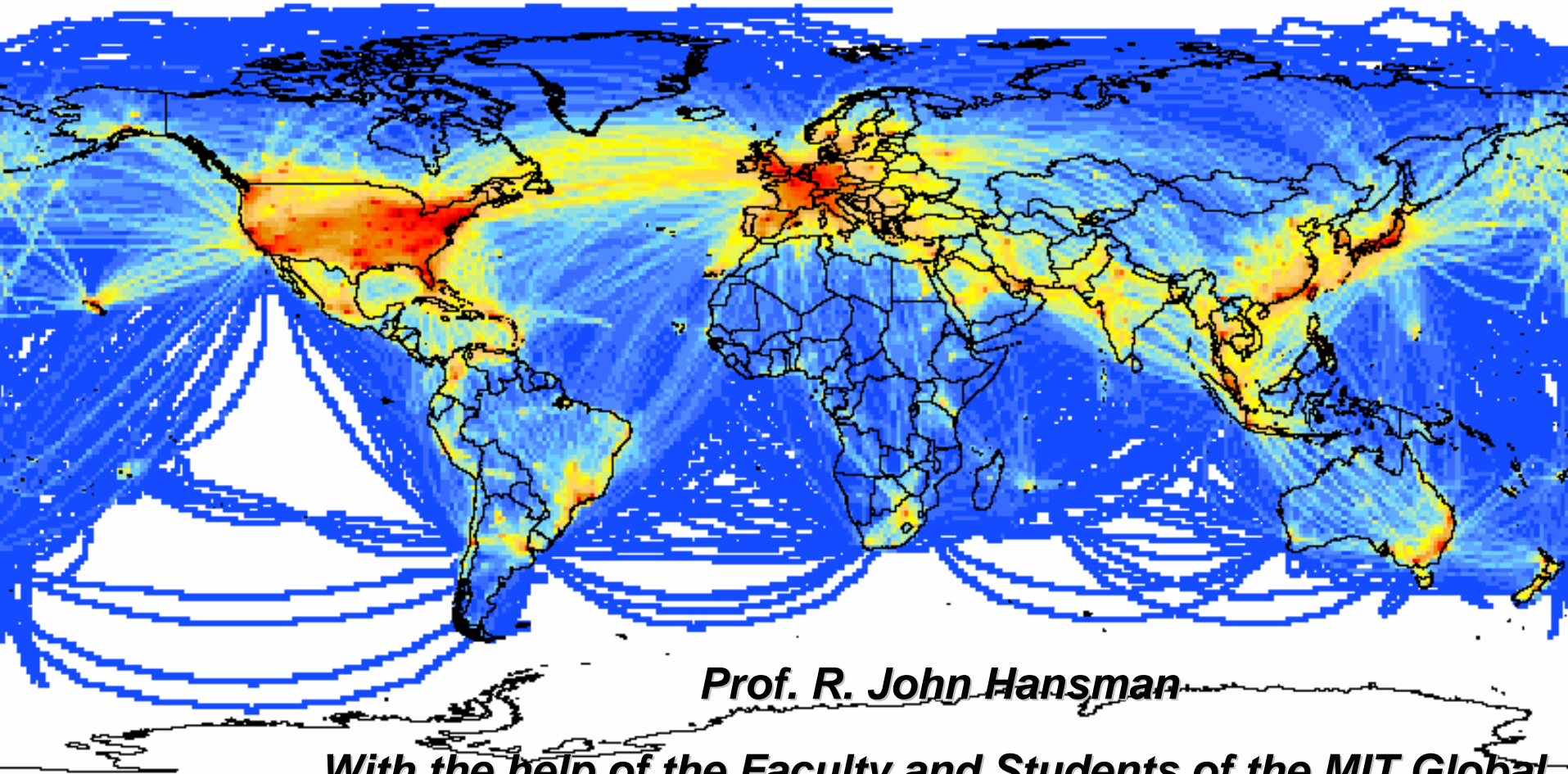




Airline Industry Recent Trend Update (November 2005)



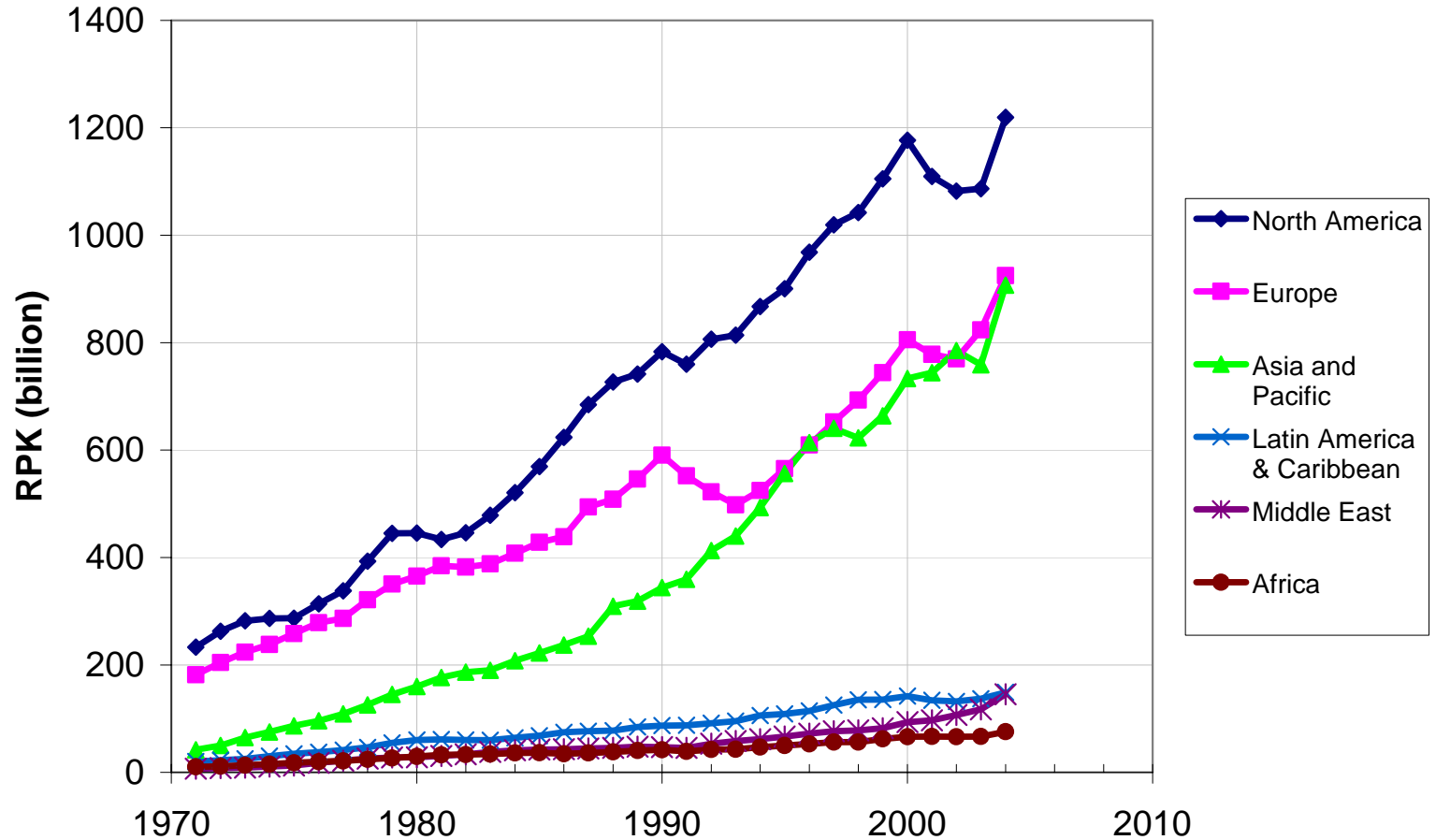
Prof. R. John Hansman

*With the help of the Faculty and Students of the MIT Global
Industry Study*

rjhans@mit.edu

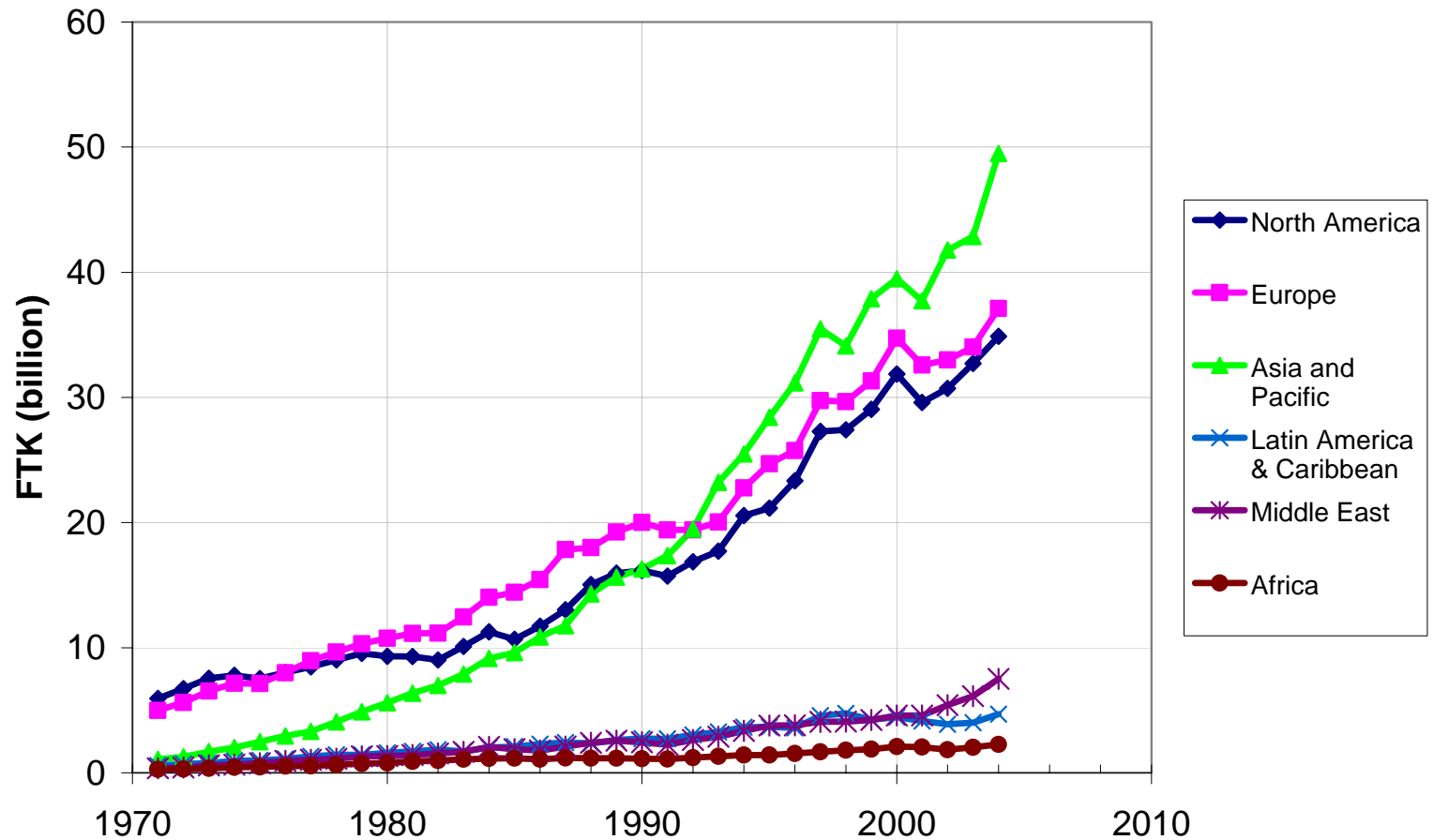
RPK by Region

Scheduled Revenue Passenger-Kilometers by Region



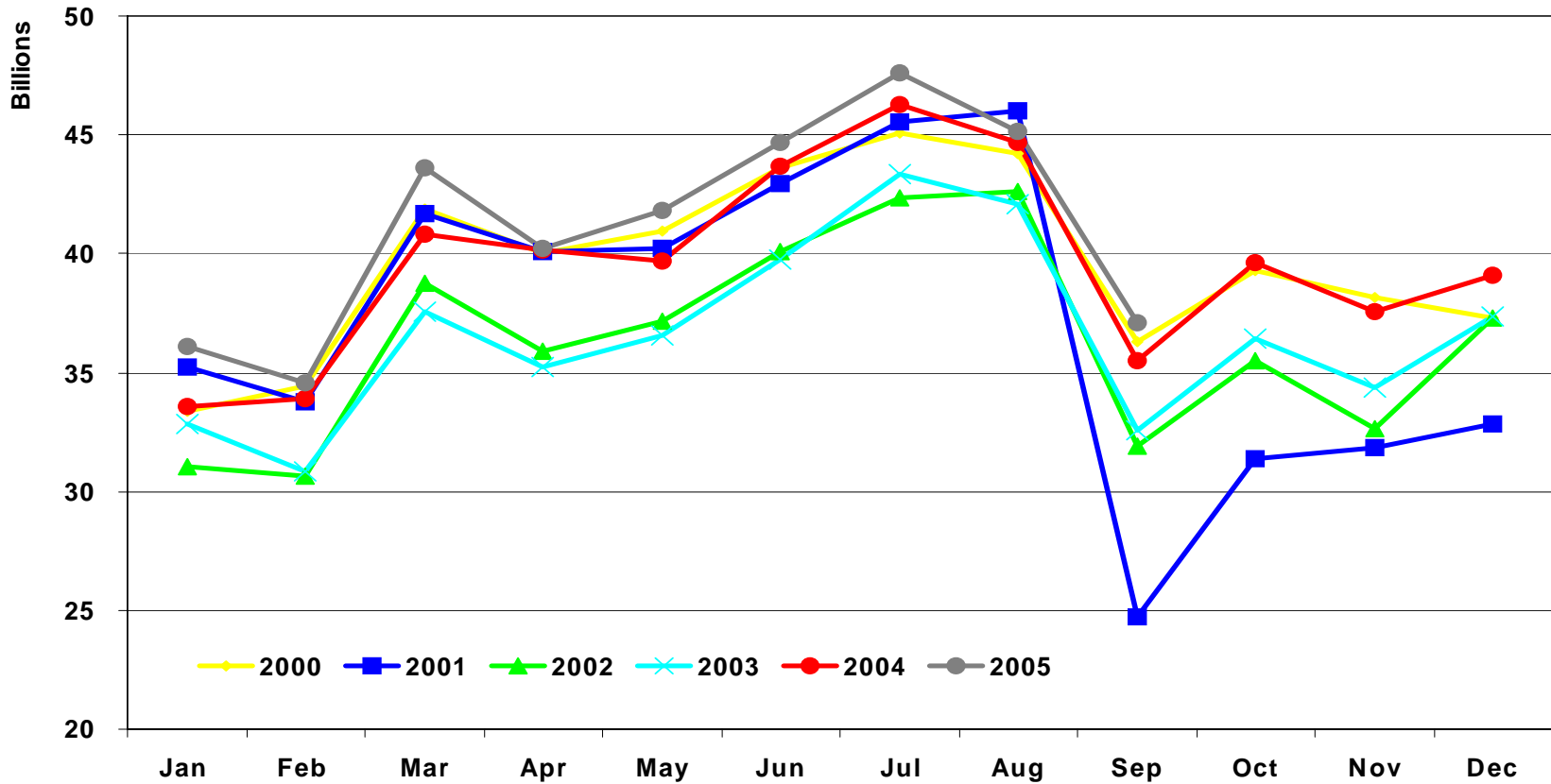
Freight Trends by Region

Freight Tonne-Kilometers by Region

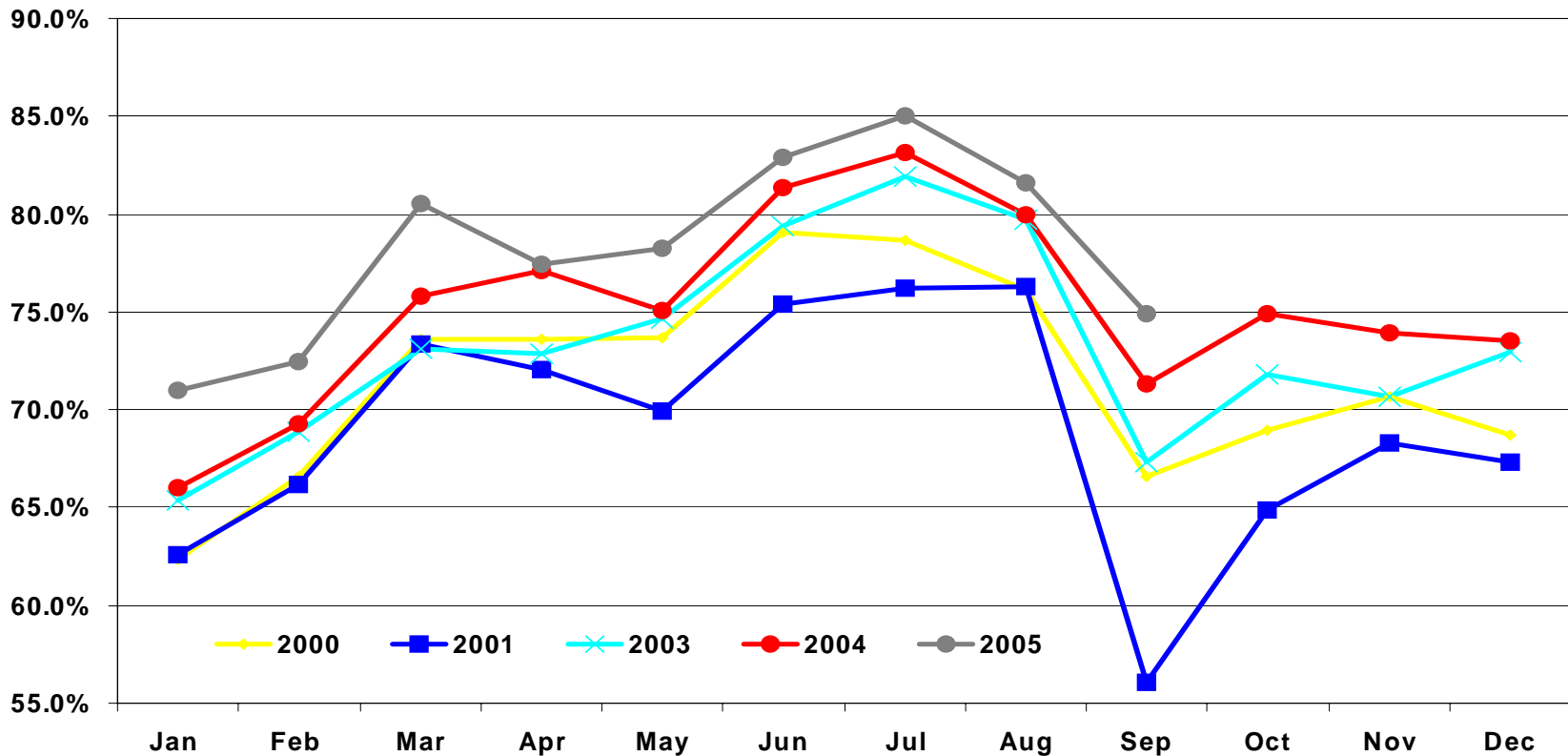


U.S. Domestic RPMs

Domestic Traffic - RPMs (Billions)



Domestic Traffic - Load Factor





U.S. Average Domestic Yield 2000-2005

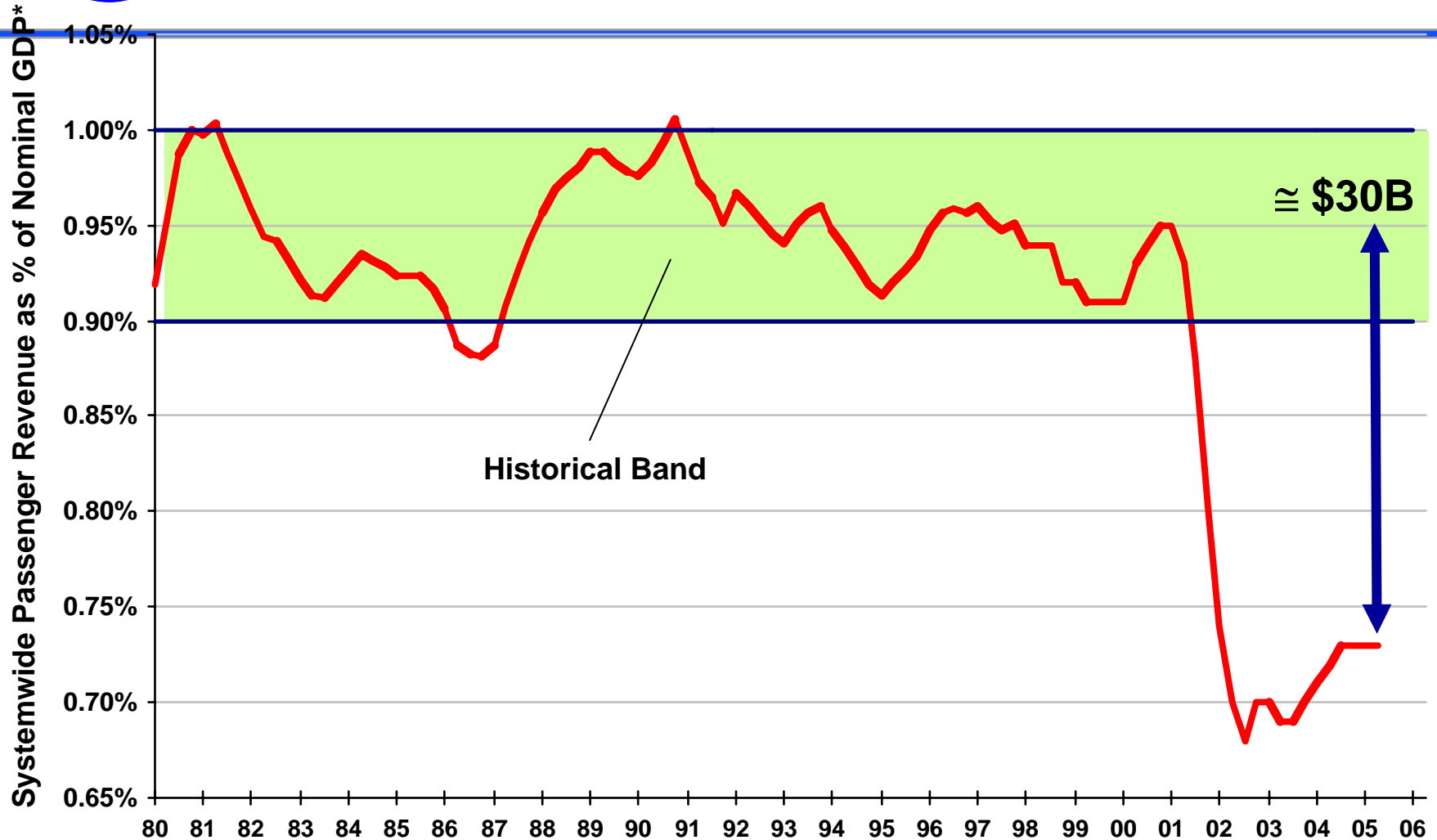
Updated
Oct 05



Data source: ATA Monthly Airfare Report, 8 US major airlines excluding Southwest (WN).



US Systemwide Passenger Revenue as % of GDP

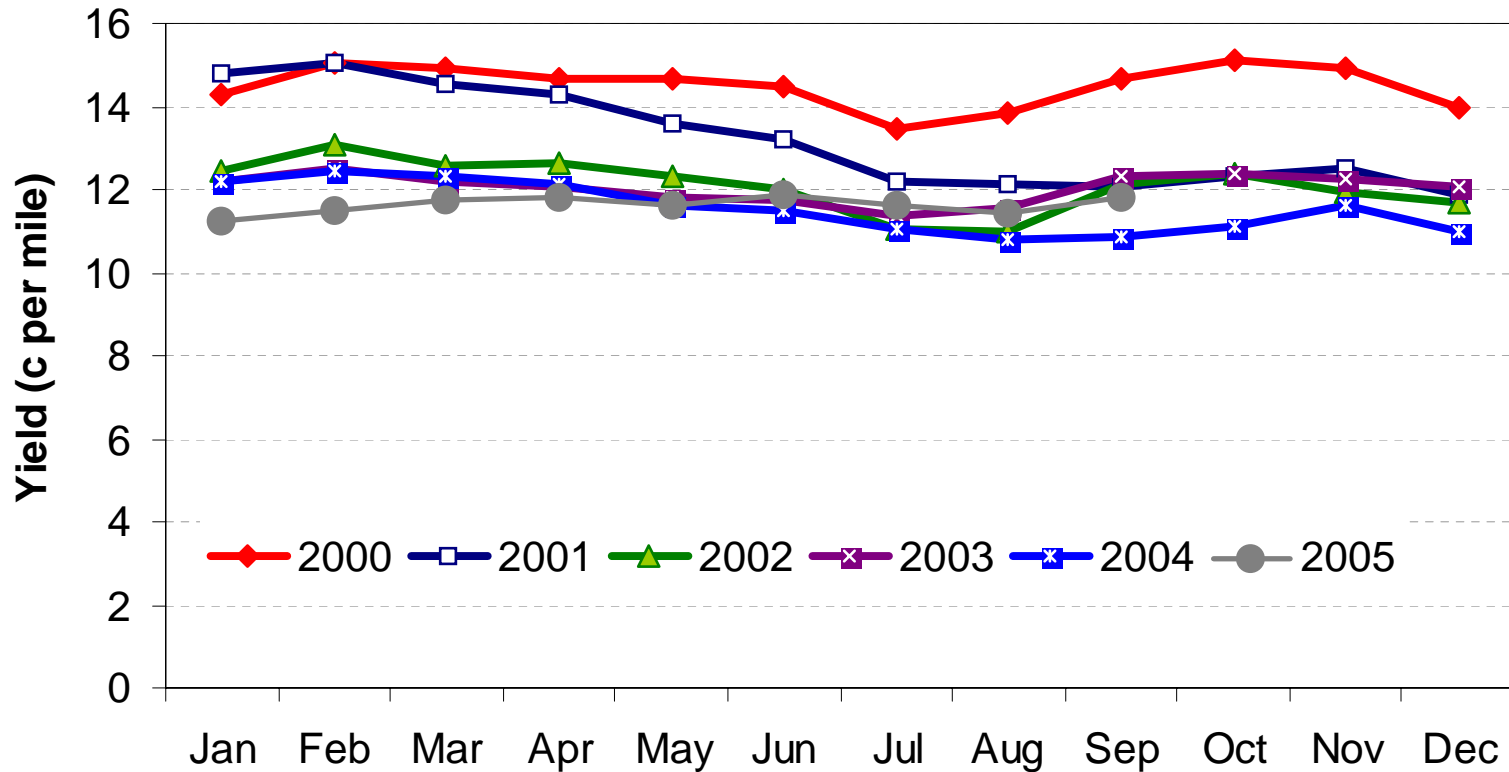


*Four-quarter rolling passenger revenue derived from government filings of major and national passenger airlines

Sources: ATA Airline Cost Index; Bureau of Economic Analysis; U.S. Department of Transportation

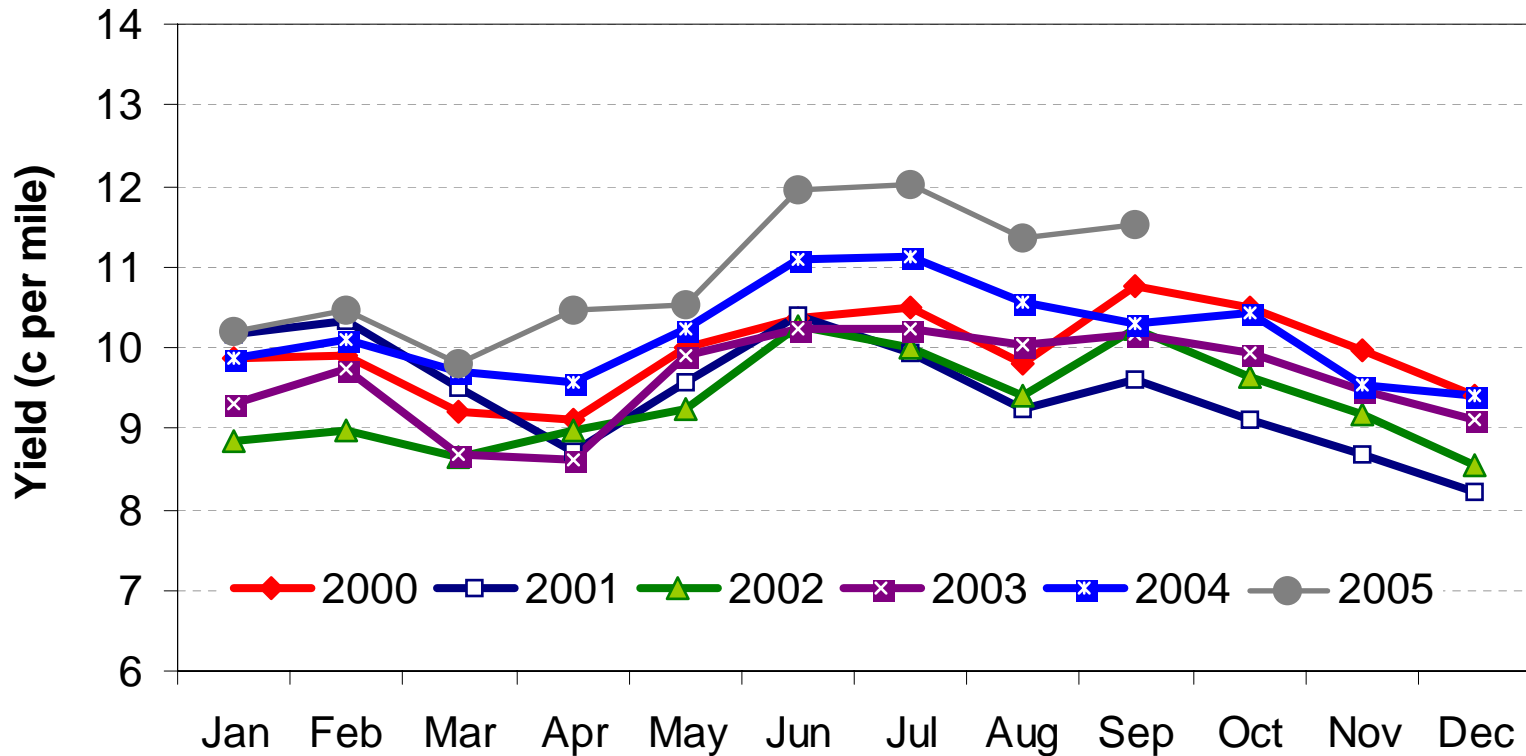
U.S. Domestic Yield 2000-2005

Yield - Domestic
(c per mile)



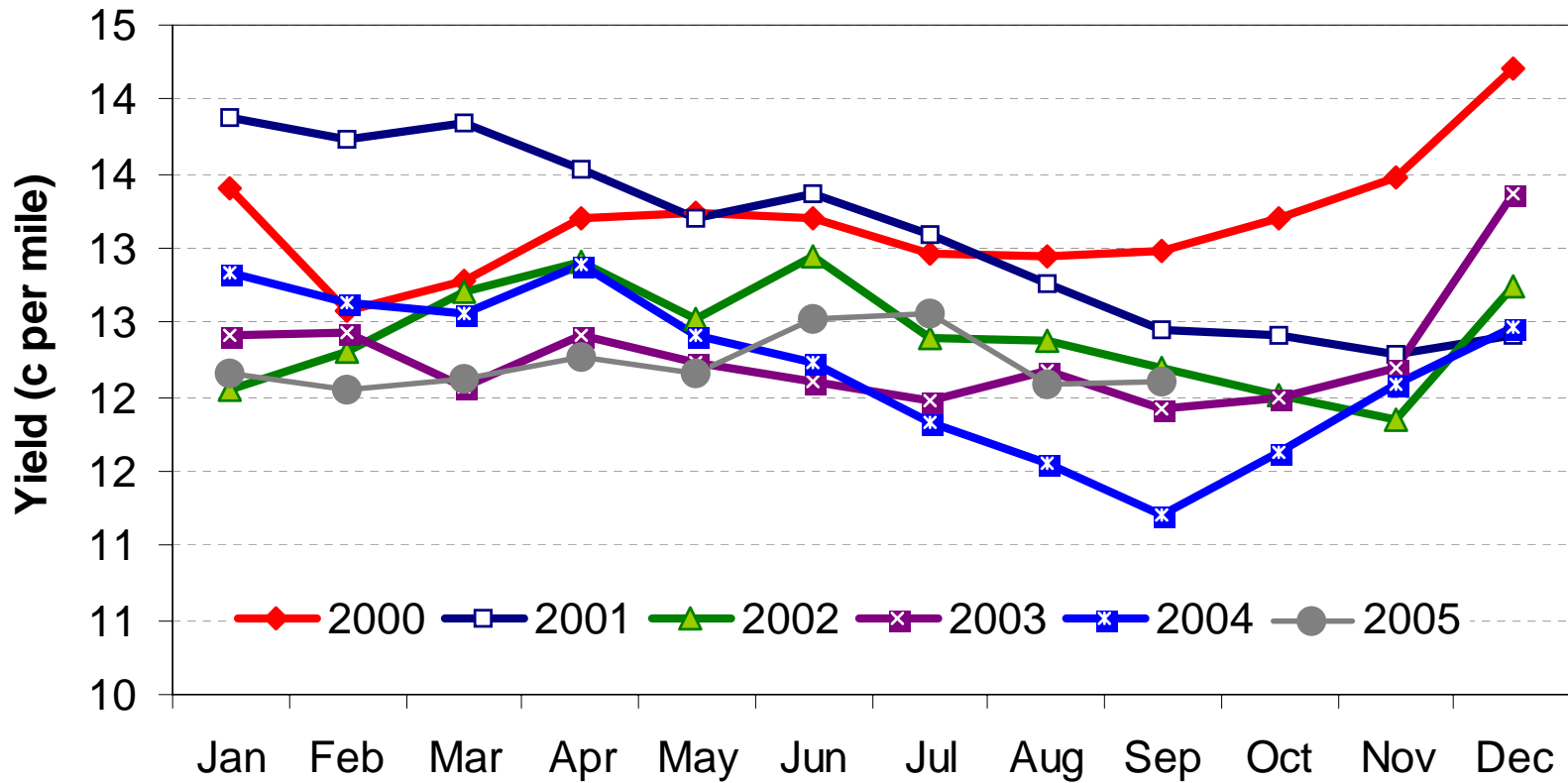
Atlantic Yield 2000-2005

Yield - Atlantic
(c per mile)

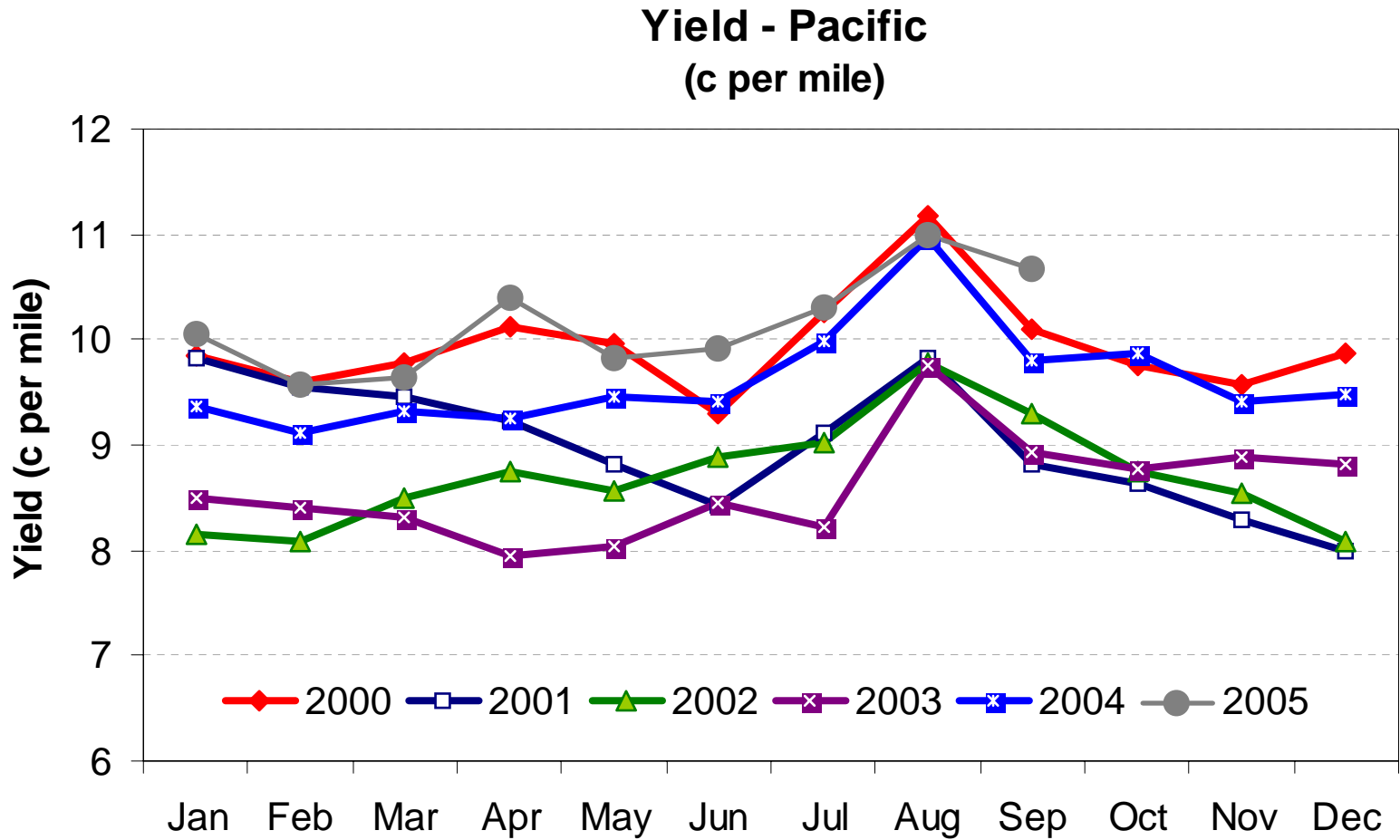


Latin Yield 2000-2005

Yield - Latin
(c per mile)



Pacific Yield 2000-2005

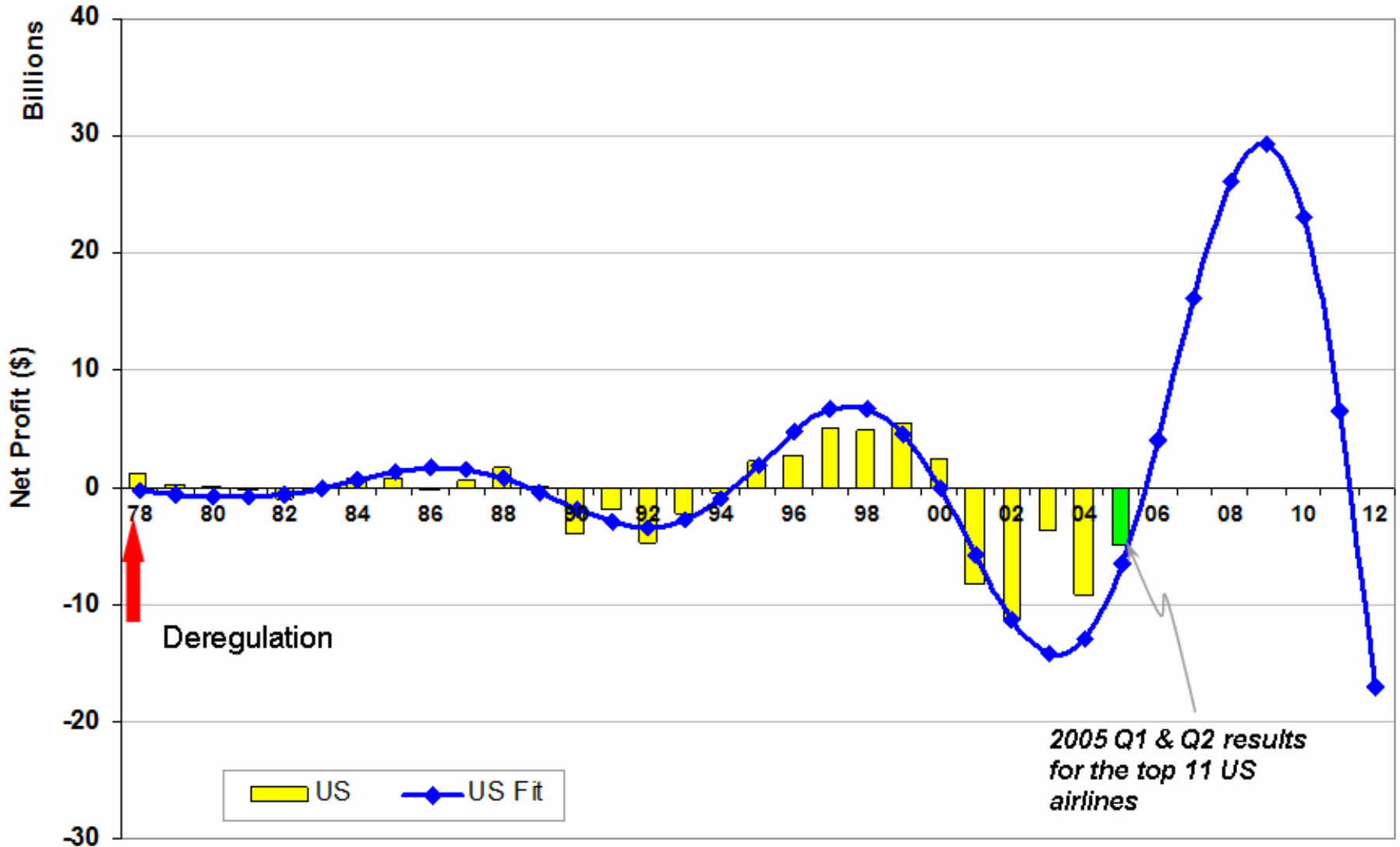




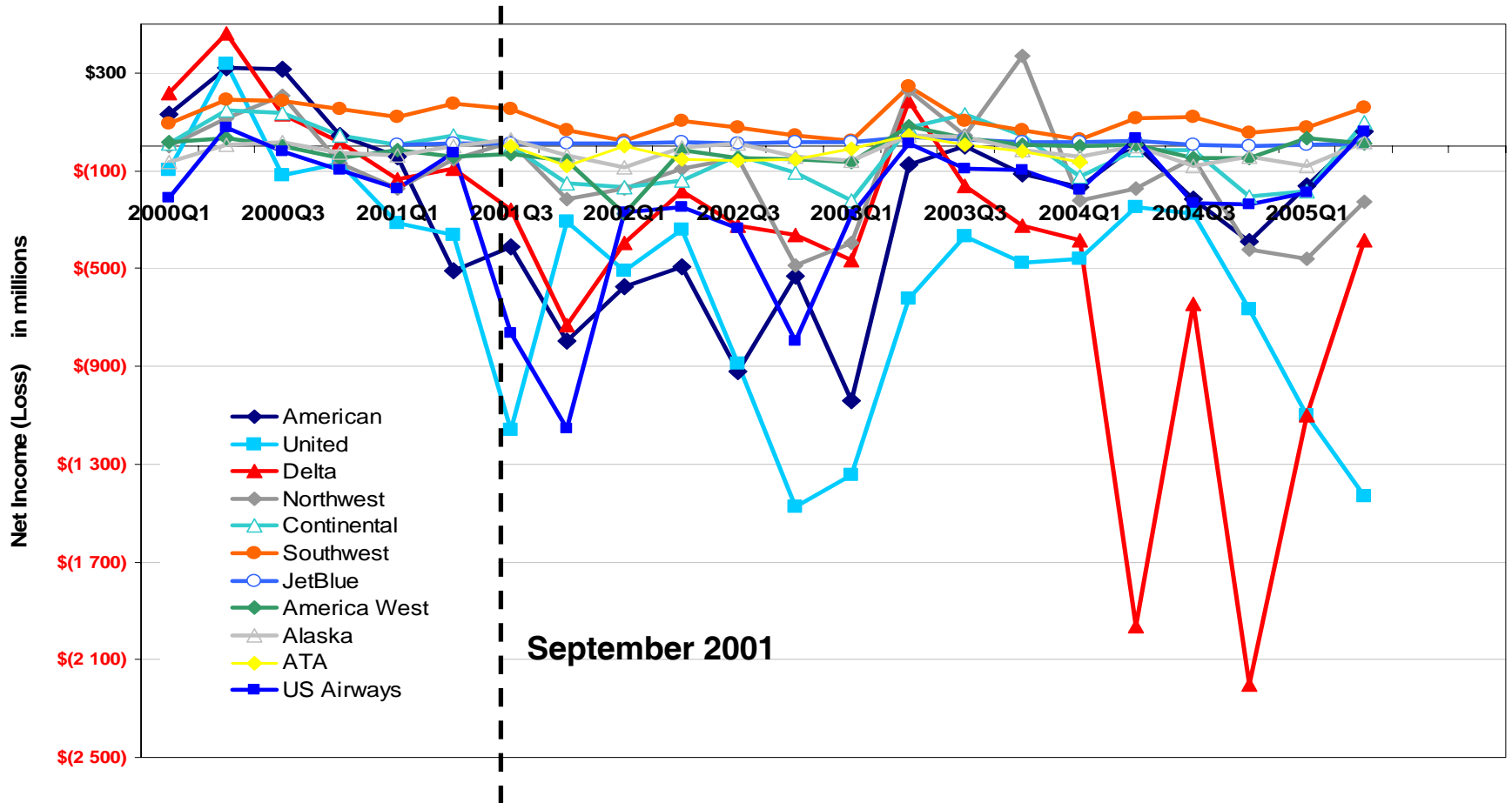
US Airlines Net Profit Model

Best Fit of Undamped Oscillation

Cycle Period = 11.3 yr eFolding Time = 7.9 yr

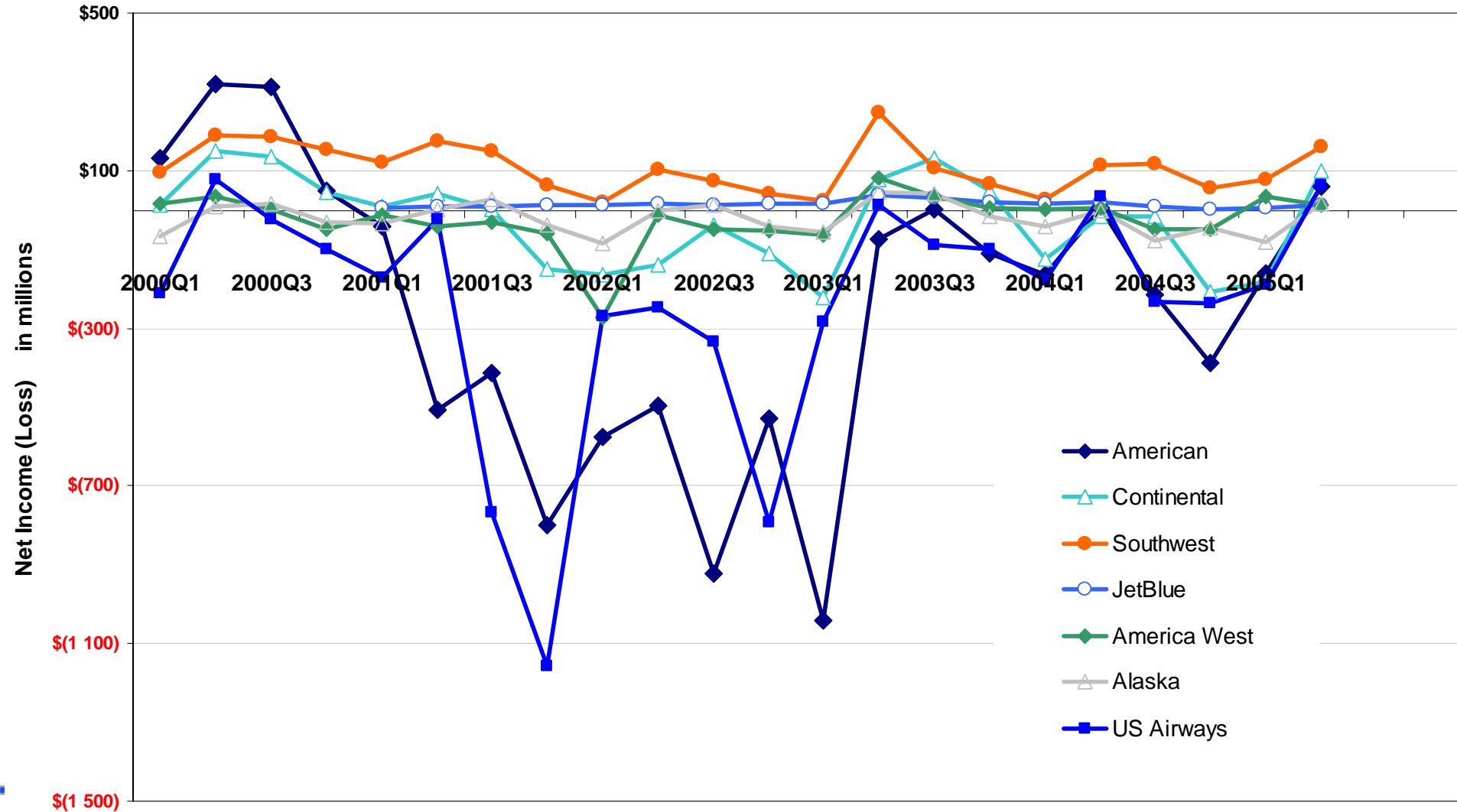


Airline Profits (Losses)





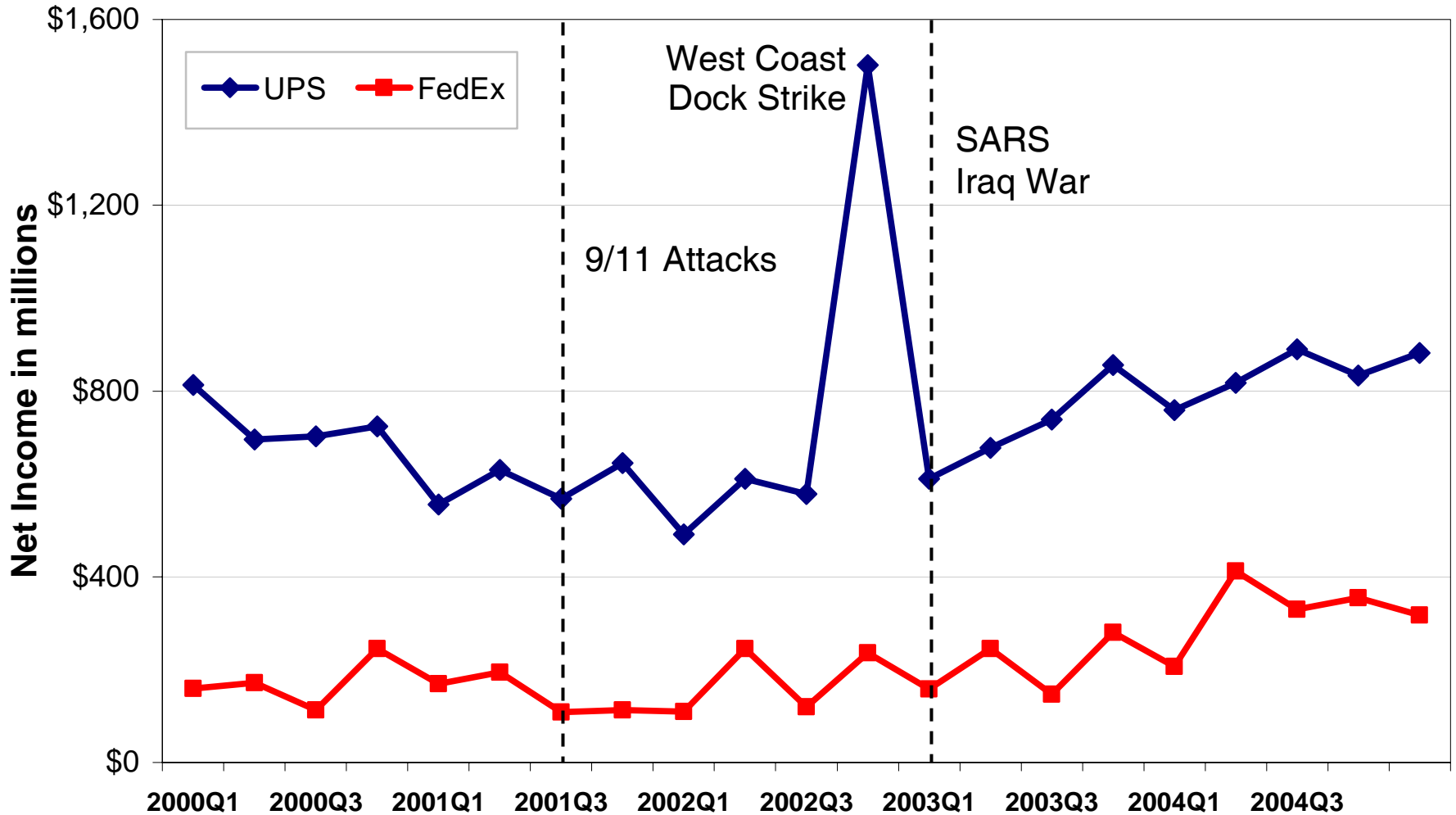
Profitable Air Carriers During 2005 Q2



Data source: Airline reports

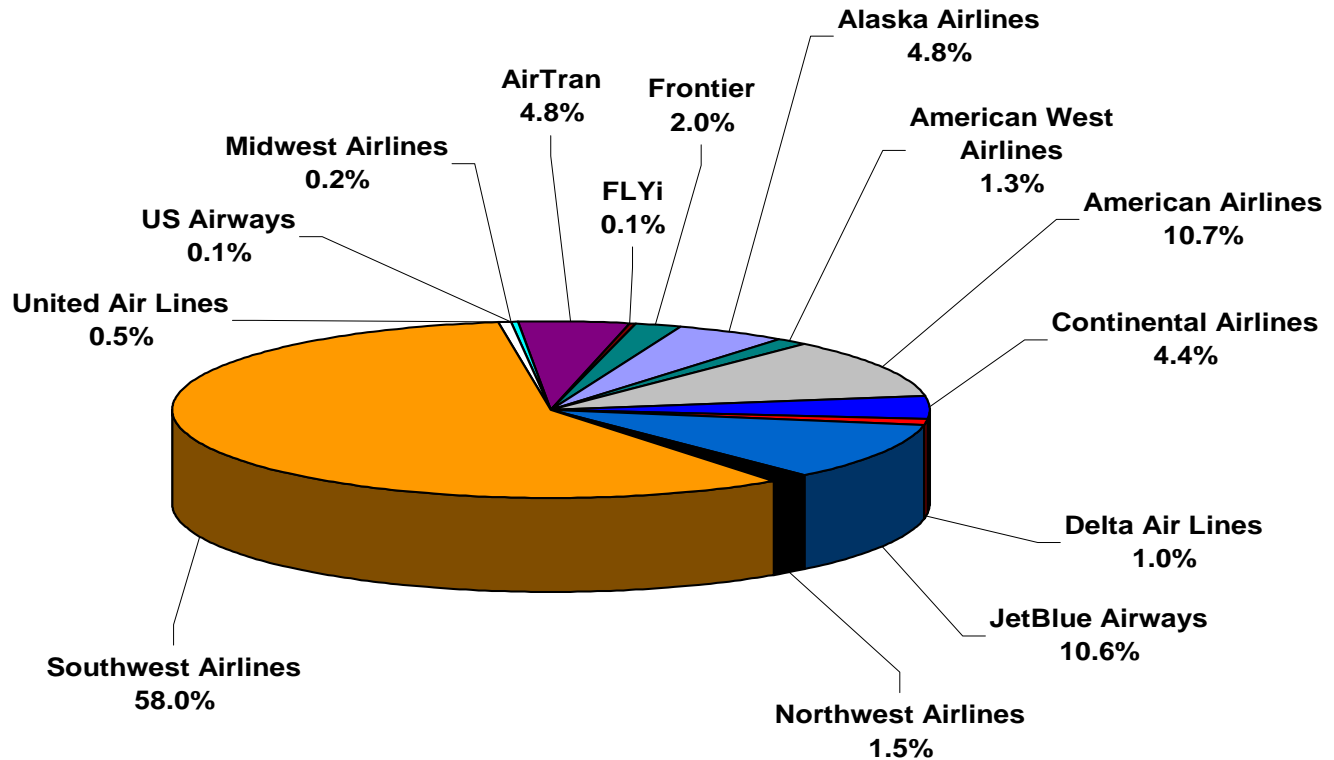


Cargo Operation Not Affected





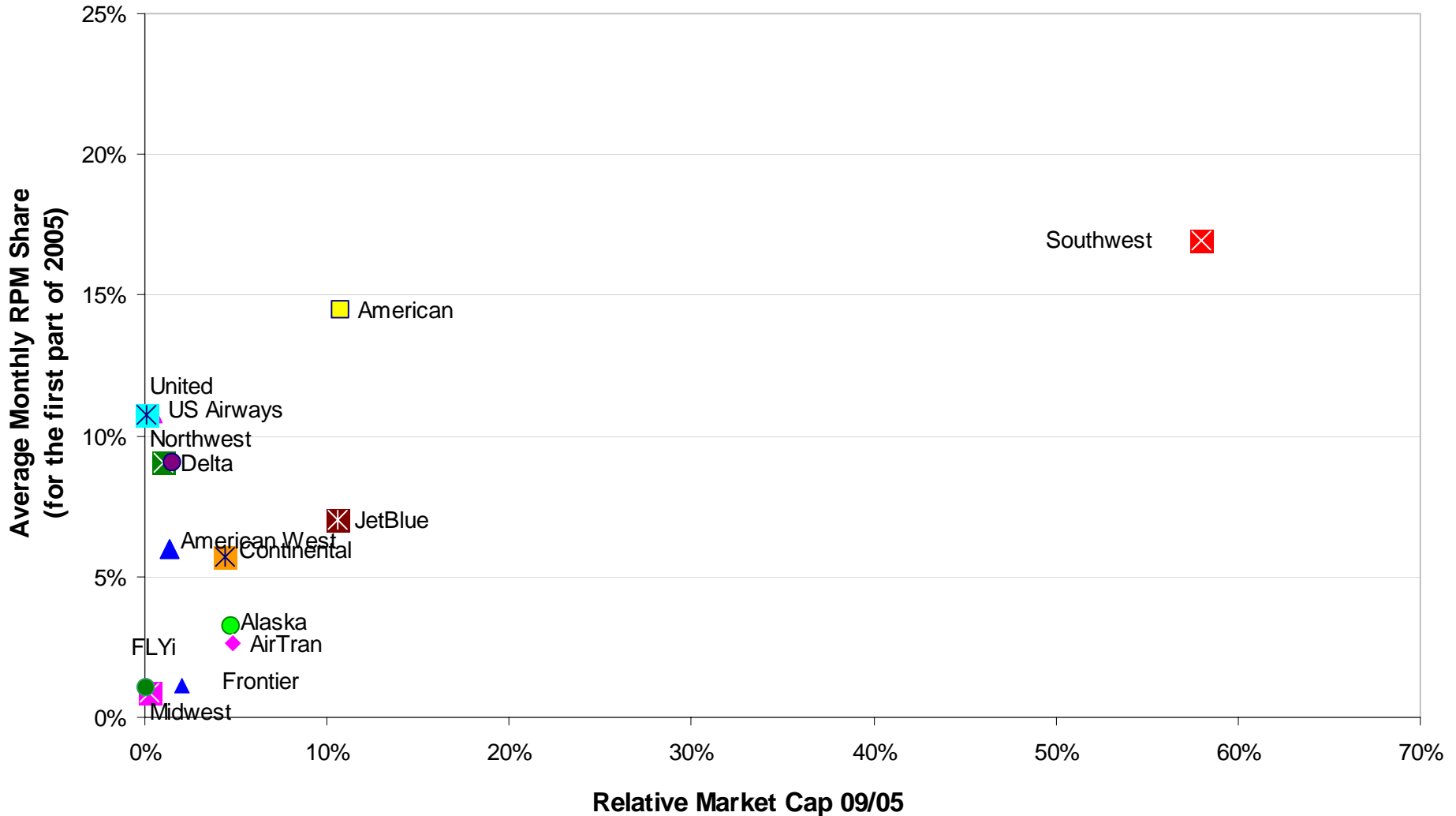
Market Cap: US Majors, 07-Sep-2005



Total Market Cap: \$18.6 billion



Current Market Cap vs. RPM Share US Majors



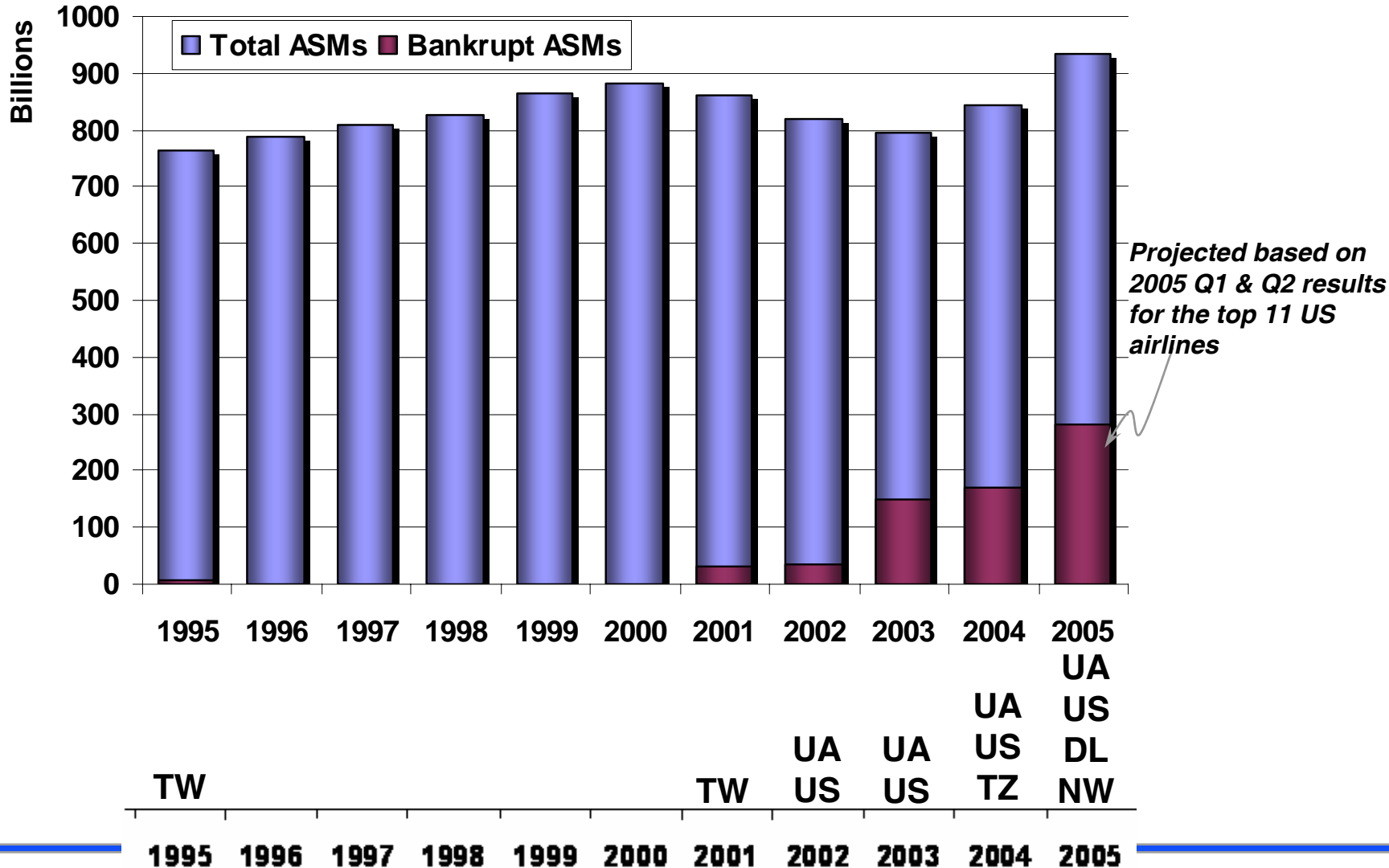


Chap 11 Bankruptcy

- **TWA**
 - 06/1995-08/1995 and 01/2001-12/2001
- **US Air**
 - 08/2002 – 03/2003 and 09/2004 – 09/2005
- **United**
 - 12/2002 - present
- **Delta**
 - 09/2005 - present
- **Northwest**
 - 09/2005 - present
- **ATA**
 - 10/2004 – present

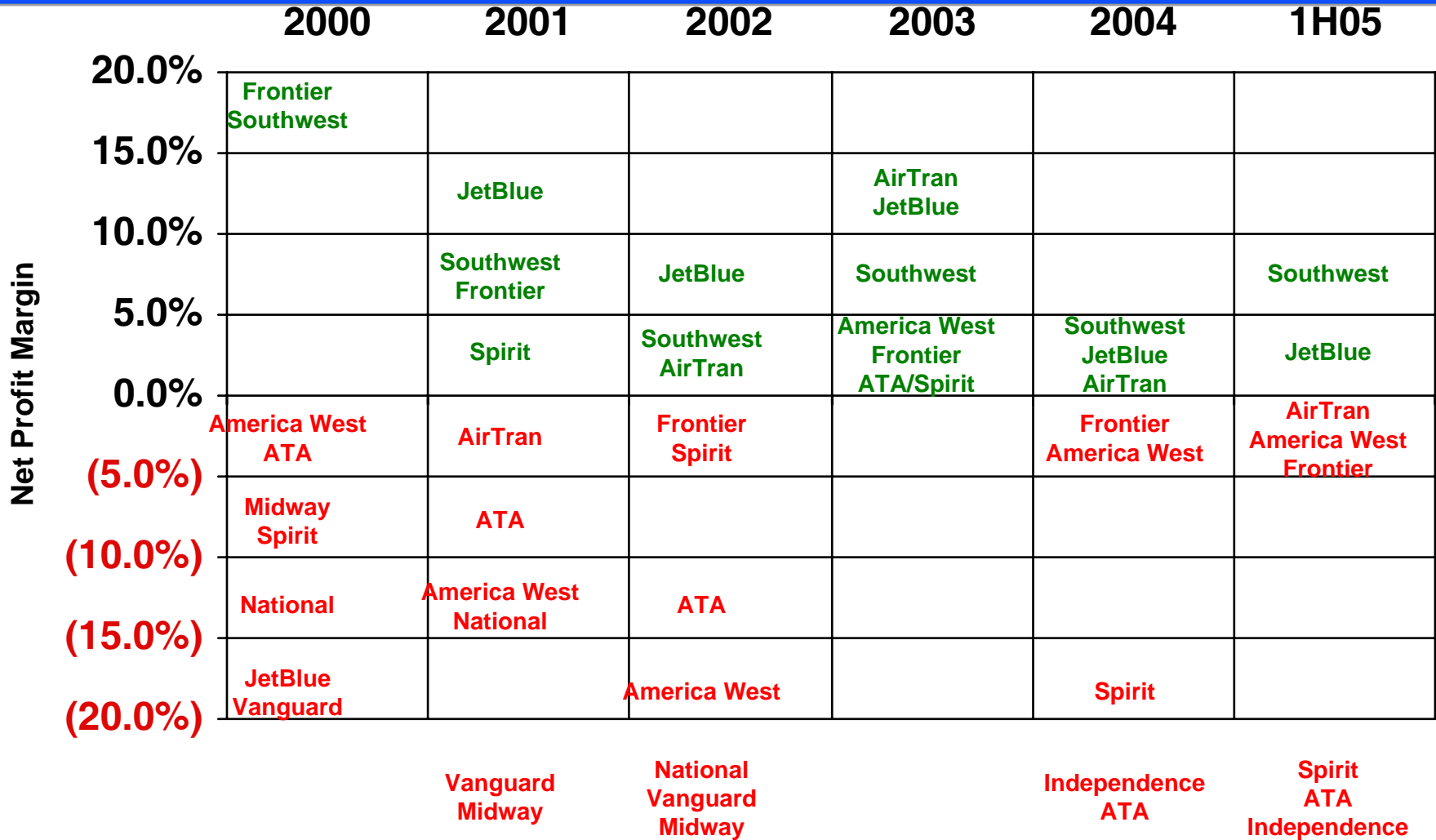


ASMs of the Top 11 US airlines





LCC Profitability





Low-Cost Carrier Envy (or not)

Emergence of LCCs

Canada (7, 1 in 2004)

- CanJet
- HMY Airways
- JetsGo Airlines
- Tango Airlines
- Westjet
- Zip
- Canada West**

Europe (60, 3 in 2004)

- Aer Arann
- Air 2000
- Air Baltic
- Air Berlin
- Air Finland
- Air Luxor Lite
- Air Polonia
- Air Scotland
- Air Southwest
- Air Wales
- Alpi Eagles
- Azzurra Air
- Baboo
- Basiq Air
- Bexx Air
- BMI Baby
- British European
- BudgetAir
- Corendon
- Deutsche BA
- EasyJet
- Evolavia
- Excel Airways
- Fairline Austria
- Fare4U
- German Wings
- Germania Express
- Globespan
- Hapag Lloyd Express
- Hellas Jet**
- Helvetic Airways
- Iceland Express
- Ryanair
- Snalskjutsen
- SnowFlake Airlines
- Sterling
- Sun Express
- Swedline
- ThomsonFly
- V Bird
- Virgin Express
- VLM Airlines
- VolareWeb
- Windjet Vola
- Smart Wings**
- Wizz Air**
- Hop**

USA (19, 4 in 2003/2004)

- AirTran
- Allegiant Air
- American West
- ATA
- Frontier Airlines
- Interstate Jet
- JetBlue Airways
- Midwest Express
- Pan American
- Southeast Airlines
- Southwest Airlines
- Spirit Airlines
- Song**
- Sun Country Airlines
- USA 3000 Airlines
- Vacation Express
- Ted**
- Independence Air**
- Virgin USA**

South America (3)

- Bra
- Gol
- U Air

Africa (2)

- 1Time
- Kulula

Asia/Pacific (20, 8 in 2004)

- Air Arabia
- Air Asia
- Air Deccan
- Athena Air Services
- Citilink
- Freedom Air
- Lion Airways
- One-Two-Go
- Skymark Airlines
- Skynet Asia Airways
- ValuAir
- Virgin Blue
- Air Blue**
- Air One**
- BackpackersXpress**
- Jetstar**
- Nok Air**
- Pacific Blue**
- SkyAsia**
- Tiger Airways**
- Spring**



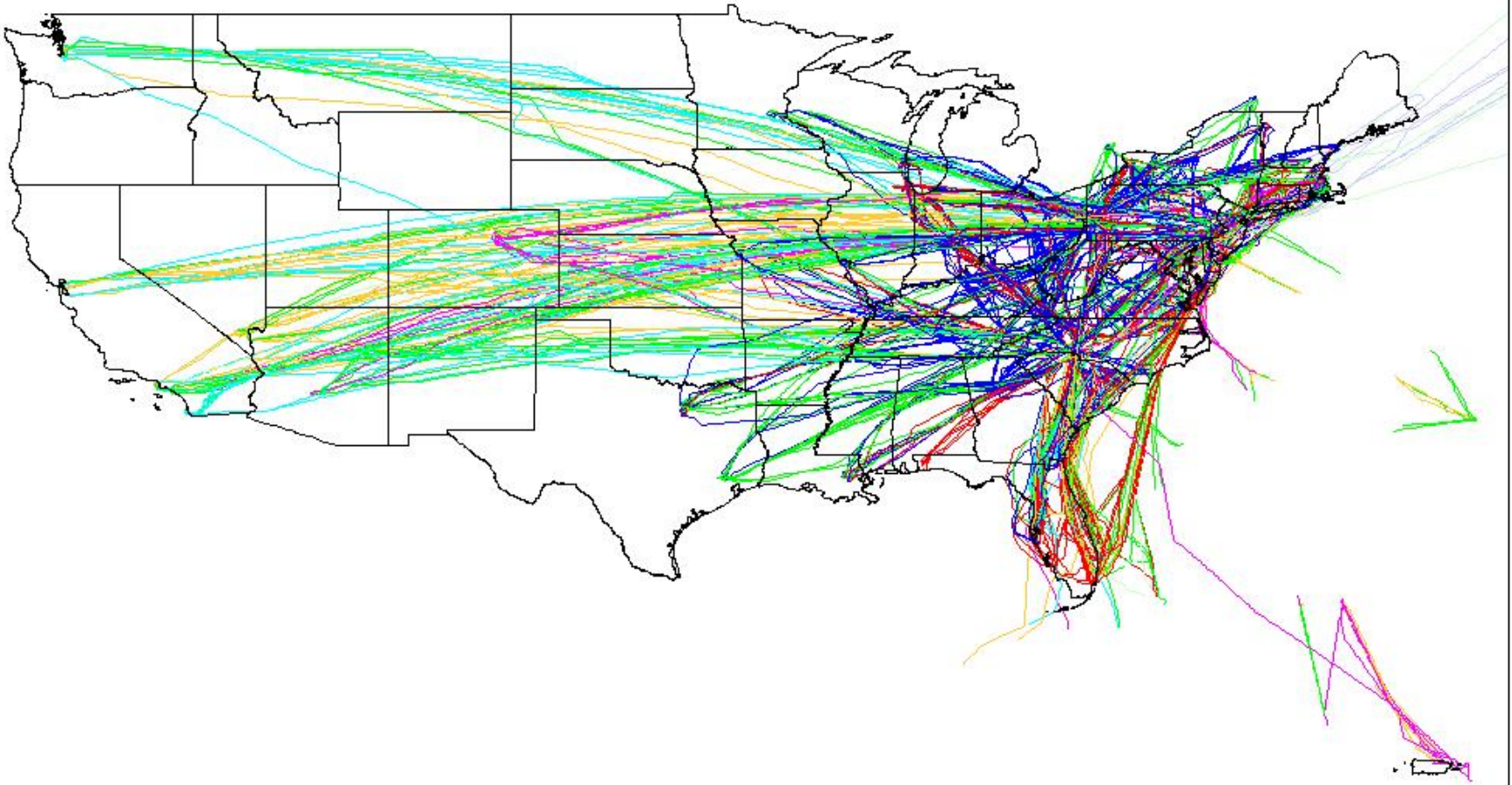
America West - USAirways Proposed Merger



America West - USAirways Proposed Merger

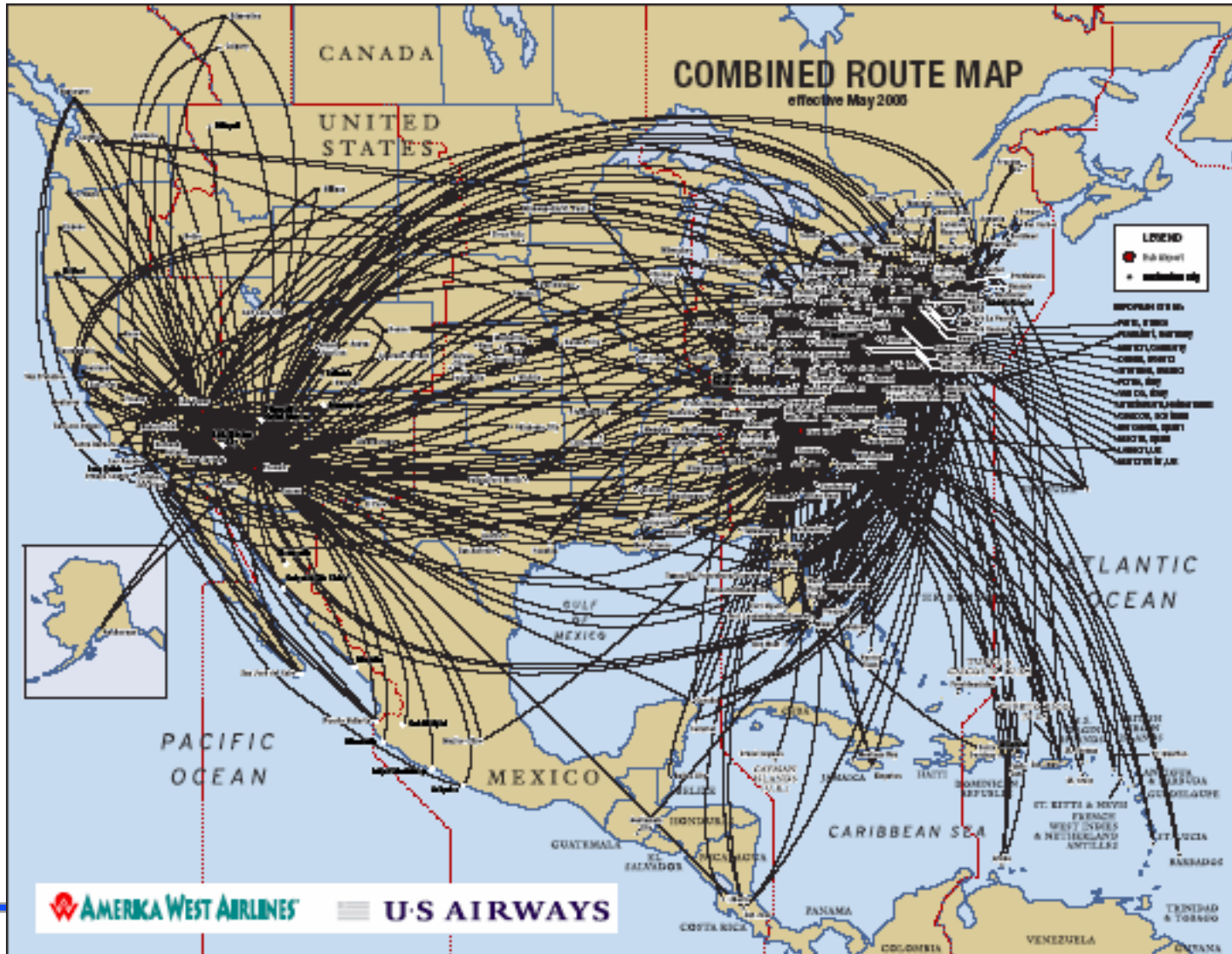
Aircraft

Blue	B733	(508)
Green	A319	(336)
Red	B734	(300)
Orange	B752	(138)
Magenta	A320	(135)
Cyan	A321	(116)
Light Green	B762	(24)
Light Blue	A333	(16)
Yellow	PA31	(1)





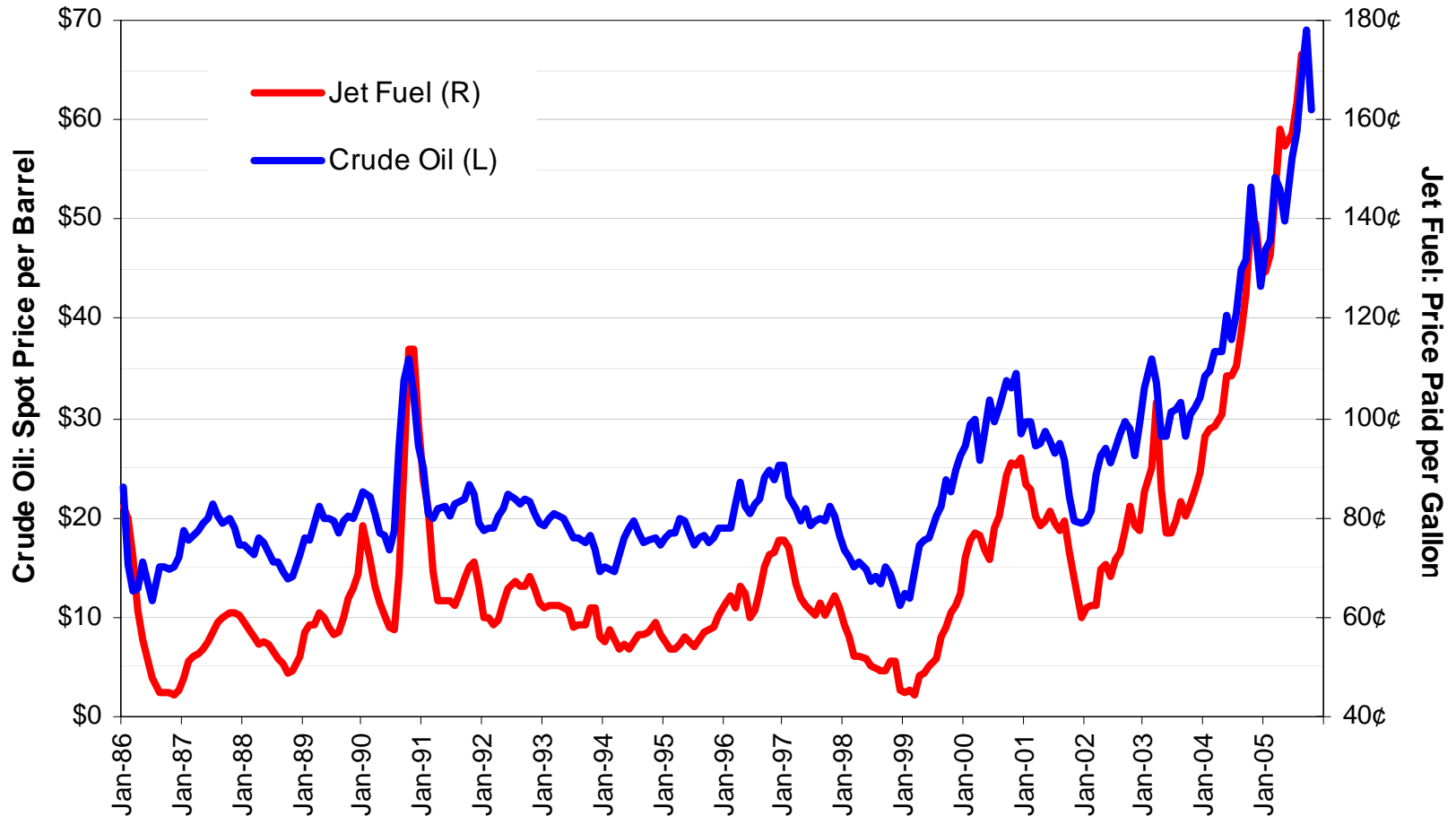
America West - USAirways Proposed Merger





Trends in Fuel Price

Average Crude Oil and Jet Fuel Prices

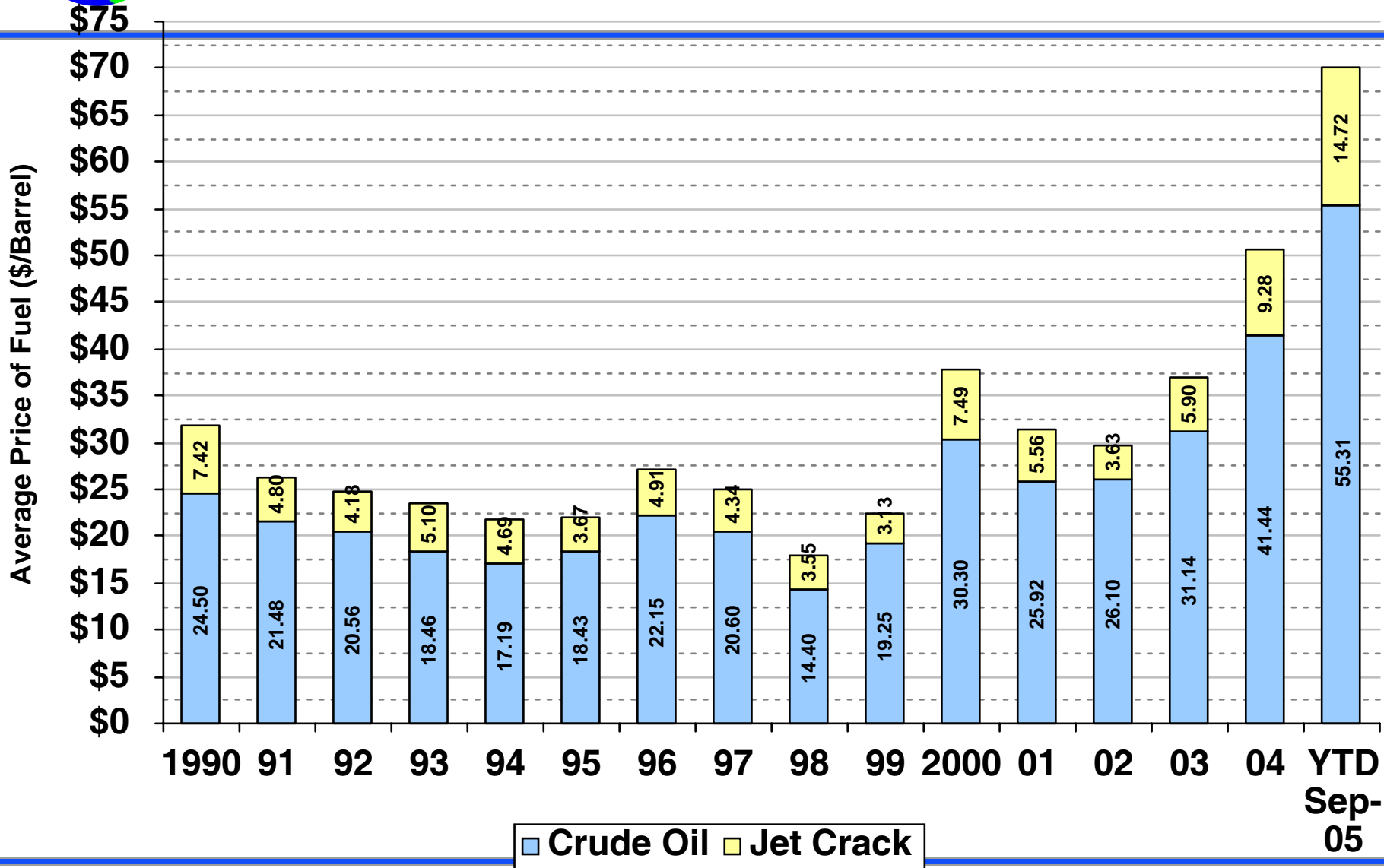


Data source: ATA; U.S. major, national, large regional passenger and cargo airlines; all services

Sept 1st data: <http://www.bloomberg.com/energy/>

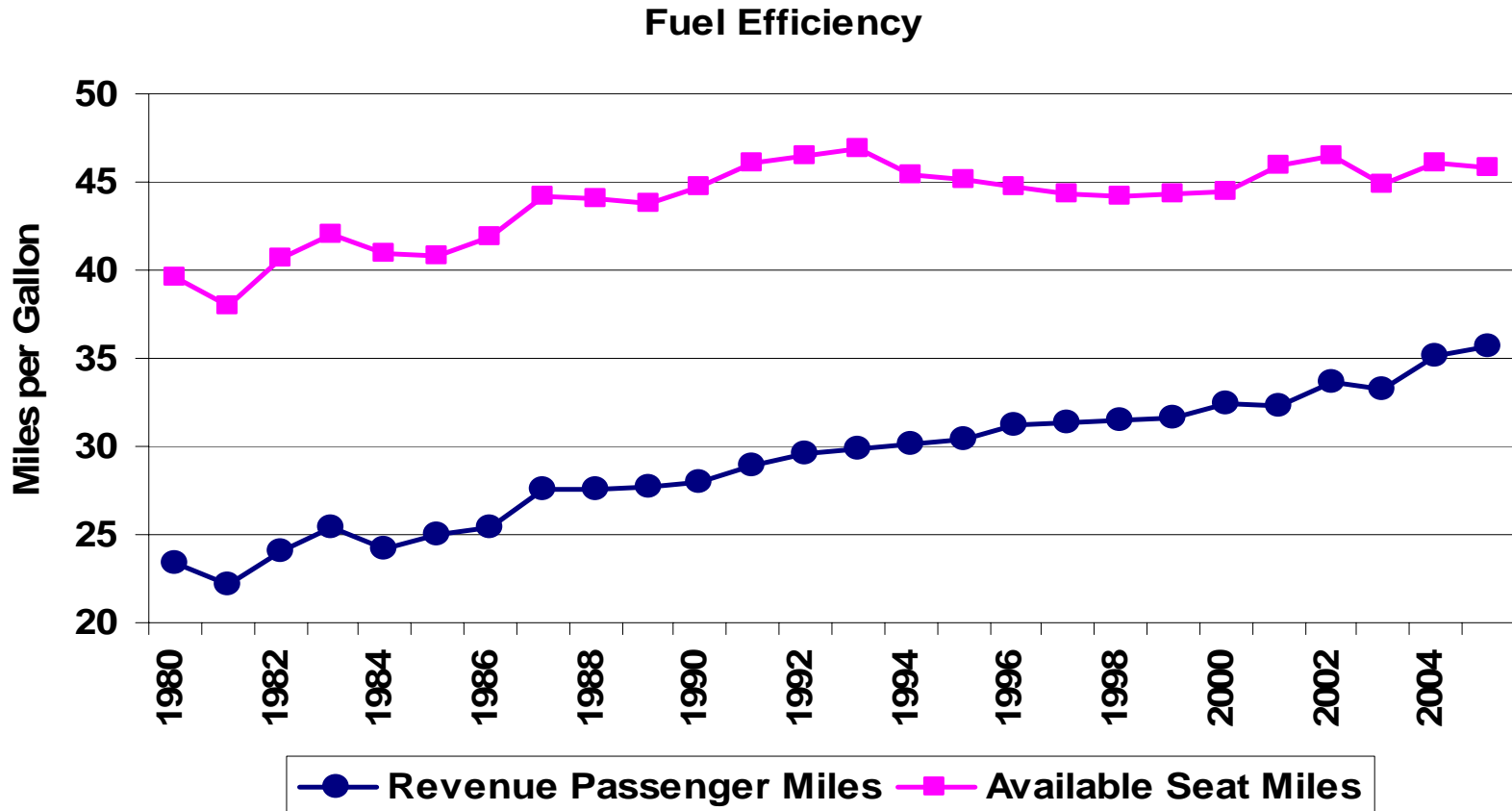


Increasing Jet Fuel Crack Spread



Source: Air Transport Association analysis of Energy Information Administration data

Fuel Efficiency

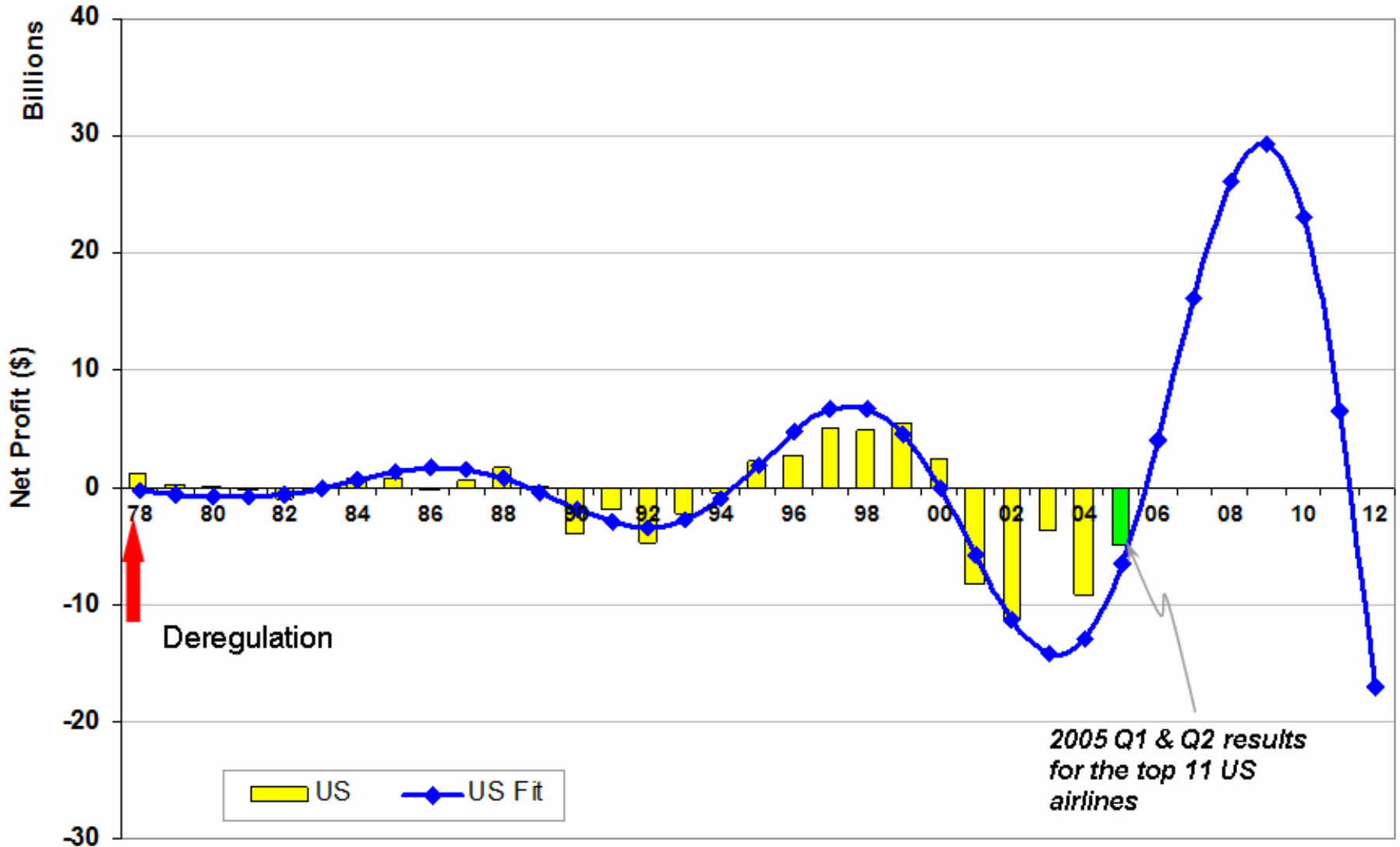




US Airlines Net Profit Model

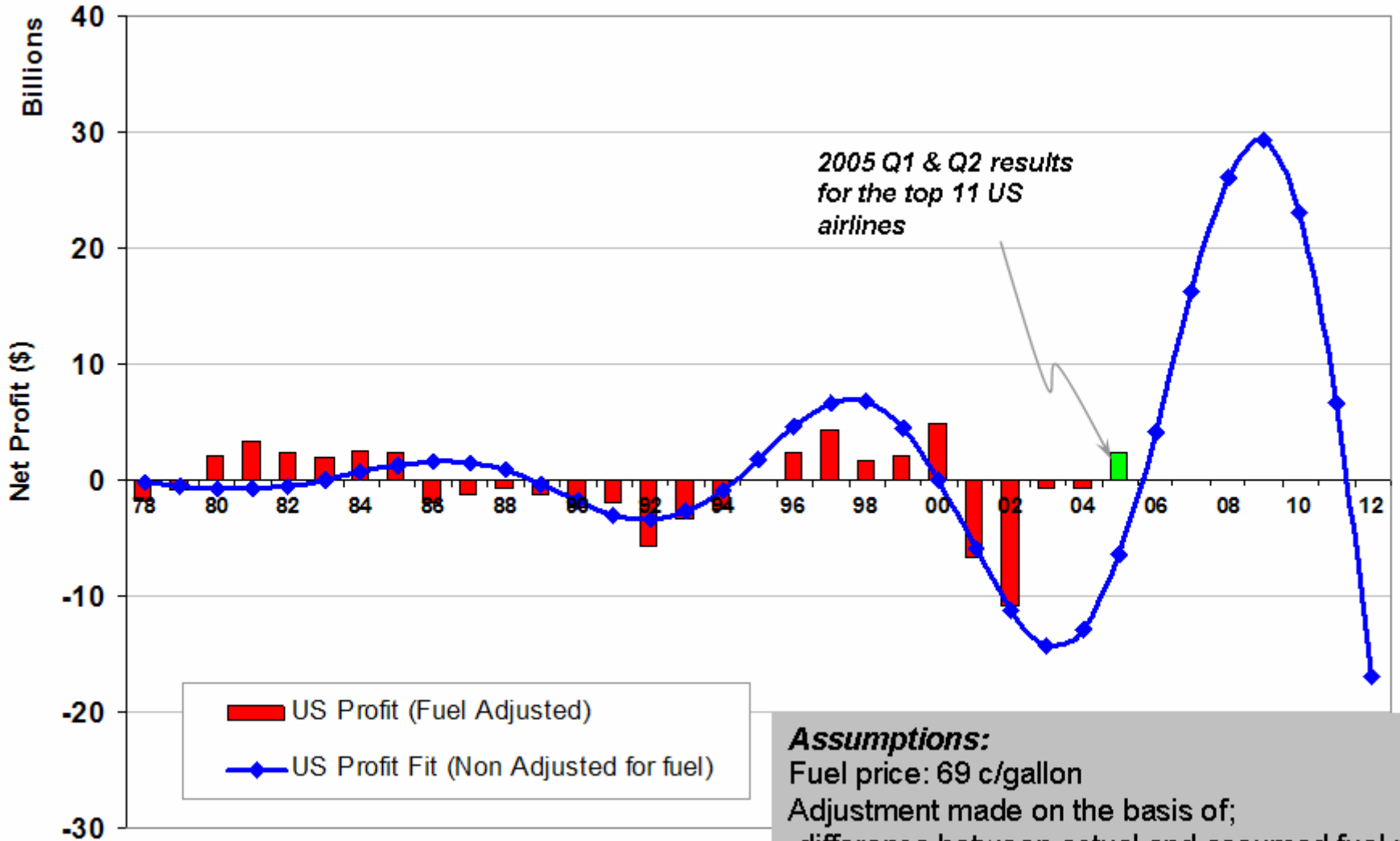
Best Fit of Undamped Oscillation

Cycle Period = 11.3 yr eFolding Time = 7.9 yr





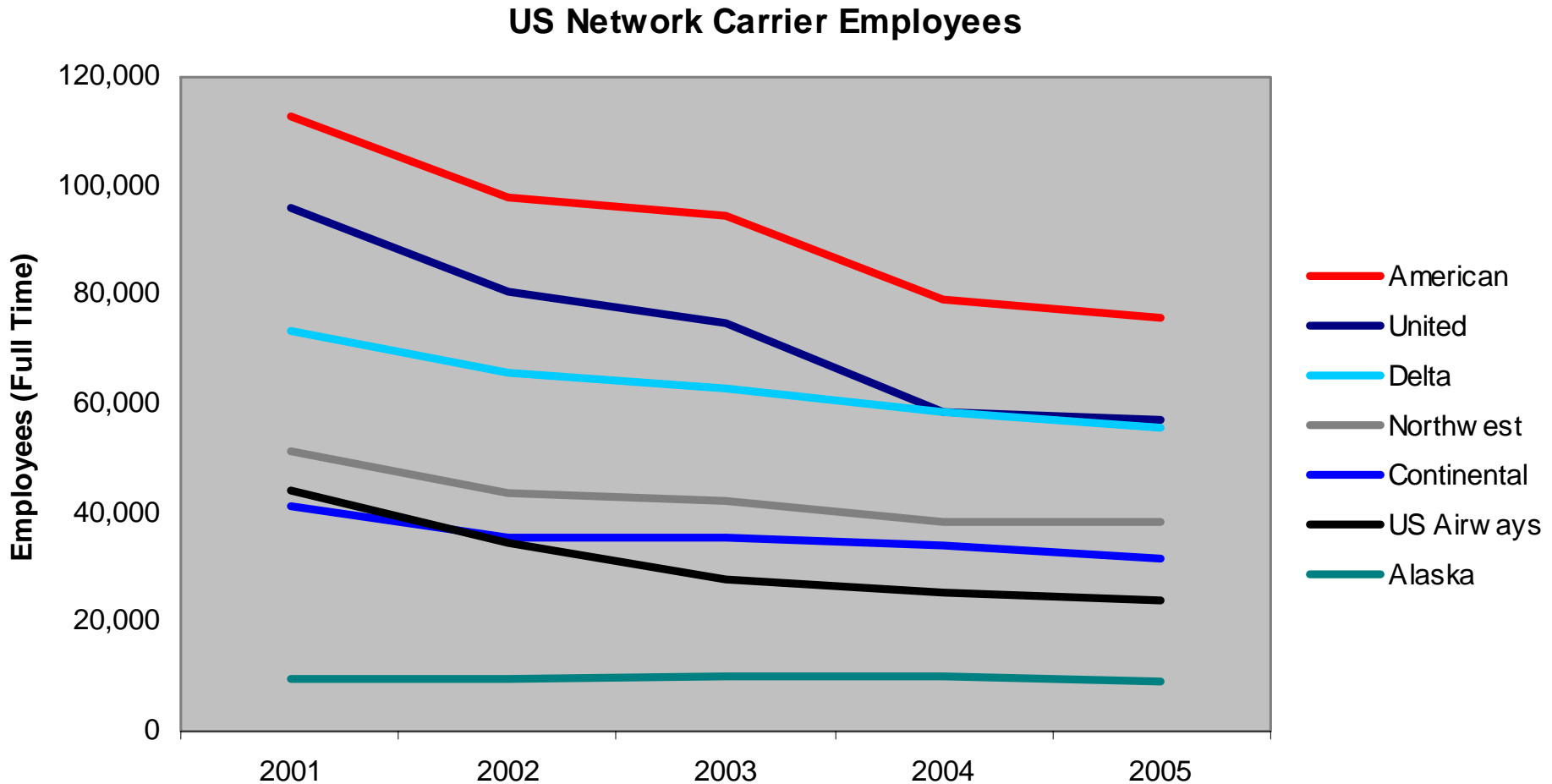
Airline Profits Adjusted for Constant Fuel Price



Assumptions:
 Fuel price: 69 c/gallon
 Adjustment made on the basis of:
 -difference between actual and assumed fuel price
 -annual fuel consumption



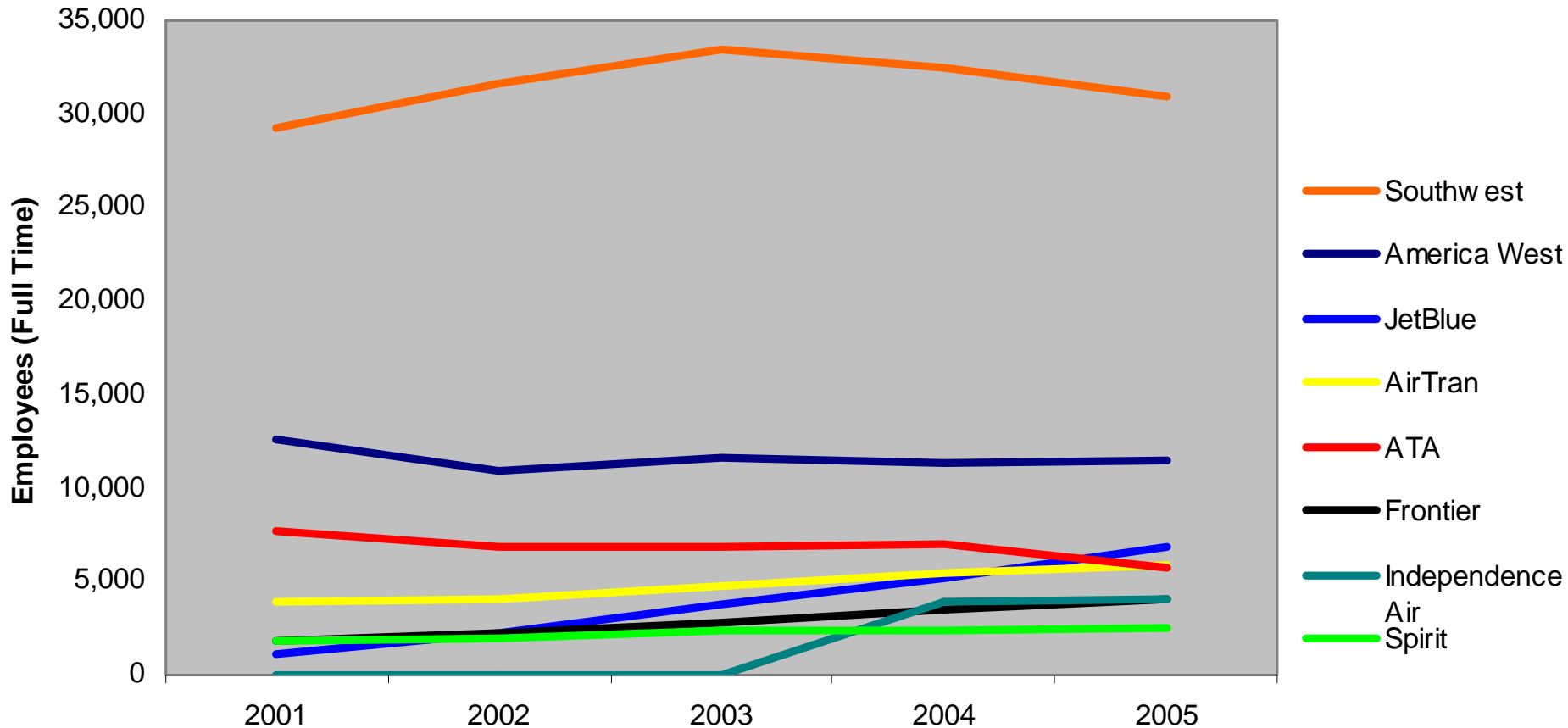
Employees Full Time: US Network Carriers 2001-2005

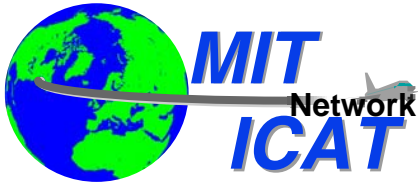




Employees Full Time: Low Cost Carriers 2001-2005

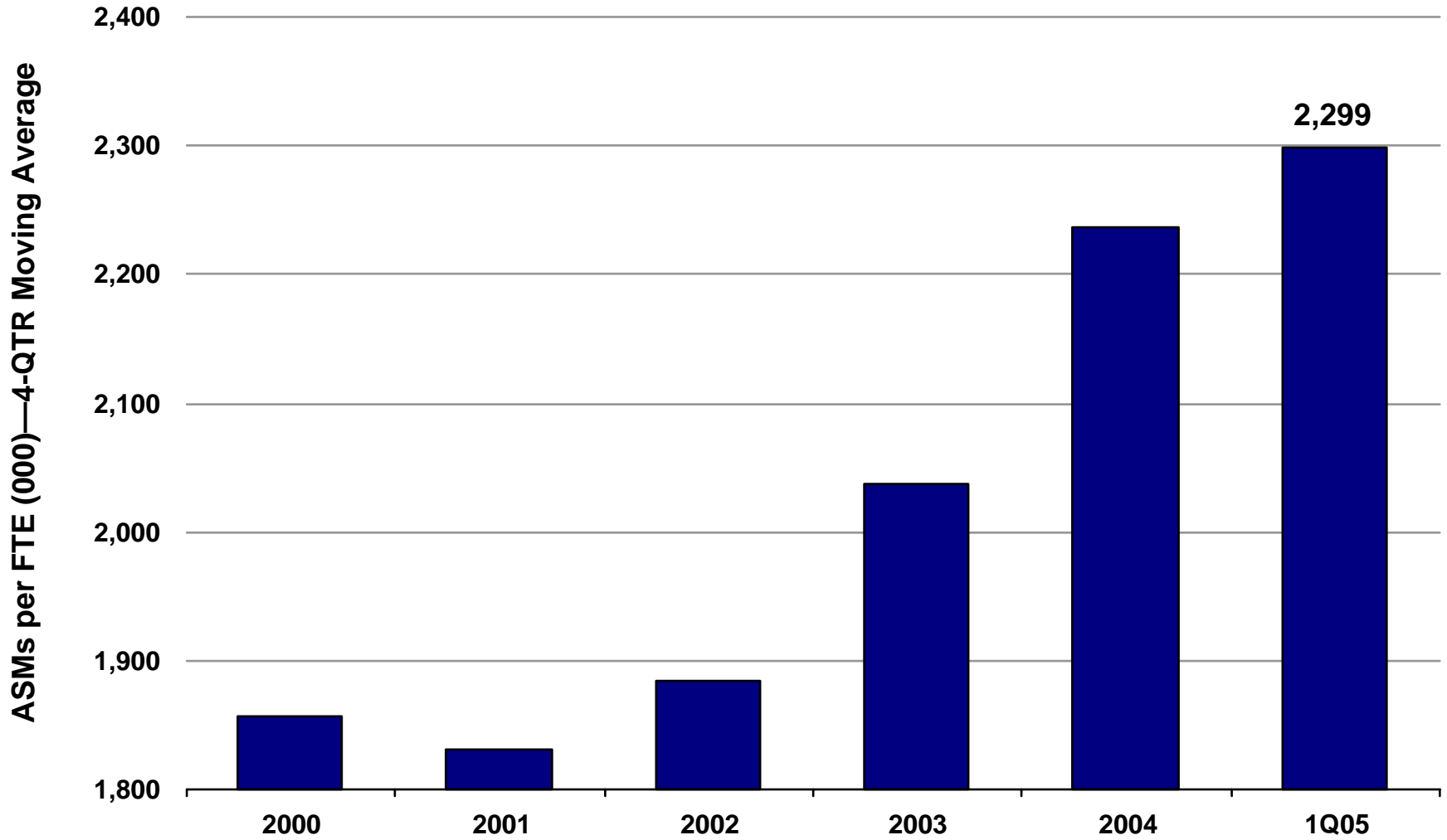
Low-Cost Carrier Employees





Productivity Improvements Driving Cost Relief

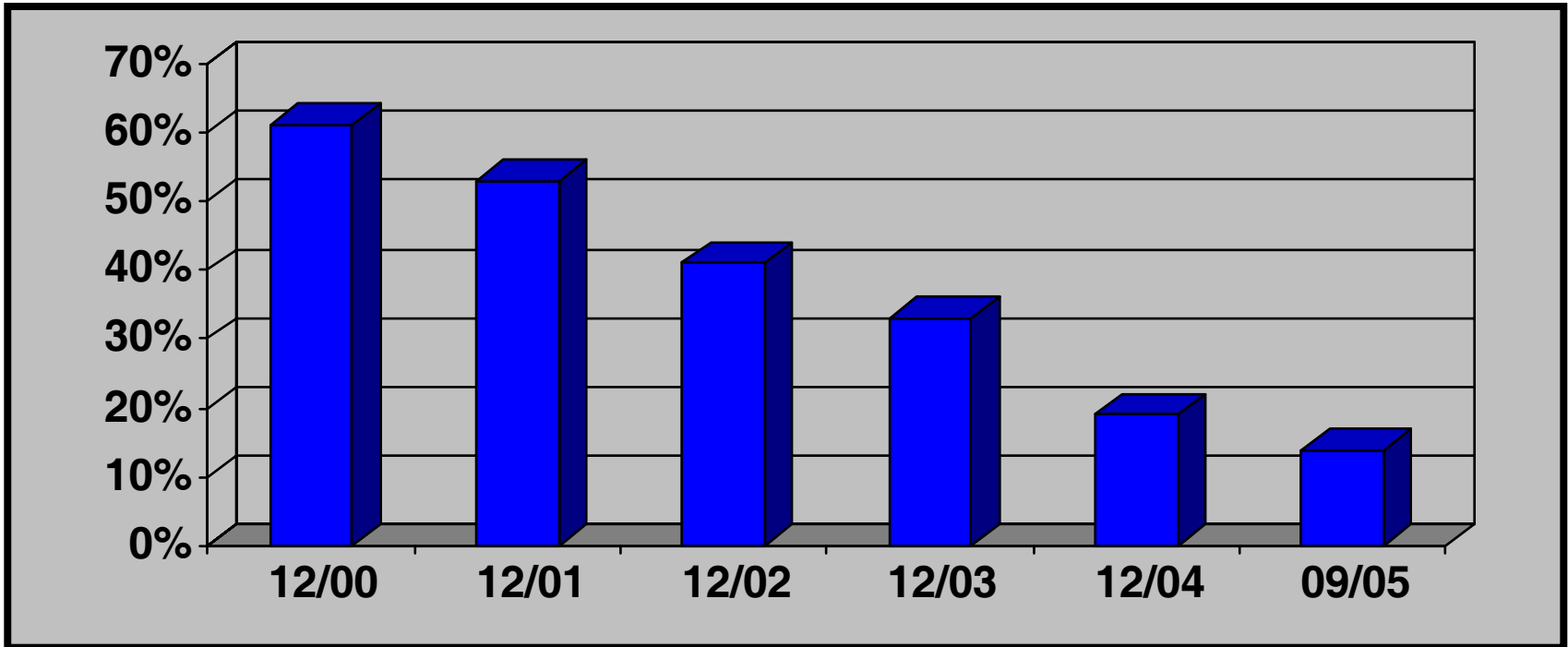
Network Restructuring, Work Rules, Human Capital, Outsourcing, Technology



Source: ATA Airline Cost Index for U.S. major and national passenger airlines



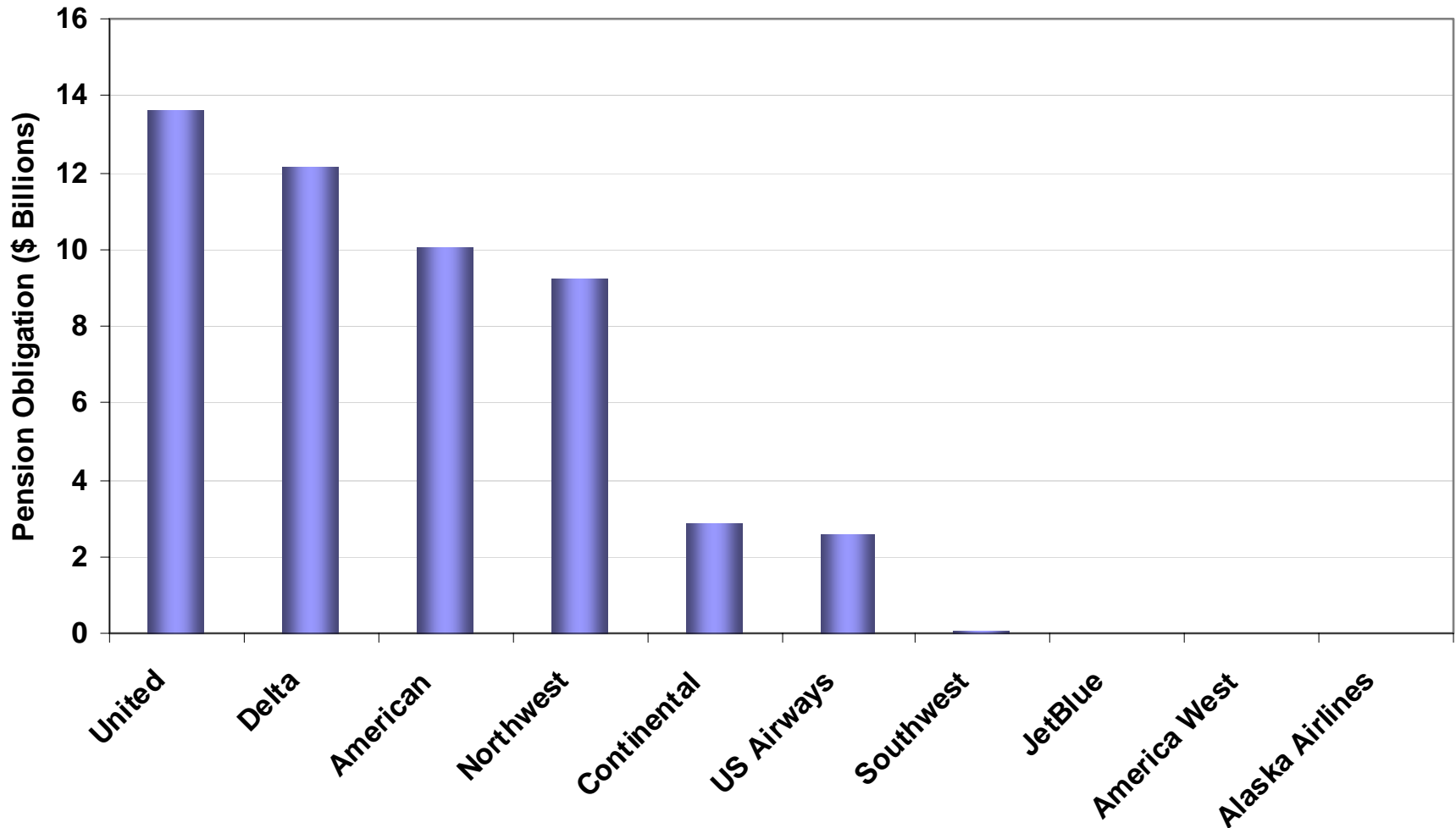
POSITIVE VIEWS OF EMPLOYEE MORALE



- **Source: The Wilson Center for Public Research, Inc. – based on 150,674 interviews conducted with pilots or flight attendants from 1/1/2001 to 9/20/2005**

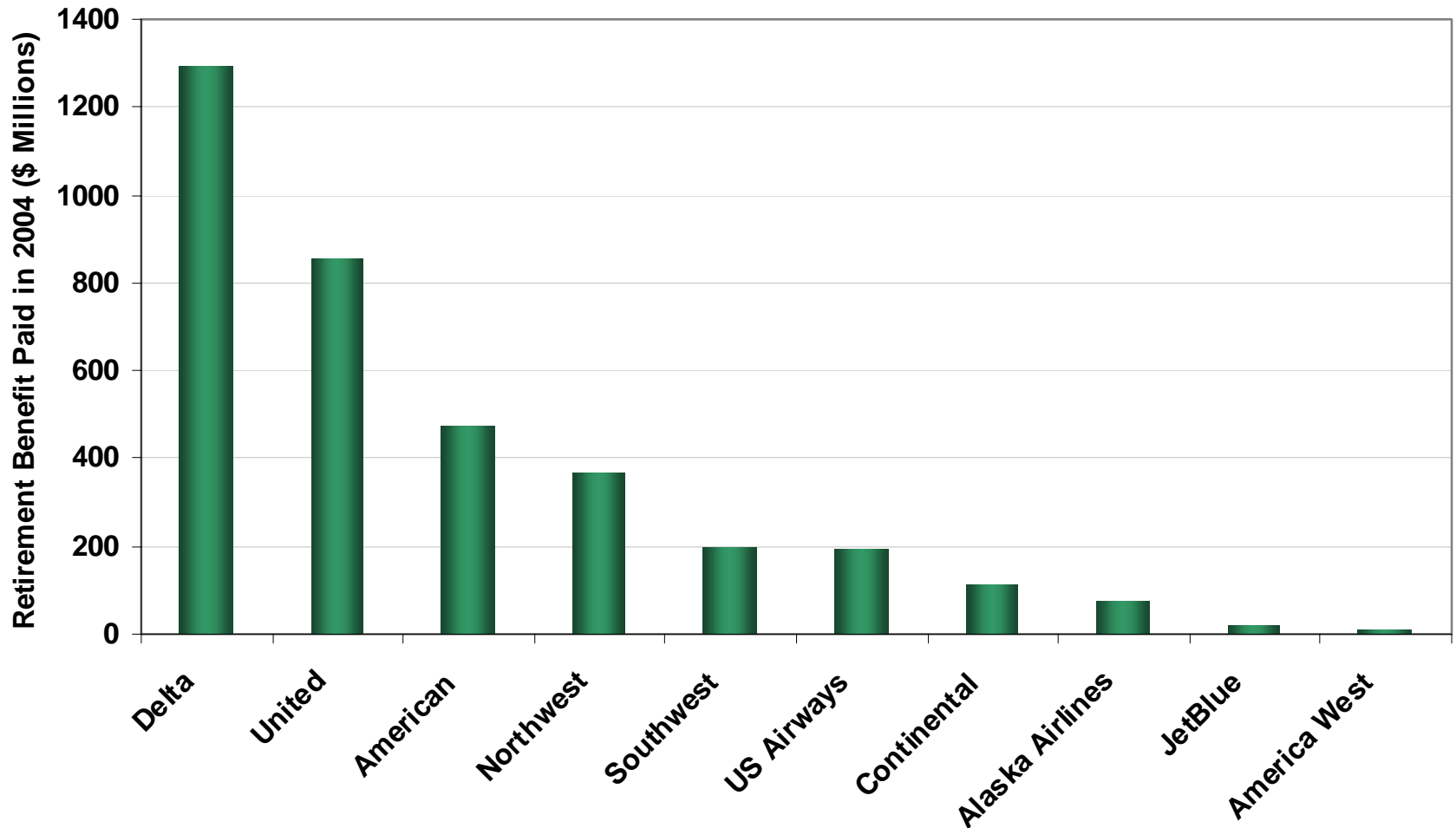


Pension Obligations at the end of year 2004





Retirement Benefits Paid in 2004



Source: Airlines Annual Financial Reports (US airways (successor company) figure corresponds to year 2003)



Retirement Plan Terminations

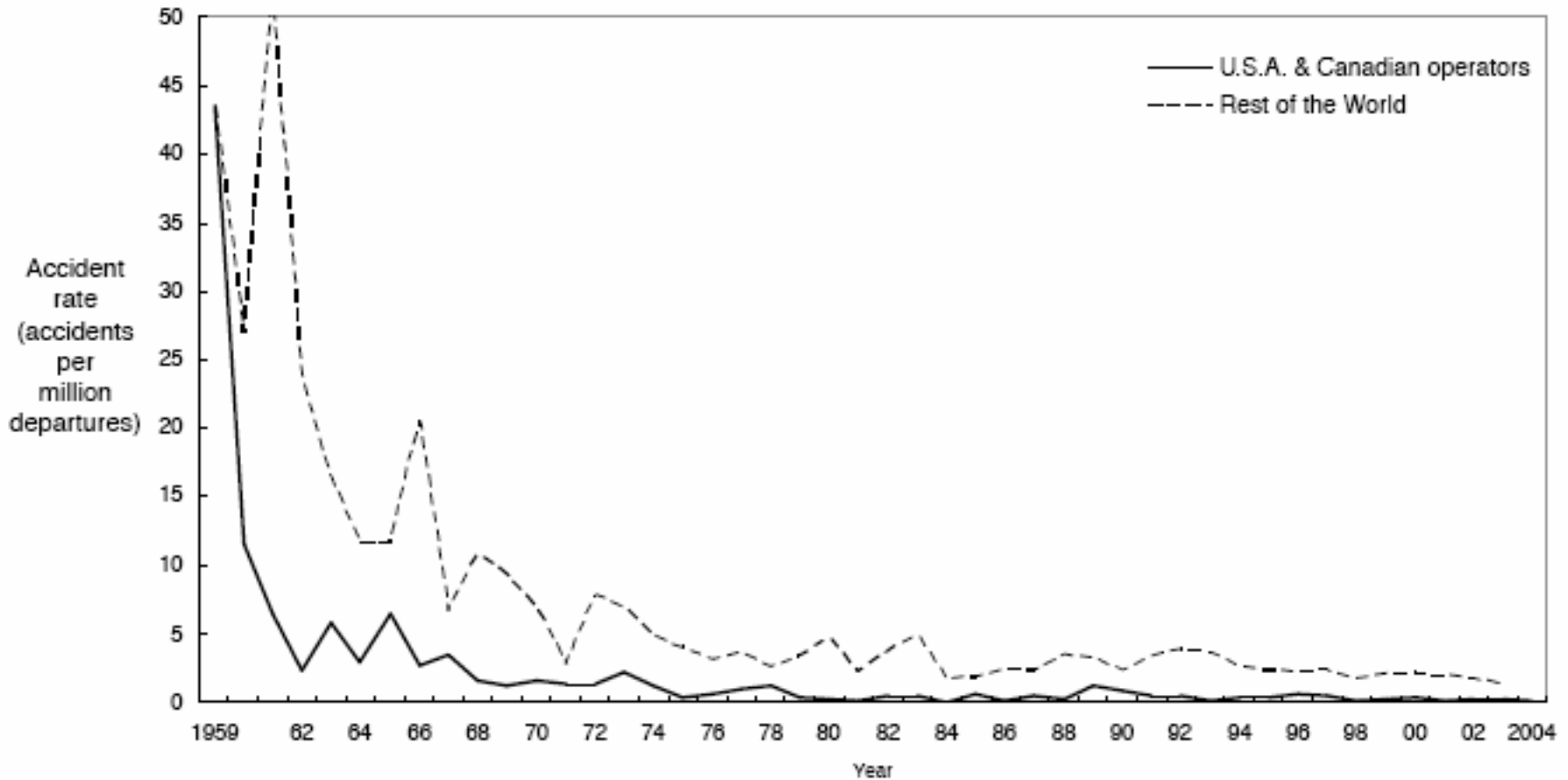
Summary of US and United Plan Terminations (\$ in billions)		
	US Airwa ys	United Airlines
Total Termination Liability	\$7.9	\$16.8
Assets	\$2.9	\$7.0
Unfunded Termination Liability	\$5.0	\$9.8
PBGC Guaranteed Portion of Underfunding	\$2.9	\$6.6
Value of Lost Benefits	\$2.1	\$3.2
Lost Benefits as % of Total Term. Liability	26.58%	19.05%

Delta and NWA Chap 11 filings estimated at \$16B Liability



Safety Trend

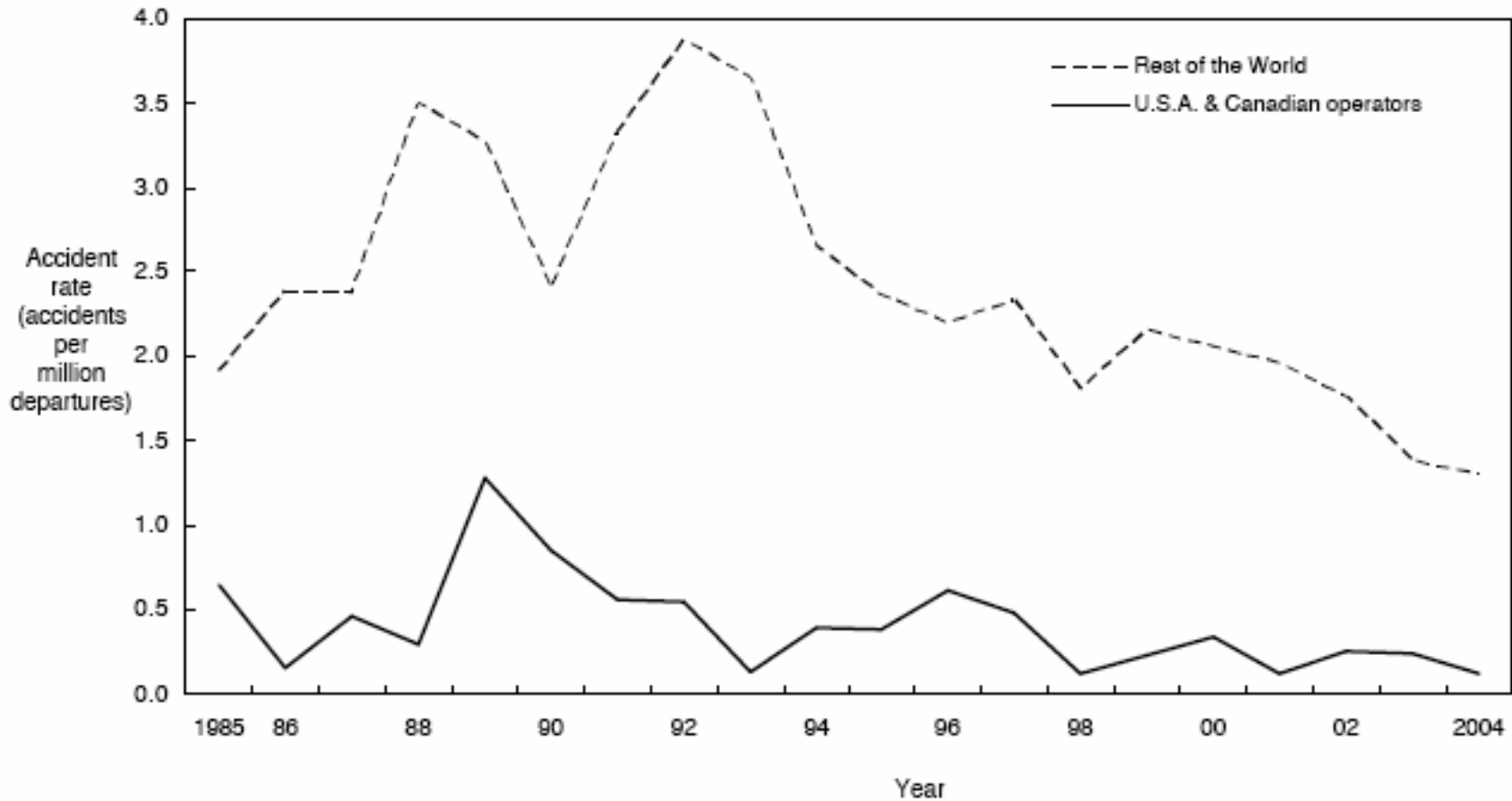
Hull Loss and/or Fatal accidents – Worldwide Commercial Jet Fleet – 1959 through 2004





Safety Trend

Hull Loss and/or Fatal accidents – Worldwide Commercial Jet Fleet – 1985 through 2004





2005 Fatal Accidents

Date	Aircraft	Operator	Fatalities	Location	Description
4-Feb	Boeing 737-200	Kam Air	104	Afghanistan	CFIT Approach Snow
3-Aug	Airbus A.340	Air France	0	Canada	Weather Overrun
15-Aug	Boeing 737-300	Helios Airways	121	Greece	Decompression
17-Aug	MD-80	West Caribbean Airways	160	Venezuela	Dual Flame Out Fuel?
24-Aug	Boeing 737-200	TANS	40	Peru	Approach Weather?
6-Sep	Boeing 737-200	Mandala Airlines	102	Indonesia	Initial Climb
23-Oct	Boeing 737-200	Bellview Airlines	117	Nigeria	Enroute



Blacklist Controversy

August 2005

- **France**

- Air Koryo (North Korea)
- Air Saint Thomas (US)
- International Air Services (Liberia)
- Lineas Aer de Mozambique (Mozambique)
- Phuket Airlines (Thailand)

- **Belgium**

- Africa Lines (Republic of Central Africa)
- Air Memphis (Egypt)
- Air Van Airlines (Armenia)
- Central Air Express (Democratic Republic of Congo)
- I.C.T.T.P.W. (Libya)
- International Air Tours Limited (Nigeria)
- Johnsons Air Limited (Ghana)
- Silverback Cargo Freighters (Rwanda)
- South Airlines (Ukraine)

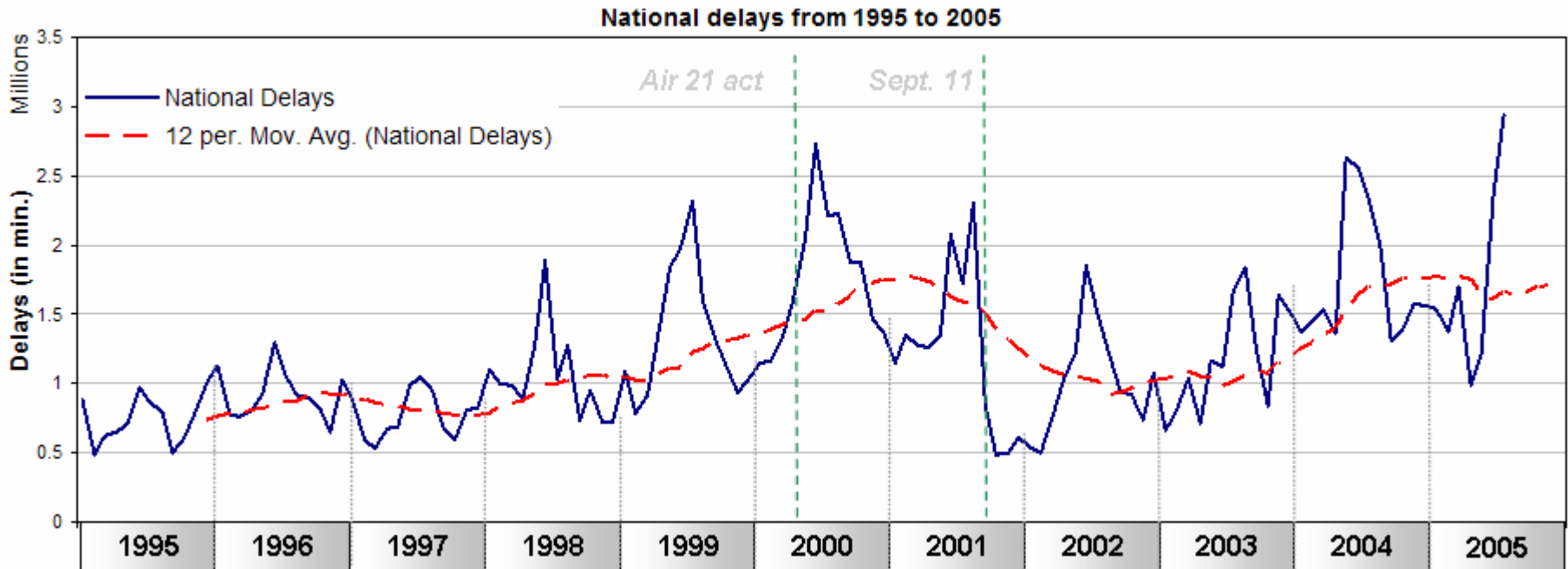
- **FAA Position (IASA) Assessment by Country**

- Category 1 (meet ICAO Standards)
- Category 2 (does not meet ICAO Standards)



US Flight Delays

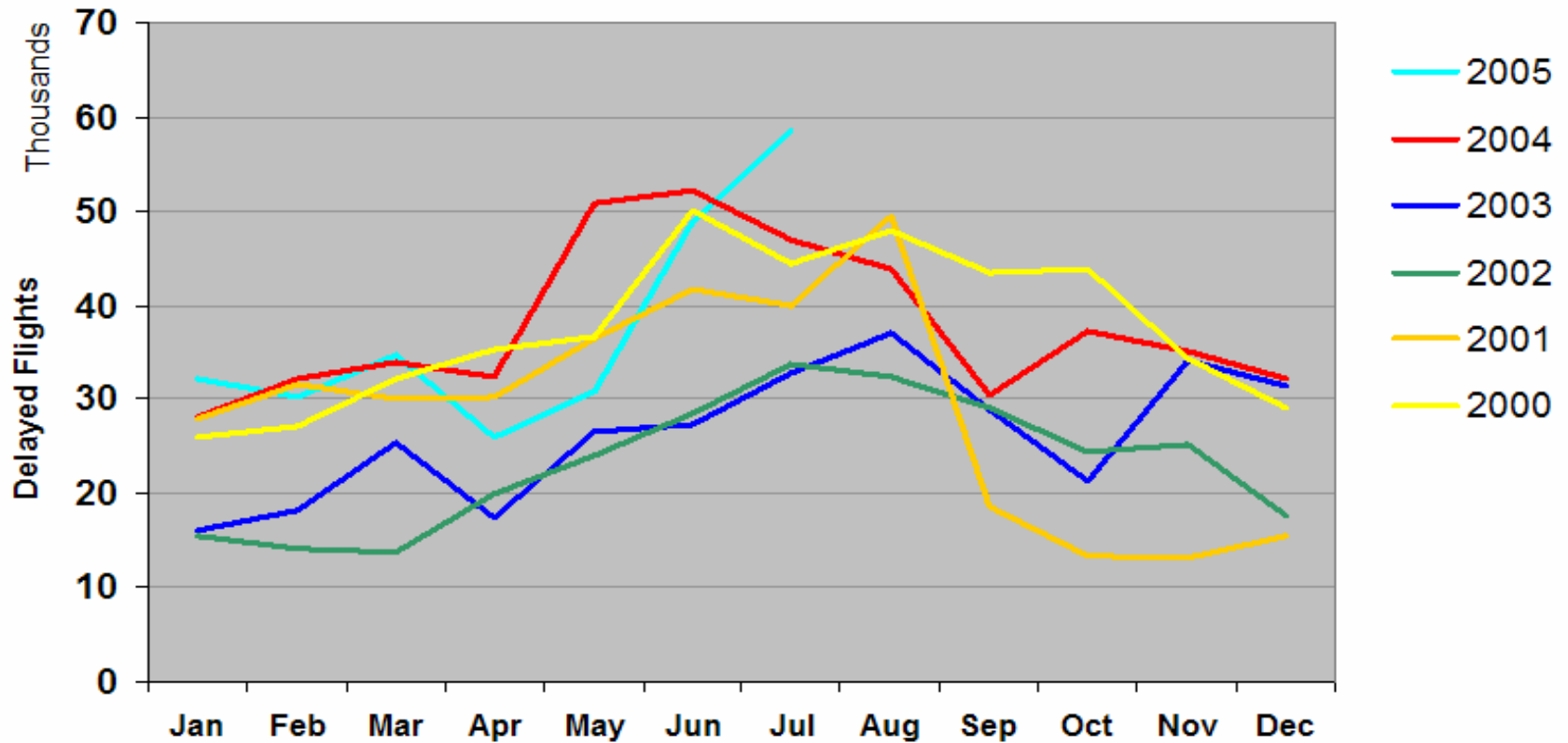
from 1995 to 2005



US Flight Delays

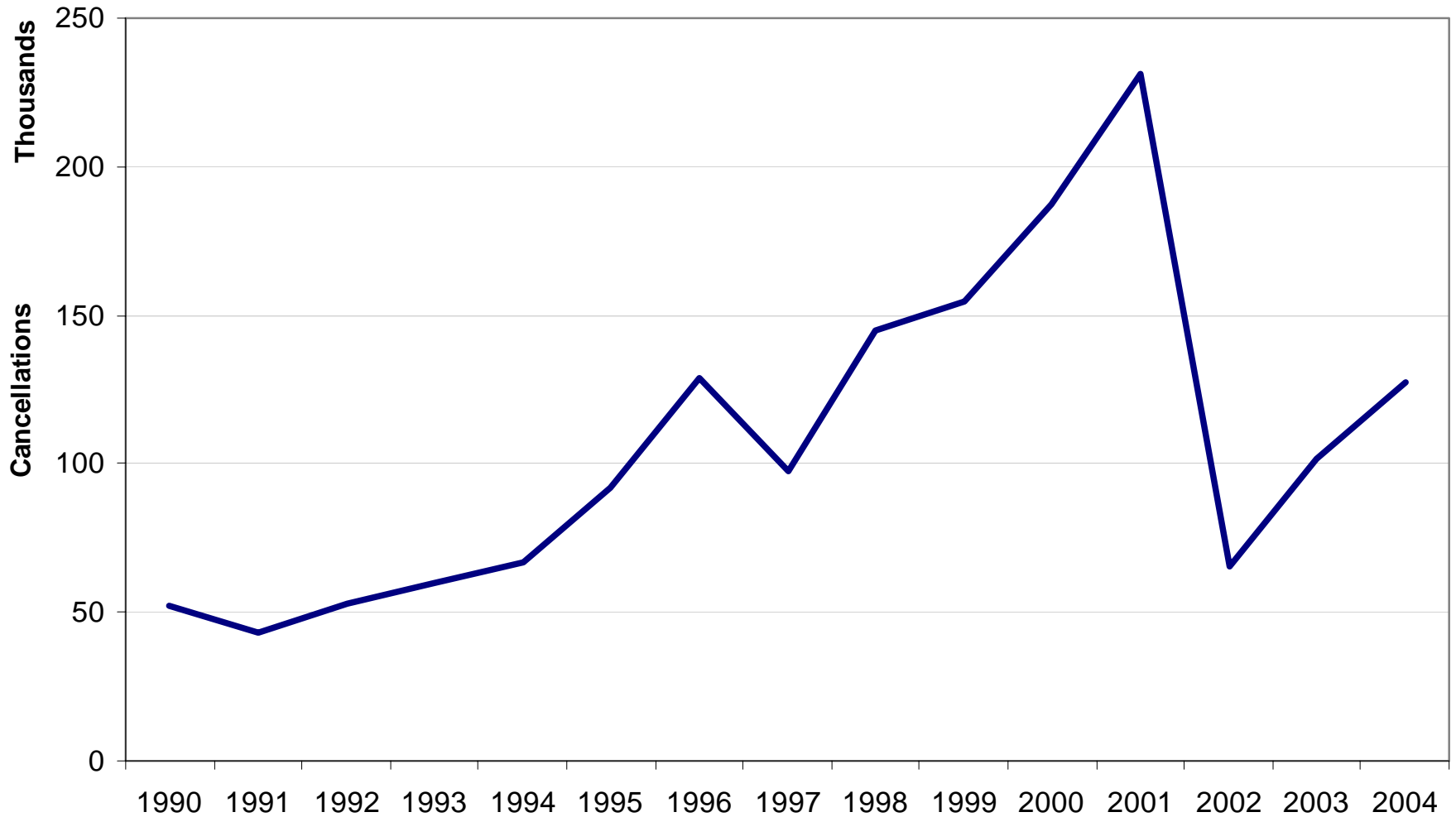
from 2000 to 2005

National Delays (in flights)



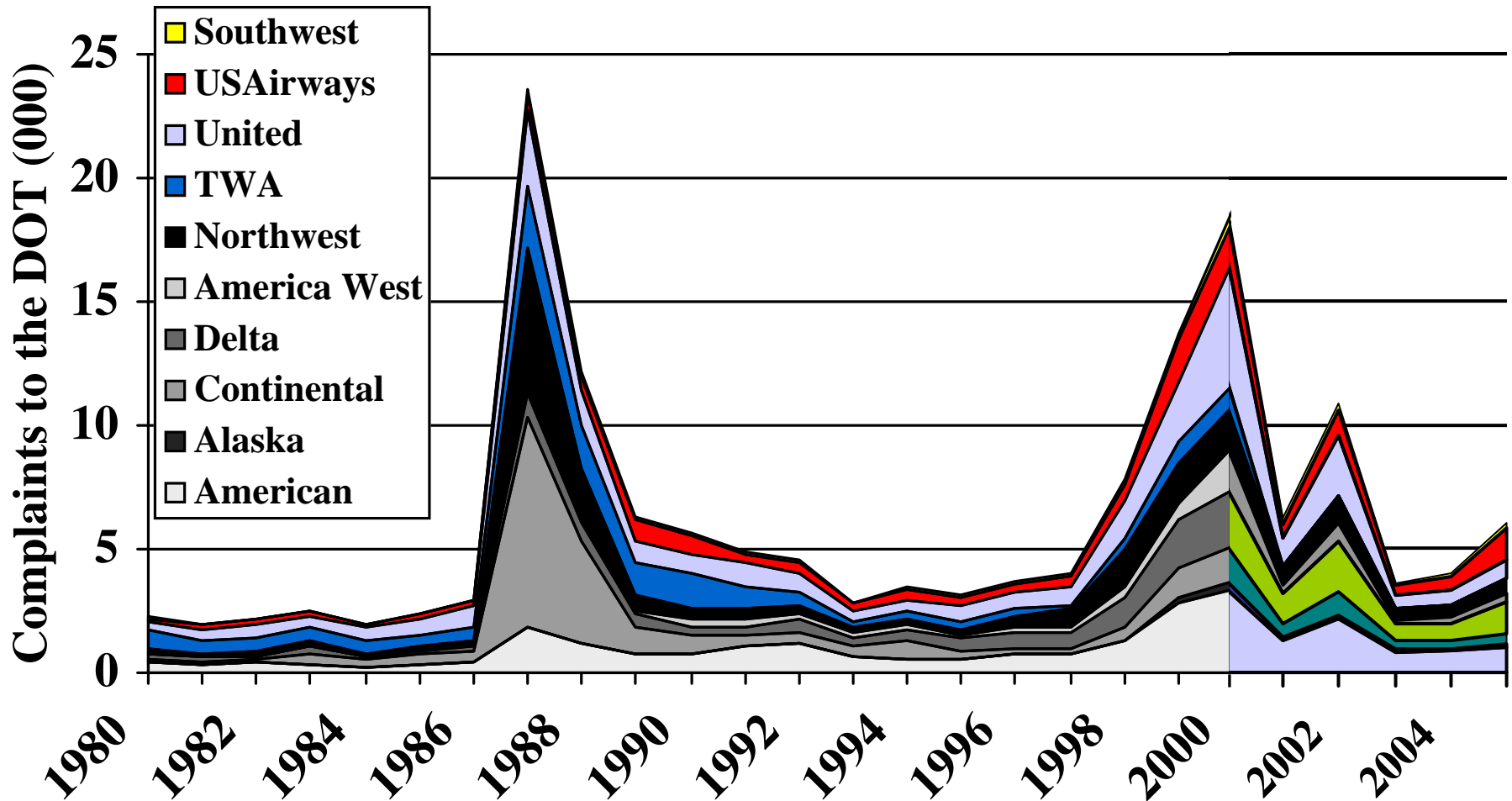


Flight Cancellations





Consumer Complaints

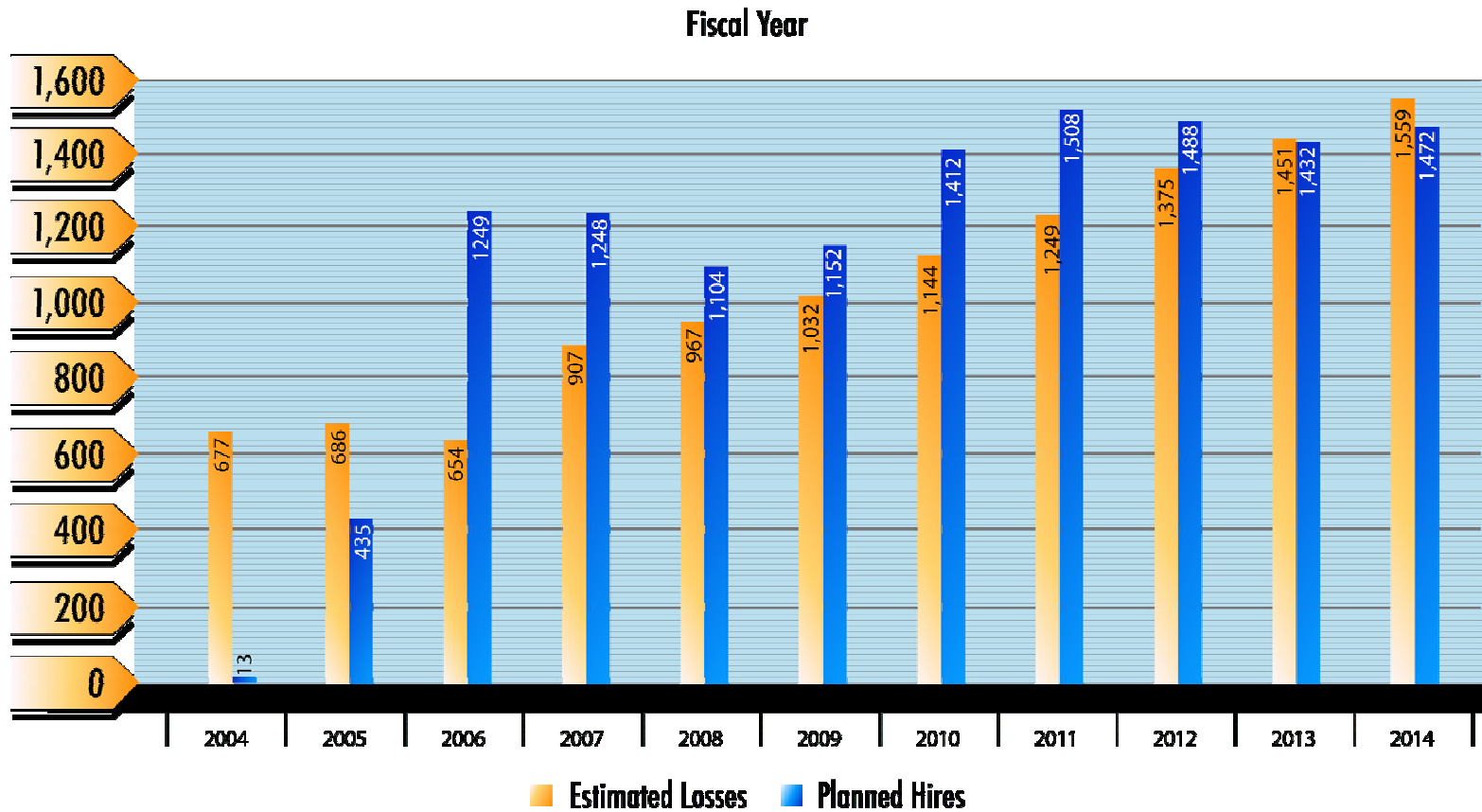


Note: Year 2005 consumer complaints is an extrapolation using data from Jan-Mar 2005

Data source: DOT Aviation Consumer Protection Division, available at: <http://airconsumer.ost.dot.gov/>

Air Traffic Controller Staffing

ATO Hiring Forecast vs. Losses



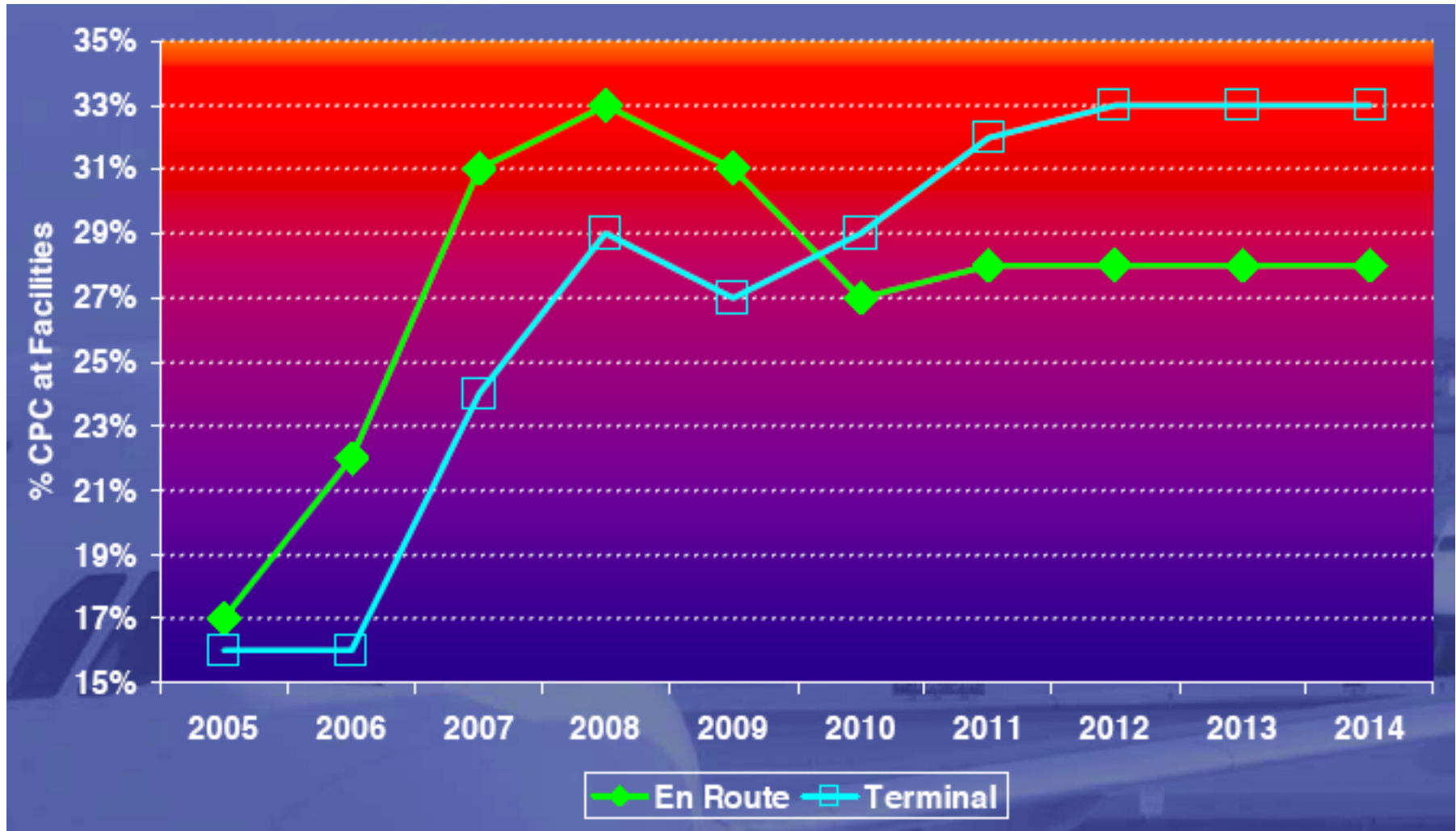
Time to CPC (Certified Professional Controller)

Terminal; 8 - 24 months

Enroute: 36 - 60

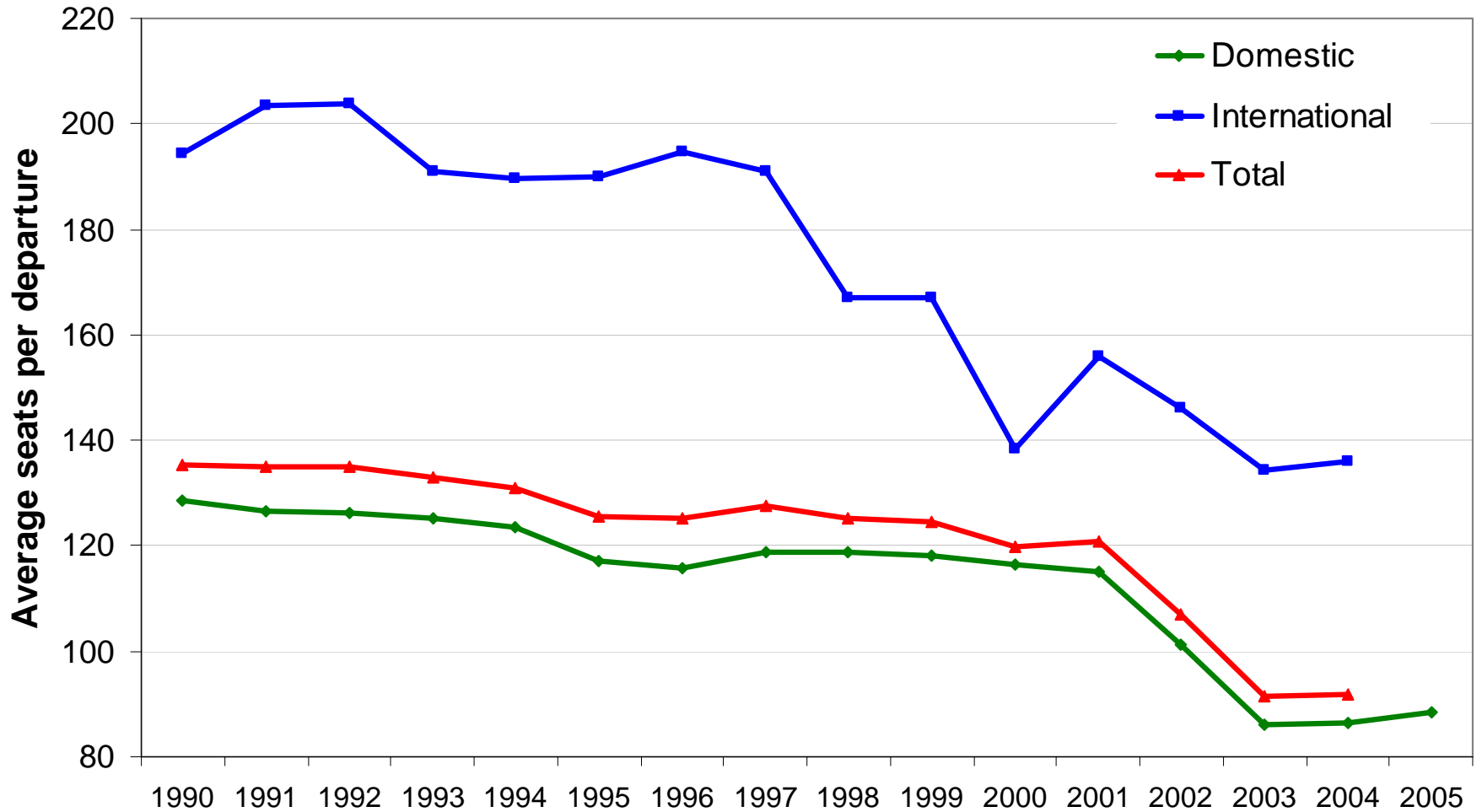
Source: *Air Traffic Controller Workforce Plan - 2004*

Projected % Developmental Controllers



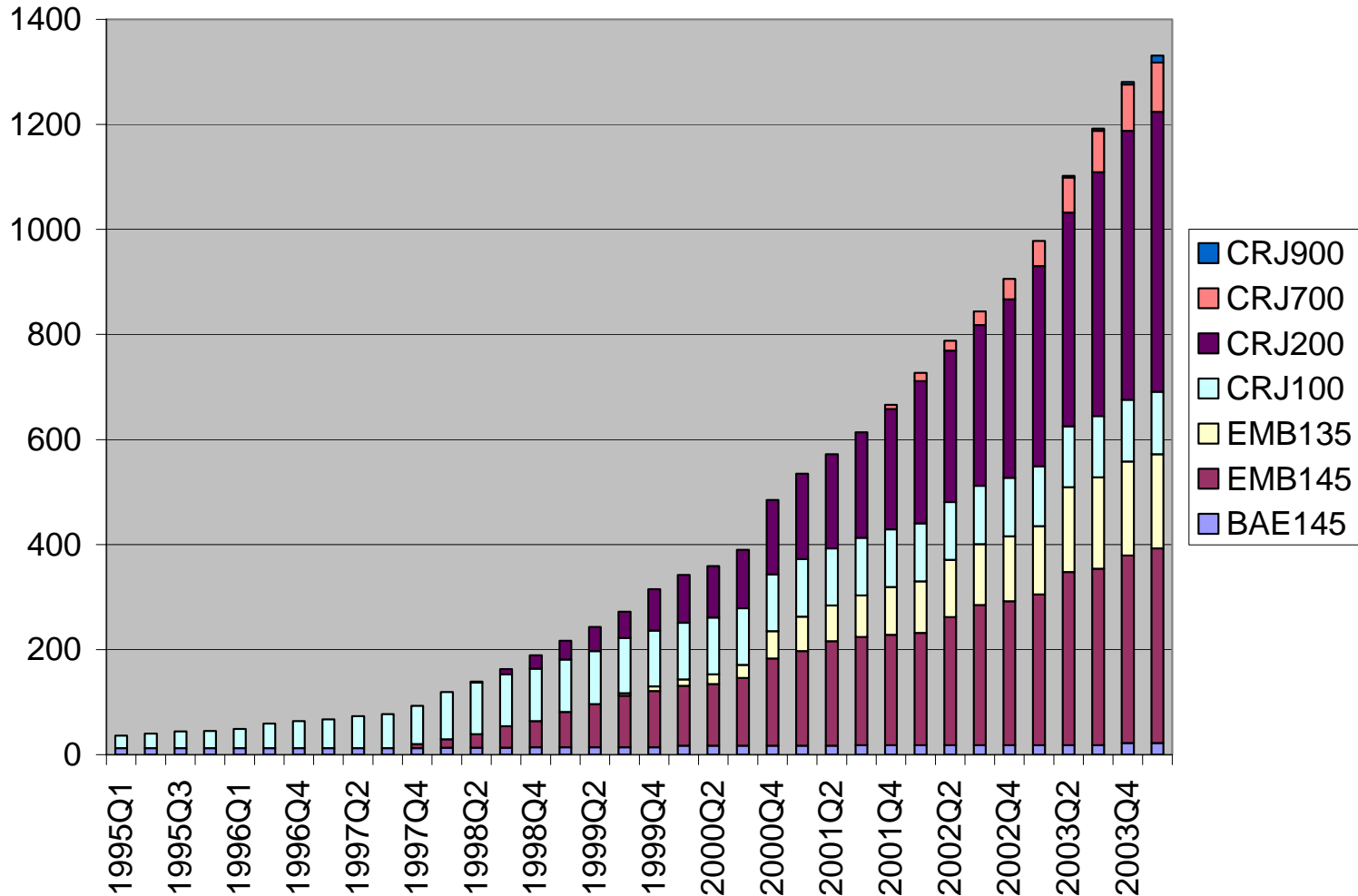


Trends in Aircraft Size





U.S. Regional Jet Growth Slowing



Source: FAA registration data from 1995 until the present



Most Common Regional Jets

ERJ 145 (50 seats)



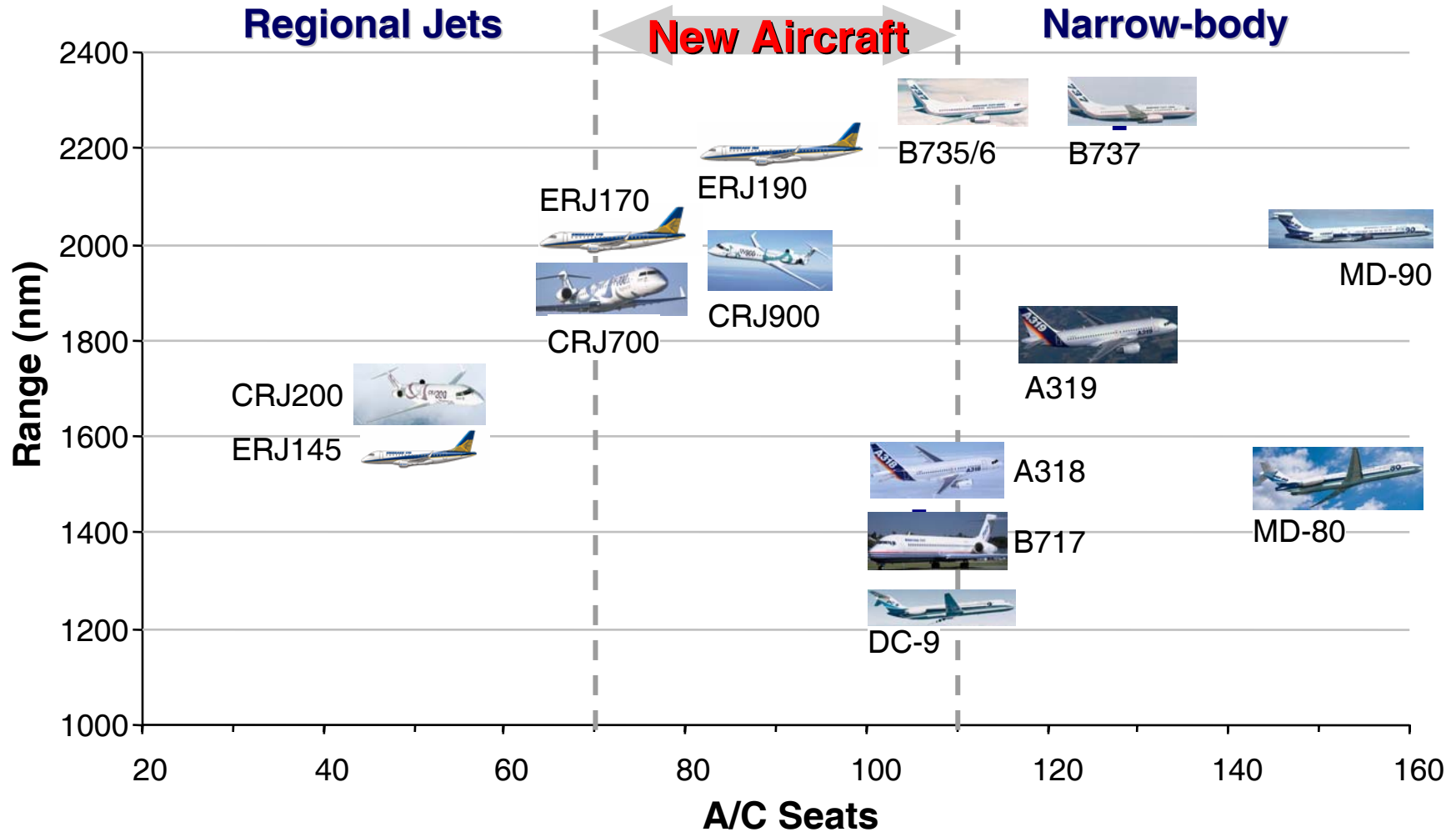
About 400 aircraft in national fleet
About 2000 daily flights in January 2003

CRJ 200 (50 seats)



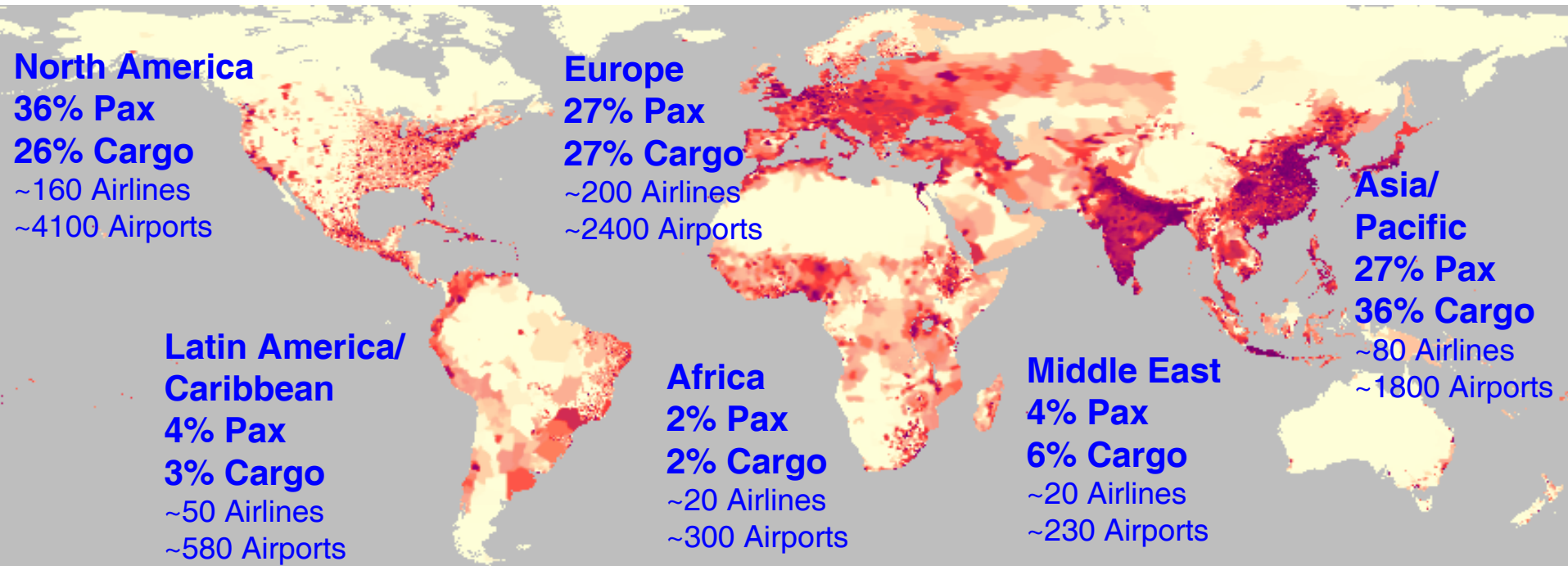
About 400 aircraft in national fleet
About 1500 daily flights in January 2003

RJ-NB Boundary Blurred





World Population Distribution & 2004 Air Transportation Activity



Data source: Population: [URL:<http://www.ciesin.org/datasets/gpw/globldem.doc.html>]

Air Transport: ICAO, R. Schild/Airbus

Passenger and freight traffic represent RPK and FTK share in 2004