Fares and Competition in US Markets: Changes in Fares and Demand Since 2000

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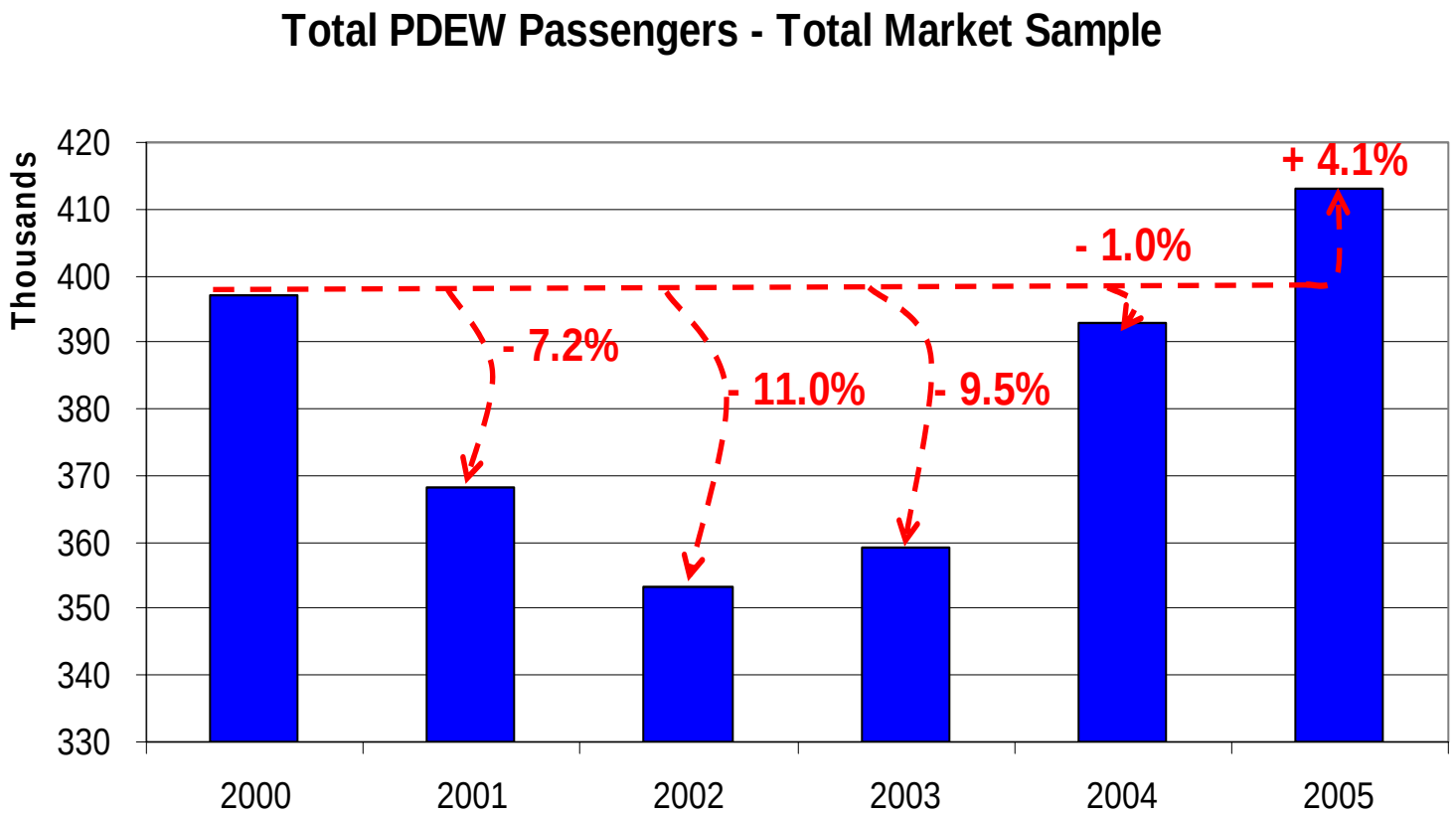
Objectives & Approach

- Objectives
  - Track fare and traffic changes in US domestic markets since 2000
    - By distance and market size
    - In hub vs. non-hub markets
    - In markets with LCC presence and new entry
  - Examine relative fares of major competitors
    - Which airlines obtain a "yield premium" in these markets?

- Data Sample
  - Top 1000 US O+D Markets extracted from O&D Plus
  - Markets were matched across each year 2000-2005
    - 856 matching markets – Total "Market Sample"

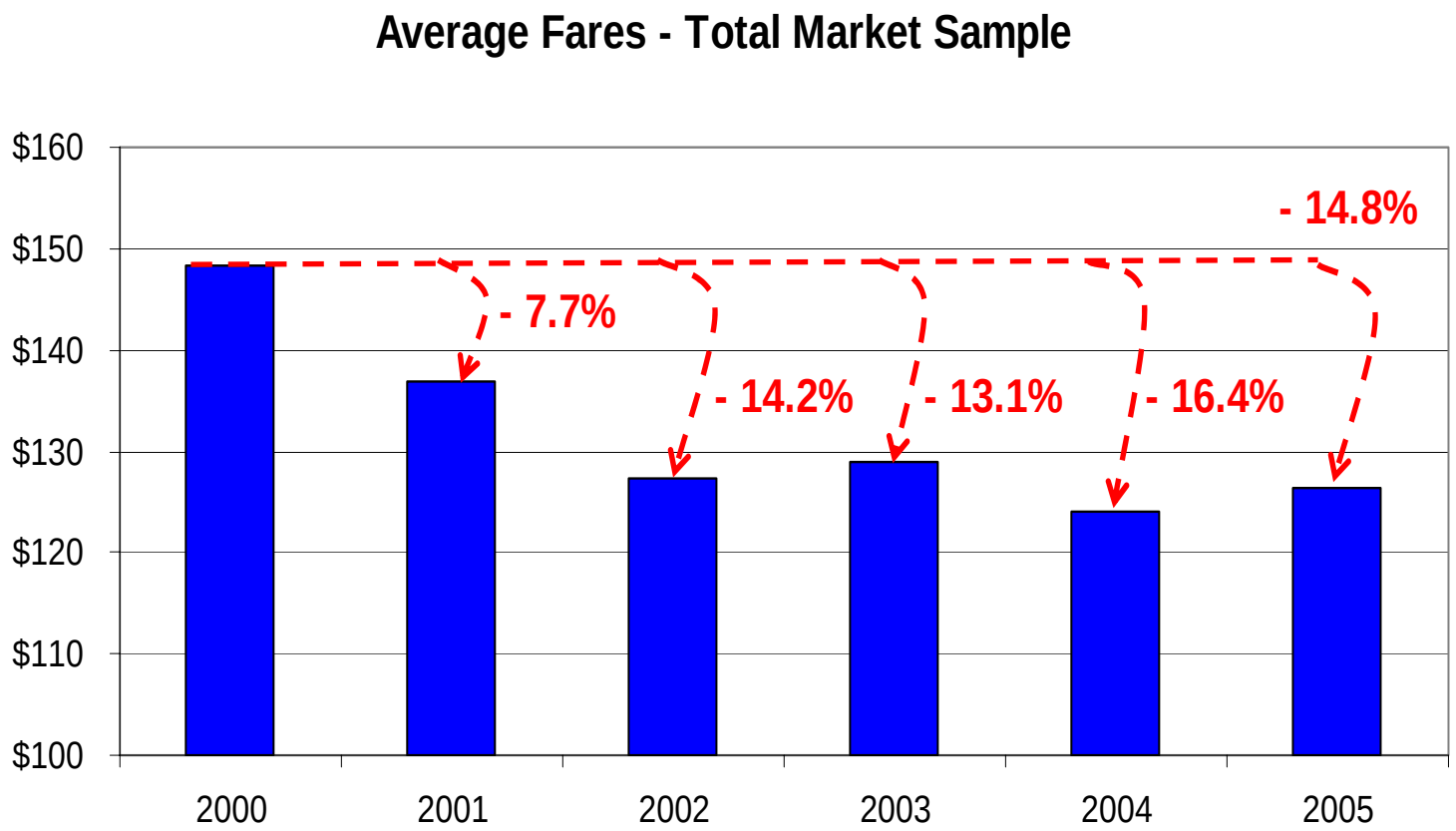
Total Traffic in Market Sample

- Passenger volumes rebounded by 2005 to 4% above 2000 levels after dropping by 11%.



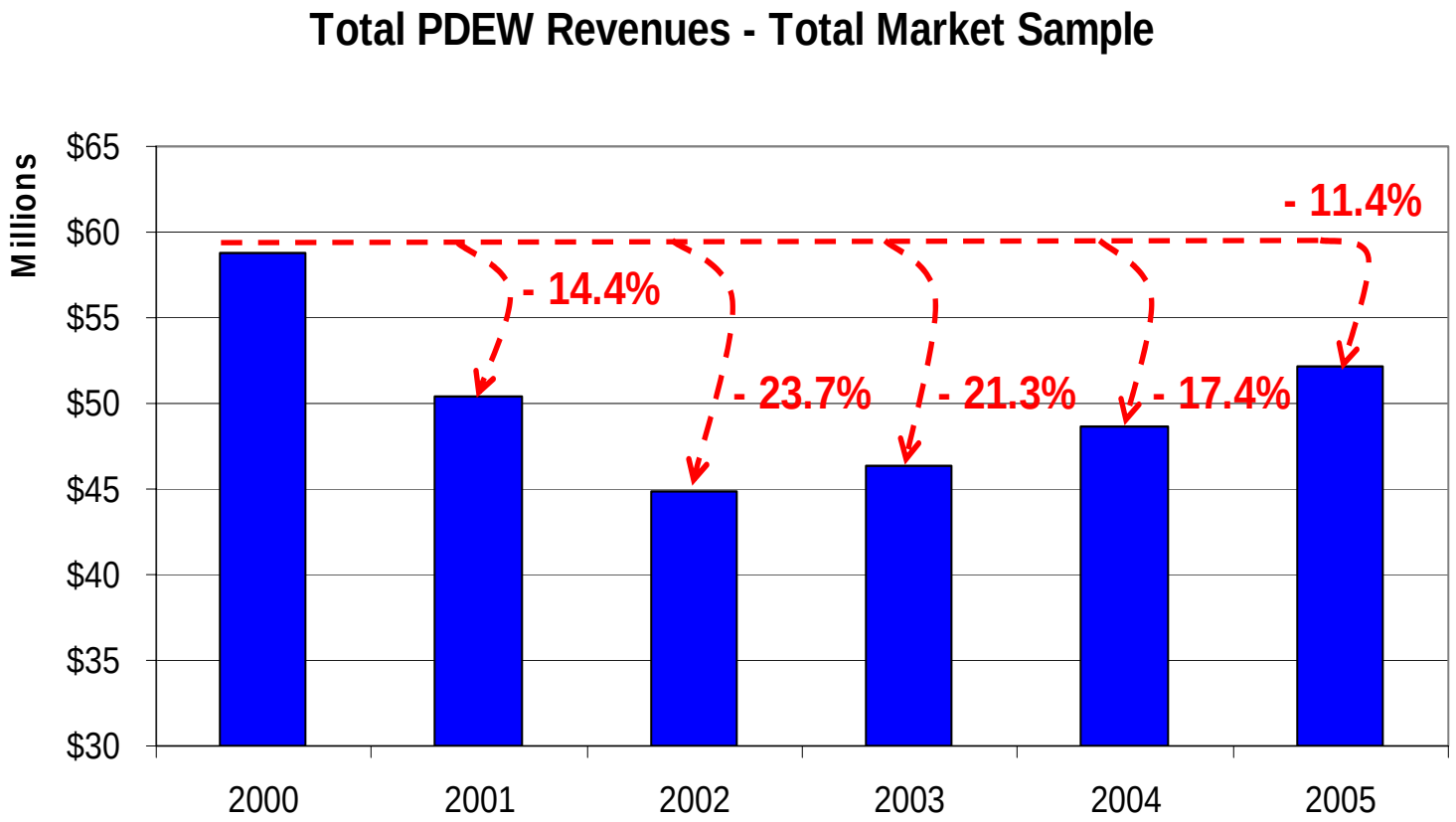
Average Fares

- After dropping 16%, fares increased slightly in 2005 but were still 14.8% lower than in 2000.



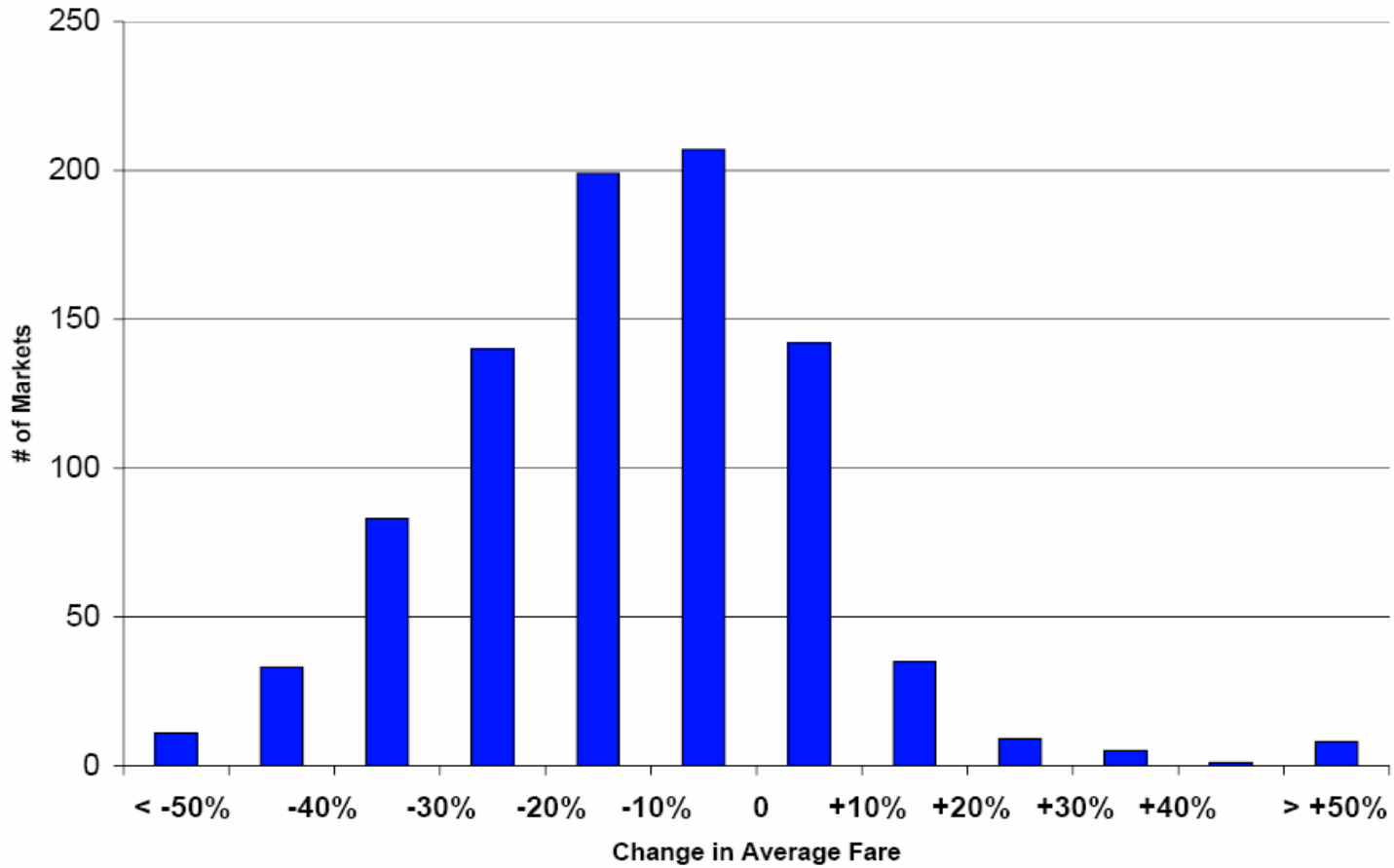
Total Market Revenues

- Slow recovery since 24% drop from 2000 to 2002, but still 11% below 2000 levels.



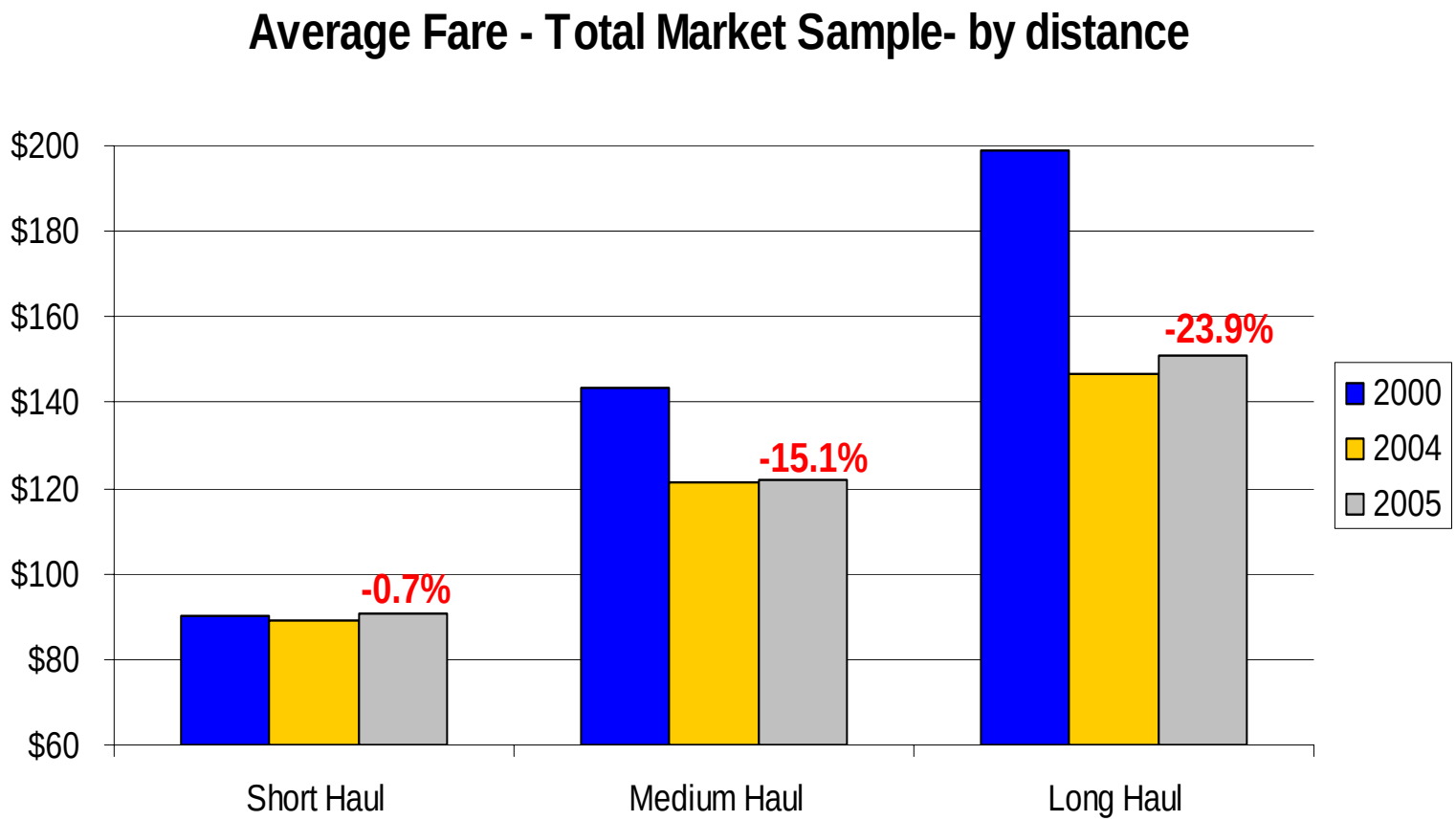
Distribution of Fare Changes

- Most, but not all markets have seen lower fares



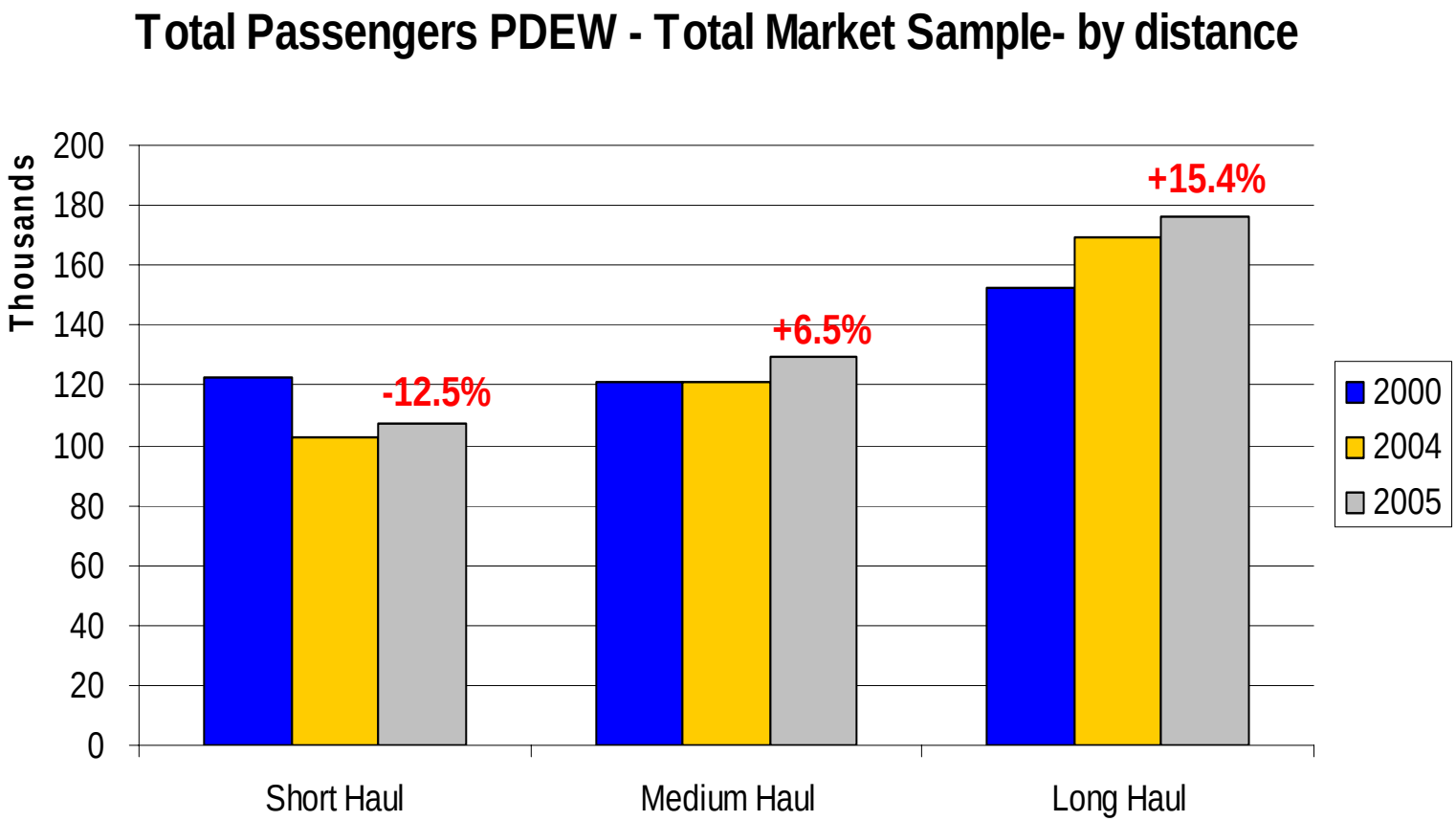
Average Fares by Distance

- Average fares 24% lower in long haul markets, while short haul fares have remained stable.



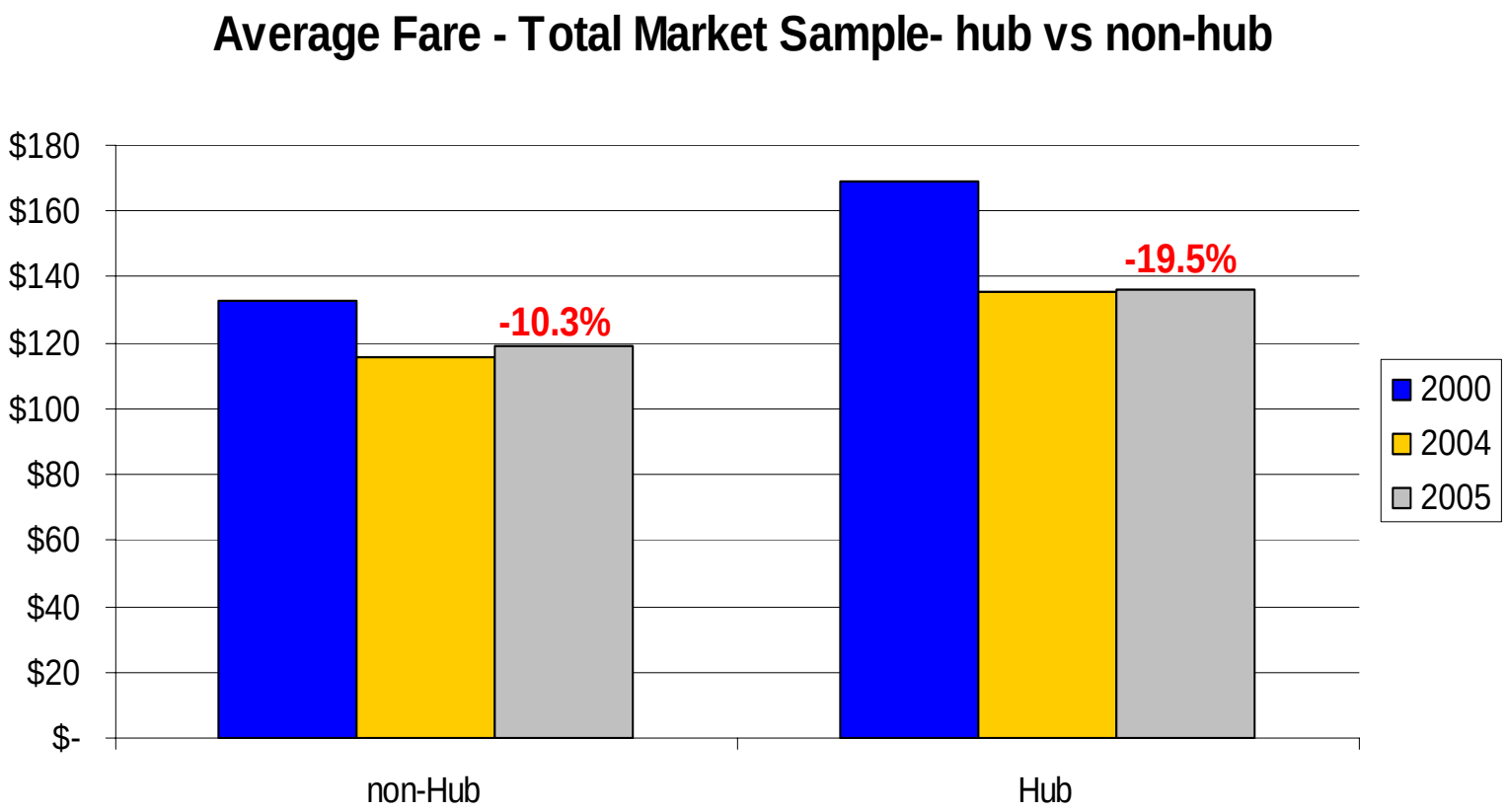
Total Passengers by Distance

- Passenger traffic in short haul markets dropped 13%, while increasing 15% in long haul markets.



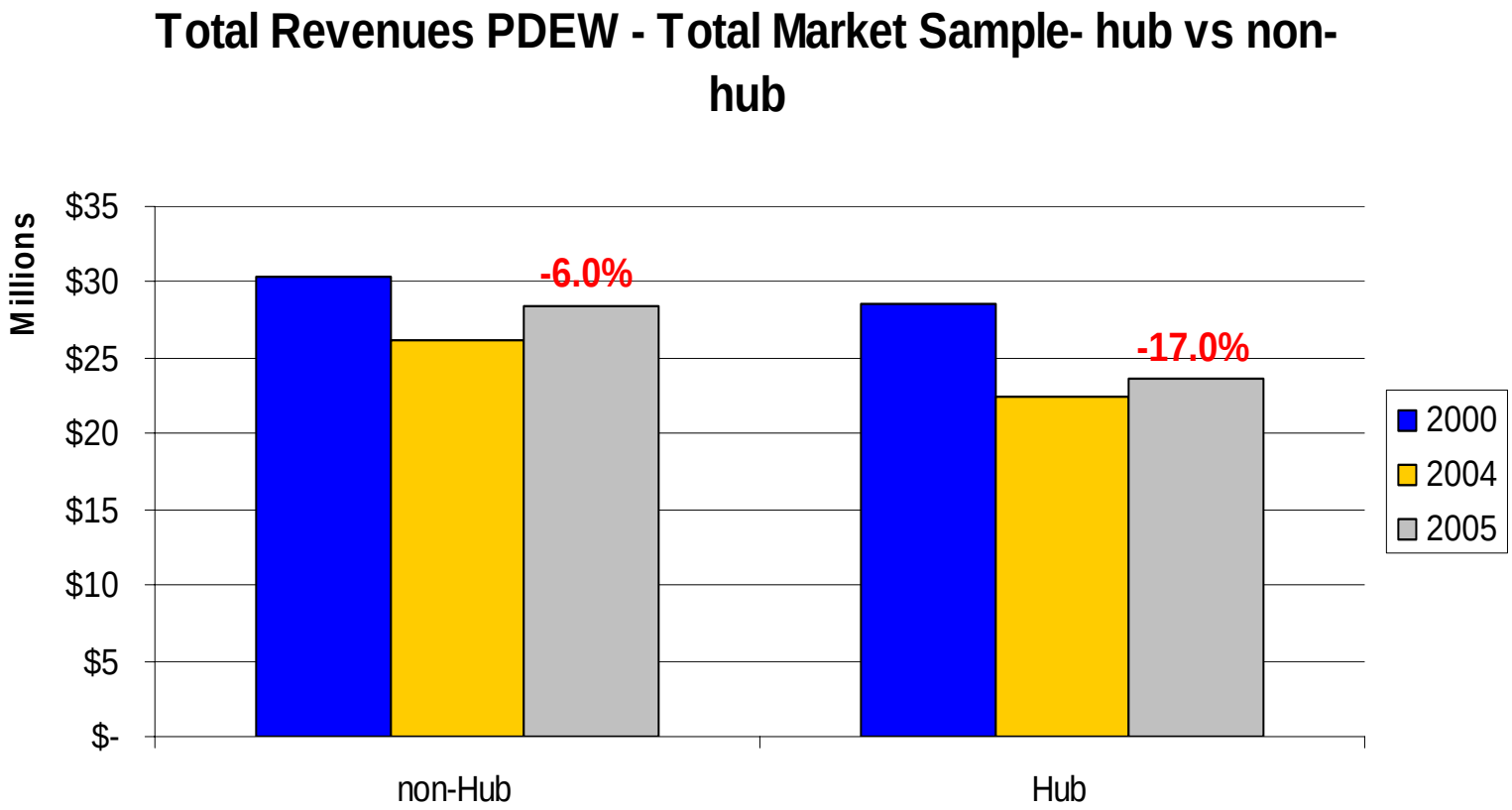
Hub vs. non-Hub Fares

- Average fares have dropped more in hub markets, but started at much higher levels and remain higher than in non-hub markets.



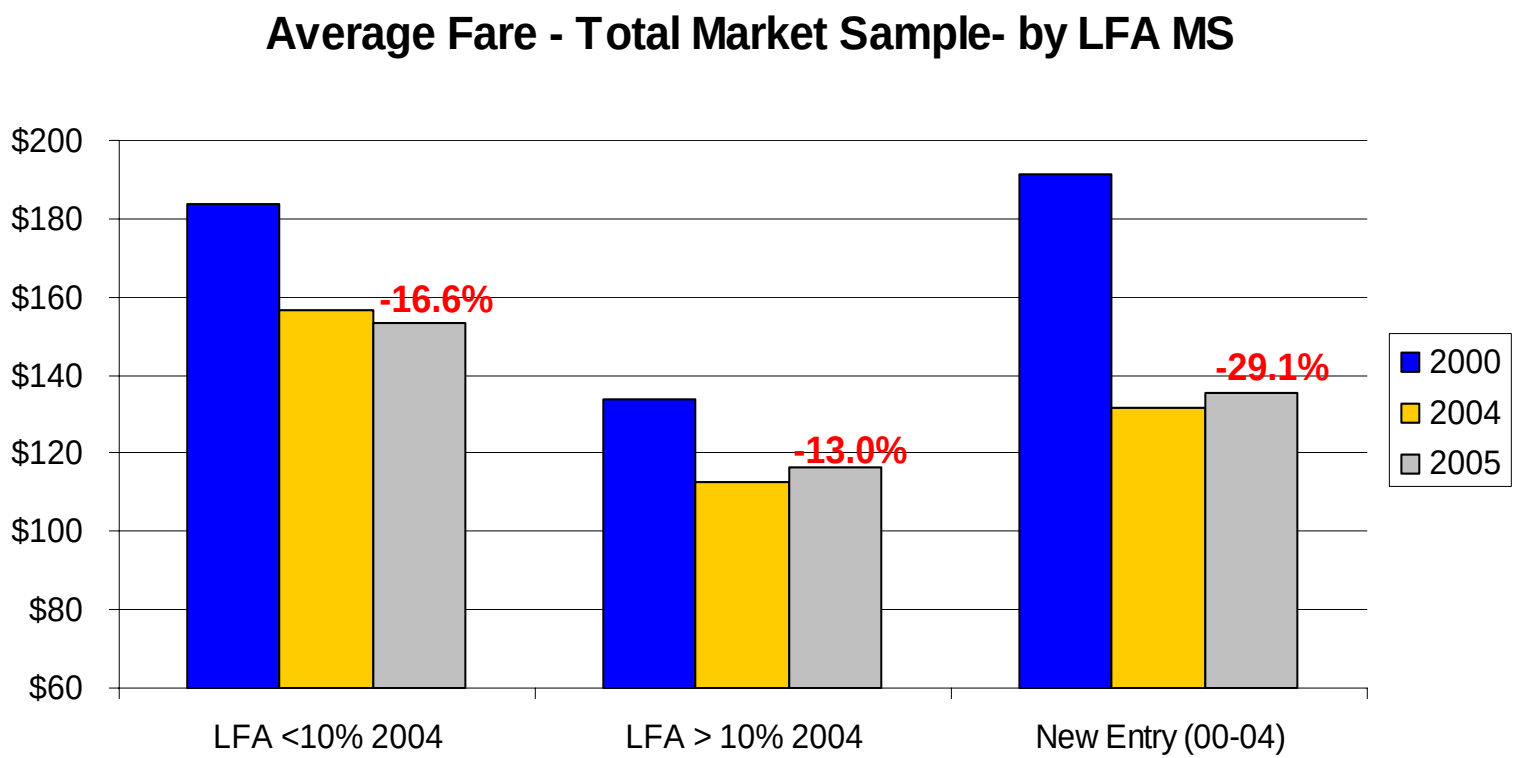
Hub vs. non-Hub Revenues

- Lower fares in hub markets have reduced total revenues by 17%, given similar 3-4% traffic growth in hub and non-hub markets.



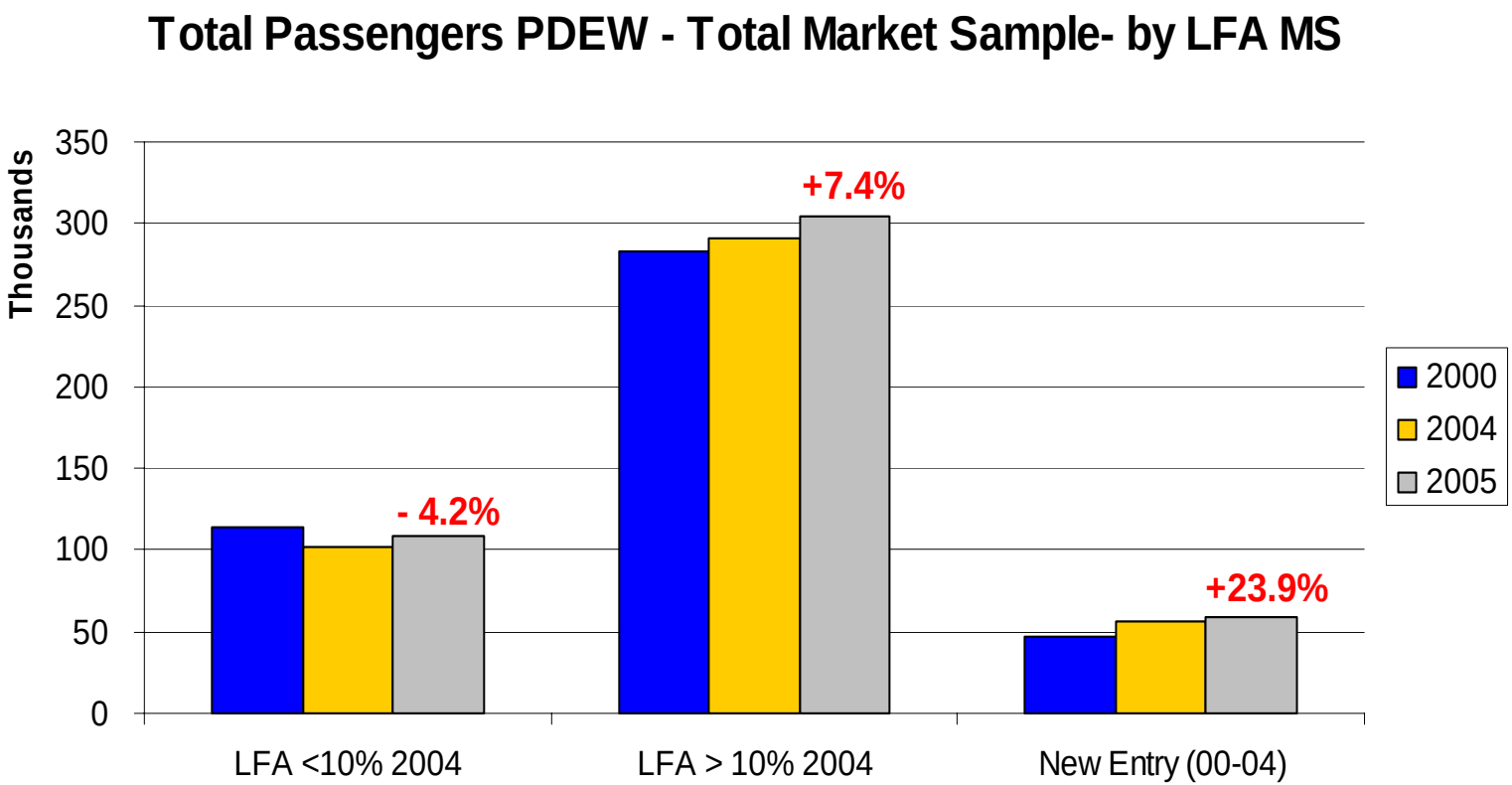
LFA Market Presence and Fares

- Fares decreased more for markets with small LFA market shares (than those with bigger LFA presence), but remain higher overall.
- Largest (29%) decrease in fares observed for markets with new entry by LFA since 2000.



LFA Entry and Traffic Growth

- Traffic increased in markets with LFA presence, but decreased in markets with small/no LFA share
- Greatest traffic increase (24%) in markets with new LFA entry 2000 to 2005.



Average Fare Regression Model

$$FARE = \alpha + \beta_1 \times DIST + \beta_2 \times PAX + \beta_3 \times LFA + \beta_4 \times CONC + \beta_5 \times HUB$$

2000

Variable	Coefficient	Standard Error
Intercept	95.5416	6.1486
DIST	0.0530	0.0023
PAX00	-0.0053	0.0028
LFA00	-88.5958	4.9369
CONC00	0.0042	0.0008
HUB	32.3041	2.8734
R squared	0.64	

Note: All coefficients are significant at 1 % level, except PAX00 which is significant at 10 % level.

2004

Variable	Coefficient	Standard Error
Intercept	106.5096	3.0925
DIST	0.0303	0.0014
PAX04	-0.0077	0.0018
LFA04	-70.6190	3.1524
CONC04	0.0025	0.0005
HUB	16.4926	1.8701
R squared	0.65	

Note: All coefficients are significant at 1 % level

- Larger markets had lower fares, more so in 2004
- Presence of LFA reduces fares, but less so in 2004
- Higher fares in more concentrated markets, less so in 2004
- "Hub premium" still exists, but cut by half between 2000 and 2004

Relative Fares by Airline

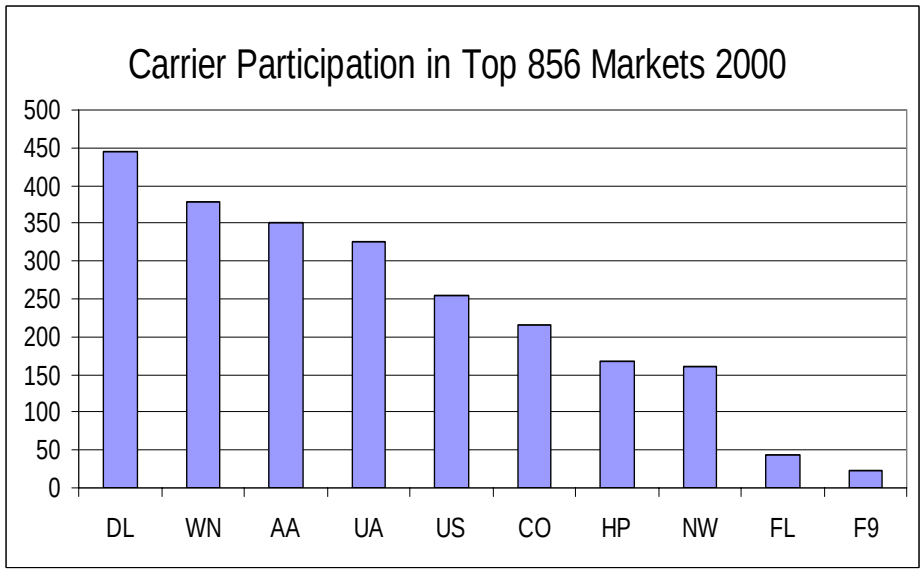
- Calculated "yield index" for each airline in each market of the Total Sample:

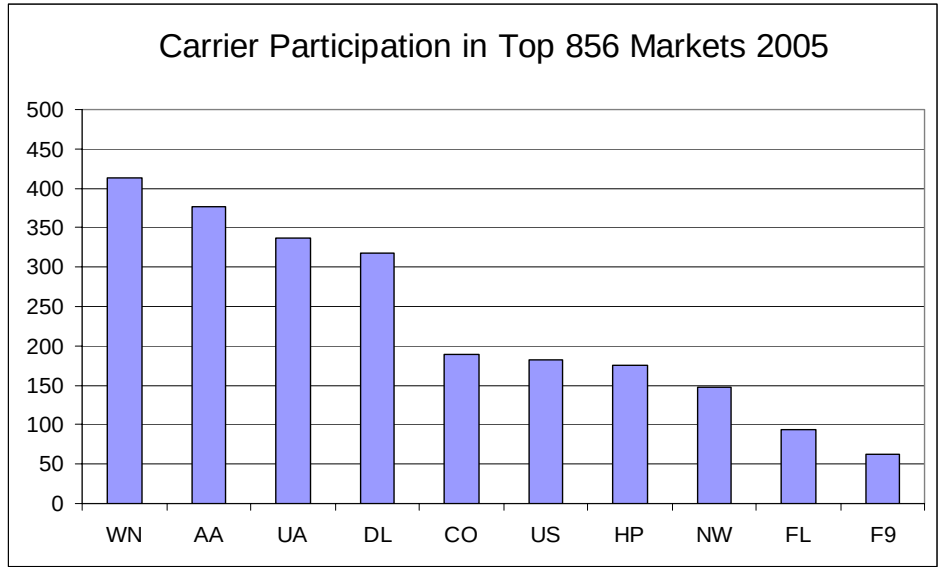
$$\text{Yield Index } YI_{ij} = (\text{Airline i Yield in a market j})/(\text{Avg Yield in market j})$$

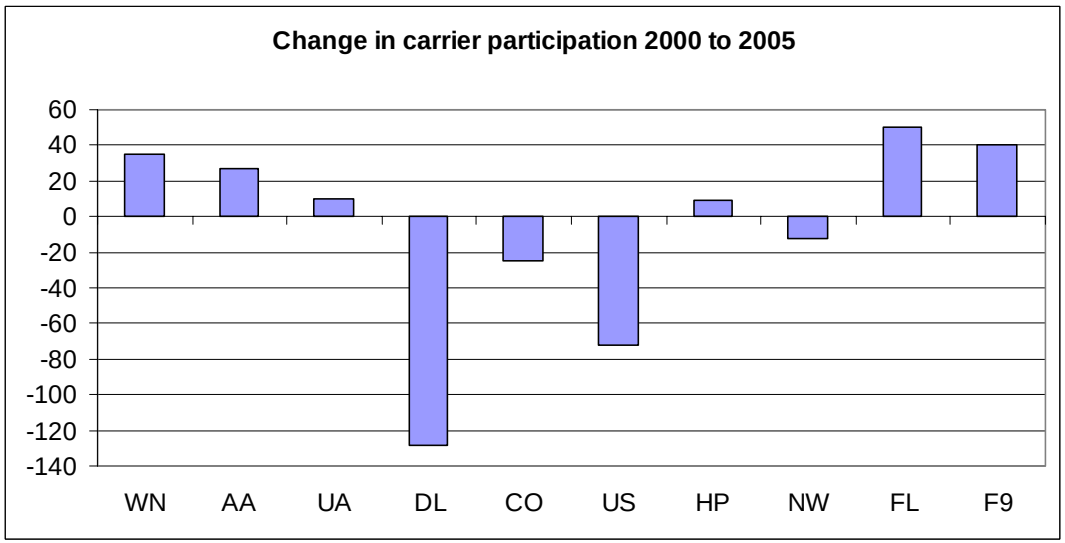
- Aggregate yield index for each airline by year, weighting by passenger volumes in each market:

$$\text{Aggregate Yield Index } AX_i = \sum(YI_{ij} \times \text{Pax of airline i in market j}) / \sum(\text{Pax of airline i})$$

Carrier Participation in Top Markets

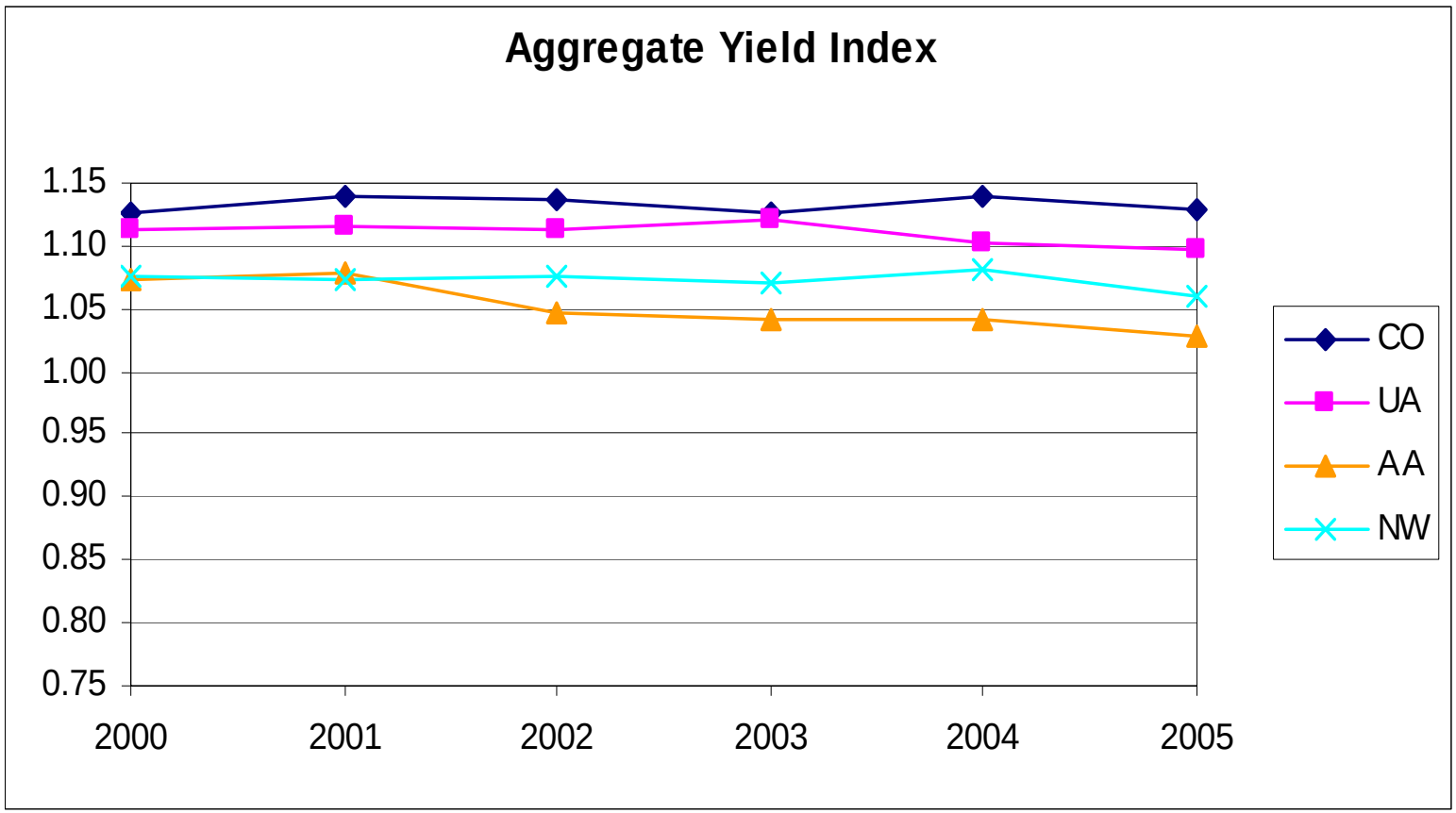






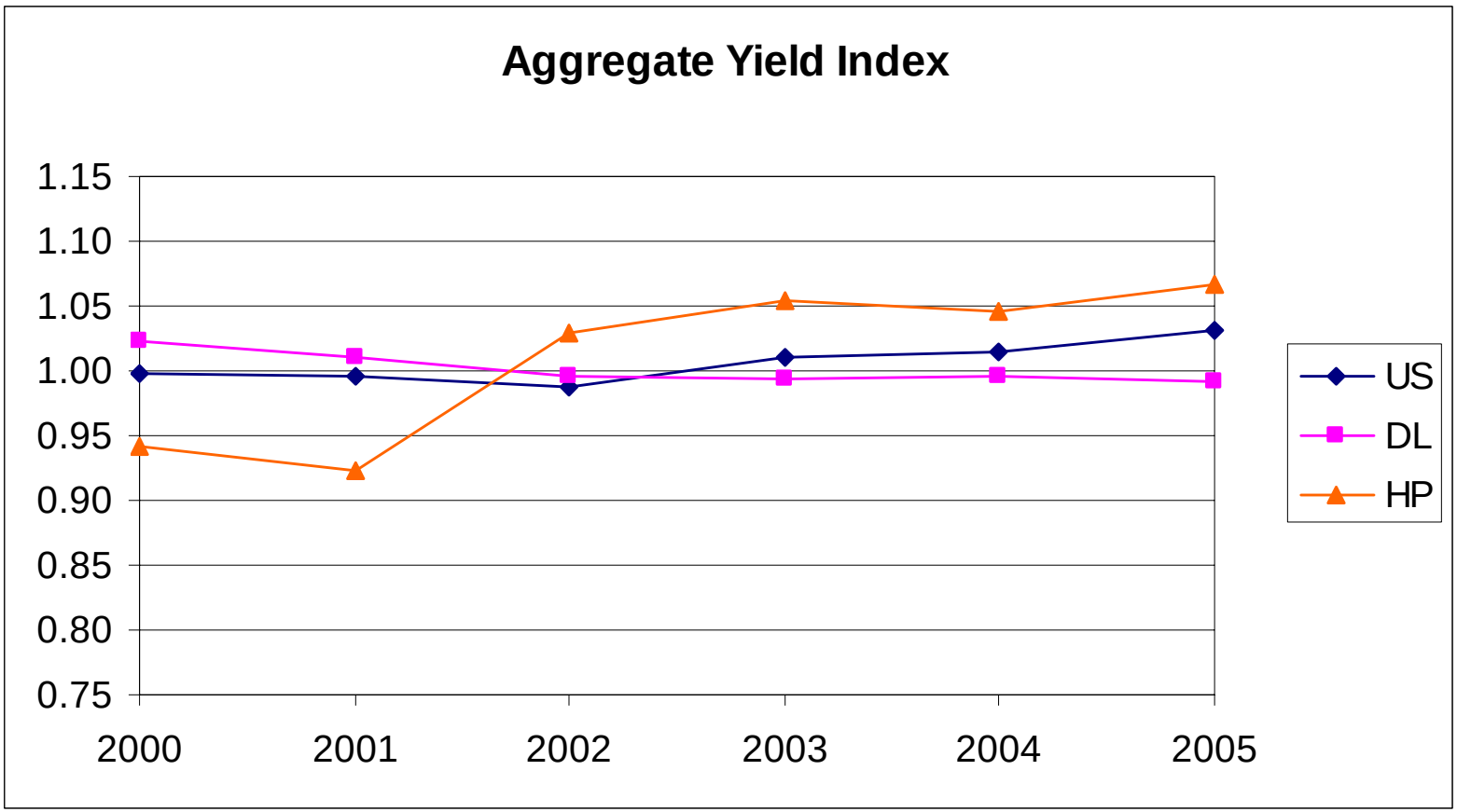
Legacy Carriers with Yield Premium

- CO, UA, NW and AA have maintained above average fares
- AA yield index has decreased, moving closer to 1.0 by 2005



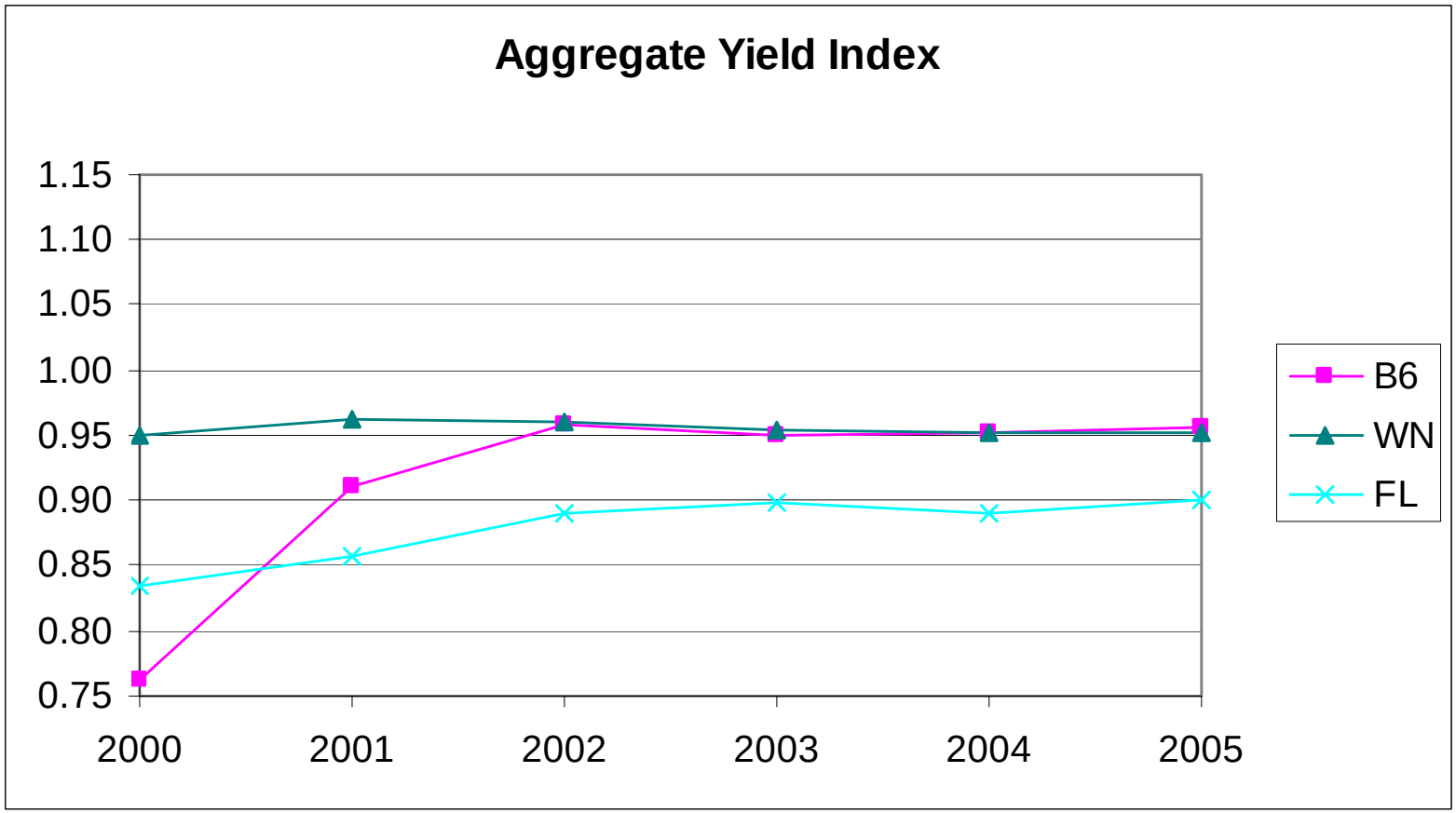
Other Legacy Carriers

- DL and US obtained little or no yield premium for most years during the period 2000-05.
- Both US and (especially) HP have increased their yield premium in recent past.



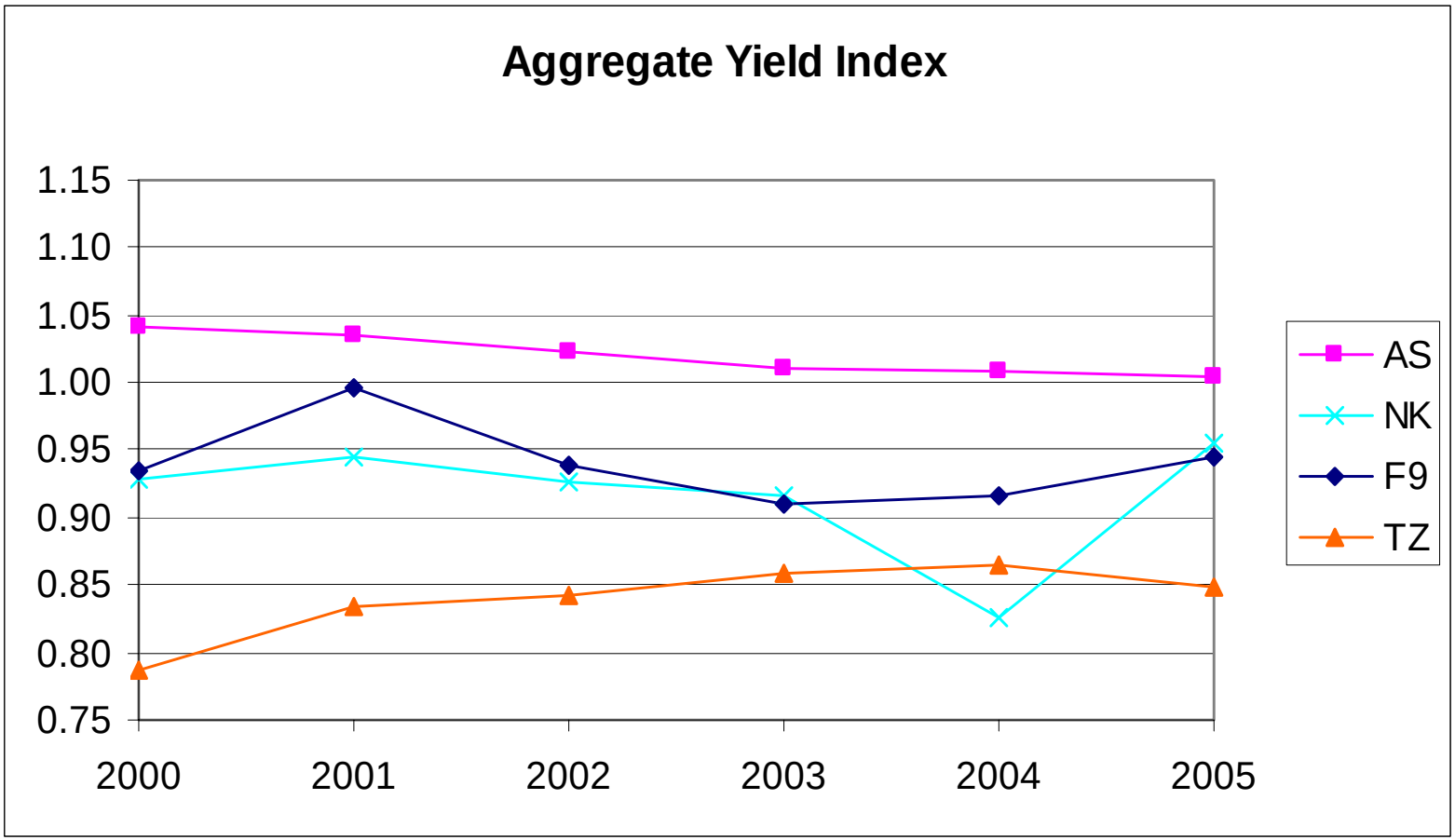
Largest Low Fare Airlines

- The largest LFA have below average yields
- B6 (JetBlue) and WN (Southwest) closer to 1.0 than FL (AirTran)



Remaining Major Carriers

- F9 (Frontier), NK (Spirit) and TZ (Am. Trans Air) also below average yields, while AS (Alaska) premium is disappearing



Summary of Results

- Fare and traffic trends differ by distance:
  - Short haul fares have remained stable, while traffic has decreased 13%
  - Long haul market fares down 24%, traffic up 15%
- LFA presence lowers fares and increases traffic
  - Greatest impacts observed for new LFA entry
- Hub fares decreased more than non-Hub fares
  - But hub premium is still evident
- Largest Legacy airlines have maintained a yield premium over LCCs in top markets:
  - DL is the exception, while US/HP have shown upward trend
  - WN and B6 are closer to market averages than smaller LCCs

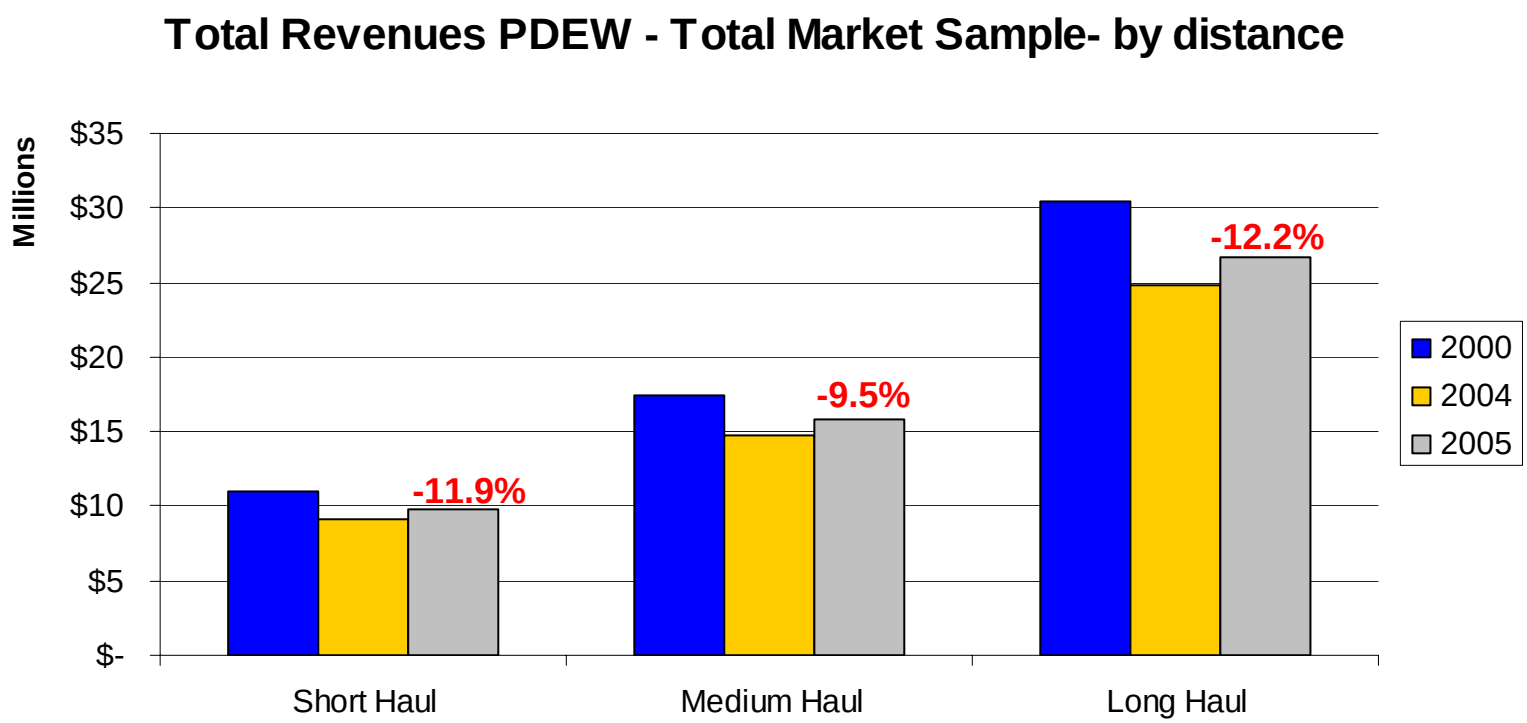
Fares and Competition – Next Steps

- Continue updates as 2006 data become available
  - Capture recent upward fare movement
  - Determine whether market differences persist
- More detailed analysis to examine correlation between individual carrier yield indices and
  - Markets shares, market concentration measures
  - LFA presence and timing of entry
  - For hub vs. non-hub markets
- Relationship of yield premium to capacity shifts
  - Changes in seat capacity and load factors

Appendix

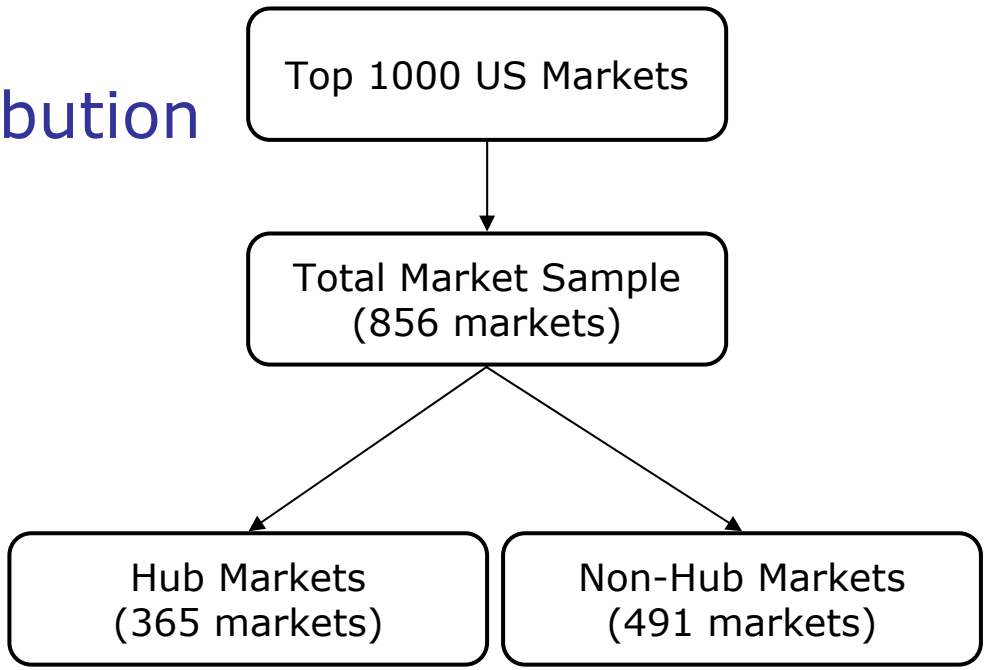
Analysis by Distance Category

- Total revenues decreased most in long haul markets despite traffic growth – down 12% overall.



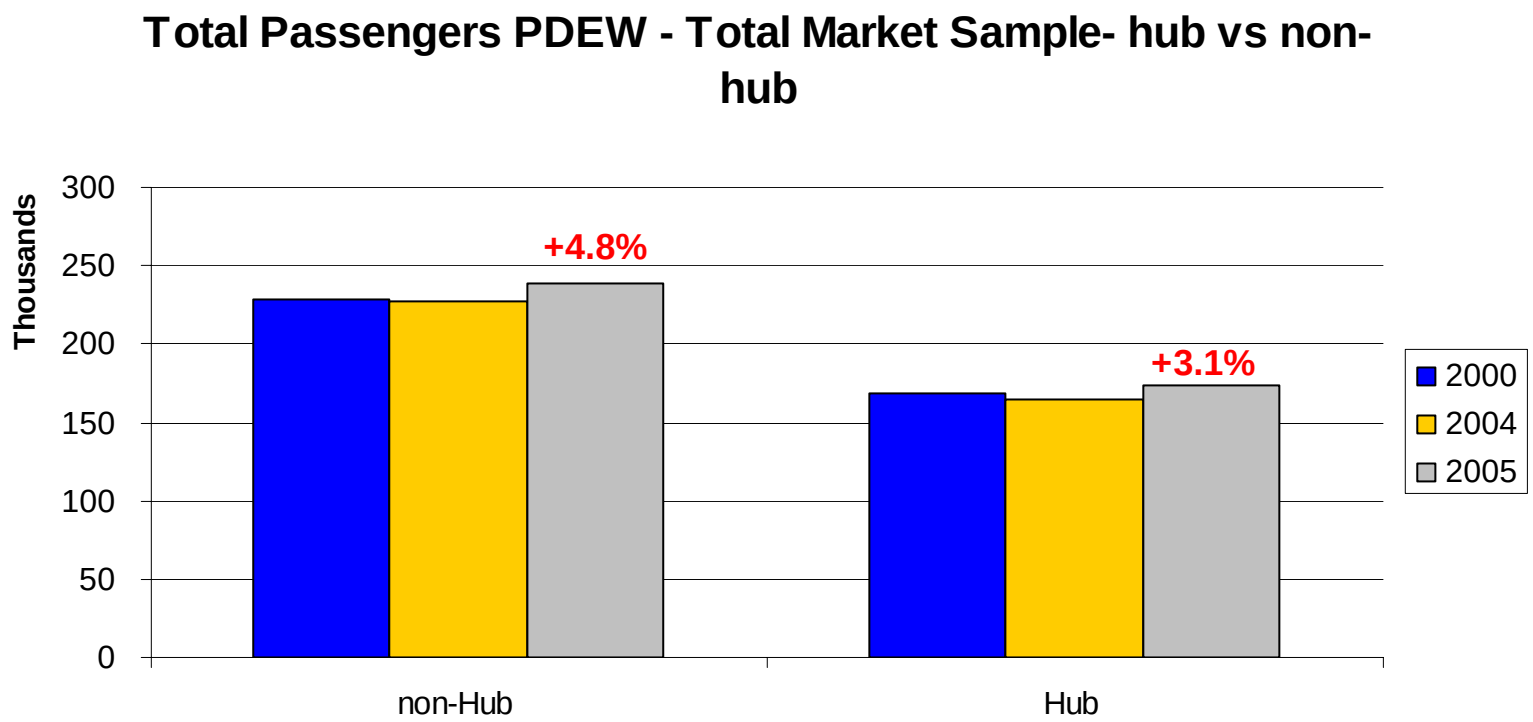
Hub vs. non-Hub Analysis

- Hub Definition
  - Connecting traffic > 50% of total traffic
  - Exclude international entry airports
    - Cincinnati, Charlotte, Atlanta, Houston, Dallas/Fort Worth, Memphis, Chicago O'hare, Detroit, Minneapolis/St. Paul, Pittsburgh, Denver.
- Distribution



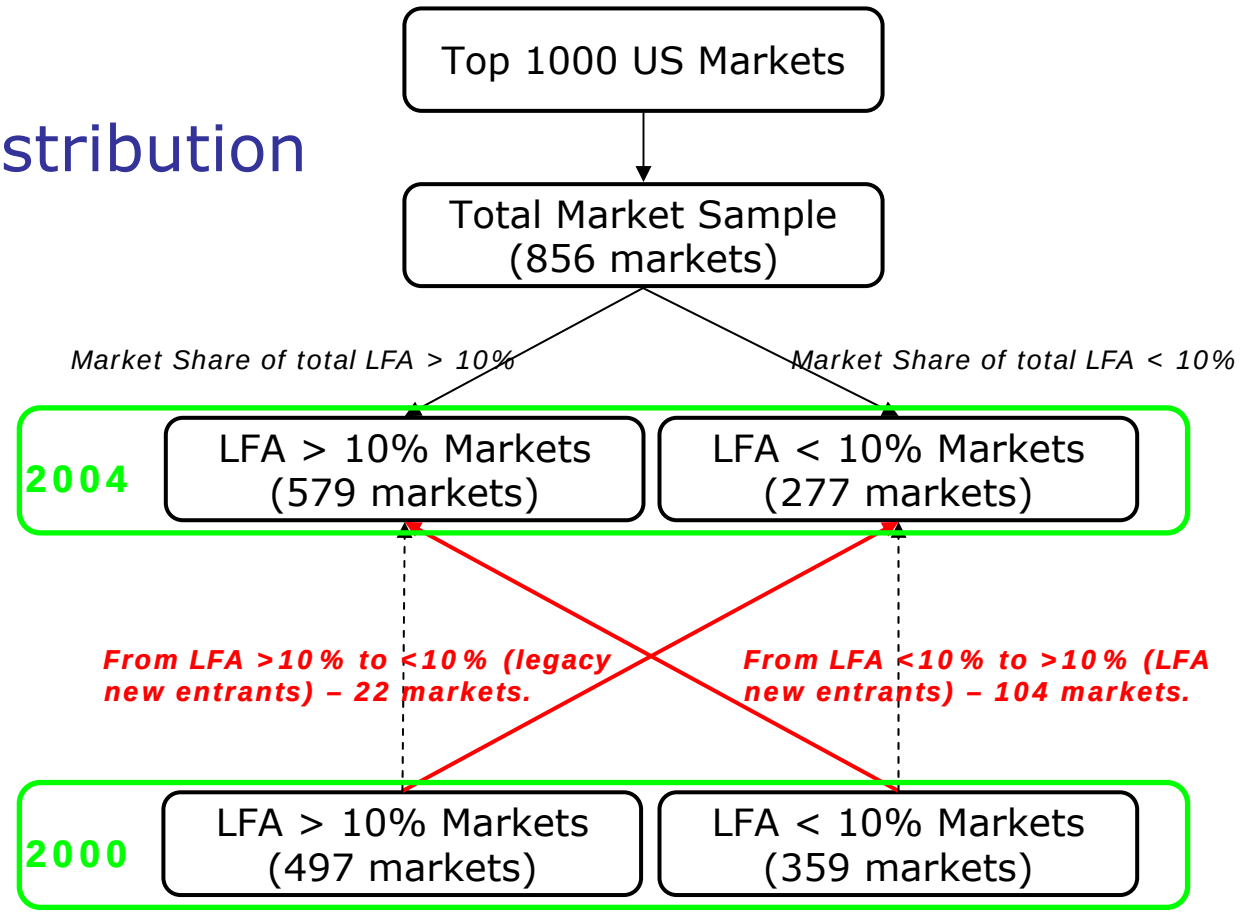
Hub vs. non-Hub Traffic

- The hub/non-hub segmentation has no real difference in traffic growth as both segments experienced a passenger increase between 3-5%.



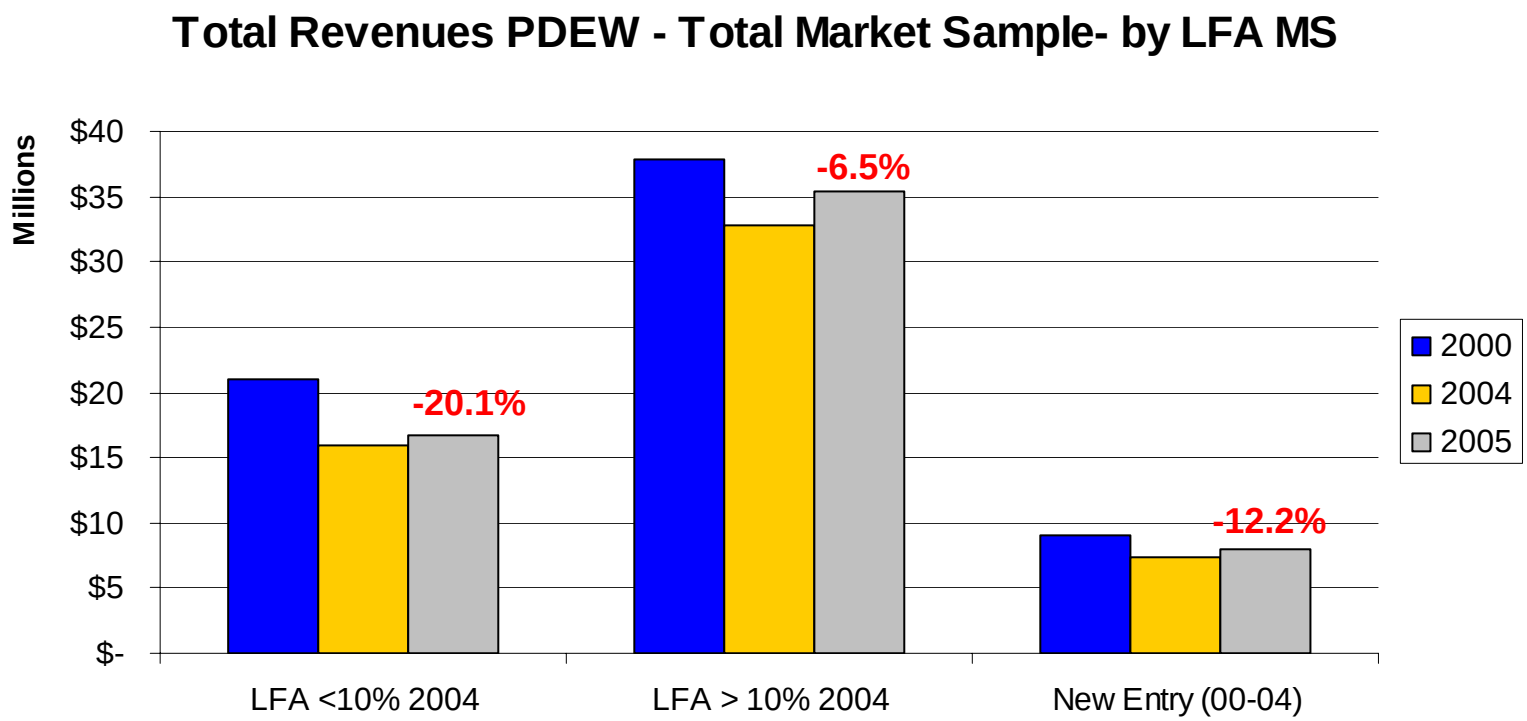
Analysis of Competition by Low-Fare Airlines

- Definition
  - Low-fare competition is significant for total low-fare carriers market share > 10%
- Distribution



Analysis of Competition by Low-Fare Airlines

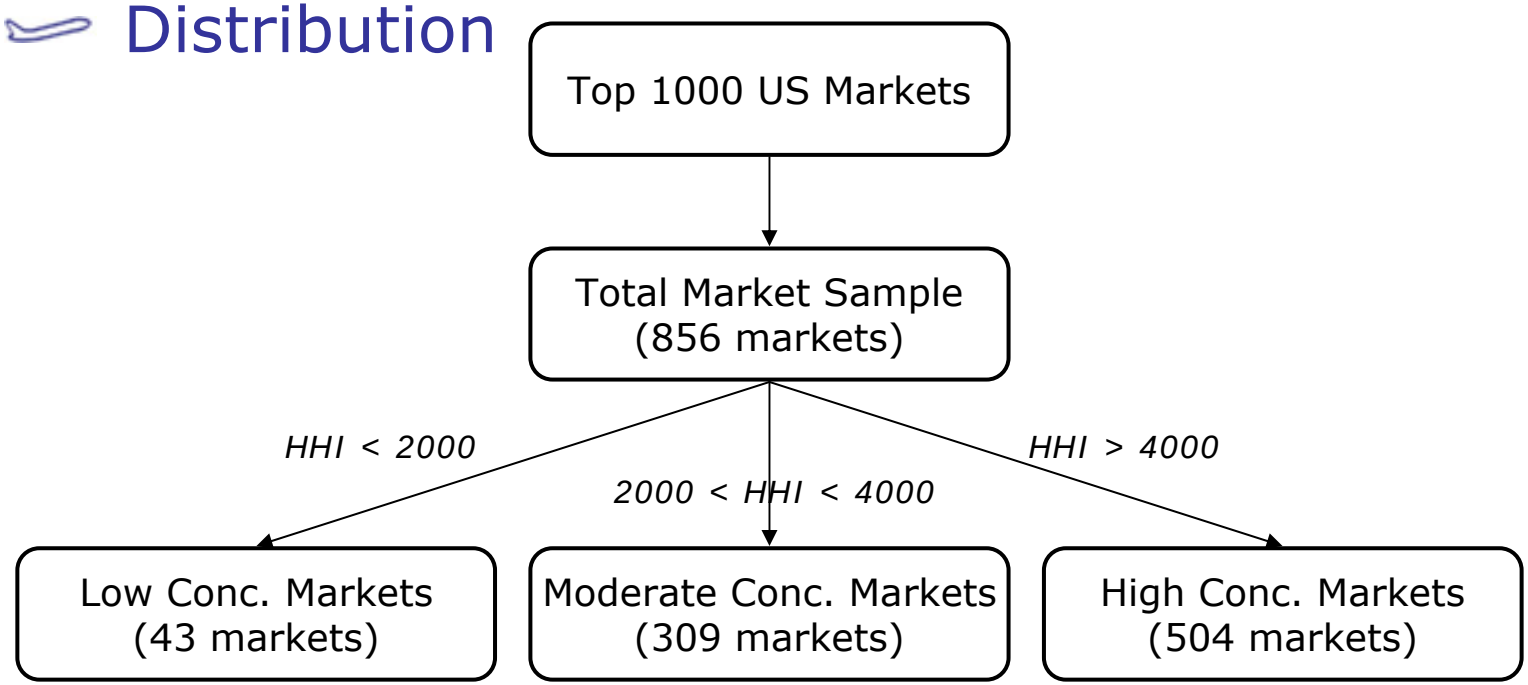
- Huge revenue drop of 20% for markets with small LFA presence.



Analysis of Competition by Concentration Level

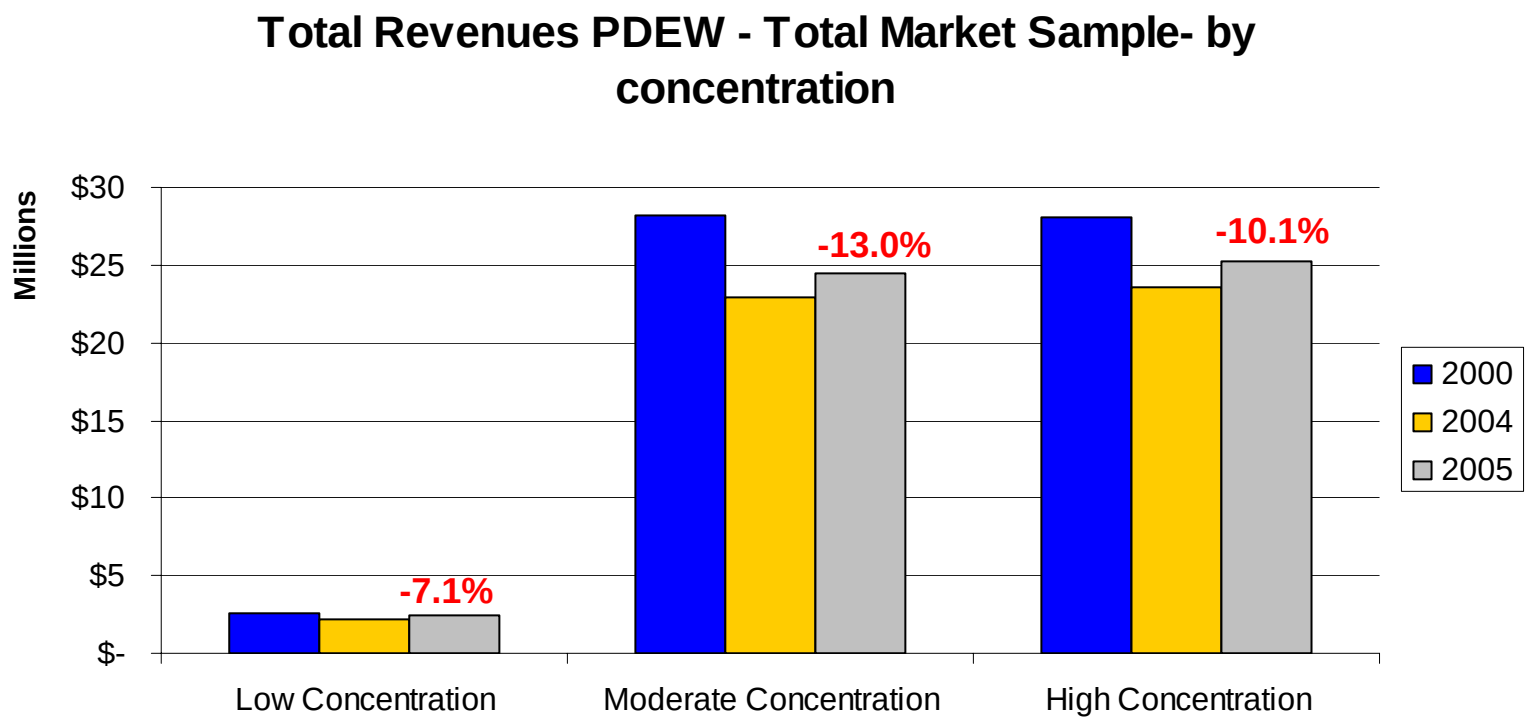
- Concentration Definition (HHI Index)
  - Low concentration: HHI < 2000
  - Moderate concentration: 2000 < HHI < 4000
  - High concentration: HHI > 4000

- Distribution



Analysis of Competition by Concentration Level

- As a result, total revenues are down for all three concentration levels between 7 and 13%.



Model of Change in Average Fare

- Model:

$$CHGFARE = \alpha + \beta_1 \times HUB + \beta_2 \times DIST + \beta_3 \times PAX00 + \beta_4 \times FARE00 + \beta_5 \times LFA00 + \beta_6 \times CHGLFA + \beta_7 \times CONC00 + \beta_8 \times CHGCONC$$

- Change in Fare Linear Results

Variable	Coefficient	Standard Error
Intercept	63.4180	3.6993
HUB	3.3960	1.5691
DIST	0.0095	0.0015
PAX00	-0.0046	0.0014
FARE00	-0.5974	0.0173
LFA00	-33.6673	3.0906
CHGLFA	-59.1282	5.2662
CONC00	0.0016	0.0005
CHGCONC	0.0019	0.0007
R squared	0.71	

Note: All coefficients are significant at 5 % level.

- Change in Fare Log-Linear Results

Variable	Coefficient	Standard Error
Intercept	1.5775	0.1584
ln(DIST)	0.0609	0.0100
ln(PAX00)	-0.0156	0.0063
ln(FARE00)	-0.4756	0.0180
ln(CONC00)	0.0488	0.0132
ln(CONCRATIO)	0.0605	0.0204
LFA00	-0.2331	0.0209
CHGLFA	-0.4600	0.0342
R squared	0.60	

Note: All coefficients are significant at 5 % level