



Operating Costs and Productivity Measures

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Airline Management

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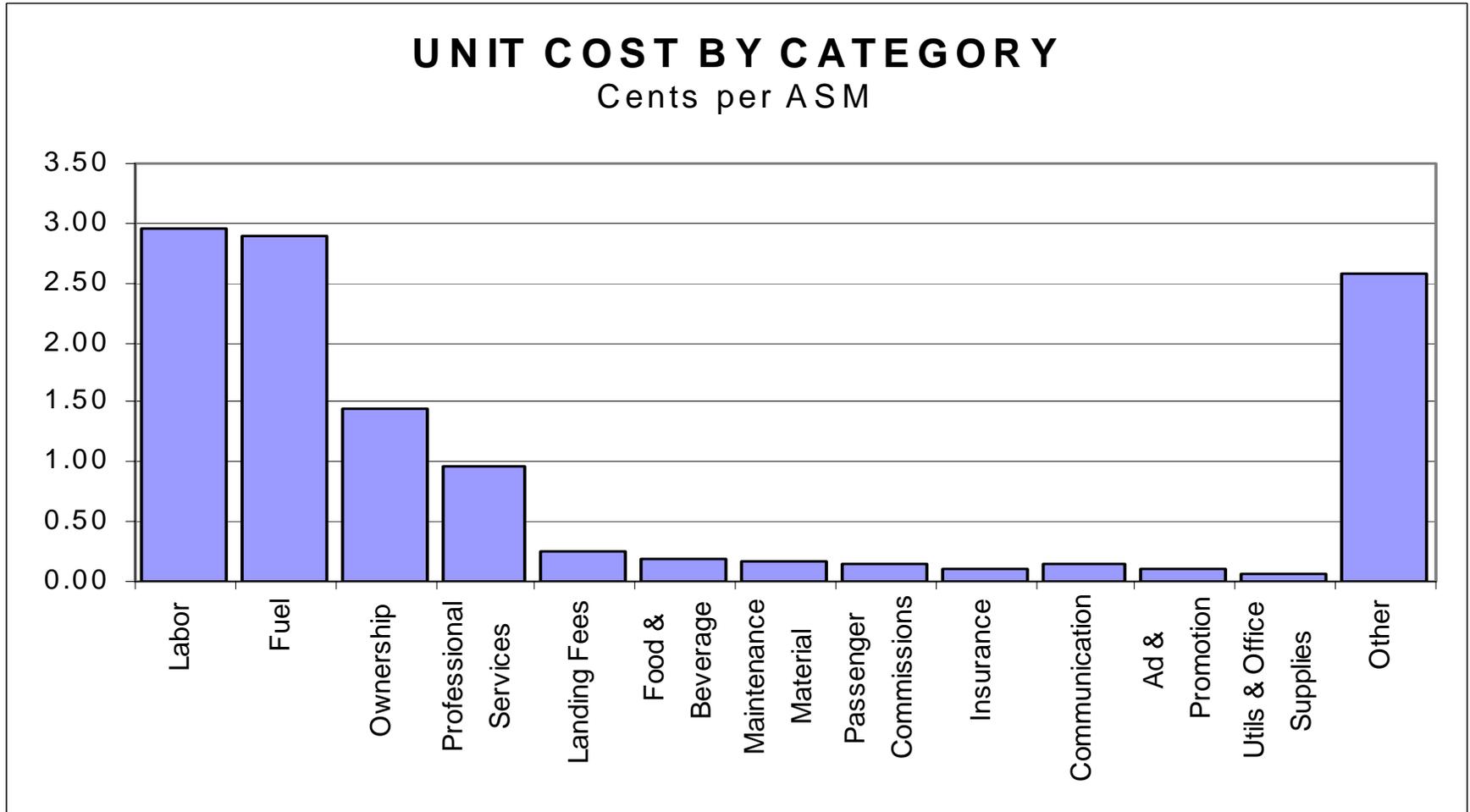


DOT Form 41

- **Form 41 contains traffic, financial, and operating cost data reported to the DOT by US Major airlines**
 - Data is reported and published quarterly for most tables
 - Detail of reporting differs for different expense categories
 - Aircraft operating expenses by aircraft type and region of operation
 - Other expenses more difficult to allocate by aircraft type
- **DOT Form 41 includes the following schedules:**
 - P12 : Profit and Loss statement
 - P52 : Aircraft Operating Expenses
 - P6 : Operating Expenses by Objective Groupings
 - P7 : Operating Expenses by Functional Groupings
 - P10 : Employment Statistics
 - B1 : Balance Sheet



Objective Cost Category Breakdown (3Q2005)



Source: ATA data



Form 41 Functional Cost Categories

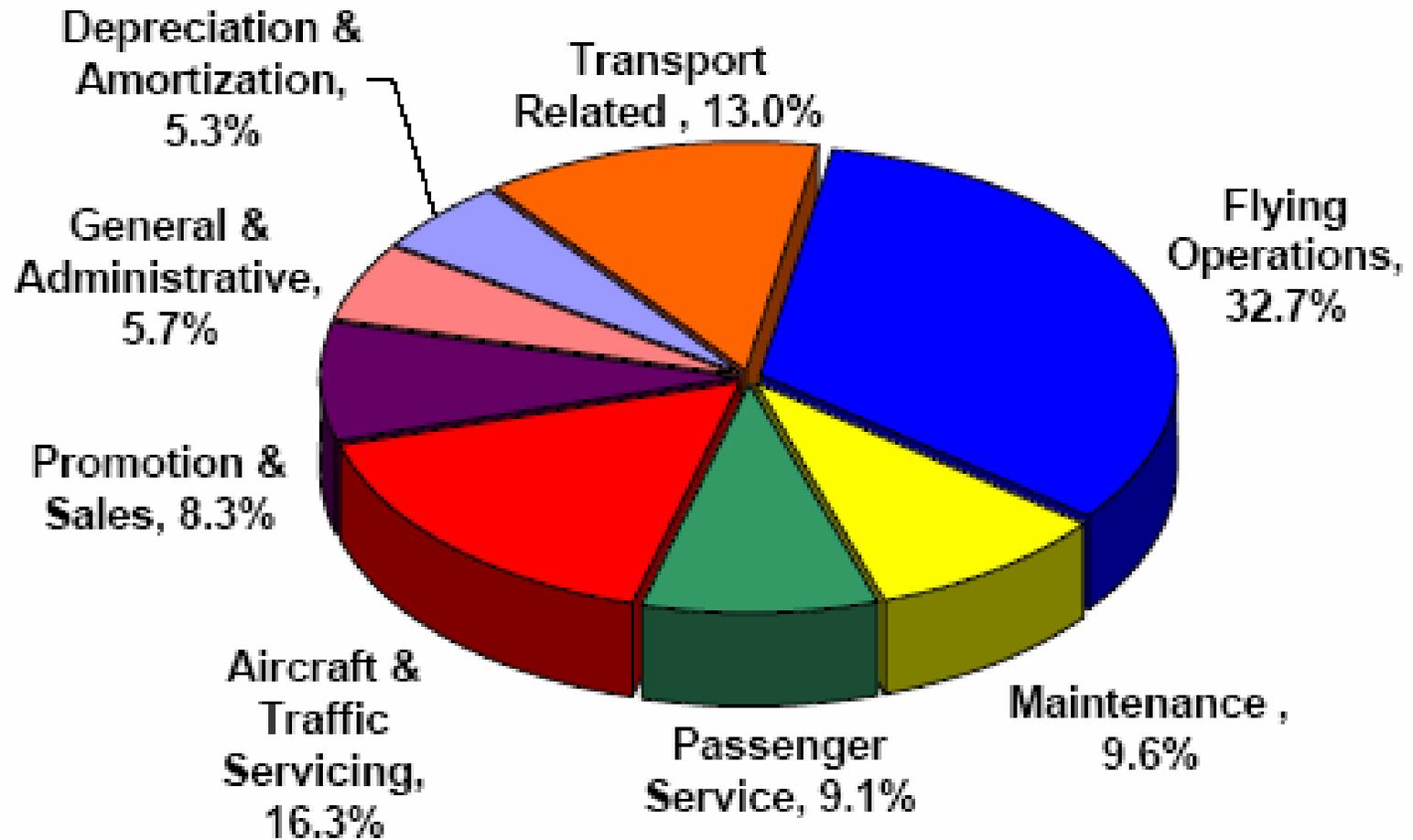
- **Aircraft operating costs**
 - Expenses associated with flying aircraft, also referred to as “Direct Operating Costs” (DOC)
- **Aircraft servicing costs**
 - Handling aircraft on the ground, includes landing fees
- **Traffic service costs**
 - Processing passengers, baggage and cargo at airports
- **Passenger service costs**
 - Meals, flight attendants, in-flight services
- **Reservation and Sales costs**
 - Airline reservations and ticket offices, travel agency commissions
- **Other costs, including:**
 - Advertising and publicity expense
 - General and administrative expense



Activity Drivers by Functional Category

- **Aircraft Operating Costs**
 - Per Block Hour (for example, \$3415 for 185-seat B757-200 in 2003)
- **Aircraft Servicing Costs**
 - Per Aircraft Departure (average \$1135 in 2003)
- **Traffic Servicing Costs**
 - Per Enplaned Passenger (average \$18)
- **Passenger Servicing Costs**
 - Per RPM (average \$0.015)
- **Reservations and Sales Costs**
 - % of Total Revenue (average 10%)
- **Other Indirect and System Overhead Costs**
 - % of Total Operating Expense (average 12%)

2004 Functional Cost Breakdown





Airline Operating Cost Breakdown

- **Adapted from Form 41, used by Boeing, MIT (and Aviation Daily) for more detailed comparisons**

FLIGHT (DIRECT) OPERATING COSTS (DOC) = 50%

- All costs related to aircraft flying operations
- Include pilots, fuel, maintenance, and aircraft ownership

GROUND OPERATING COSTS = 30%

- Servicing of passengers and aircraft at airport stations
- Includes aircraft landing fees and reservations/sales charges

SYSTEM OPERATING COSTS = 20%

- Marketing, administrative and general overhead items
- Includes in-flight services and ground equipment ownership

- **Percentages shown reflect historical “rules of thumb”.**



Flight Operating Costs

- **Flight operating costs (FOC) by aircraft type:**
 - Reflect an average allocation of system-wide costs per block hour, as reported by airlines for each aircraft type
 - Can be affected by specific airline network or operational patterns
 - Collected by US DOT as Form 41 operating data from airlines
- **Typical breakdown of FOC for US carrier:**
 - CREW:** Pilot wages and benefits
 - FUEL:** Easiest to allocate and most clearly variable cost
 - MAINTENANCE:** Direct airframe and engine maintenance cost, plus “burden” or overhead (hangars and spare parts inventory)
 - OWNERSHIP:** Depreciation, leasing costs and insurance



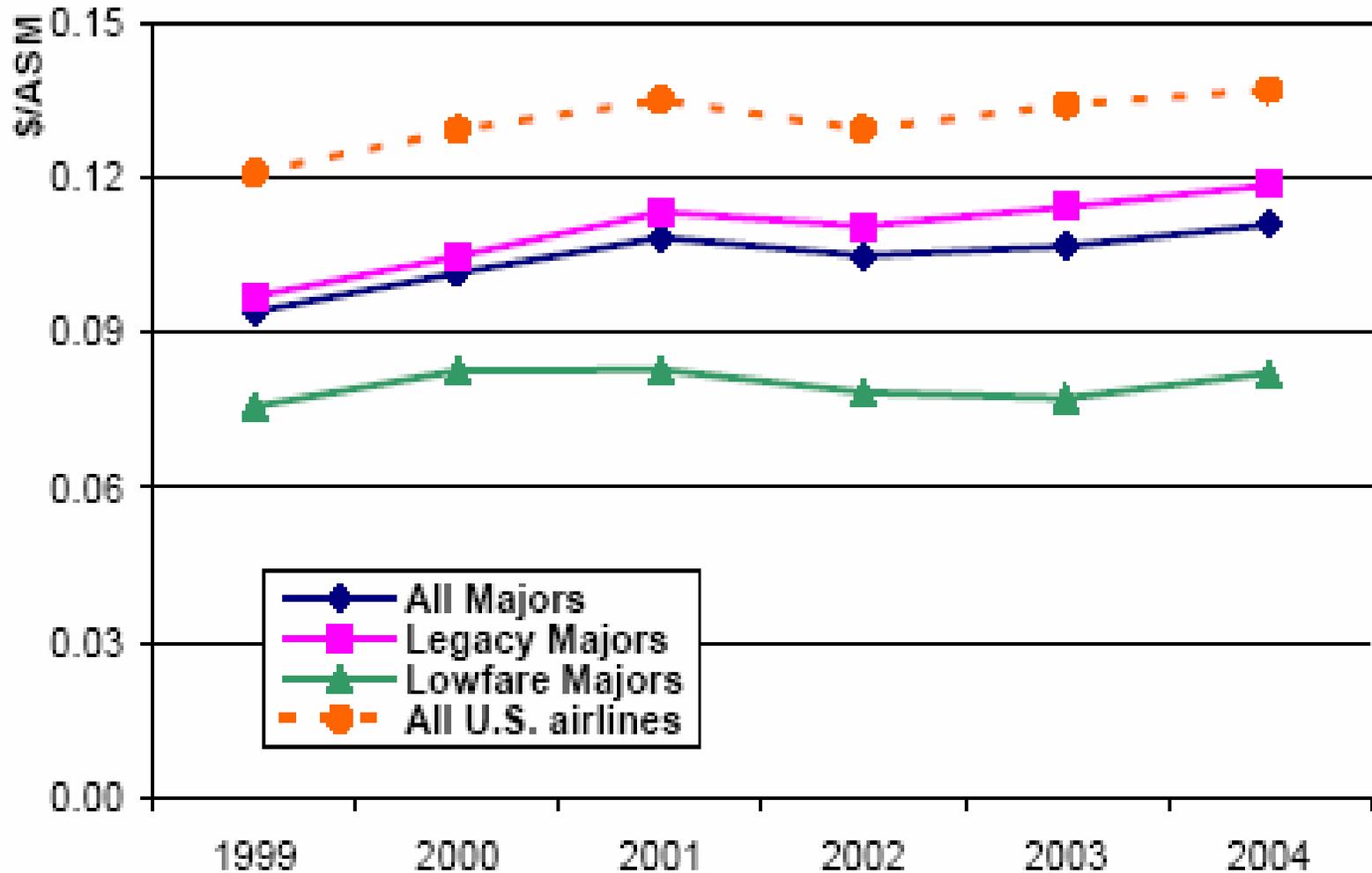
Boeing 757-200 Flight Operating Costs 2003

Table 9 - Hourly flight and Seats Costs for the B757-200

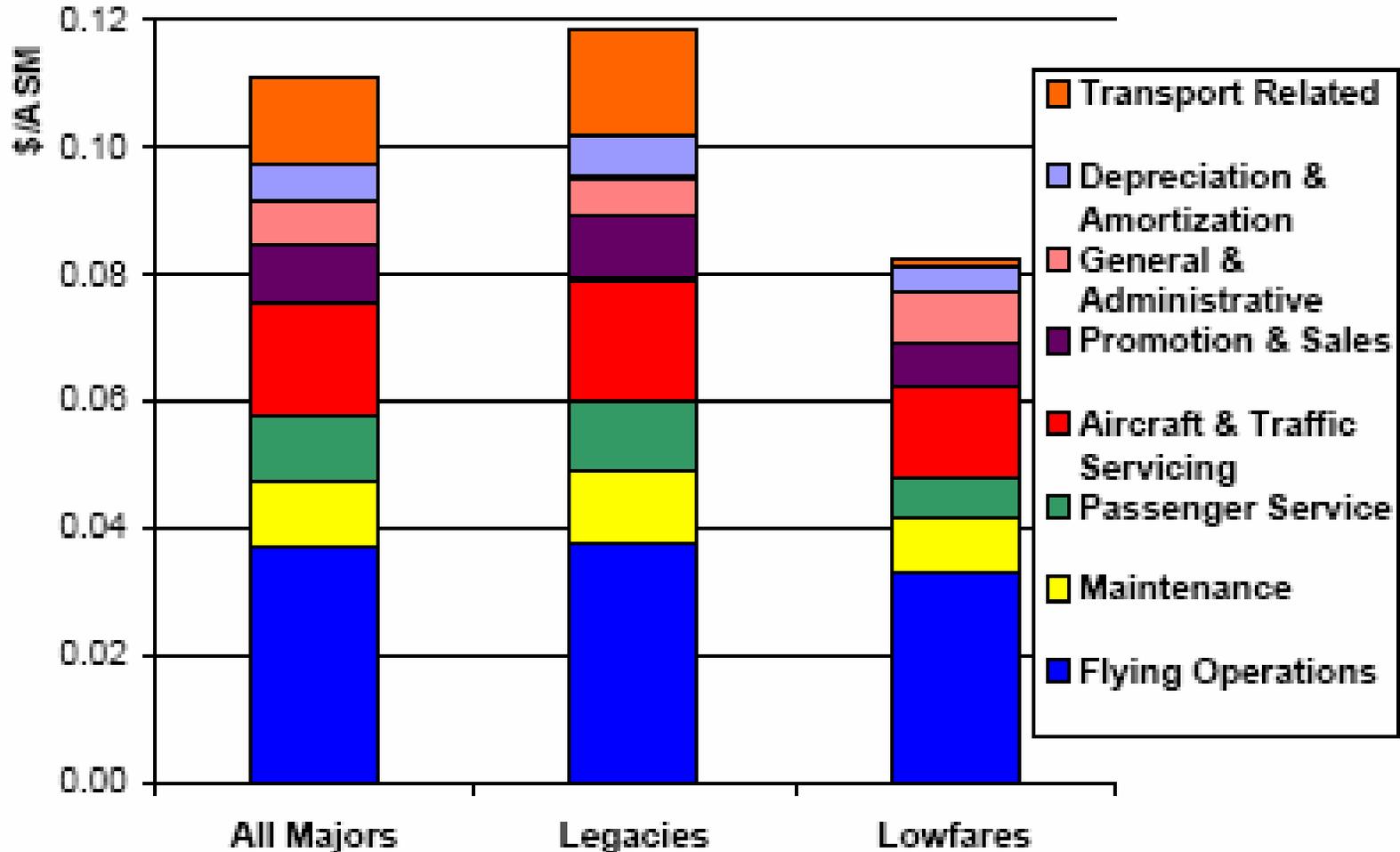
Airline	Number of Aircraft	Sv (seats)	HFC (\$/hr)	HSC (\$/seat-hr)	Utilization (hrs/day)	SL (Miles)
American	142	175	3370.1	19.26	10.2	1430.8
Delta	106	185	3382.8	18.29	11.0	1084.8
United	96	182	3516.8	19.32	9.1	1361.5
Northwest	54	182	2923.7	16.06	9.2	1157.7
Continental	41	178	3445.7	19.36	10.7	1506.1
US Airways	30	182	4308.0	23.67	9.9	1015.2
ATA	16	214	4284.3	20.02	8.9	1390.4
America West	13	190	3808.4	20.04	8.3	1073.5
average	498	186	3630.0	19.50	9.7	1252.5

Source: DOT Form41 Schedule P-5.2

Unit Cost by Airline Group

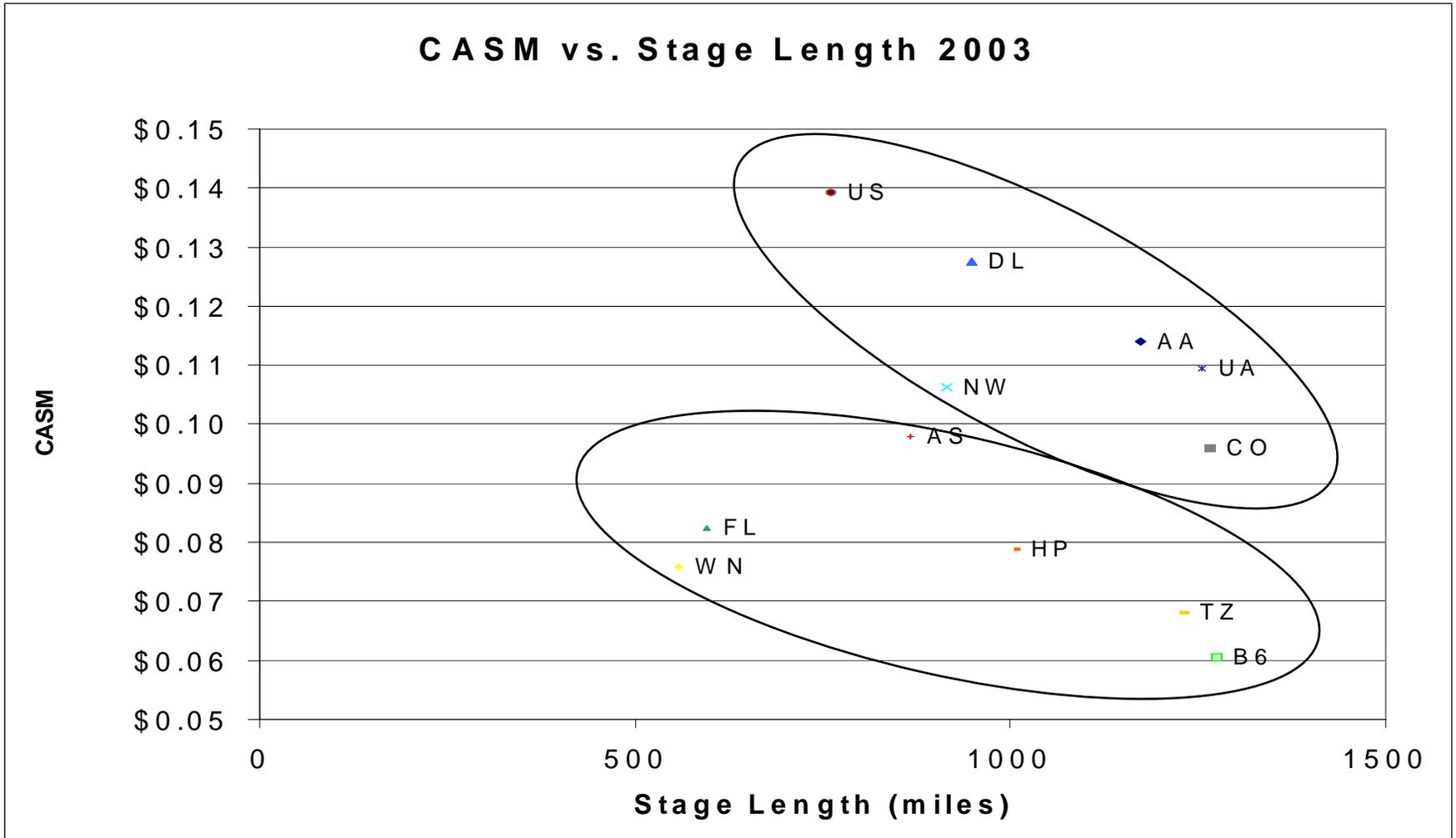


Unit Costs by Functional Category 2004

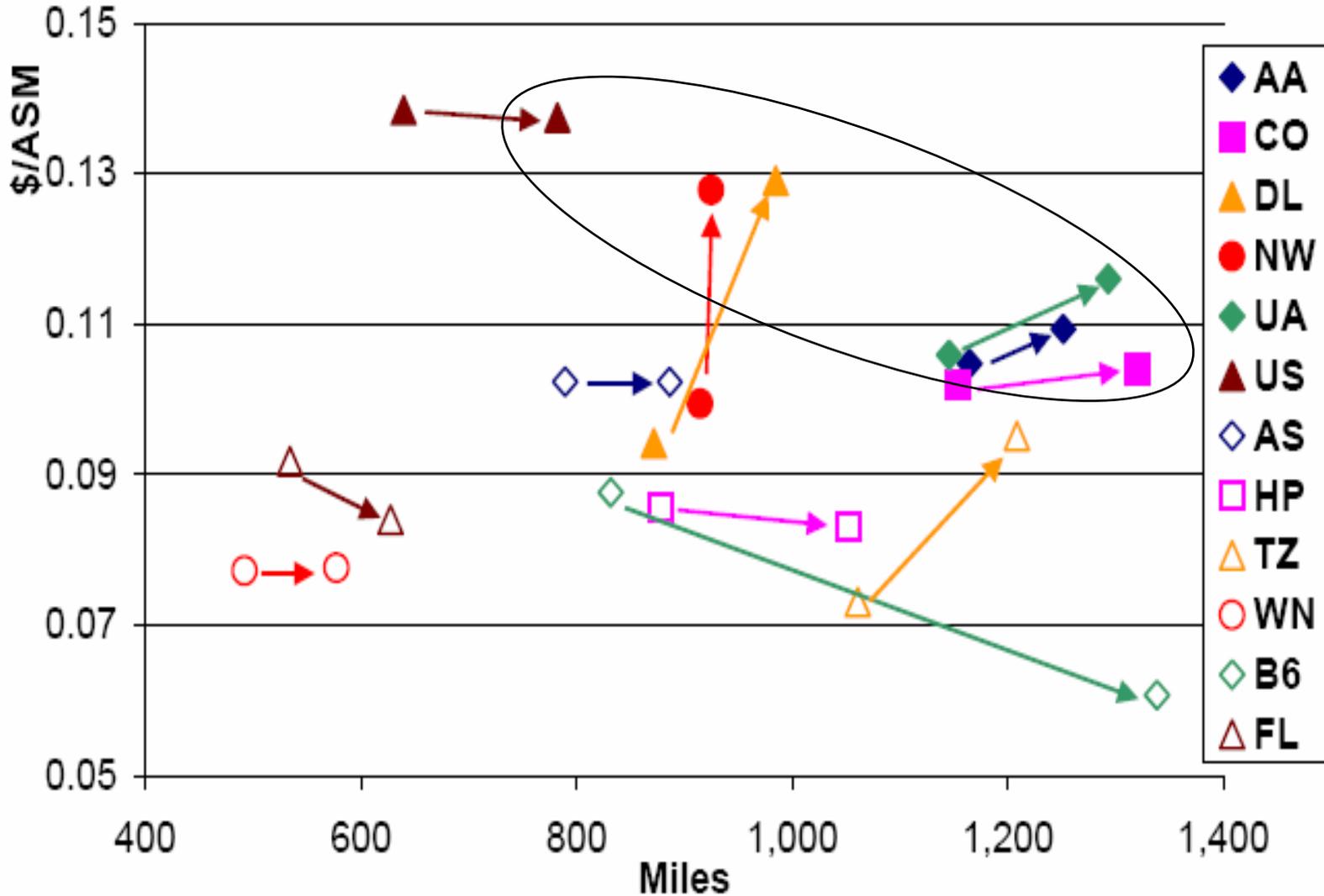




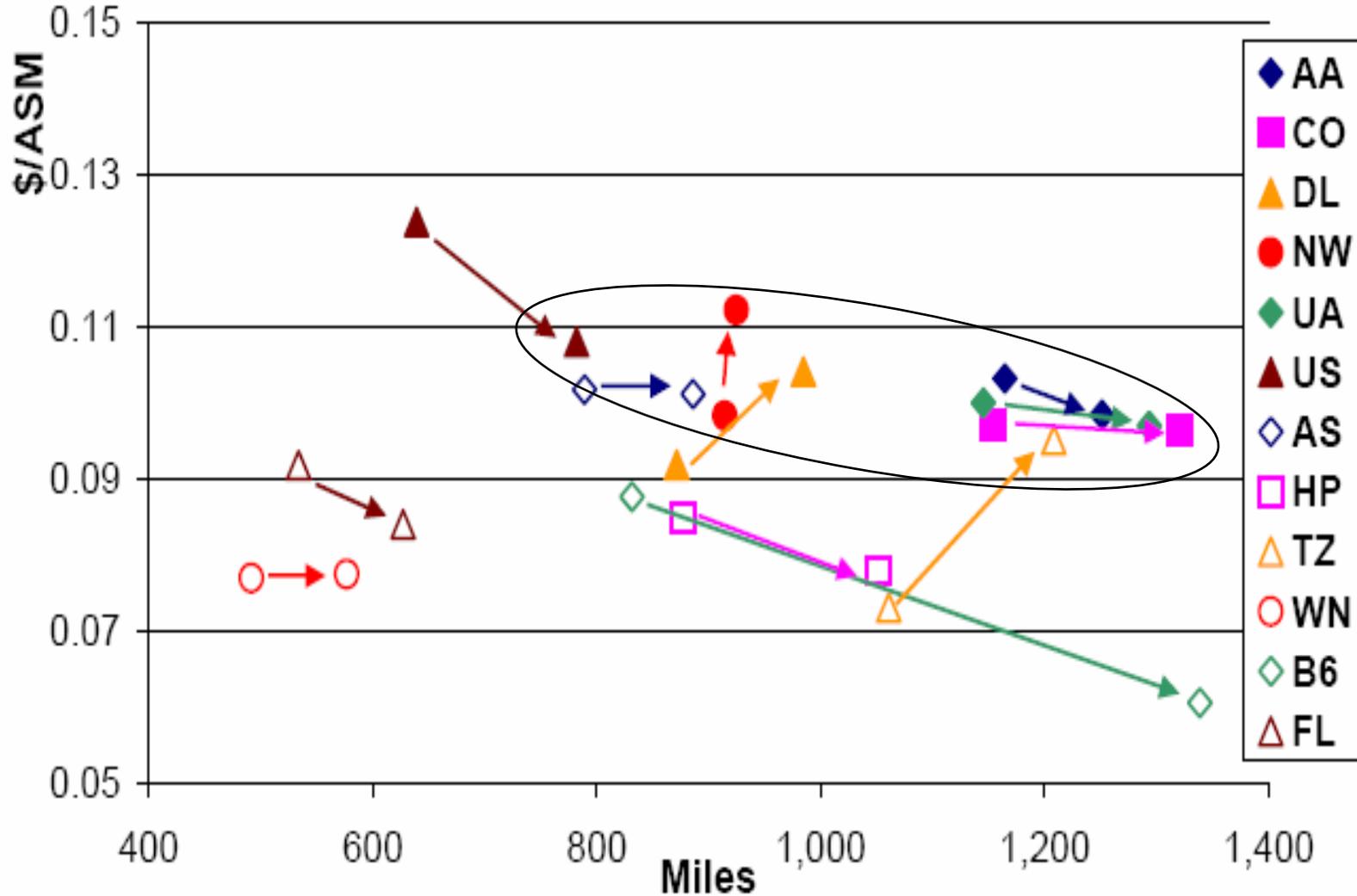
Lowfare carriers have lowest CASM across all average stage lengths



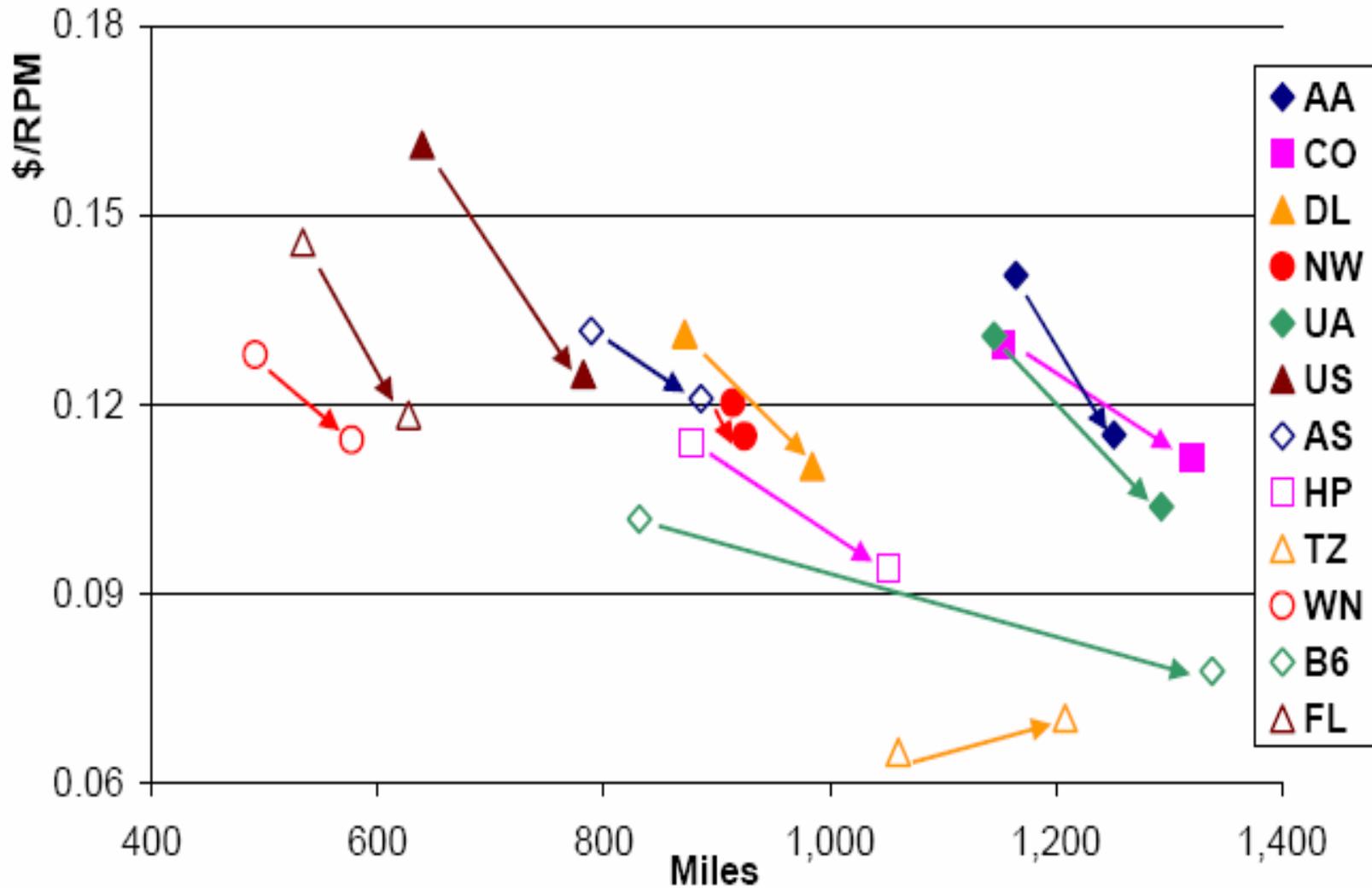
Unit Cost and Ave Stage Length 2000-2004



Ex-transport related CASM 2000-2004



Yield and Stage Length 2000-2004





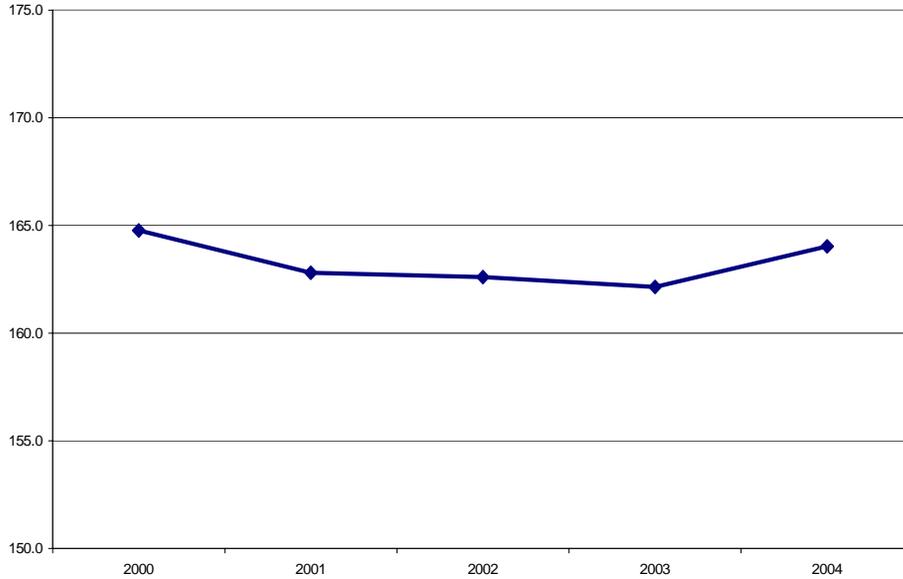
Aircraft Productivity

- **Measured in ASMs generated per aircraft per day:**
= # departures X average stage length X # seats
- **Aircraft “utilization” measured in block-hours/day:**
 - Block hours begin at door close (blocks away from wheels) to door open (blocks under wheels)
 - Gate-to-gate time, including ground taxi times
- **Increased aircraft productivity achieved with:**
 - More flight departures per day, either through shorter turnaround (ground) times or off-peak departure times
 - Longer stage lengths (average stage length is positively correlated with increased aircraft utilization = block hours per day)
 - More seats in same aircraft type (no first class seating and/or tighter “seat pitch”)

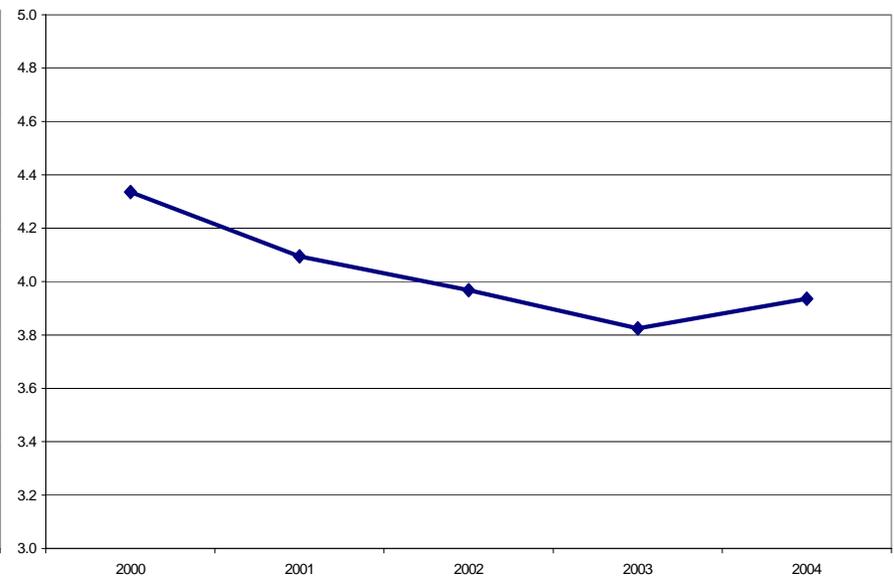


Components of Aircraft Productivity

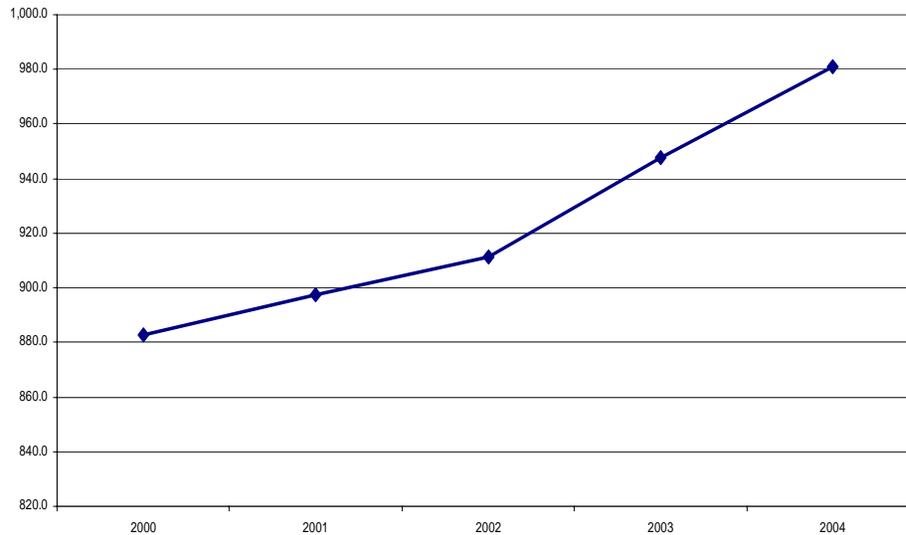
Average Aircraft Capacity



Departures per Day



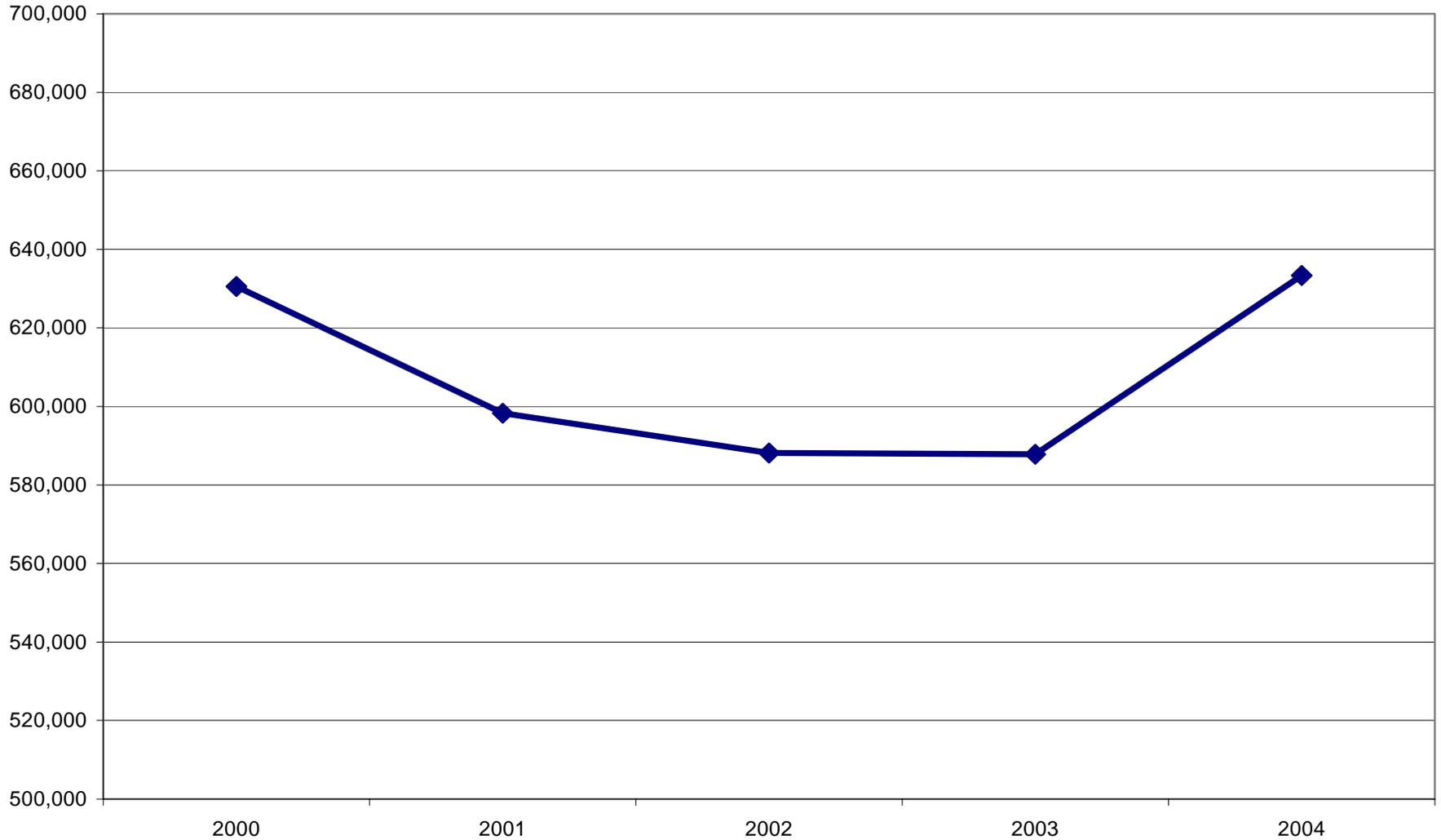
Average Stage Length





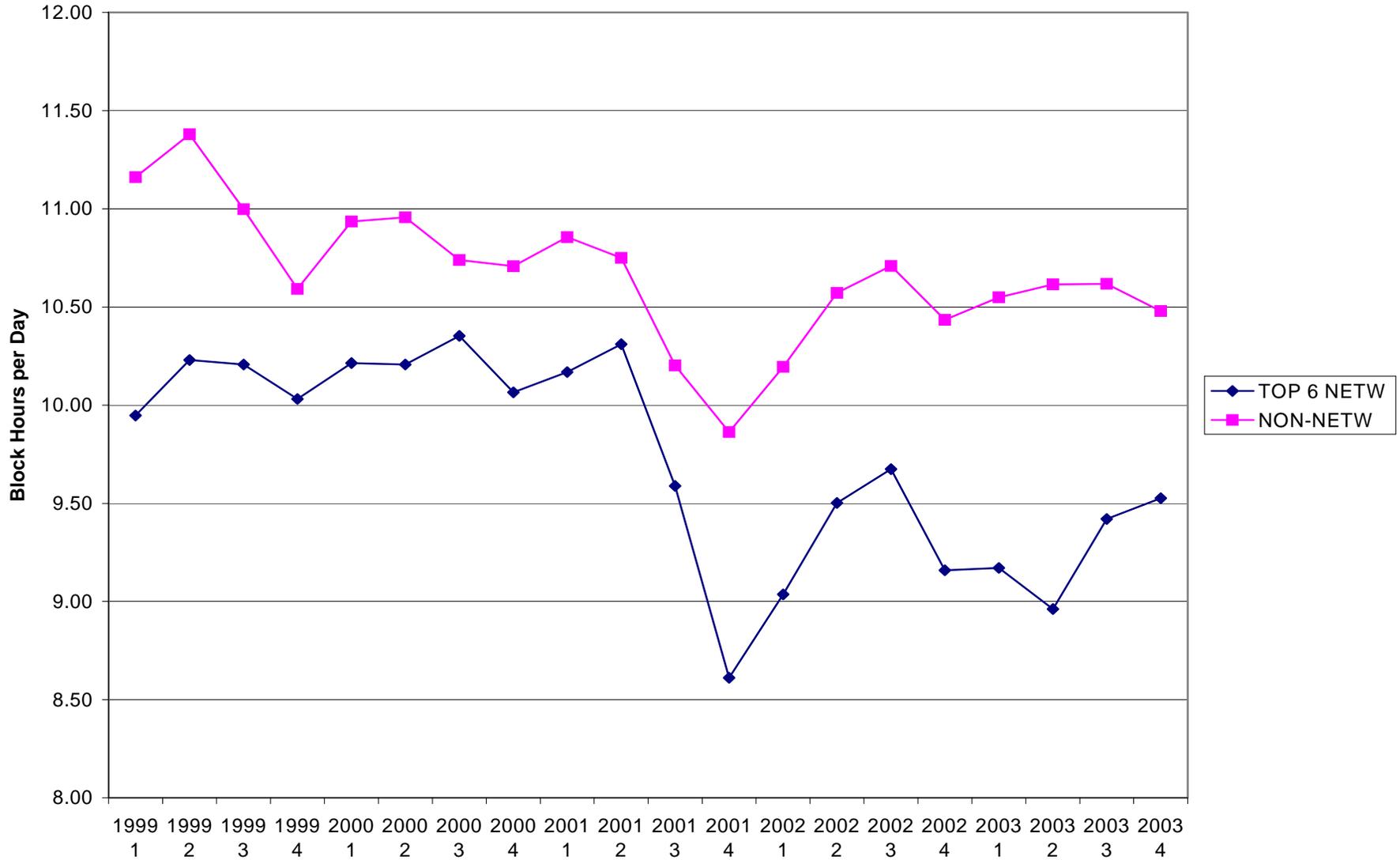
US Major Airlines Aircraft Productivity

Aircraft Productivity (ASMs per day)





AIRCRAFT UTILIZATION 1999-2003





Example: Boeing 737-500 Productivity

Airline	Flights per Day	Block Hours	Stage Length	Seats	ASMs
Continental	3.9	8.3	719	104	291,246
United	4.3	7.5	564	109	264,284
Southwest	8.2	10.2	400	122	399,746

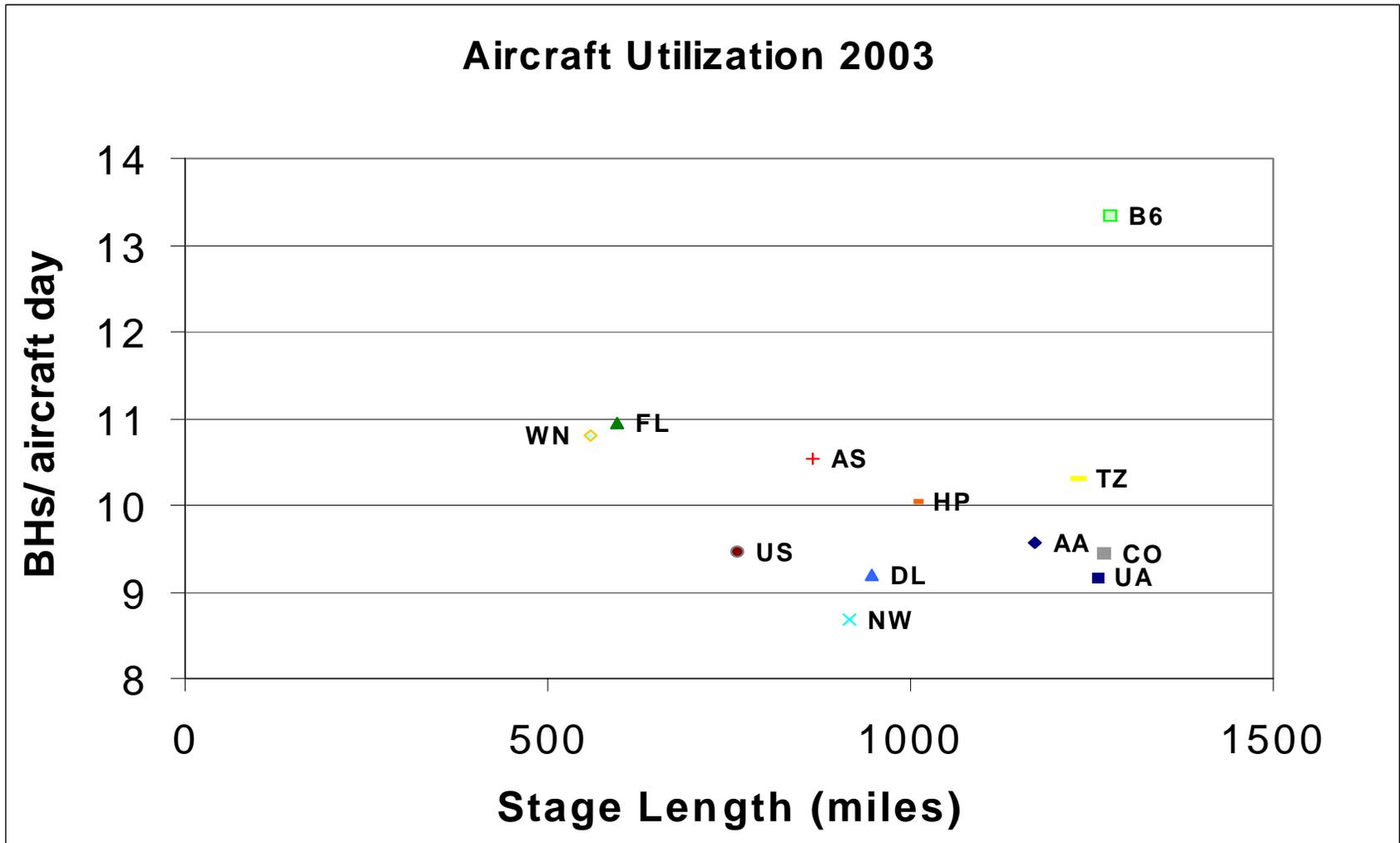


Example: B737-500 FOC per Block Hour

Airline	Crew	Fuel	Maintenance	Ownership	Total
Continental	\$510	\$430	\$651	\$698	\$2,291
United	\$927	\$487	\$1048	\$510	\$2,974
Southwest	\$388	\$537	\$251	\$350	\$1,526



Lowfare carriers lead in aircraft utilization at all average stage lengths



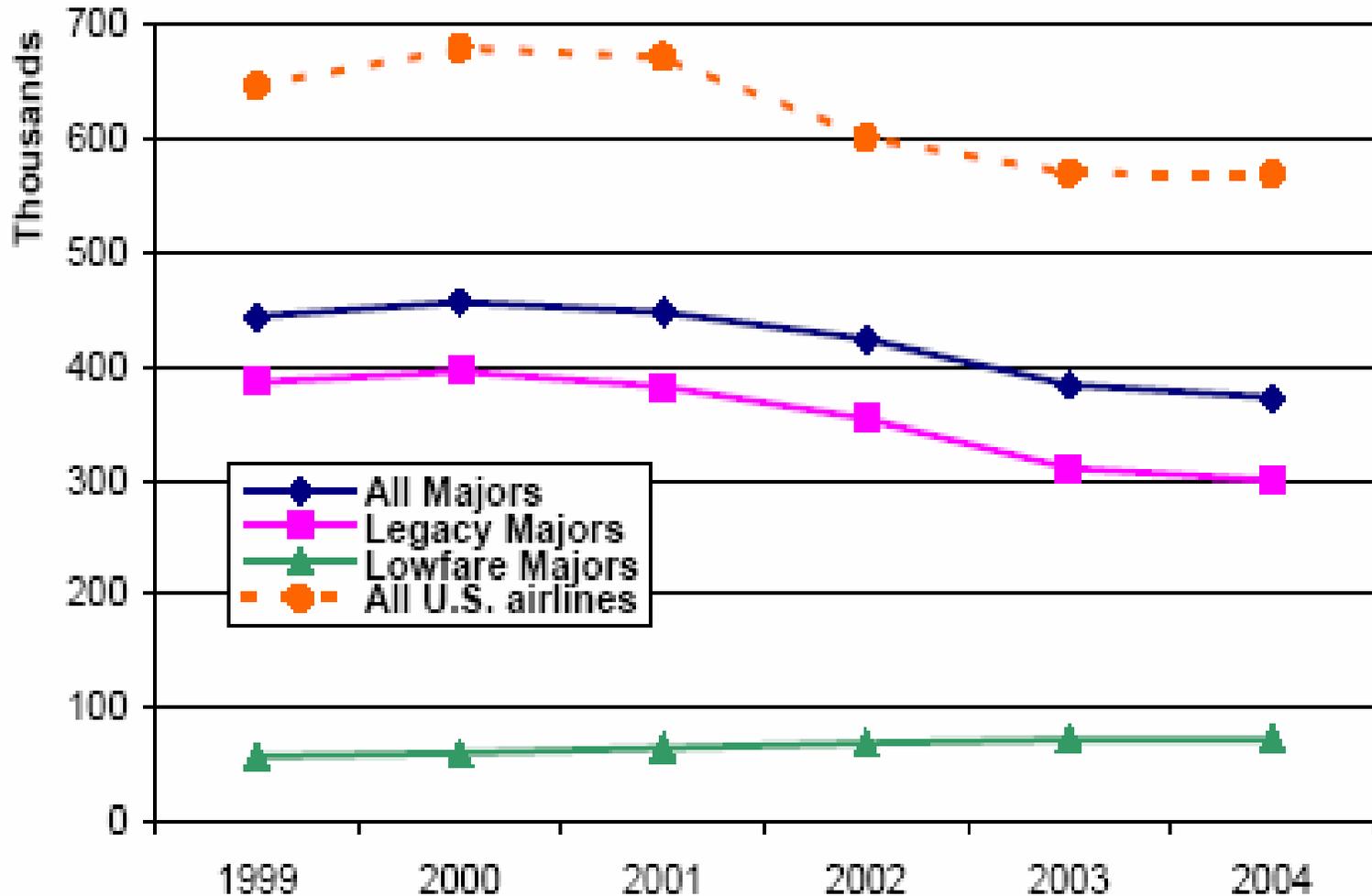


Employee Productivity

- **Measured in ASMs per employee per period**
- **As with aircraft, employee productivity should be higher with:**
 - **Longer stage lengths (amount of aircraft and traffic servicing for each flight departure not proportional to stage length)**
 - **Larger aircraft sizes (economies of scale in labor required per seat for each flight departure)**
 - **Increased aircraft productivity due to shorter turnaround times (more ASMs generated by aircraft contribute to positive employee productivity measures)**
- **Yet, network airlines with long stage lengths and large aircraft have lower employee productivity rates**



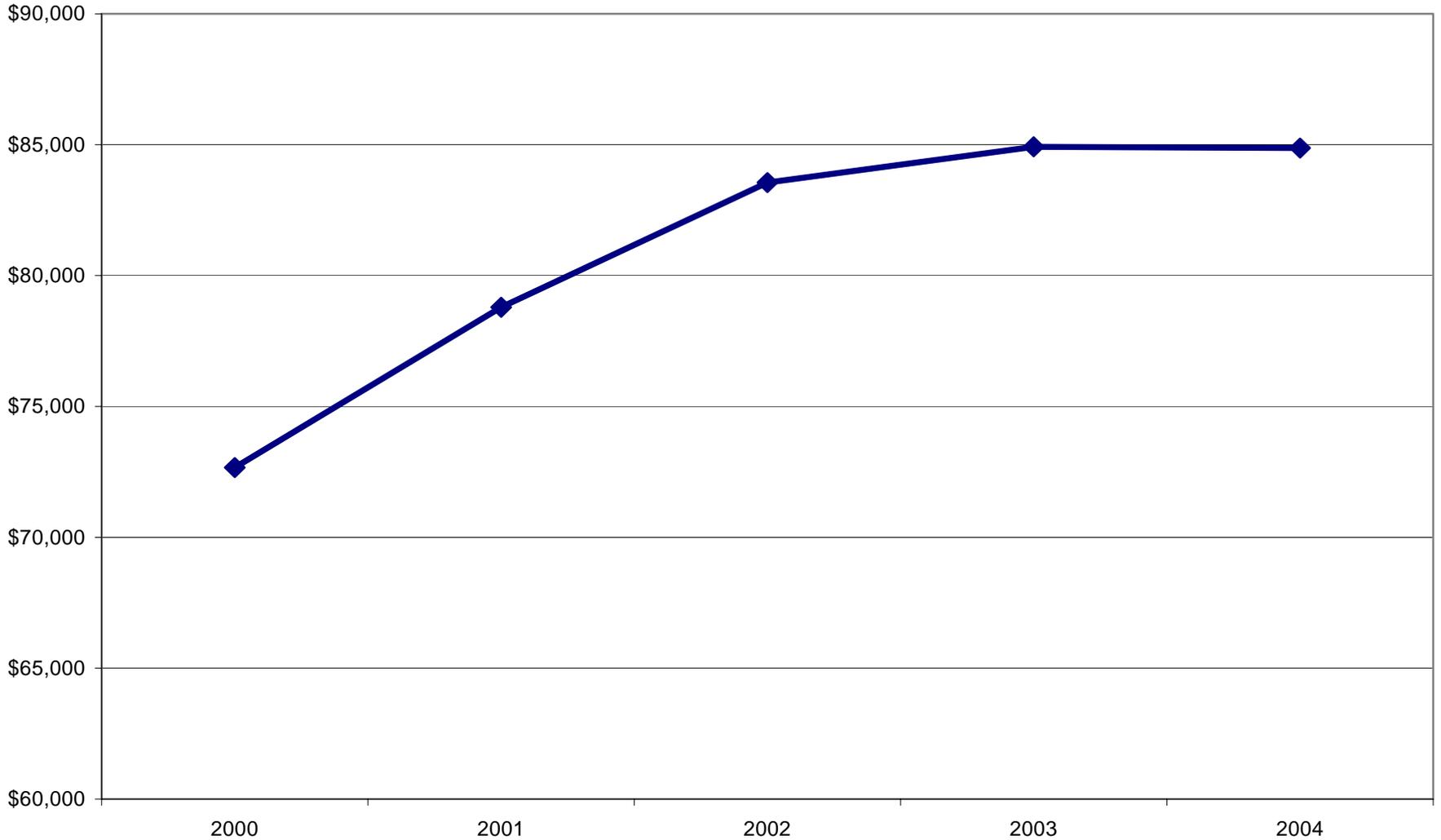
Legacy carrier employment down by 25% since 2000, a loss of over 100,000 jobs





US Major Airline Labor Cost per Employee

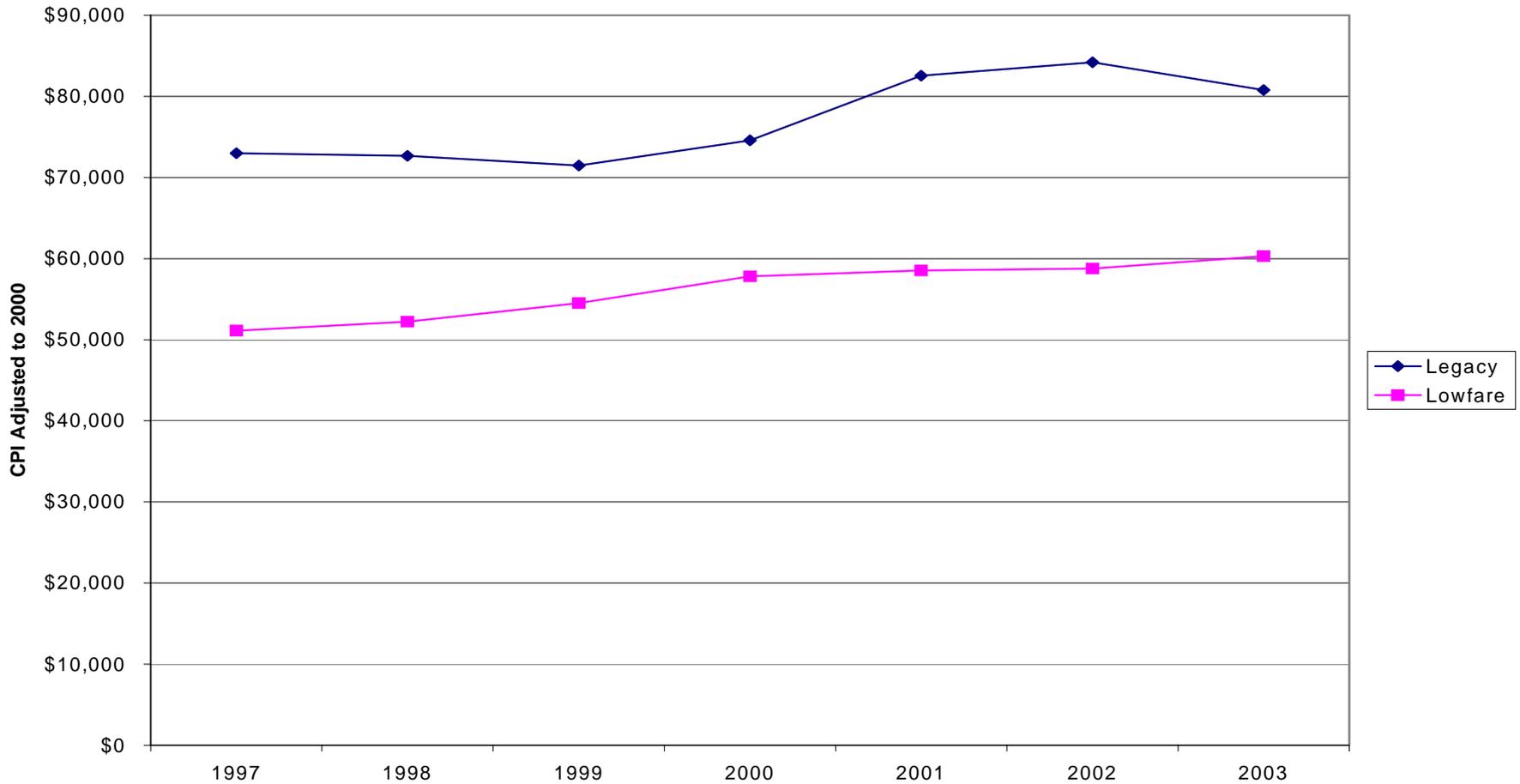
Average Salary+Benefits per Employee





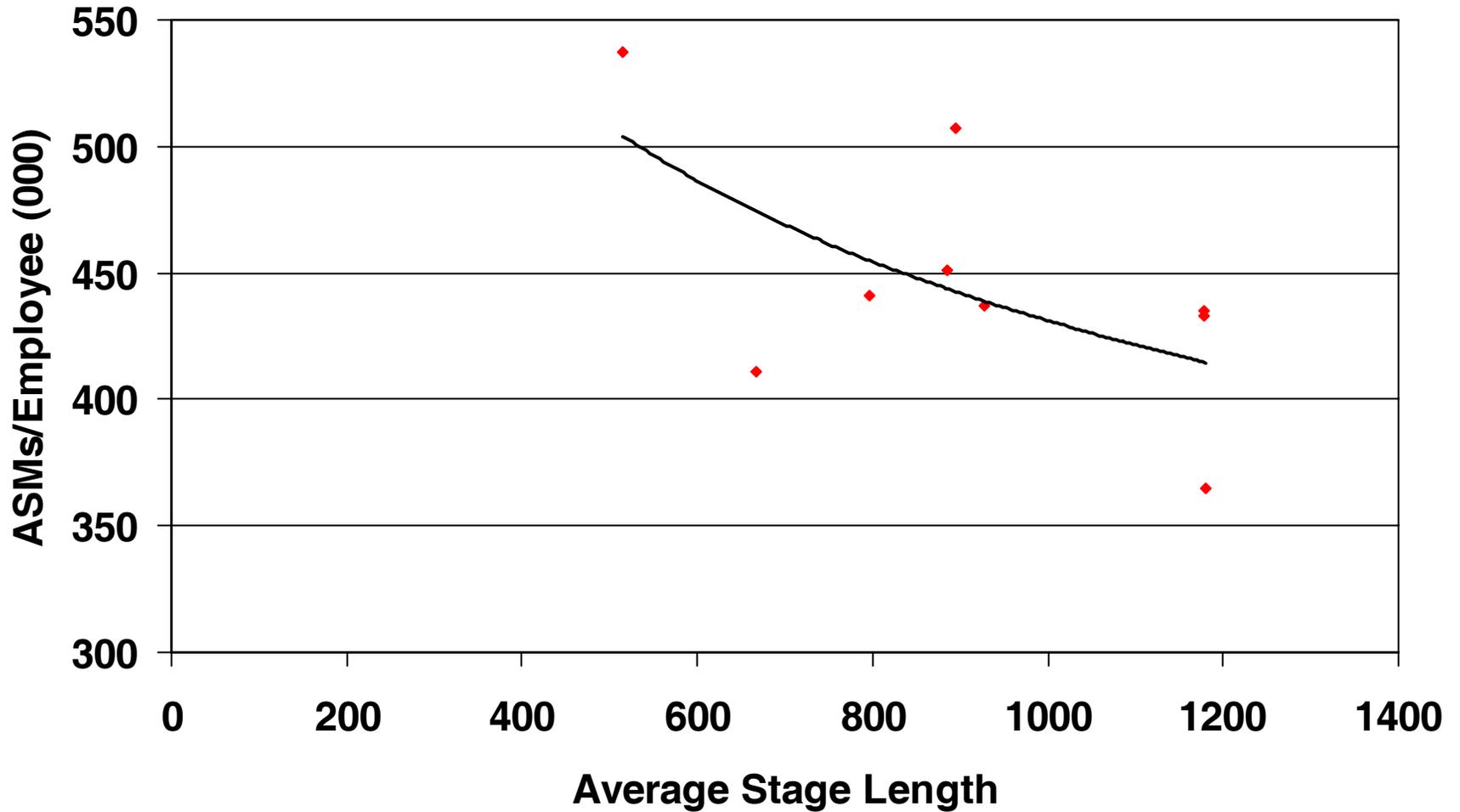
Lowfare carrier salaries/benefits per employee 25% lower than legacy carriers

Salaries and Benefits per Employee



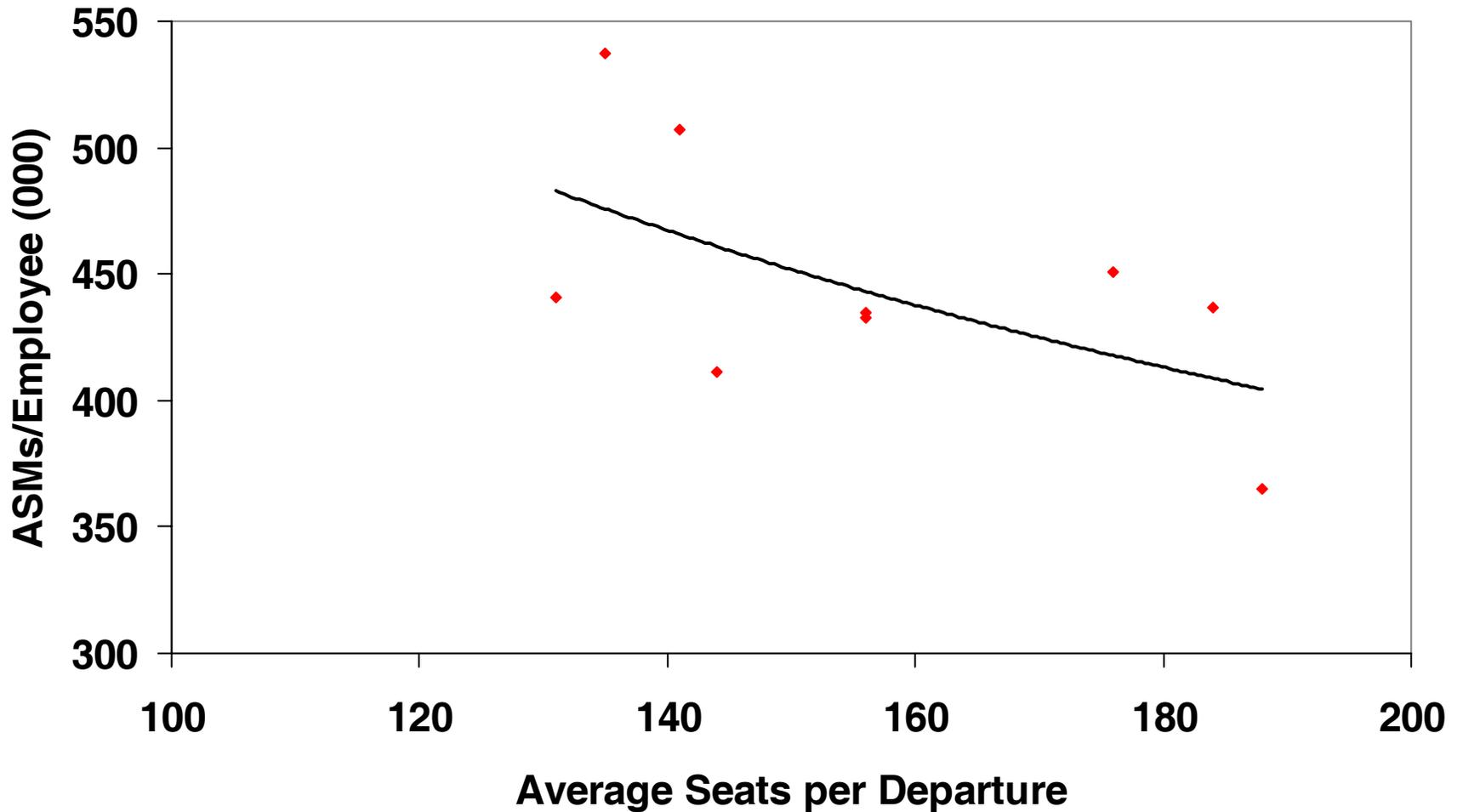


ASMs/employee vs. Average Stage Length



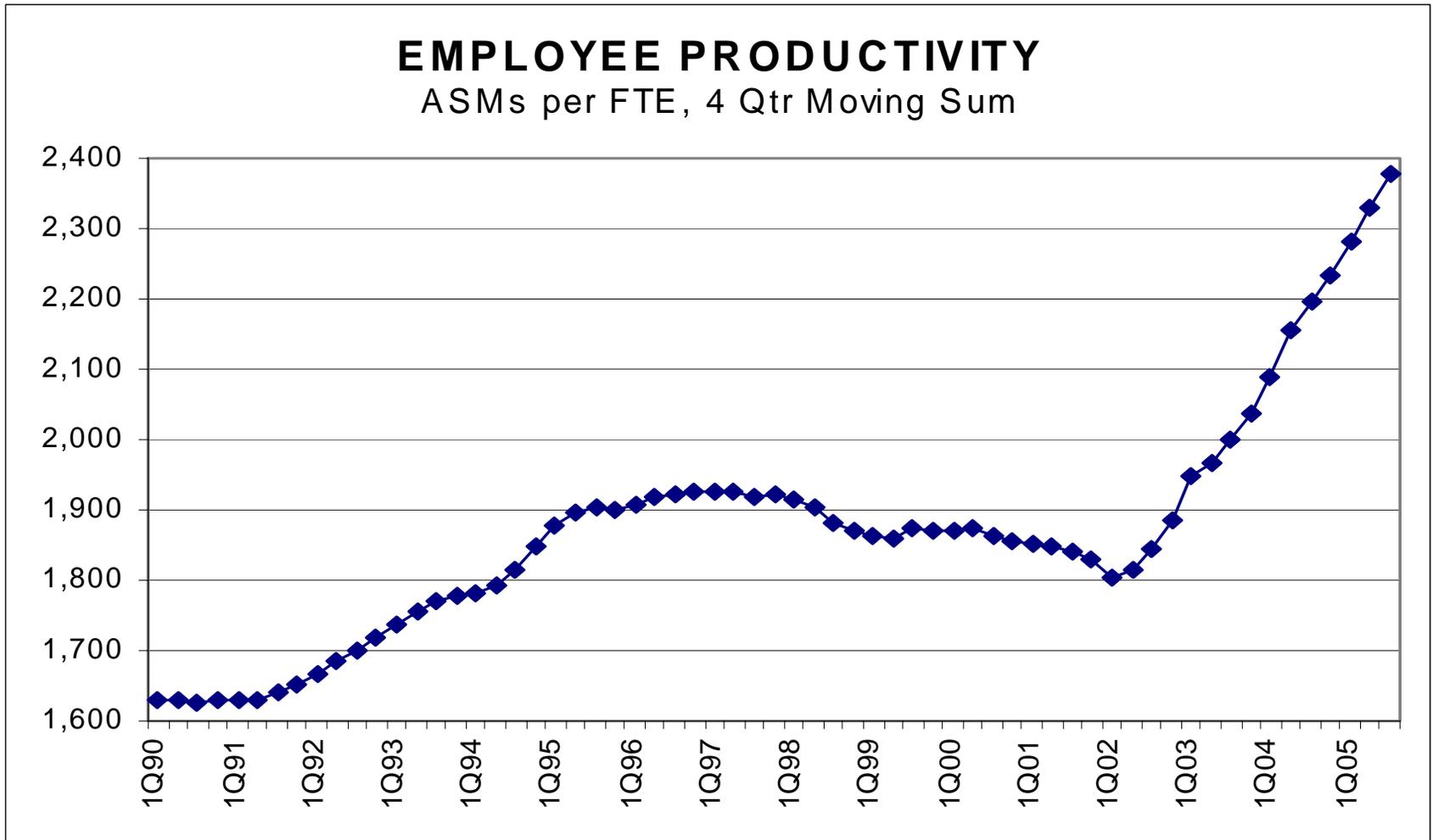


ASMs/employee and Average A/C Size





Employee Productivity Up 30% From 2002

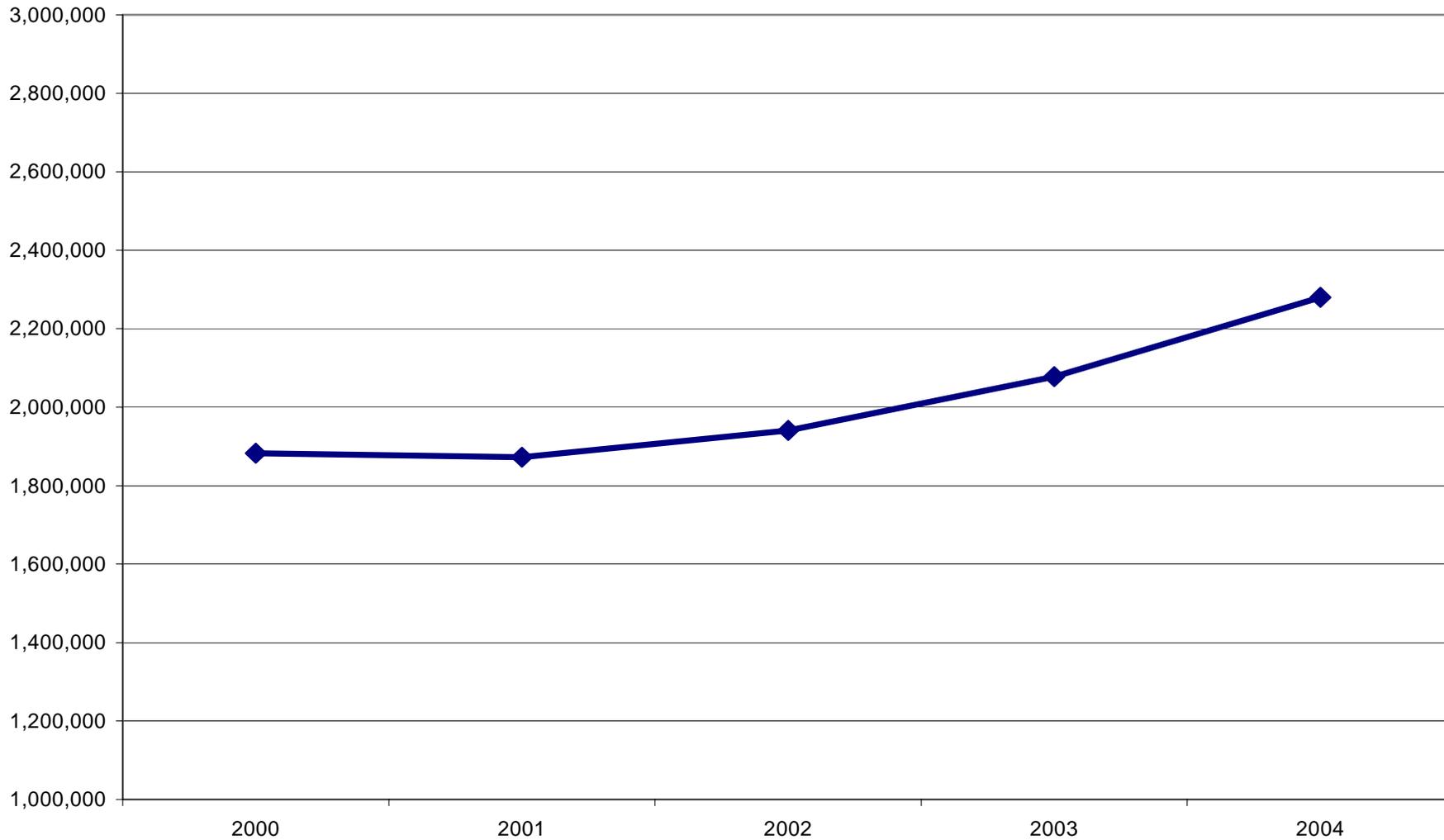


Source: ATA data



ASM per Employee 2000-2004

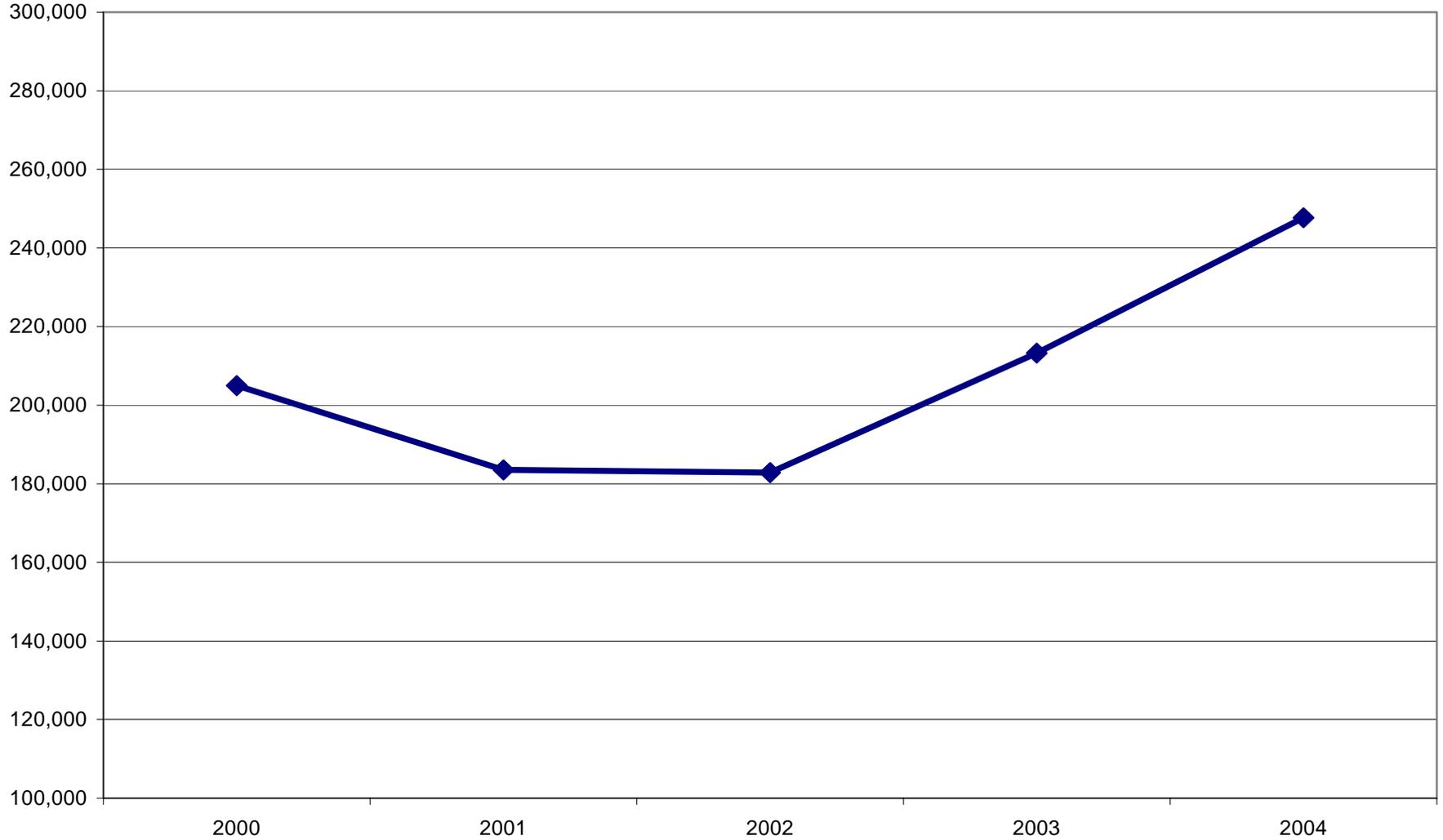
Annual ASM per Employee





Revenue per Employee

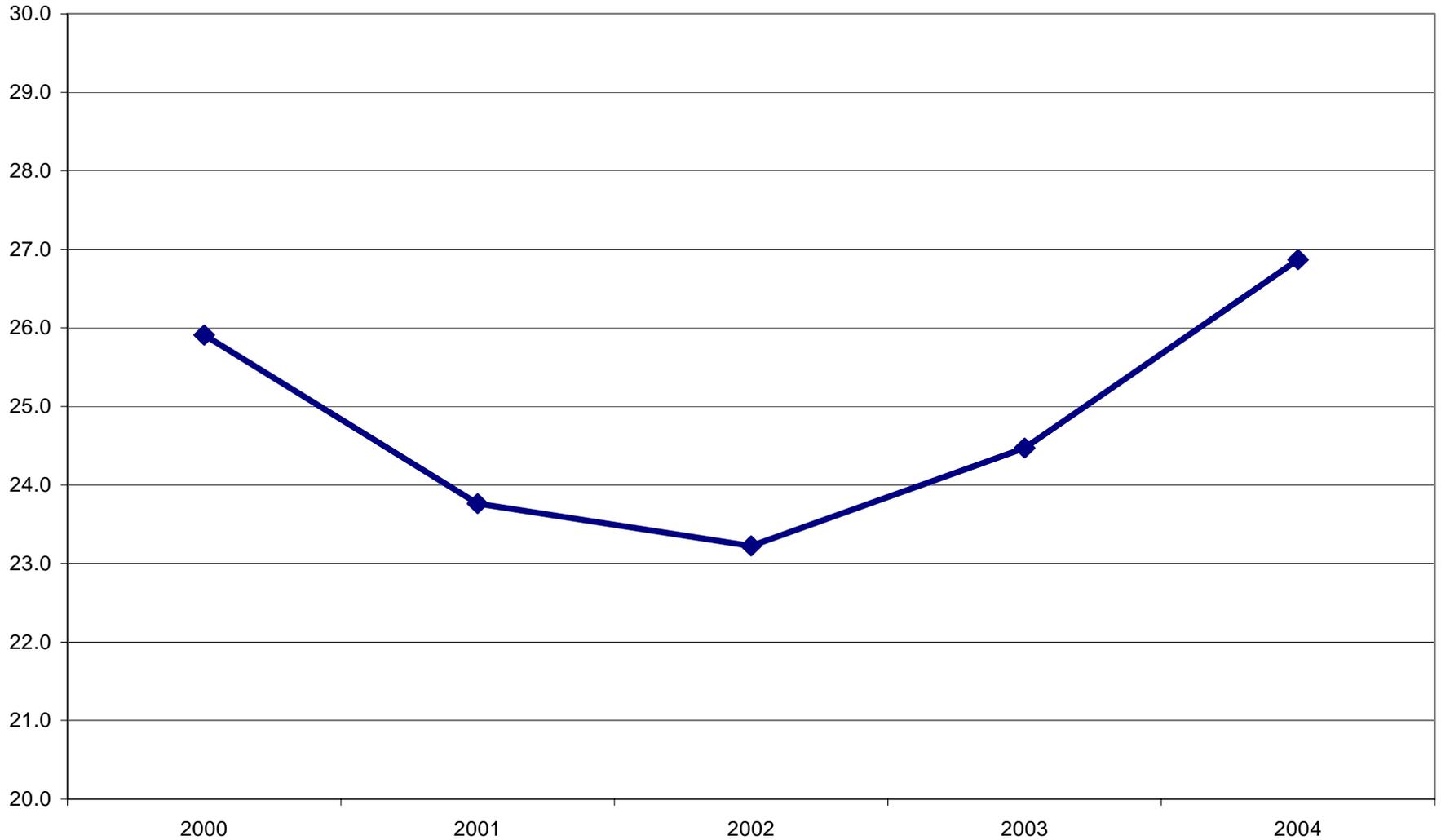
Annual Operating Revenue per Employee





ASM per Dollar of Salaries+Benefits

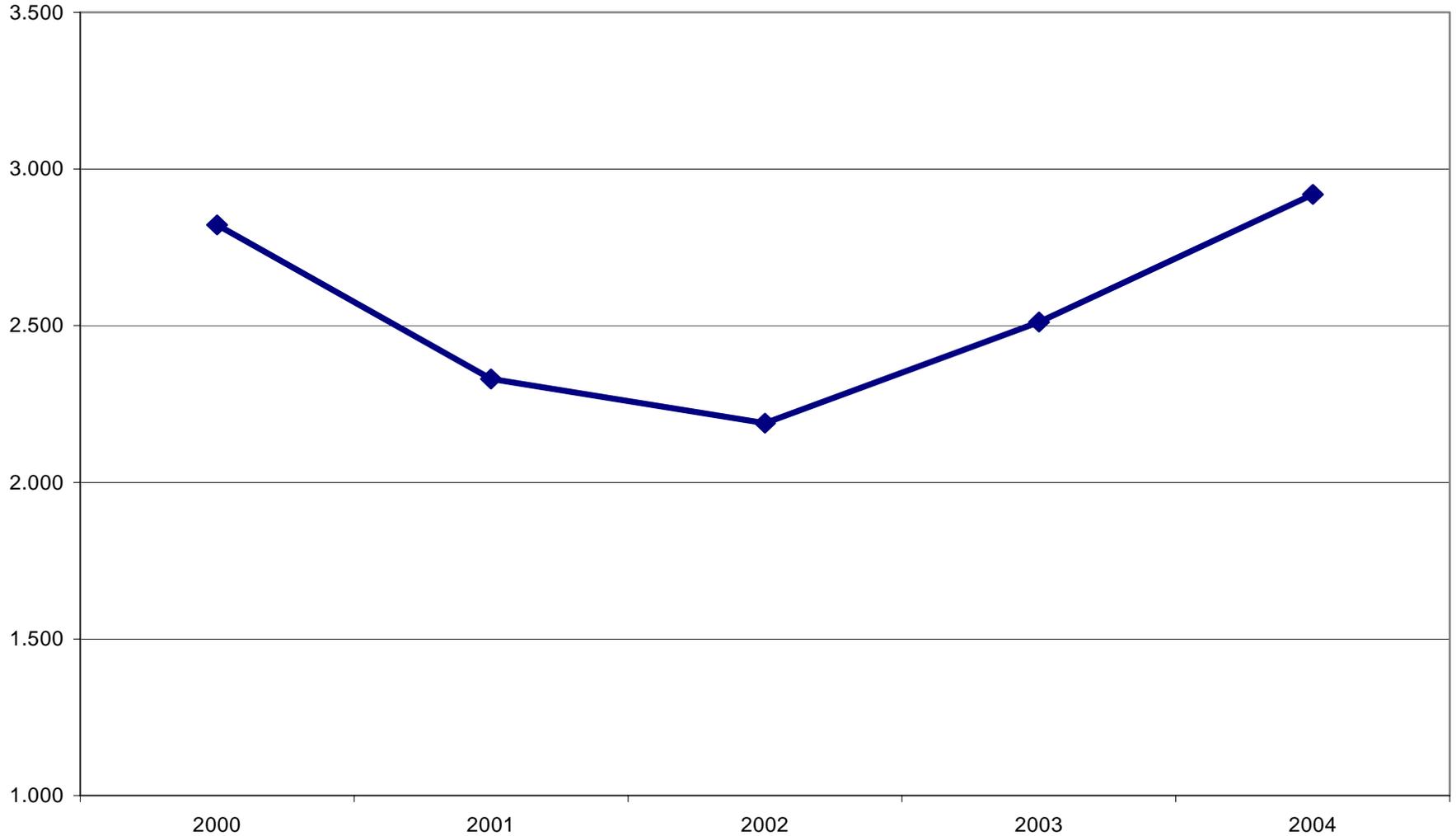
Annual ASM per Dollar Salaries & Benefits





Revenue per Dollar of Labor Expense

Operating Revenue per Salary/Benefit Dollar





Summary: Airline Productivity Measures

- **Aircraft Productivity**
 - Aircraft Utilization (block-hours per day)
 - ASMs per Aircraft per Day
 - Average Stage Length
 - Number of Departures per Day
 - Aircraft Capacity (seats per aircraft)
- **Employee Productivity**
 - ASMs per Employee
 - ASMs per Labor Dollar
 - Revenue per Employee,
 - Revenue per Labor Dollar