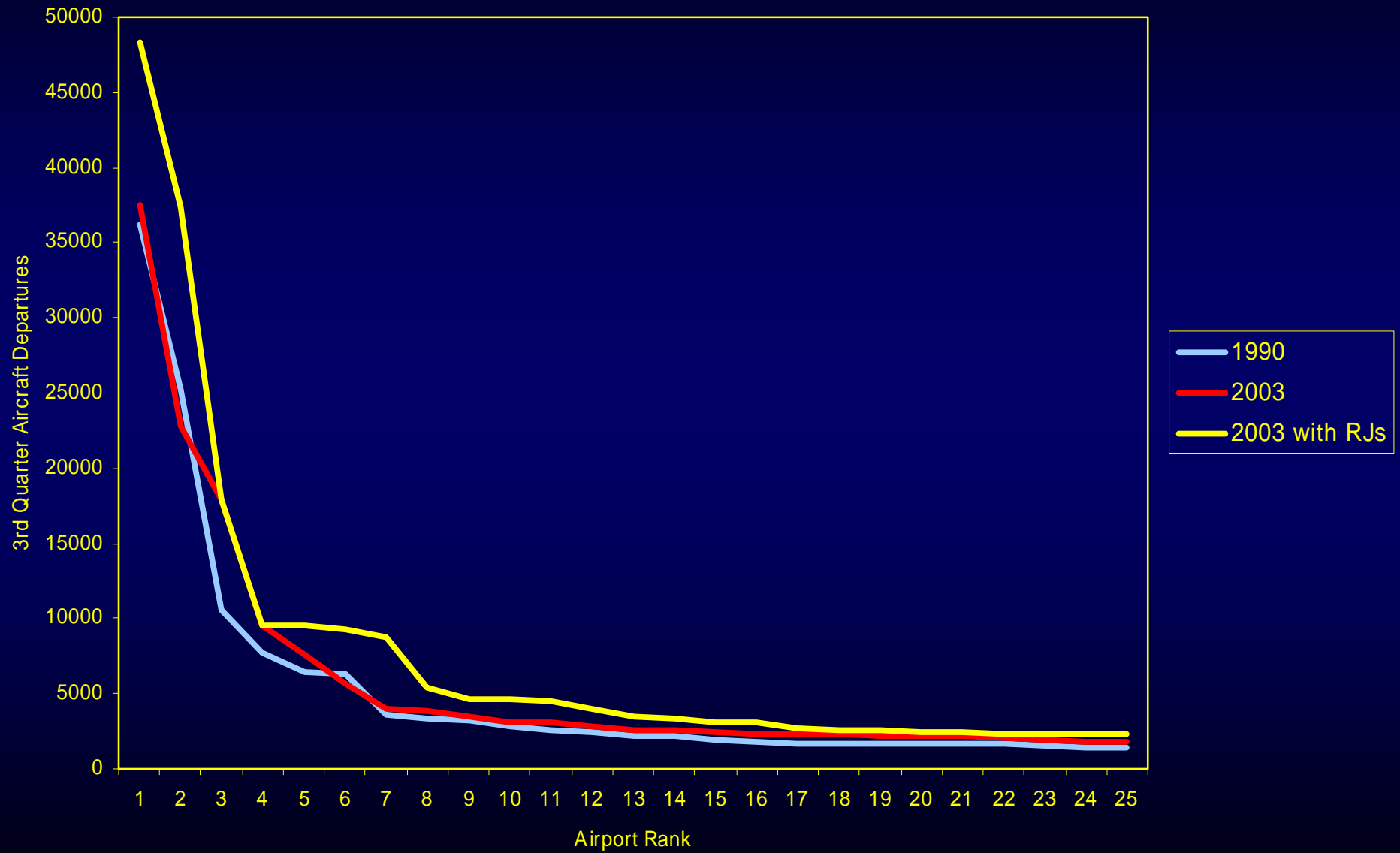
## Southwest Aircraft Departures by "Hub"



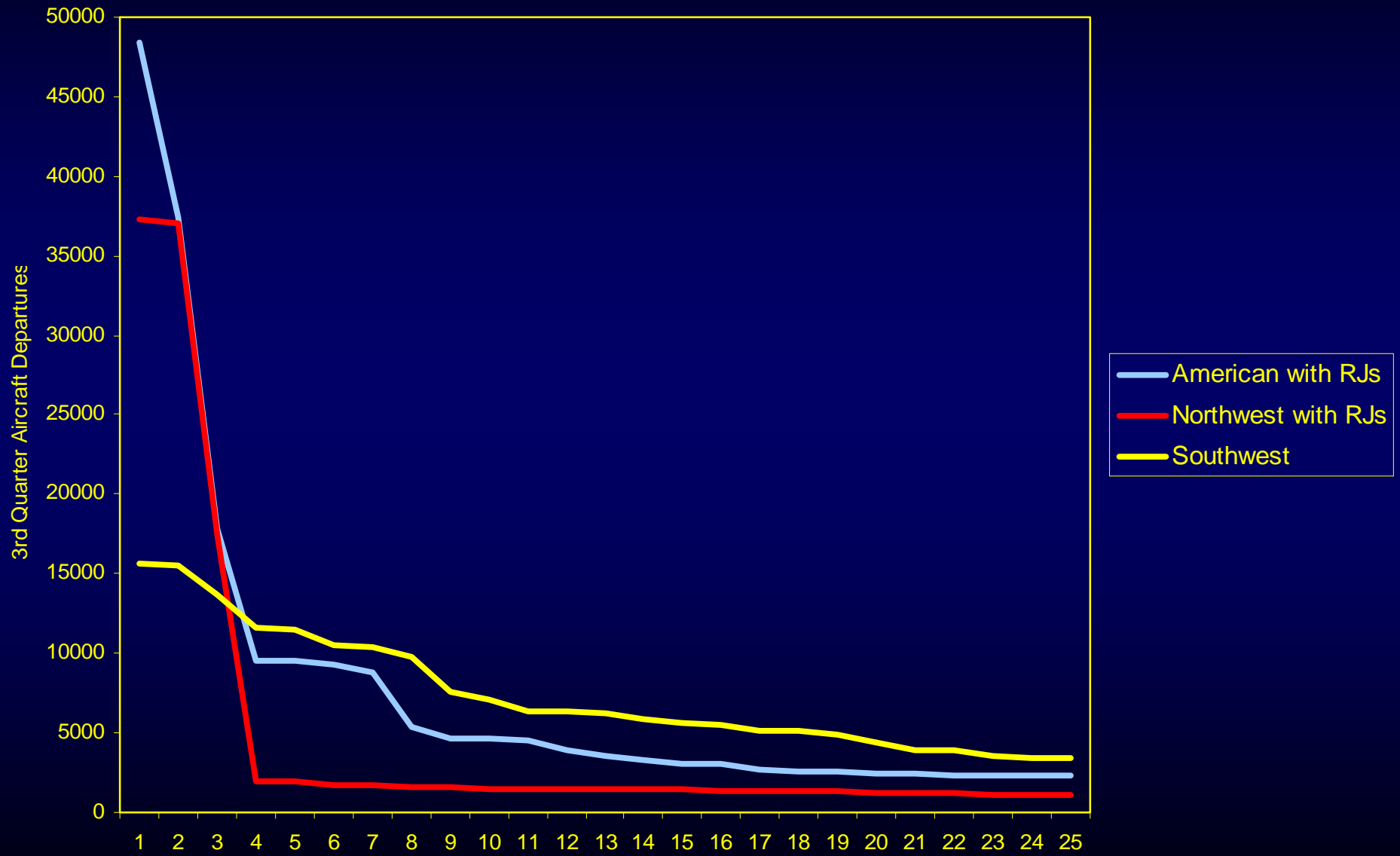
# Northwest Airlines Hub Structure Changes



# 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