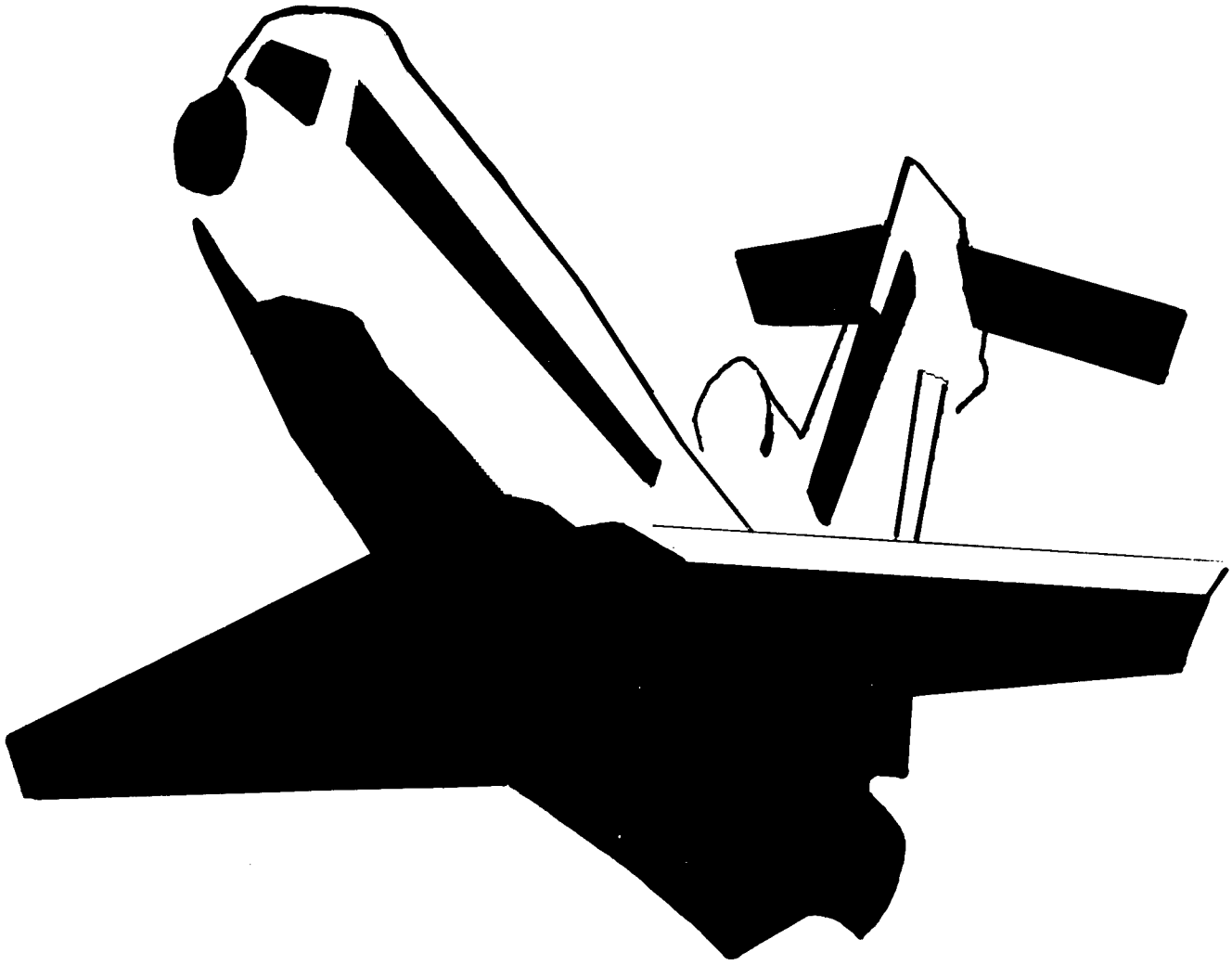
U.S. Department of Transportation
Office of the Secretary of Transportation

Secretary's Task Force on Competition in the U.S. Domestic Airline Industry



INDUSTRY AND ROUTE STRUCTURE
Volume I
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SECRETARY'S TASK FORCE ON COMPETITION IN THE U.S. DOMESTIC AIRLINE INDUSTRY

Industry and Route Structure

Volume I

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INTRODUCTION

This analysis, which focuses on the domestic airline industry structure and service, is one of a series of studies which are intended to provide an information base to: 1) assess the state of competition in the domestic airline industry, and 2) develop policy options for maintaining the competitive benefits of deregulation. It is designed to be both a source document, providing detailed information on the state of service competition in the domestic industry, and an analytical study. This study addresses the state of domestic service competition in general and specifically analyzes service competition at hub airports.

The structure of the domestic airline industry has changed dramatically since 1978. The early years saw many new carriers enter the business but this peaked around 1984. Since then the industry has experienced a period of consolidation due to mergers, acquisitions and carrier failures. Today, based on carrier shares of the total domestic market, the airline industry is actually somewhat more concentrated than it was in 1978. An equally significant structural change has been the accelerating shift in recent years from primarily linear and point-to-point route patterns, a legacy of the regulatory era, to the almost universal use of hub and spoke route systems which use coordinated groups of connecting flights at a central point to provide one stop, same carrier service to a large number of city-pair markets.

While industry consolidation and "hubbing" have worked to create fewer carriers and the dominance of one, or in a few cases two, carriers at some large and medium hub airports, these changes have also transformed what were formerly regional carriers into coast-to-coast carriers which serve many more points throughout the nation than they did previously. Through hub and spoke systems many more city-pair markets are served more effectively, with greater frequency, and by competing carriers serving these markets with connecting flights over different hubs.

Because these changes have been so pervasive and have affected all points and city-pair markets, both large and small, simply looking at any one aspect of the industry, such as hub concentration, can be misleading. For this reason this study has developed both comprehensive data on industry structure and more detailed analyses of service levels and competition at individual hubs.

To assess the state of competition, data for 1988 1/ were analyzed and compared to data for 1979 and 1984. Data for 1979 largely reflect the state of the industry and route structure as put in place during the era of regulation. Data for 1984 reflect the

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1/ Most of the exhibits are based on data for the 12 months ended September 30, 1988. The computer program created in conjunction with the Office of Aviation Information Management (OAIM) of RSPA can be used to update information as needed.

period when the number of competing carriers was the greatest and when hub and spoke systems were not yet the industry norm.

The study is divided into two parts; there are also several appendices. Part I primarily involves the presentation of data which are descriptive of the structure and competitiveness of the domestic industry, covering service levels, competition (particularly among major carriers) and concentration.

Part II provides an in-depth analysis of hubbing, covering: how hubbing works, the service effects of hubbing, the competitive effects of hubbing and an analysis of how hubbing affects load factors. An understanding of the airline industry today requires an appreciation of why hub and spoke systems have developed.

Part II also provides much more detailed information, in some cases analyzing service at specific points and in specific markets to provide insight into how the system is working today and where the competitive problems may lie.

Summary of Findings

The analysis of domestic industry data in Part I provides some clear-cut conclusions regarding the structure of the domestic airline industry today:

- Carrier concentration at the national level declined and then increased over the past decade. For example, the top ten carriers accounted for 85 percent of the domestic revenue passenger miles in 1979, 78 percent in 1984, and 94 percent in 1988.

- Carrier concentration at large and some medium FAA hubs has clearly increased since both 1979 and 1984. 1/

- Concentration at small FAA hubs and many non-hubs has declined significantly.

1/ The FAA assigns domestic cities hub classifications based on their percent of total domestic enplaned passengers -- large hubs (1.00 percent or more), medium hubs (0.25 to 0.999 percent), small hubs (0.05 to 0.249 percent) and non-hubs (0.05 to 0.249 percent) and non-hubs (less than 0.05 percent). These FAA classifications should not be confused with the term "connecting hub", which refers to an airport in a hub and spoke system where a carrier or carriers elect to crossconnect passengers on a large scale. Many large and some medium FAA hubs serve as "connecting hubs".

- In city-pair markets, which are widely considered the most relevent markets for competitive analysis, concentration has declined and competitive service has increased significantly. More than half the passengers traveled in markets with 3 or more competitive carriers in 1988 compared with one quarter of the passengers in 1979.

- The number of markets receiving single-plane service in 1988 was 25 percent higher than in 1979 and about the same as 1984.

- The major carriers faced much more competition in 1988 than in 1979 and generally as much as in 1984.

- The increase in competitive service in city-pair markets in the face of increased concentration in the national market and at many hubs, is explained by the dramatic increase in the number of points served nationwide by the major carriers which are now interconnected through well developed hub and spoke networks. The ten carriers classified as major carriers, along with their code-sharing regional partners, now serve collectively 1,361 stations, compared to 746 stations in 1984 and 531 stations in 1979.

The analysis of hub and spoke networks in Part II yields the following observations:

- The hub and spoke systems of today offer travelers convenient service to more destinations than did the linear systems they replaced.

- The hubbing process by its very nature requires a large volume of frequent service and this leads naturally to a relatively high degree of concentration. Moreover, once hubs are established, carriers have a strong incentive to attempt to increase their control of traffic at their connecting hubs.

- Attempts to control traffic at connecting hubs have also encouraged geographic expansion by all major carriers which has intensified service competition in many city-pair markets.

- Hub concentration has intensified competition at smaller points which tend to receive service to several connecting hubs.

- Virtually all non-hubbing carriers have stopped competing with nonstop service in city pairs involving a highly concentrated connecting hub. The number of nonstop competitors in city-pairs involving concentrated hubs, therefore, is essentially limited to carriers that hub at either end point.

- There is evidence that the absence of service by non-hubbing carriers has reduced competition in certain city-pair markets, primarily relatively large city-pairs of under 1,000 miles, where on-line connecting competition generally is not a significant competitive factor.

- The lack of non-hubbing service competition in city-pair markets suggests that new nonstop entry is not likely and increases the prospect that the existing competitors will not compete vigorously over time.

- The incentives for carriers to control originating traffic at their connecting hubs and the loss of nonhubbing competition are consistent with load factor results which show that dominant carriers enjoy significant advantages relative to competitors at these hubs.

- In view of the substantial load factor advantage enjoyed by dominant carriers at highly concentrated connecting hubs, in the absence of price deviations which could cause such differences, any expansion of service can be expected to involve the least risk where a carrier already has a high degree of concentration and the most risk where another carrier has a high degree of concentration. All else being equal, this would seem to encourage expansion by extending dominance at existing hubs or creating new hubs rather than by trying to compete at another carrier's hub.

- When hub carriers at each endpoint of a city pair elect to compete, they tend to offer equivalent frequency.

- While some dense short-haul markets affected by hub dominance appear to lack adequate single-plane competitive service, the number of local passengers in such markets represents less than 5 percent of total domestic traffic.

PART I

MEASURES OF SERVICE LEVELS, COMPETITION, AND POINT CONCENTRATION

PART I

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SERVICE LEVELS, COMPETITION, AND POINT CONCENTRATION

Part I consists of an overview of domestic service levels, competition and concentration, including measures of service and competition at both destination points and individual airports as well as data relating to nonstop city-pair and origin and destination (O&D) markets.

Clearly, the major carriers have greatly increased the overall volume and variety of service over the 1979-1988 period. The number of stations served by these carriers is up 156 percent since 1979, and by 80 percent from 1984. (Table I-6). They have expanded their networks through code-sharing in extending service to smaller points and by creating hubs (Table I-7). Most of the majors now serve all or nearly all of the 27 large hubs in the 48 contiguous states. Stations operated by the majors at the medium hubs more than doubled between 1979 and 1988 and stations at the small hubs increased by 181 percent in the same period.

Four alternative measures of competitive service at large, medium and small hubs were examined: (1) total number of carrier stations; (2) number of carrier stations of carriers with 18 or more departures per week; (3) number of carrier stations of

carriers with one percent or more of available seats; and (4) number of carrier stations of carriers with 10 percent or more of available seats. In almost all cases these measures show about the same results -- service to all hubs by the majors increased from 1979 to 1984 and then declined from the 1984 peak.

In the case of the large hubs the 1988 levels are lower than the 1979 levels, but for the medium and small hubs the 1988 levels are generally higher than the 1979 levels. (Table I-8). Medium and small hubs have particularly benefited in this regard from the shift to hub and spoke route systems. The extent of these benefits will be described further in Part II.

The level of competitive service of the 115 hubs in the 48 contiguous states has changed significantly over the 1979-1988 period. Carrier concentration at large hubs has grown substantially, with 17 having only one or two competitors in July 1988 compared to only three large hubs with this few competitors in 1979. 1/ The number of large hubs with four or more competitors decreased from 14 in 1979 to three in 1988.

Medium hubs were slightly more concentrated in 1988 than in 1979. While no medium hub was dominated by a single competitor in 1979, by 1988 four were (Table I-9).

1/ Competitors are those carriers providing 10 percent or more of total available seats at the point. Hub classification is as of 1988.

Offsetting the increases in concentration at the large and medium hubs, small hubs tended to gain in the numbers of competitors. In 1979, 24 small hubs had only one or two competitors; by 1988 no small hub was limited to a single competitor and only four had as few as two competitors. In 1979, only nine small hubs had four or more competitors; by 1988 this number had increased to 32.

From 1979 through 1988 there was about a 23 percent reduction in the number of nonhub airports, but those that have retained service are also much more competitive. While only 30 nonhubs had three competitors in 1979 and none had four or more, in 1988 a total of 79 had three or more competitors -- 56 with three and 23 with four or more. (Table I-9).

Table I-11 provides a detailed comparison of the number of competitors at each of the geographic points classified as large, medium and small hubs in 1988 as of July 1979, July 1984, and July 1988. Looked at from the point of view of enplanements and concentration, the same picture emerges. Concentration is up at large and some medium hubs but is down at small hubs and non-hubs. (Table I-12).

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Enplanements at domestic airports were up 50 percent between 1979 and 1988, but more airports had decreases than increases. This reflects the service reductions and eliminations at the smallest traffic generating points. Between 1984 and 1988, enplanements were up 31.4 percent (an annual growth rate of 7.1 percent) and more than half of the airports had increases. (Tables I-13 and I-14).

An analysis of service in terms of weekly frequencies at all domestic points receiving scheduled service shows that between 1979 and 1988 frequencies were down at 57 percent of the points and up at 43 percent. Closer examination of the data indicates that the bulk of the points which lost frequency were points served by relatively small aircraft (Tables I-15 and I-16). In the more recent 1984-1988 period slightly more than half of the points recorded decreases in frequency, about three-quarters of which were points served by small aircraft. (Tables I-17 and I-18). Most of this reduction represented a paring down or elimination of commuter service at very small traffic generating points. Moreover, lower frequency under the hub and spoke systems of today may be superior to higher frequency under the linear service patterns of 1979 (See Part II, Table II-5.)

Although under the hub and spoke system single-plane service may not be as important as it once was, it still constitutes the main mode of travel for many air travelers. An analysis of changes in

single-plane service between 1979 and 1988 shows that of 5,400 single-plane markets served in July 1979, 2,434 (45.1 percent) were not served in July 1988; 1,515 (28.1 percent) were served by the same number of carriers in 1988 as in 1979; 547 (10.1) percent) were served by fewer carriers in 1988; and 904 (16.7 percent) were served by more carriers in 1988. (Table I-19). In July 1988, 2,348 markets received single-plane service which were not so served in July 1979. Much of this entry and exit occurs at the lower end of the traffic spectrum, primarily at low traffic volume points served by commuter carriers.

Of the 1,458 markets which received competitive single-plane service in July 1979, 178 (12.2 percent) did not receive single-plane service in July 1988; 371 (25.4 percent) were served by the same number of carriers in both years; 547 (37.5 percent) were served by fewer carriers; and 362 (24.8 percent) were served by more carriers in 1988 than in 1979.

The system was more competitive in 1988 than in 1979 in terms of single-plane service. Monopoly markets declined 11.7 percent (from 3,942 to 3,481) while competitive markets (those served by 2 or more carriers) rose 25.7 percent (from 1,458 to 1,833). Total single-plane markets decreased by 1.6 percent, from 5,400 to 5,314. (Table I-20).

All major carriers had substantial increases in the number of

single-plane markets served between July 1979 and July 1988. The data show a tremendous expansion of service by the majors, reflecting the growth of their own service and the expansion of service by their code-sharing commuters. For all carriers, 1988 single-plane service competition was comparable to 1984 (Tables I-21 and I-22).

Comparisons of the revenue passenger mile (RPM) shares in the top 100 RPM markets of each major carrier indicate increased competitiveness in city-pair markets. In all cases major carrier shares show a decline from 1979 to 1984 and all but one (Pan American) show a decline in the 1979-1988 comparison. The RPM shares for the three top competitors of each major carrier show about half up and half down for the 1979-1984, 1984-1988 and 1979-1988 comparisons. (Tables I-23 and I-24). In 1979 five major carriers' percentage shares exceeded the shares of the top 3 competitors. By 1984, only one carrier's share (United) exceeded that of its top three competitors and this also held true for the year ended September 30, 1988.

Table I-25 is a detailed listing of the RPMs of each major carrier's top 100 markets in the years 1979, 1984 and the year ended September 30, 1988, and the RPM of its competitors in these markets. Generally, market shares for the majors in their top 100 RPM markets declined from 1979 to 1988 because of the expansion in

the number of markets served, as shown in Table I-21. In this period carriers entered many markets which they had been precluded from serving prior to 1978. Many of these were larger markets in which it was not possible to gain large market shares, at least in the short run. With all of the new entry which occurred, competition was more intense in most markets and it was more difficult to maintain market share.

Carrier market shares in the top 50 RPM markets for the year ending September 30, 1988 are shown in Table I-26 and are compared with the RPM shares for the years 1984 and 1979. In 1988, there was an average of 8.7 carriers with a market share of one percent or more per market, compared to an average of 8.5 carriers per market in 1984 and 5.3 carriers per market in 1979.

The connecting hubs of the major carriers have become increasingly important to their overall operations as measured by relative share of total departures or enplanements at those hubs. Between 1979 and 1988 all carriers had increases in both measures. (Table I-27).

In contrast to point concentration, city-pair concentration has declined in every density category. The measures vary from one density category to another. While concentration in the more dense city pair markets (500 passengers per day or more) has changed only modestly, the change has been dramatic in all other density categories.

NUMBER OF AIR CARRIERS OPERATING, 1978-1988

Tables I-1 through I-4

Objective: To enumerate the certificated and commuter air carriers actually operating (as reflected by actual reports filed with the CAB or DOT), to count the new entrants which actually conducted operations and the number of carriers deleted.

Data Sources: Data are derived from records of the Office of Aviation Information Management, Research and Special Programs Administration (RSPA).

Observations/Interpretation: Between 1978 and 1988 a total of 178 certificated carriers filed reports with the CAB or DOT. Of this total, 67 were still in operation in January 1989, while 111 had ceased reporting. Twenty-one of the 43 carriers from 1978 were still in operation and 22 had been deleted due to merger, financial failure, cessation of operations or grant of a waiver to file less detailed reports. Of the 135 new entrants in the 1979-1988 period 46 (34 percent) were still operating in January 1989, while 89 had been deleted.

From 1981 through 1988, 94 small certificated carriers filed Form 298-C reports on their operations with the CAB or DOT. Forty-two carriers were deleted from this group, leaving a total of 52 in operation at the end of 1988.

For commuter carriers filing Form 298-C reports, the peak of the passenger carrying carriers was 1983, when there were 144 reporting carriers in the fourth quarter. The figure for the fourth quarter of 1988 was 111, a net decrease of 33 carriers from the peak year.

CERTIFICATED AIR CARRIERS FILING FORM 41
IN THE FOURTH QUARTER, 1979-1988

	Number of Carriers --			
Year	At End of Previous Year	New Carriers Added	Total Carriers	Carriers Deleted
1979	43	22	65	5
1980	60	17	77	5
1981	72	16	88	8
1982	80	10	90	15
1983	75	18	93	9
1984	84	19	103	16
1985	87	18	105	19
1986	86	7	93	19
1987	74	5	79	11
1988	68	3	71	4
Total	--	135	--	111

Source: Office of Aviation Information Management, Research and Special Programs Administration.

STATUS OF CERTIFICATED CARRIERS BY YEAR
OF FIRST FILED REPORTS, 1978-1988

Year	Number of Carriers -- By Year of First Report	Still Operating 1/	Carriers Deleted 2/
1978	43 3/	21	22
1979	22	4	18
1980	17	3	14
1981	16	3	13
1982	10	1	9
1983	18	8	10
1984	19	10	9
1985	18	7	11
1986	7	2	5
1987	5	5	0
1988	3	3	0
Total	178	67	111
1978 Carriers	43	21	22
New Entrants	135	46	89

1/ Carriers still operating as of January 1989.
2/ Includes carriers deleted due to merger, financial failure, cessation of operation or grant of waiver to file less detailed reports.
3/ Number of carriers filing reports in the 4th Quarter of 1978.

Source: Office of Aviation Information Management, Research and Special Programs Administration.

SMALL CERTIFICATED AIR CARRIERS FILING
FORM 298-C IN THE FOURTH QUARTER, 1981-1988

	Number of Carriers			
Year	At End of Previous Year	New Carriers Added 1/	Total Carriers	Carriers Deleted 2/
1981	0	3	3	0
1982	3	26	29	1
1983	28	16	44	3
1984	41	7	48	8
1985	40	16	56	13
1986	43	14	57	6
1987	51	5	56	2
1988	54	7	61	9
Total	--	94	--	42

1/ Includes completely new carriers and carriers granted waivers from filing more-detailed Form 41 reports.
2/ Includes carriers deleted due to merger, financial failure, cessation of operation or grant of waiver.

Source: Office of Aviation Information Management, Research and Special Programs Administration.

COMMUTER AIR CARRIERS FILING FORM 298-C
IN THE FOURTH QUARTER, 1978-1988

Year	Number of Carriers Filing 4th Quarter Reports
1978	242
1979	230
1980	230
1981 1/	135
1982	135
1983	144
1984	127
1985	143
1986	135
1987	126
1988	111

1/ The decrease from 1980 to 1981 reflects the deletion of all-cargo and mail carriers from the commuter definition.

Source: Office of Aviation Information Management, Research and Special Programs Administration.

DOMESTIC CONCENTRATION IN THE AIRLINE INDUSTRY

Table I-5

Objective: To trace domestic airline industry concentration for the period 1978-1988.

Data Source: CAB/DOT Form 41 Reports as summarized in CAB/DOT Air Carrier Traffic Statistics

Observations/Interpretation: Following enactment of the Airline Deregulation Act (ADA) in October 1978, the Civil Aeronautics Board certificated several new airlines. Although many of these new carriers never operated, several did. The ADA also loosened many regulatory roadblocks to competition, which enabled the existing carriers to expand their domestic operations significantly. As a result, the level of airline concentration -- as measured by revenue passenger miles (RPMs) -- in domestic markets showed a gradual decline from 1978 through the mid-1980s.

In 1985 the Department approved 5 mergers and acquisitions. In 1986 it approved 13. In 1987 it approved 3. In 1988 it approved 1. With this era of mergers and acquisition and the cessation of operations by a number of new entrants, the number of competitors sharply declined. Accordingly, the degree of industry concentration has risen to the point where the concentration level in domestic operations now exceeds that which existed in 1978.

The level of concentration among the top 5 carriers declined substantially from 68.80 percent in 1978 to 57.30 percent in 1985 (a decline of 950 basis points), then climbed to 74.05 percent in 1987, with a slight decline to 73.78 percent in 1988. For the top 5 carriers this represents a net increase of 498 basis points above the 1978 concentration level, but a significant jump of 1648 basis points since 1985.

Among the top 15 air carriers, domestic concentration declined each year from 95.80 percent in 1978 to 89.66 percent in 1983 (a drop of 614 basis points). The degree of concentration then rose each year reaching a level of 98.59 percent in 1988 (an increase of 893 basis points since 1983 and 309 basis points since 1978) for the top 15 carriers.

Similar results occurred among the top 20 carriers. In 1978 the top 20 carriers operated 99 percent of the domestic revenue passenger miles. However, by 1983 the top 20 carriers' RPM share declined to 94.20 percent (a decrease of 480 basis points) then rose to 99.43 percent in 1988 (a slight increase of 43 basis points above the 1978 level).

PERCENT OF DOMESTIC RPM'S BY CARRIER RANK
CY 1978 - 1988

Carrier Rank	1978 Carrier	1978 %	1979 Carrier	1979 %	1980 Carrier	1980 %	1981 Carrier	1981 %	1982 Carrier	1982 %	1983 Carrier	1983 %
1	UA	21.60%	UA	17.98%	UA	18.90%	UA	17.51%	UA	18.30%	UA	18.63%
2	AA	13.80%	AA	13.85%	AA	12.10%	AA	12.74%	AA	13.50%	AA	13.49%
Top 2		35.40%		31.84%		31.00%		30.24%		31.80%		32.11%
3	DL	12.30%	DL	11.70%	DL	12.10%	EA	12.03%	EA	11.30%	DL	10.88%
Top 3		47.70%		43.53%		43.10%		42.27%		43.10%		42.99%
4	EA	11.40%	EA	11.30%	EA	11.70%	DL	11.34%	DL	10.90%	EA	10.91%
Top 4		59.10%		54.84%		54.80%		53.61%		54.00%		53.90%
5	TW	9.70%	TW	9.67%	TW	9.20%	TW	7.93%	TW	7.40%	TW	6.89%
Top 5		68.80%		64.51%		64.00%		61.54%		61.40%		60.79%
6	WA	5.20%	BN	4.50%	PA	4.40%	NW	4.11%	RC	4.40%	RC	4.17%
7	CO	4.60%	WA	4.48%	NW	4.20%	PA	3.82%	NW	4.10%	NW	4.07%
8	BN	3.90%	NW	4.22%	WA	3.90%	RC	3.79%	WA	3.90%	WA	3.78%
9	NA	3.70%	CO	4.16%	BN	3.70%	WA	3.60%	CO	3.90%	CO	3.41%
10	NW	2.70%	NA	3.21%	CO	3.60%	CO	3.44%	PA	3.40%	PA	3.26%
Top 10		88.90%		85.07%		83.80%		80.30%		81.10%		79.47%
11	AL	2.20%	AL	2.43%	RC	3.50%	BN	3.12%	AL	2.90%	AL	3.18%
12	RW	1.40%	RC/NC/SO	1.81%	AL	2.70%	AL	2.74%	PI	1.90%	PI	2.23%
13	FL	1.30%	FL	1.41%	FL	1.50%	FL	1.73%	FL	1.70%	FL	1.68%
14	PA	1.10%	PS	1.32%	PI	1.20%	PI	1.62%	WN	1.40%	WN	1.68%
15	NC	.90%	RW	1.25%	TI	1.10%	WO	1.37%	PS	1.30%	PE	1.42%
Top 15		95.80%		93.29%		93.80%		90.88%		90.30%		89.66%
16	TI	.90%	PA	1.20%	WO	1.00%	WN	1.15%	BN	1.10%	PS	1.33%
17	PI	.80%	TI	1.08%	WN	1.00%	TI	1.12%	CL	1.10%	OZ	1.15%
18	OZ	.80%	PI	.93%	PS	1.00%	PS	1.11%	OZ	1.00%	WO	.74%
19	SO	.70%	OZ	.81%	OZ	.80%	OZ	.98%	TI	1.00%	AS	.67%
20	-		WN	.70%	OC	.50%	CL	.74%	WO	.90%	OC	.66%
Top 20		99.00%		98.00%		98.10%		95.98%		95.40%		94.20%

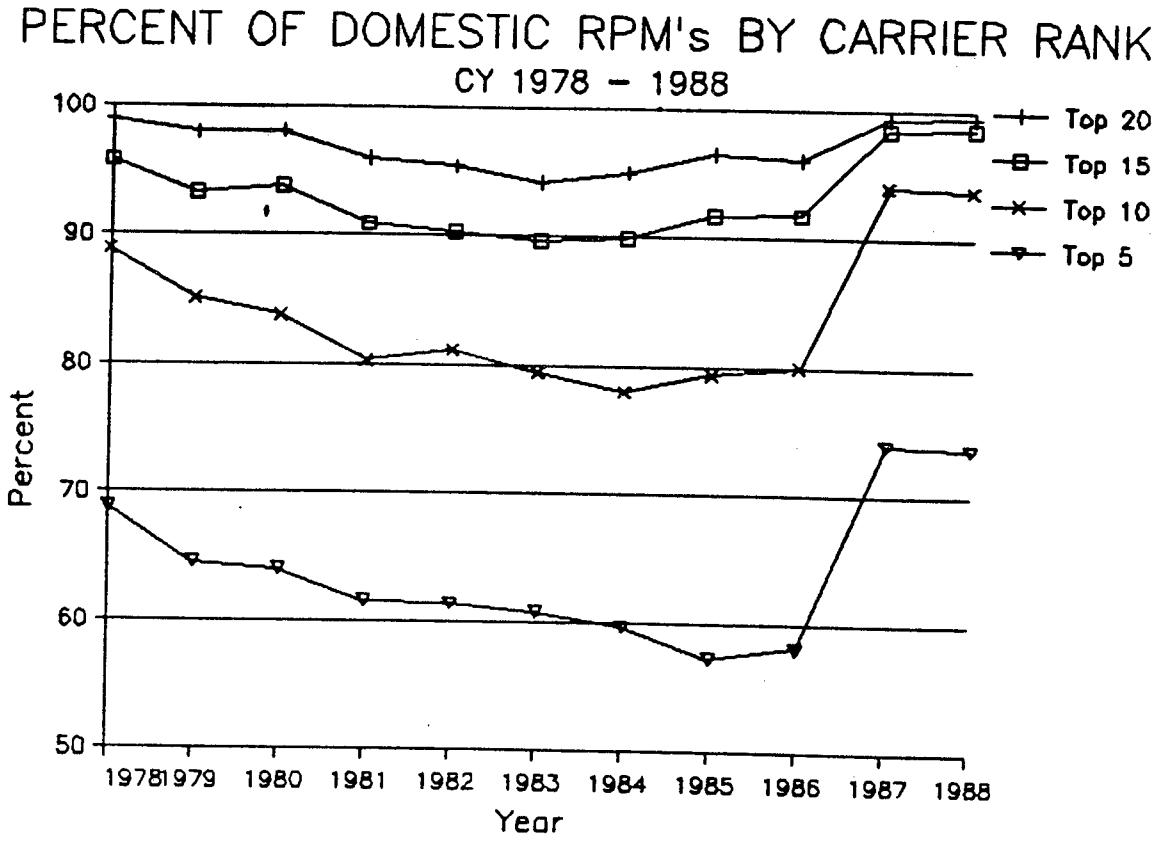
Table I-5
Page 2 of 3

PERCENT OF DOMESTIC RPM'S BY CARRIER RANK
CY 1978 - 1988

Carrier Rank	1984 Carrier	1984 %	1985 Carrier	1985 %	1986 Carrier	1986 %	1987 Carrier	1987 %	1988 Carrier	1988 %
1	UA	18.40%	UA	14.90%	UA	17.10%	CO/EA/RU	20.13%	CO/EA	17.09%
2	AA	13.90%	AA	14.80%	AA	14.50%	UA	17.04%	UA	16.93%
Top 2		32.30%		29.70%		31.60%		37.17%		34.02%
3	EA	10.90%	EA	11.20%	EA	10.50%	AA/OC	15.24%	AA	16.74%
Top 3		43.20%		40.90%		42.10%		52.41%		50.76%
4	DL	10.40%	DL	10.30%	DL	9.60%	DL/WA	12.79%	DL	13.74%
Top 4		53.60%		51.20%		51.70%		65.20%		64.50%
5	TW	6.10%	TW	6.10%	CO/NY	6.40%	AL/PI/PS	8.85%	AL/PI/PS	9.28%
Top 5		59.70%		57.30%		58.10%		74.05%		73.78%
6	NW	4.00%	PE/FL/RU	5.30%	TW	5.80%	NW	7.80%	NW	7.28%
7	CO	3.80%	CO	5.10%	NW	5.00%	TW	6.37%	TW	6.31%
8	WA	3.60%	NW	4.10%	PE/FL/RU	4.00%	WN/MC	2.44%	WN	2.32%
9	RC	3.50%	RC	4.00%	AL	3.70%	HP	1.76%	HP	2.13%
10	AL	3.40%	WA	3.60%	WA	3.40%	PA	1.61%	PA	1.99%
Top 10		78.00%		79.40%		80.00%		94.02%		93.80%
11	PE	2.70%	AL	3.60%	PI/UR	3.40%	AS/SI/QX	1.25%	BN/ZO	1.46%
12	PI	2.60%	PI/UR	3.10%	RC	3.10%	BN	1.03%	AS/QX	1.18%
13	PA	2.50%	WN/MC	2.40%	WN/MC	2.40%	HA	.94%	ML	.90%
14	FL	2.10%	PA	1.90%	PA	1.50%	ML	.78%	HA	.84%
15	WN	1.90%	PS	1.30%	PS	1.40%	TZ	.44%	TZ	.42%
Top 15		89.80%		91.70%		91.80%		98.46%		98.59%
16	PS	1.30%	WO	1.20%	HP	1.10%	GM	.25%	SYQ	.23%
17	WO	1.20%	OZ	1.10%	AS	.90%	SYQ	.21%	GM	.23%
18	OZ	1.10%	AS	.90%	BN	.80%	ZO	.19%	AQ	.13%
19	BN	.80%	HP	.80%	HA	.80%	XV	.13%	ZW	.13%
20	AS	.80%	BN	.80%	OZ	.70%	JK	.12%	PC	.12%
Top 20		95.00%		96.50%		96.10%		99.37%		99.43%

Carrier Decoding List

Carrier Code	Carrier
AA	American
AL	USAir/Allegheny
AQ	Aloha
AS	Alaska
BN	Braniff
CL	Capitol
CO	Continental
DL	Delta
EA	Eastern
FL	Frontier
GM	Air America
HA	Hawaiian
HP	America West
JK	Sun World
MC	Muse/Transtar
ML	Midway
NA	National
NC	North Central
NW	Northwest
NY	New York Air
OC	Air California
OZ	Ozark
PA	Pan American
PC	Skyworld/Ports of Call
PE	Peoples
PI	Piedmont
PS	Pacific Southwest
QX	Horizon
RC	Republic
RU	Britt
RW	Hughes Airwest
SI	Jet America
SO	Southern
SYQ	Sun Country
TI	Texas International
TW	Trans World
TZ	American Transair
UA	United
UR	Empire
WA	Western
WN	Southwest
WO	World
XV	Presidential
ZO	Florida Express
ZW	Air Wisconsin


PERCENT OF DOMESTIC RPM's BY CARRIER RANK
CY 1978 - 1988
Top 20
Top 15
Top 10
Top 5
Percent
100
90
80
70
60
50
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
Year

SERVICE TO POINTS BY MAJOR CARRIERS

Table I-6

Objective: To show the total number of points served by each major carrier and its code-sharing affiliates in July 1979, July 1984, and July 1988, to indicate the growth of service by each carrier and the majors as a group.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

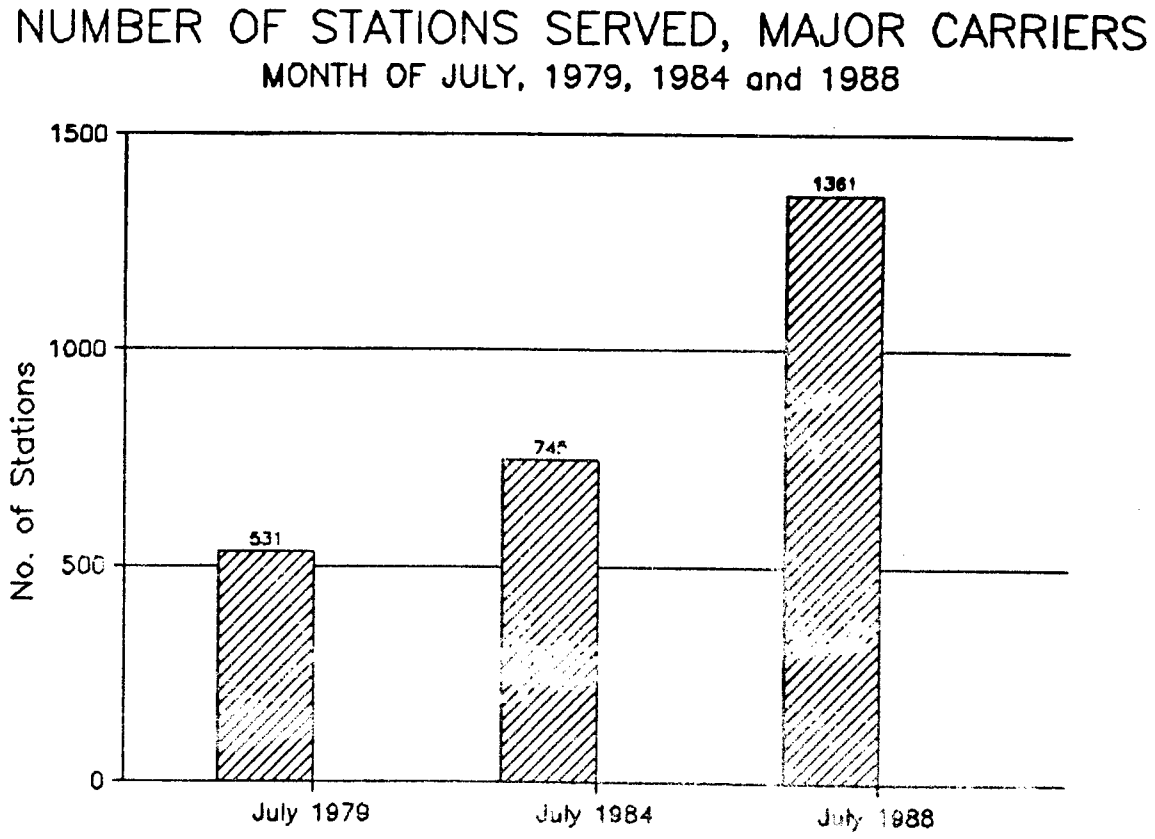
Observations/Interpretation: The 10 major carriers under the current classification system operated 531 stations in July 1979. In July 1984, these same carriers served 745 stations and in July 1988 they served 1,361 stations. This represents a 40 percent increase from 1979 to 1984 and an 83 percent increase from 1984 to 1988. From 1979 to 1988 the total increase is 156 percent. Except for Pan American, all carriers showed increases from 1979 to 1984, 1984 to 1988, and 1979 to 1988. Pan American had an increase from 1979 to 1984 (25 to 40) but a decrease from 1984 to 1988 (40 to 35). From 1979 to 1988 it showed an increase from 25 to 35. These data reflect the rapid expansion of the majors' systems following deregulation through internal growth and acquisitions and the expansion of code-sharing networks.

NUMBER OF POINTS SERVED, MAJOR CARRIERS
Month of July, 1979, 1984, and 1988

Carrier	Number of Points Served		
	1979	1984	1988
American	50	75	173
Continental	32	64	137
Delta	69	107	190
Eastern	68	84	142
Northwest	34	42	167
Pan American	25	40	35
Piedmont	48	70	123
Trans World	49	59	91
United	80	112	169
USAir	81	92	131
Total Stations (Duplicated)	531	745	1,361

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.


NUMBER OF STATIONS SERVED, MAJOR CARRIERS
MONTH OF JULY, 1979, 1984 and 1988
No. of Stations
1500
1000
500
0
531
1361
July 1979
July 1984
July 1988

SERVICE TO FAA HUBS BY MAJOR CARRIERS

Table I-7

Objective: To enumerate the large, medium and small hubs served by each major carrier in 1979, 1984 and 1988 to illustrate the expansion of service by these carriers.

Data Sources: OAG tapes. Later data contain code-sharing service so this must be recognized in interpreting the results.

Observations/Interpretation: The summary figures for each hub type show a steady increase in the number of stations operated by the majors as a group. From July 1979 to July 1988 the numerical and percentage increases were:

Hub Type	Number	Percent Increase
Large	77	43%
Medium	127	102%
Small	189	181%

All 10 major carriers showed increases in large hubs served between 1979 and 1988. Some of the smaller carriers showed substantial increases, e.g., Pan American from 8 in 1979 to 23 in 1984 and then to 20 in 1988; or Piedmont with 13 in 1979, 18 in 1984 and 24 in 1988. Four carriers now serve all 27 large hubs: American, Delta, TWA and United, and three more, Eastern, Northwest and USAir, serve all but one. This is a considerable change from 1979 when 23 was the maximum number of large hubs served by any carrier.

The gains in medium hubs served were even more dramatic than for large hubs. All carriers showed sizeable gains between 1979 and 1988. Two carriers, American and United, now serve all 31 medium hubs, while 22 was the maximum served by any carrier in 1979. Large increases were made by Pan American -- from none in 1979 to 14 in 1984 and 1988, and Northwest -- from 4 in 1979 to 8 in 1984 to 25 in 1988.

All carriers showed increases in the number of small hubs served. On average, each of the majors serves about half of the 57 small hubs, with Continental, Pan American, TWA and USAir on the low side. United, American and Delta serve 45, 44 and 43, respectively.

NUMBER OF LARGE, MEDIUM AND SMALL HUBS SERVED, MAJOR CARRIERS
Month of July, 1979, 1984 and 1988

Carrier	Large Hubs			Medium Hubs			Small Hubs		
	1979	1984	1988	1979	1984	1988	1979	1984	1988
American	21	26	27	22	28	31	7	19	44
Continental	14	21	25	11	11	28	4	8	25
Delta	23	27	27	17	21	28	17	30	43
Eastern	21	26	26	18	26	24	20	21	32
Northwest	18	22	26	4	8	25	4	5	32
Pan American	8	23	20	0	14	14	0	2	2
Piedmont	13	18	24	5	10	17	9	21	28
Trans World	22	25	27	15	25	26	9	9	17
United	23	27	27	17	31	31	22	37	45
USAir	15	23	26	15	17	27	12	17	25
Total Stations	178	238	255	124	191	251	104	169	293

Note: Includes service provided by code-sharing commuters.
Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

MEASURES OF MULTI-CARRIER SERVICE

Table I-8

Objective: To compare alternative measures of multi-carrier service at the 115 FAA hubs for the years 1979, 1984 and 1988, in order to measure changes in competition at points in this period.

Data Source: OAG tapes.

Observations/Interpretation: At the 27 FAA large hubs the total number of carrier stations rose from 680 in 1979 to 876 in 1984 and then declined to 638 in 1988. In 1988, the average number of carriers operating at large hubs was only slightly lower than the average for 1979. A three round-trip pattern six days a week in one non-stop city-pair market would require 18 weekly departures. Carriers with 18 or more weekly departures rose from 433 in 1979 to 593 in 1984 and then declined to 390 in 1988. Carriers with 1% or more of available seats rose from 290 in 1979 to 379 in 1984 and then declined to 270 in 1988. Carriers with a 10% or greater share of available seats declined steadily from 95 in 1979 to 65 in 1984 to 60 in 1988. All four measures at large hubs, were lower in 1988 than in 1979 or 1984.

At the 31 FAA medium hubs, the picture is somewhat different. Three of the four measures of multi-carrier service are higher in 1988 than in 1979. At the 31 medium hubs the total number of carrier stations rose from 298 in 1979 to 461 in 1984 and then declined to 353 in 1988. Carriers with 18 or more weekly departures rose from 246 in 1979 to 359 in 1984 and then declined to 287 in 1988. Carriers with 1% or more of available seats rose from 238 in 1979 to 367 in 1984 and than declined to 300 in 1988. Carriers with 10% or more of available seats declined from 103 in 1979 to 91 in 1984 and then rose to 95 in 1988.

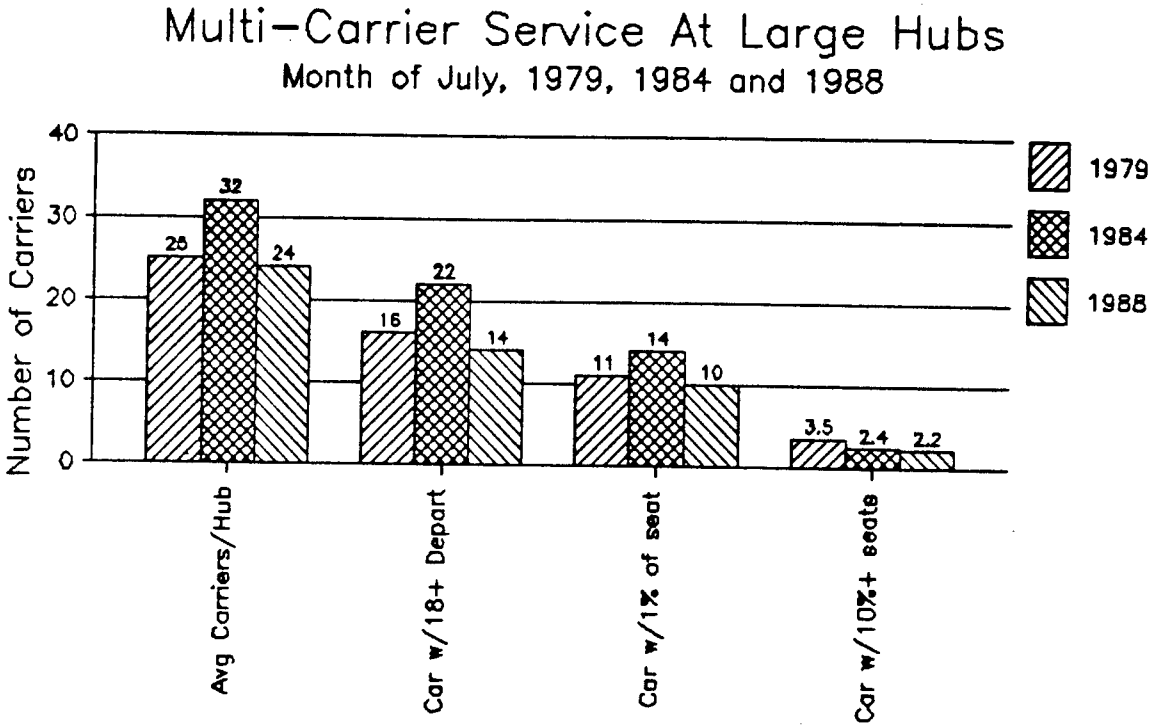
At the 57 FAA small hubs the total number of carrier stations rose from 277 in 1979 to 380 in 1984 and then declined to 351 in 1988. Carriers with 18 or more departures per week rose from 222 in 1979 to 304 in 1984 to 307 in 1988. Carriers with 1% or more of available seats rose from 247 in 1979 to 357 in 1984 and then declined to 333 in 1988. Carriers with 10% or more of available seats rose from 150 in 1979 to 205 in 1984 to 213 in 1988.

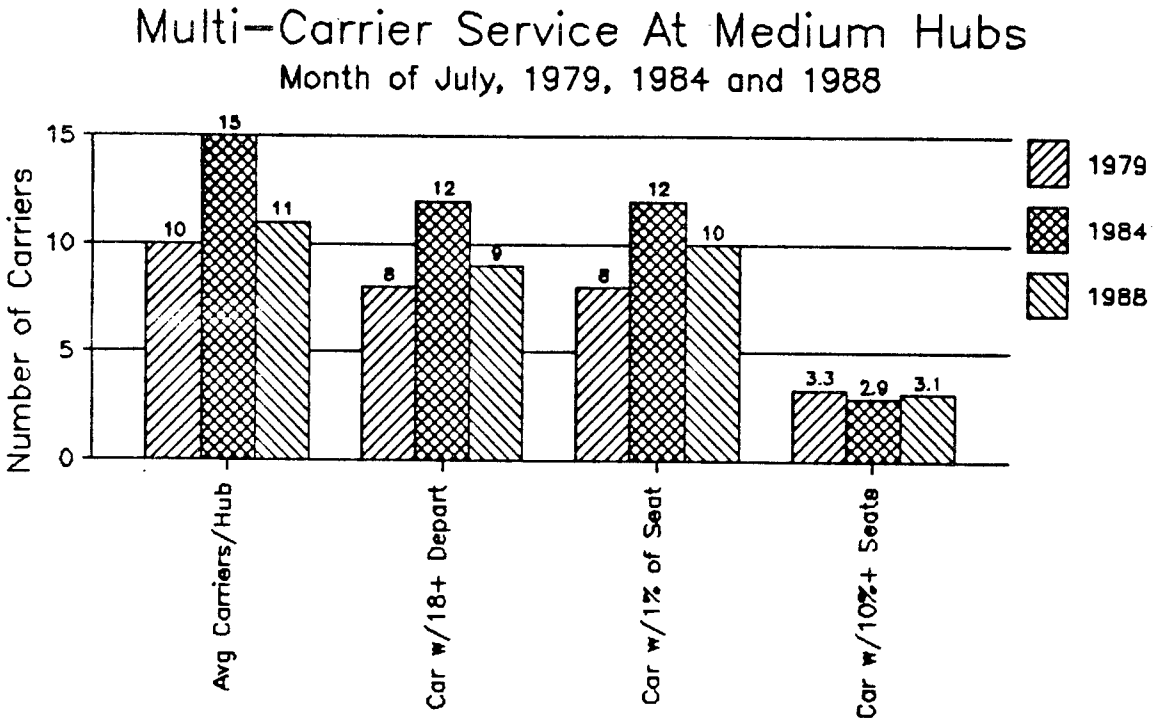
In summary, these measures show generally that multi-carrier service to the hubs increased from 1979 to 1984 and then declined from the 1984 peak. In the case of the large hubs the 1988 levels are lower than the 1979 levels. For the medium and small hubs the 1988 levels are generally higher than the 1979 levels, although less than the 1984 peaks.

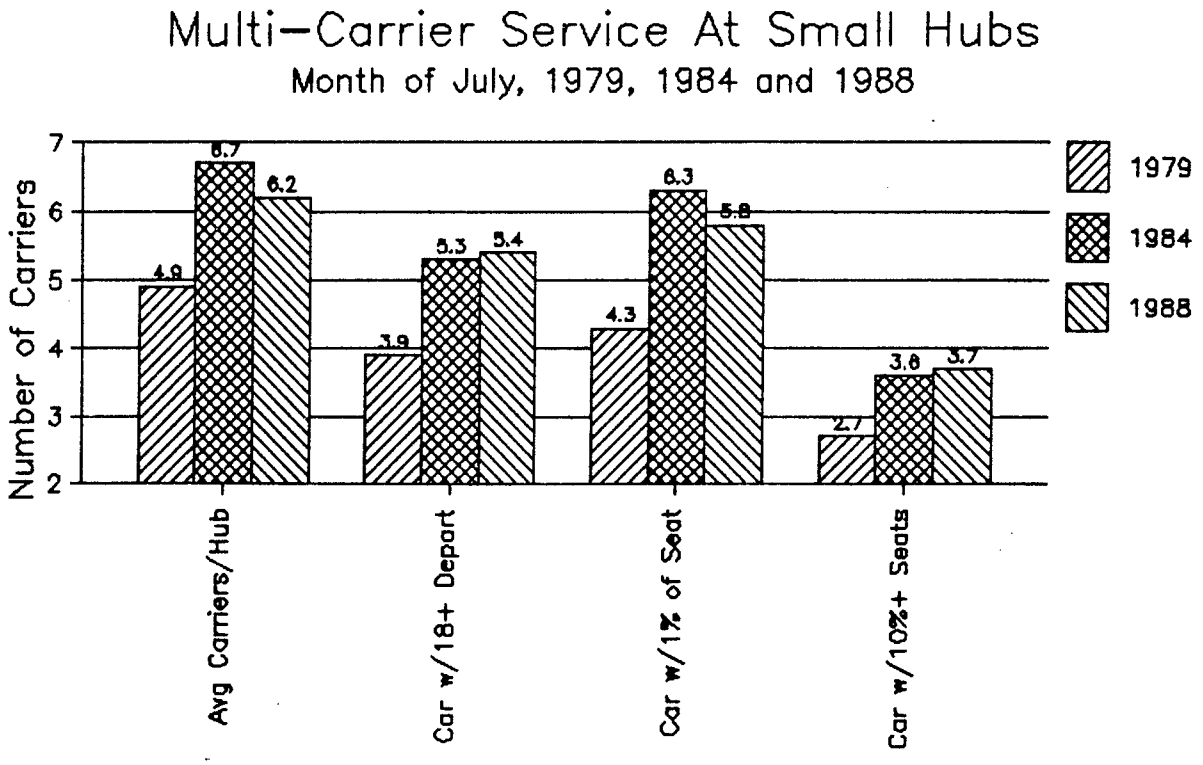
MEASURES OF MULTIPLE CARRIER SERVICE AT
LARGE, MEDIUM AND SMALL HUBS
Month of July 1979, 1984 and 1988

	Number of Carriers			Average Per Hub		
27 Large Hubs	1979	1984	1988	1979	1984	1988
Total No. of Carrier Stations	680	876	638	25.2	32.4	23.6
Carriers with 18 or more departures per week	433	593	390	16.0	22.0	14.4
Carriers with 1% or more of available seats	290	379	270	10.7	14.0	10.0
Carriers with 10% or more of available seats	95	65	60	3.5	2.4	2.2
31 Medium Hubs						
Total No. of Carrier Stations	298	461	353	9.6	14.9	11.4
Carriers with 18 or more departures per week	246	359	287	7.9	11.6	9.3
Carriers with 1% or more of available seats	238	367	300	7.7	11.8	9.7
Carriers with 10% or more of available seats	103	91	95	3.3	2.9	3.1
57 Small Hubs						
Total No. of Carrier Stations	277	380	351	4.9	6.7	6.2
Carriers with 18 or more departures per week	222	304	307	3.9	5.3	5.4
Carriers with 1% or more of available seats	247	357	333	4.3	6.3	5.8
Carriers with 10% or more of available seats	156	205	213	2.7	3.6	3.7

Source: Official Airline Guide, July 1979, July 1984 and July 1988.


Multi-Carrier Service At Large Hubs
Month of July, 1979, 1984 and 1988
Number of Carriers
40
30
20
10
0
25
32
24
16
22
14
11
14
10
3.5
2.4
2.2
Avg Carriers/Hub
Car w/18+ Depart
Car w/1% of seat
Car w/10%+ seats
1979
1984
1988


Multi-Carrier Service At Medium Hubs
Month of July, 1979, 1984 and 1988
Number of Carriers
15
10
5
0
10
15
11
8
12
9
8
12
10
3.3
2.9
3.1
Avg Carriers/Hub
Car w/18+ Depart
Car w/1% of Seat
Car w/10%+ Seats
1979
1984
1988


Multi-Carrier Service At Small Hubs
Month of July, 1979, 1984 and 1988
Number of Carriers
7
6
5
4
3
2
4.9
6.7
6.2
3.9
5.3
5.4
4.3
6.3
5.8
2.7
3.8
3.7
Avg Carriers/Hub
Car w/18+ Depart
Car w/1% of Seat
Car w/10%+ Seats
1979
1984
1988

COMPETITION AT DOMESTIC POINTS

Tables I-9 and I-10

Objective: To array all points served in the months of July 1979, July 1984 and July 1988 by competitive status (number of competitors defined as carriers providing 10 percent or more of available seats) and to show changes in the relative competitive status for the hub classes.

Data Sources: OAG tapes.

Observations/Interpretation: As Table I-9 shows, large hubs have become much more concentrated, with 17 having only 1 or 2 competitors in July 1988 vs. only 3 in 1979. Large hubs with 4 or more competitors dropped from 14 in 1979 to 3 in 1988. Medium hubs also show somewhat more concentration. While no medium hub was dominated by a single competitor in 1979, in 1988 4 were. Small hubs are clearly less concentrated. In 1979, 24 had only 1 or 2 competitors. In 1988 none had a single competitor and only 4 had 2. While 9 small hubs had 4 or more competitors in 1979, 32 did in 1988. Three hundred sixty-six nonhubs were served in all 3 years. Most noteworthy is the fact that while only 29 nonhubs had 3 competitors in 1979 and none had 4 or more, in 1988 a total of 80 had 3 or more competitors -- 57 with 3 and 23 with 4 or more.

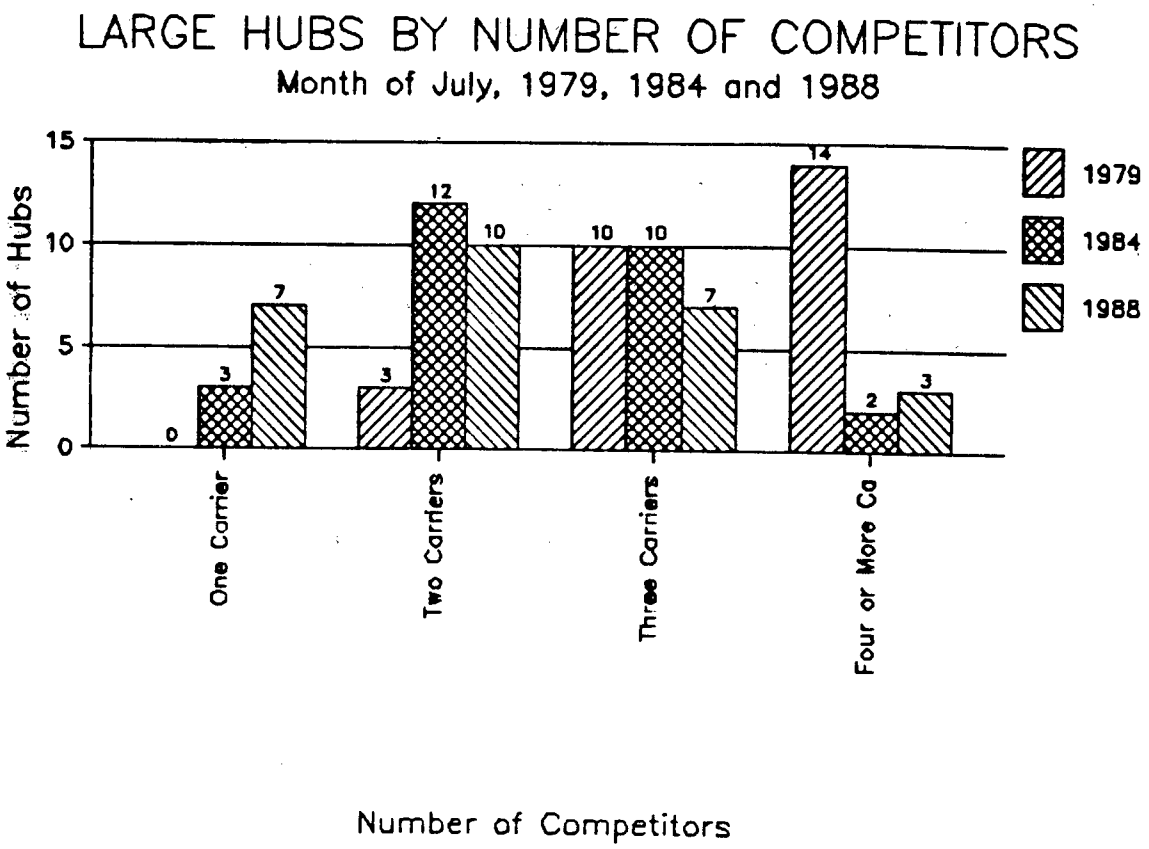
Table I-10 shows the percent of FAA hubs by competitive status. Most noteworthy is the increase of small hubs with 4 or more competitors from 15.8 percent of small hubs in 1979 to 56.1 percent in 1988.

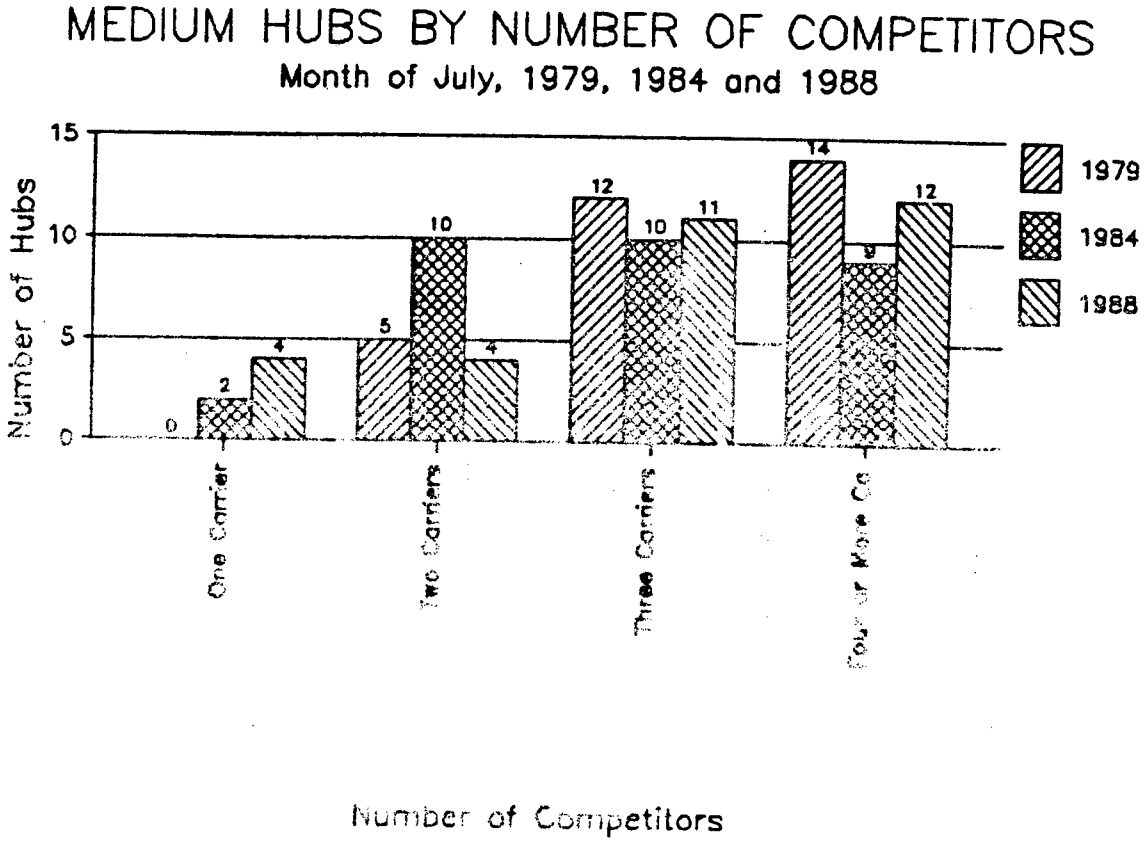
NUMBER OF POINTS SERVED, BY HUB TYPE AND NUMBER OF COMPETITORS
Month of July, 1979, 1984 and 1988

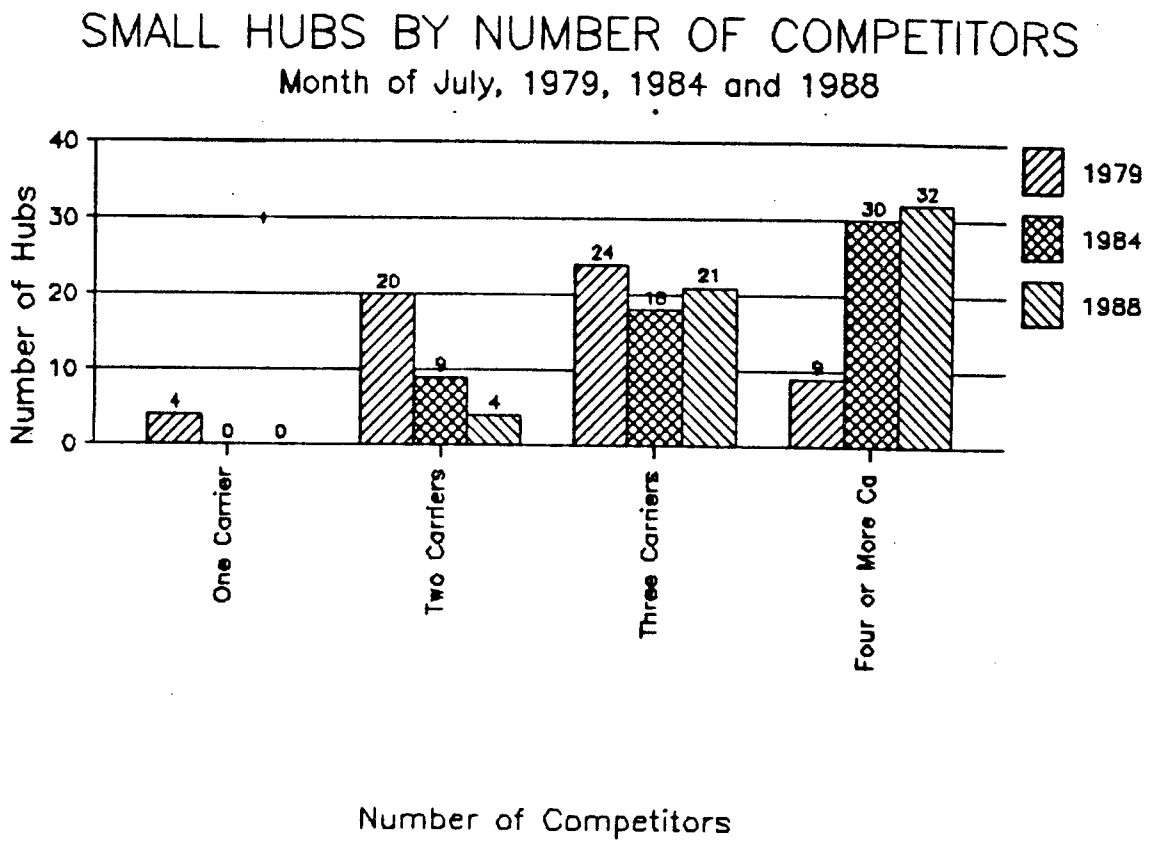
	Number of Points, July 1979					Number of Points, July 1984					Number of Points, July 1988				
		By Number of Competitors 1/					By Number of Competitors 1/					By Number of Competitors 1/			
	Total	1	2	3	4+	Total	1	2	3	4+	Total	1	2	3	4+
Large Hubs	27	0	3	10	14	27	3	12	10	2	27	7	10	7	3
Medium Hubs	31	0	5	12	14	31	2	10	10	9	31	4	4	11	12
Small Hubs	57	4	20	24	9	57	0	9	18	30	57	0	4	21	32
Total Hubs	115	4	28	46	37	115	5	31	38	41	115	11	18	39	47
Nonhubs 2/	366	215	122	29	0	366	201	96	54	15	366	192	94	57	23

1/ Competitors are those carriers providing 10 percent or more of total seats available at the point.
2/ Includes only points served in all three years. The total number of nonhubs served in each year were: 505 in 1979, 432 in 1984 and 389 in 1988.

Source: Official Airline Guide, July 1979, July 1984 and July 1988. Includes 48 contiguous states only. Hub classifications are as of 1988.


LARGE HUBS BY NUMBER OF COMPETITORS
Month of July, 1979, 1984 and 1988
Number of Hubs
15
10
5
0
0
3
7
3
12
10
10
10
7
14
2
3
One Carrier
Two Carriers
Three Carriers
Four or More Ca
1979
1984
1988
Number of Competitors


MEDIUM HUBS BY NUMBER OF COMPETITORS
Month of July, 1979, 1984 and 1988
Number of Hubs
15
10
5
0
0
2
4
5
10
4
12
10
11
14
9
12
1979
1984
1988
One Carrier
Two Carriers
Three Carriers
Four or More Co
Number of Competitors


SMALL HUBS BY NUMBER OF COMPETITORS
Month of July, 1979, 1984 and 1988
Number of Hubs
40
30
20
10
0
4
0
0
20
9
4
24
18
21
9
30
32
1979
1984
1988
One Carrier
Two Carriers
Three Carriers
Four or More Ca
Number of Competitors

PERCENTAGE BREAKDOWN OF HUBS BY NUMBER OF COMPETITIVE CARRIERS
Month of July, 1979, 1984 and 1988

Number of Competitive Carriers 1/	Percent at Large Hubs			Percent at Medium Hubs			Percent at Small Hubs		
	1979	1984	1988	1979	1980	1988	1979	1984	1988
1	0.0	11.1	25.9	0.0	6.5	12.9	7.0	0.0	0.0
2	11.1	44.4	37.0	16.1	32.3	12.9	35.1	15.8	7.0
3	37.0	37.0	25.9	38.7	32.3	35.5	42.1	31.6	36.8
4 or more	51.9	7.4	11.1	45.2	29.0	38.7	15.8	52.6	56.1
Total 2/	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Competitors are those carriers providing 10 percent or more of total seats available at the hub.
2/ Components may not add to 100.0 due to rounding.

Source: Official Airline Guide, July 1978, July 1984 and July 1988.

CHANGES IN COMPETITORS AT FAA HUBS

Table I-11

Objective: To present a detailed list of the large, medium and small hubs which had increases, no change or decreases in the number of competitors (as measured by a 10% share of seats) and to show the actual competitive carriers in the years 1979 and 1988.

Data Sources: OAG tapes. Hubs classifications based on Airport Activity Statistics.

Observations/Interpretation: Two large hubs, New York and San Francisco/Oakland had an increase in the number of competitors from 1979 to 1988. New York gained one competitor, from 3 to 4, and San Francisco/Oakland gained one, from 2 to 3.

Seven large hubs had no change in number of competitors. These were Atlanta (2), Los Angeles (4), Miami/Ft. Lauderdale (3), Orlando (3), San Diego (4), Seattle (3), and Tampa (3).

Eighteen large hubs had decreases in the number of competitors. Six hubs, Boston, Charlotte, Chicago, Denver, Kansas City and Newark, had a loss of one competitor. Six hubs, Dallas/Ft. Worth, Houston, Las Vegas Minneapolis/St. Paul, Phoenix and Washington had a loss of 2 competitors. Five hubs, Memphis, Philadelphia, Pittsburgh, St. Louis, and Salt Lake City had a loss of 4 competitors.

The results for the 31 medium hubs were somewhat more balanced. Seven had an increase in competitors, 11 had no change and 13 had a loss of competitors. Of the seven hubs which had an increase in competitors, Reno, Nevada gained 3 competitors, Columbus, Ohio and Ontario, California each gained 2 competitors, and El Paso, Ft. Myers, Norfolk and Portland, Oregon each gained one. Of the 13 medium hubs which lost competitors, Baltimore, Maryland and Nashville, Tennessee each lost 3, while Cincinnati, and Dayton each lost two. Albuquerque, Buffalo, Indianapolis, Oklahoma City, Raleigh/Durham, Sacramento, San Antonio, Syracuse and Tulsa each lost one competitor.

The results for the 57 small hubs were quite positive 37 (65 percent) had an increase in the number of competitors. Akron/Canton and Daytona Beach each gained four competitors. Five hubs gained 3 competitors, 12 gained 2 competitors and 18 gained one competitor. Fourteen small hubs showed no change in number of competitors. Six small hubs showed a loss of competitors. Corpus Christi, Texas and Louisville, Kentucky each lost 2 competitors, while Fargo, Greensboro, Palm Springs and Santa Barbara each lost one.

CHANGES IN NUMBER OF COMPETITORS AT LARGE HUBS
July 1979 - July 1988

Large Hubs With An Increase in Number of Competitors*

	1979 Carriers	1988 Carriers	Change
New York	AA,EA,TW	AA,EA,PA,TW	+1
San Francisco/Oakland	PS,UA	AA,AL,UA	+1

Large Hubs With No Change In Number of Competitors*

Atlanta	DL,EA	DL,EA	0
Los Angeles	AA,PS,UA,WA	AA,AL,DL,UA	0
Miami/Ft. Lauderdale	DL,EA,NA	DL,EA,PA	0
Orlando	DL,EA,NA	BN,DL,EA	0
San Diego	AA,PS,UA,WA	AA,AL,DL,WN	0
Seattle	NW,UA,WA	AS,NW,UA	0
Tampa	DL,EA,NA	DL,EA,PI	0

Large Hubs With A Decrease In Number of Competitors*

Boston	AA,DL,EA,TW	DL,EA,NW	-1
Charlotte	EA,PI	PI	-1
Chicago	AA,TW,UA	AA,UA	-1
Dallas/Ft. Worth	AA,BN,DL,WN	AA,DL	-2
Denver	CO,FL,UA	CO,UA	-1
Detroit	AA,DL,NC,NW,UA	NW	-4
Houston	CO,NA,TI,WN	CO,WN	-2
Kansas City	BN,TW,UA	BN,EA	-1
Las Vegas	PS,RW,TW,UA,WA	AL,DL,HP	-2
Memphis	AA,BN,DL,SO	NW	-3
Minneapolis/St. Paul	NC,NW,WA	NW	-2
Newark	AA,EA,UA	CO,PI	-1
Philadelphia	AL,DL,EA,TW,UA	AL,EA	-3
Phoenix	AA,RW,TW,WA	HP,WN	-2
Pittsburgh	AL,EA,TW,UA	AL	-3
St. Louis	AA,EA,OZ,TW	TW	-3
Salt Lake City	FL,RW,UA,WA	DL	-3
Washington	AA,EA,TW,UA	EA,UA	-2

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FL = Frontier, HP = America West, NA = National, NC = North Central, NW = Northwest, OZ = Ozark, PA = Pan American, PI = Piedmont, PS = Pacific Southwest, RW = Airwest, SO = Southern, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WN = Southwest.

Source: Official Airline Guide, July 1979 and July 1988.

CHANGES IN NUMBER OF COMPETITORS AT MEDIUM HUBS
July 1979 - July 1988

Medium Hubs With An Increase In Number of Competitors*

	1979 Carriers	1988 Carriers	Change
Columbus, OH	DL,TW	AA,AL,DL,TW	+2
El Paso, TX	AA,CO	AA,CO,WN	+1
Ft. Myers, FL	EA,FE,NA	AA,DL,EA,TW	+1
Norfolk, VA	AL,PI,UA	AA,AL,DL,PI	+1
Ontario,CA	CO,OC,PS	AA,AS,DL,HP,UA	+2
Portland, OR	CO,UA,WA	AA,AS,DL,UA	+1
Reno, NV	UA,WA	AA,AL,DL,HP,UA	+3

Medium Hubs With No Change In Number of Competitors*

Austin, TX	BN,CO,TI,WN	AA,CO,DL,WN	0
Cleveland, OH	AA,UA	AL,CO	0
Hartford, CT	AL,DL,EA,UA	AA,AL,DL,EA	0
Jacksonville, FL	DL,EA,NA,QH	AA,DL,EA,PI	0
Milwaukee, WI	NC,NW	AA,NW	0
New Orleans, LA	DL,EA,NA	CO,DL,WN	0
Omaha, NE	BN,EA,FL,UA	AA,HP,NW,UA	0
Rochester, NY	AA,AL,UA	AA,AL,PI	0
San Jose, CA	OC,PS,UA	AA,AL,AS	0
Tucson, AZ	AA,CO,FL,RW	AA,AL,CO,HP	0
W. Palm Beach, FL	DL,EA,NA	CO,DL,EA	0

Medium Hubs With A Decrease In Number of Competitors*

Albuquerque, NM	CO,FL,TI,TW	AA,DL,WN	-1
Baltimore, MD	AL,DL,EA,UA	PI	-3
Buffalo, NY	AA,AL,EA,UA	AA,AL,CO	-1
Cincinnati, OH	AA,DL,TW	DL	-2
Dayton, OH	AL,DL,TW	PI	-2
Indianapolis, IN	AA,AL,DL,TW	AL,CO,DL	-1
Nashville, TN	AA,AL,BN,SO	AA	-3
Oklahoma City, OK	AA,BN,FL,TW	AA,DL,WN	-1
Raleigh/Durham, NC	DL,EA,PI	AA,PI	-1
Sacramento, CA	OC,PS,UA,WA	AA,AL,UA	-1
San Antonio, TX	AA,BN,CO,EA,WN	AA,CO,DL,WN	-1
Syracuse, NY	AA,AL,EA	AA,PI	-1
Tulsa, OK	AA,BN,CO,TW	AA,DL,WN	-1

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FE = Air South, FL = Frontier, HP = America West, NA = National, NC = North Central, NW = Northwest, OC = Air California, OZ = Ozark, PA = Pan American, PI = Piedmont, PS = Pacific Southwest, QH = Air Florida, RW = Airwest, SO = Southern, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WN = Southwest

Source: Official Airline Guide, July 1979 and July 1988.

CHANGES IN NUMBER OF COMPETITORS AT SMALL HUBS
July 1979 - July 1988

Small Hubs With An Increase In Number of Competitors*

	1979 Carriers	1988 Carriers	Change
Akron/Canton, OH	UA	AA,AL,EA,PI,UA	+4
Albany, NY	AA,AL,EA	AA,AL,PI,UA	+1
Allentown, PA	AL,EA,UA	AL,EA,NW,PI,UA	+2
Billings, MT	FL,NW,WA	CO,DL,NW,UA	+1
Brownsville/ Harlingen, TX	BN,WN	AA,CO,WN	+1
Cedar Rapids, IA	OZ,UA	AA,HP,NW,TW,UA	+3
Charleston, SC	DL,EA,PI	AA,DL,EA,PI,UA	+2
Charleston, WV	AL,PI,UA	AL,DL,PI,UA	+1
Chattanooga, TN	DL,SO	AA,DL,NW,PI	+2
Colorado Springs, CO	BN,CO,FL,JC	AA,CO,DL,HP,TW,UA	+2
Columbia, SC	DL,EA	AA,DL,EA,PI	+2
Daytona Beach, FL	EA	AA,CO,DL,EA,PI	+4
Des Moines, IA	BN,OZ,UA	AA,HP,NW,TW,UA	+2
Eugene, OR	FL,RW,UA	AA,AL,AS,UA	+1
Ft. Wayne, IN	DL,UA,ZW	AA,DL,PI,UA	+1
Fresno, CA	OC,PS,UA	AL,CO,DL,UA	+1
Grand Rapids, MI	NC,UA	AA,NW,PI,UA	+2
Greenville/ Spartanburg, SC	EA,SO	DL,EA,PI	+1
Harrisburg, PA	AL,TW	AA,AL,UA	+1
Huntsville, AL	SO,UA	AA,DL,EA,NW,UA	+3
Long Island/ McArthur, NY	AA,AL,PM	AA,AL,EA,PI	+1
Knoxville, TN	DL,UA	DL,NW,UA	+1
Lexington, KY	DL,EA,PI	AL,DL,PI,TW,UA	+2
Lincoln, NE	FL,UA	HP,TW,UA	+1
Melbourne, FL	EA,NA	AA,DL,EA	+1
Mobile, AL	EA,NA,SO	AA,DL,EA,NW	+1
Portland, ME	DL,QO	AA,CO,DL,EA,UA	+3
Providence, RI	AL,EA	AA,AL,EA	+1
Richmond, VA	EA,PI	AA,AL,DL,PI	+2
Roanoke, VA	PI	DL,PI,UA	+2
Sarasota/Bradenton, FL	EA,NA	AA,CO,DL,EA,TW	+3
Savannah, GA	DL,EA	AA,DL,EA,PI,UA	+3
Shreveport, LA	DL	AA,DL,NW	+2
Sioux Falls, SD	NC,OZ,WA	DL,NW,TW,UA	+1
South Bend, IN	NC,UA	AA,PI,UA	+1
Spokane, WA	NW,RW,UA	AA,DL,NW,UA	+1
Toledo, OH	DL,UA	AA,DL,PI,UA	+2

Small Hubs With No Change In Number of Competitors*

Amarillo, TX	BN,TI,TW,WN	AA,CO,DL,WN	0
Baton Rouge, LA	DL,SO,TI	AA,CO,DL	0
Birmingham, AL	DL,EA,SO	AA,DL,WN	0
Boise, ID	GG,RW,UA	AS,DL,UA	0
Burlington, VT	AL,DL,NE,NO	AL,CO,PI,UA	0

Small Hubs With No Change In Number of Competitors* (continued)

Jackson, MS	DL,SO	AA,DL	0
Little Rock, AR	AA,DL,FL	AA,DL,WN	0
Lubbock, TX	BN,CO,TI,WN	AA,DL,HP,WN	0
Madison, WI	NC,NW,OZ	AA,NW,UA	0
Midland/Odessa, TX	CO,TI,WN	AA,HP,WN	0
Moline,IL/Davenport,IA	OZ,UA	TW,UA	0
Pensacola, FL	EA,NA,QH	DL,EA,PI	0
Tallahassee, FL	EA,QH,SO	DL,EA,PI	0
Wichita, KS	BN,CO,FL,TW	AA,CO,TW,UA	0

Small Hubs With A Decrease In Number of Competitors*

Corpus Christi, TX	BN,EA,TB,TI,WN	AA,CO,WN	-2
Fargo, ND	FL,NC,NW	NW,UA	-1
Greensboro, NC	DL,EA,PI	AA,PI	-1
Palm Springs, CA	AA,OC,OO,RW TW,WA	AA,AL,DL,TW,UA	-1
Louisville, KY	AA,AL,DL,EA,PI	AL,DL,PI	-2
Santa Barbara, CA	GW,ID,UA,WI	AA,DL,UA	-1

* Competitors are carriers providing 10% or more of available seats.

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, BN = Braniff, CO = Continental, DL = Delta, EA = Eastern, FL = Frontier, GG = North American, GW = Golden West, HP = America West, ID = Apollo, JC = Rocky Mountain, NA = National, NC = North Central, NW = Northwest, NE = Air New England, OC = Air California, OO = Sun Aire, PA = Pan American, PI = Piedmont, PM = Pilgrim, PS = Pacific Southwest, QH = Air Florida, QO = Bar Harbor, RW = Airwest, SO = Southern, TB = Tejas, TI = Texas Int'l, TW = Trans World, UA = United, WA = Western, WI = Swift, WN = Southwest.

Source: Official Airline Guide, July 1979 and July 1988.

DISTRIBUTION OF POINT CONCENTRATION BY DOMINANT CARRIER SHARE

Table I-12

Objective: To analyze point concentration by comparing hub enplanements distributed by dominant carrier share. Changes over time indicate how concentration is increasing or decreasing.

Data Sources: DOT Form 41, Schedule T-3.

Observations/Interpretation:

These data show total enplanements at points distributed on the basis of the dominant carrier's share. For example, for calendar year 1988, Piedmont accounted for 90.9 percent of enplanements at Charlotte, so all enplanements at Charlotte are included in the 90 percent or more column of Page 1. Page 2 is a percentage distribution of these data and pages 3 and 4 show cumulative distributions starting with most concentrated (page 3) and least concentrated (page 4) points. Pages 5 and 6 show the distribution of the dominant carrier enplanements.

Concentration is quite different depending on hub size. It has increased considerably at most large hubs and many medium hubs. Concentration has occurred, in part, as a result of added new service to small hubs. As a consequence, concentration at small hubs has declined markedly. As the distribution on page 4 shows, at hubs where a single carrier accounted for less than 50 percent of the enplanements, from 1979 to 1988, the percent of total enplanements declined from 86.9 percent to 66.1 percent at large hubs, while at small hubs total enplanements increased from 47.0 to 77.9 percent.

Point Concentration
Distribution of Total Enplanements
Based on Dominant Carrier Share 1/

Hub Size and Year	Number of Enplanements (000) 90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	40 to 49.9%	30 to 39.9%	Under 30%	Total
Calendar 1988:									
Large Hubs	6,619	27,161	8,088	—	65,238	64,449	41,774	102,865	316,194
Medium Hubs	—	—	5,678	6,756	7,784	10,502	14,590	25,754	71,065
Small Hubs	—	240	188	1,785	4,266	7,679	9,416	5,750	29,325
Non-Hubs	3,049	623	1,349	1,127	1,720	883	740	—	9,490
Total	9,668	28,024	15,303	9,668	79,008	83,513	66,520	134,369	426,074
Calendar 1984:									
Large Hubs	—	—	13,920	—	45,244	62,707	12,221	108,612	242,704
Medium Hubs	—	—	—	2,567	3,367	7,500	12,119	24,917	50,471
Small Hubs	205	467	1,259	1,709	4,548	6,788	4,850	2,637	22,461
Non-Hubs	3,329	922	929	332	852	1,097	729	—	8,190
Total	3,534	1,389	16,108	4,608	54,011	78,092	29,919	136,166	323,826
Calendar 1979:									
Large Hubs	—	—	1,556	—	26,034	28,420	25,890	128,873	210,773
Medium Hubs	—	—	382	906	5,304	12,823	15,851	10,179	45,445
Small Hubs	2,488	—	2,575	2,291	5,544	6,949	3,565	904	24,315
Non-Hubs	5,865	964	1,132	1,399	3,291	808	270	105	13,834
Total	8,353	964	5,645	4,596	40,173	49,000	45,576	140,061	294,367

1/ Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Percentage Distribution of Total Enplanements
Based on Dominant Carrier Share 1/

Hub Size and Year	Percent Distribution of Enplanements								Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	40 to 49.9%	30 to 39.9%	Under 30%	
Calendar 1988:									
Large Hubs	2.1%	8.6%	2.6%	—	20.4%	20.6%	13.2%	32.5%	100.00%
Medium Hubs	—	—	8.0	9.5%	11.0	14.8	20.5	36.2	100.00
Small Hubs	—	0.8	0.6	6.1	14,5	26.2	32.1	19.6	100.00
Non-Hubs	32.1	6.6	14.2	11.9	18.1	9.3	7.8	0.0	100.00
Total	2.3	6.6	3.6	2.3	18.5	19.6	15.6	31.5	100.00
Calendar 1984:									
Large Hubs	—	—	5.7	—	18.6	25.8	5.0	44.8	100.00
Medium Hubs	—	—	—	5.1	6.7	14.9	24.0	49.4	100.00
Small Hubs	0.9	2.1	5.6	7.6	20.2	30.2	21.6	11.7	100.00
Non-Hubs	40.6	11.3	11.3	4.1	10.4	13.4	8.9	—	100.00
Total	1.1	0.4	5.0	1.4	16.7	24.1	9.2	42.0	100.00
Calendar 1979:									
Large Hubs	—	—	0.7	—	12.4	13.5	12.3	61.1	100.00
Medium Hubs	—	—	0.8	2.0	11.7	28.2	34.9	22.4	100.00
Small Hubs	10.2	—	10.6	9.4	22.8	28.6	14.7	3.7	100.00
Non-Hubs	42.4	7.0	8.2	10.1	23.8	5.8	2.0	0.8	100.00
Total	2.8	0.3	1.9	1.6	13.6	16.6	15.5	47.6	100.00

1/ Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Cumulative Percent Distribution of Total Enplanements 1/
(Starting with most concentrated points)

Hub Size and Year	90% or More	80% or More	70% or More	60% or More	50% or More	40% or More	30% or More
Large Hubs:							
1988	2.1%	10.7%	13.3%	13.3%	33.9%	54.3%	67.5%
1984	—	—	5.7	5.7	24.3	50.1	55.1
1979	—	—	0.7	0.7	13.1	26.6	38.9
Medium Hubs:							
1988	—	—	8.0	17.5	28.5	43.3	63.8
1984	—	—	—	5.1	11.8	26.7	50.7
1979	—	—	0.8	2.8	14.5	42.7	77.6
Small Hubs:							
1988	—	0.8	1.4	7.5	22.0	48.2	80.3
1984	0.9	3.0	8.6	16.2	36.4	66.6	88.2
1979	10.2	10.2	0.7	30.2	53.0	81.6	96.3
Non Hubs:							
1988	32.1	38.7	52.9	64.8	82.9	92.2	100.0
1984	40.6	51.9	63.2	67.3	77.7	91.1	100.0
1979	42.4	49.4	57.6	67.7	91.5	97.3	99.3
Total:							
1988	2.3	8.9	12.5	14.8	33.3	52.9	68.5
1984	1.1	1.5	6.5	7.9	24.6	48.7	57.9
1979	2.8	3.1	5.0	6.6	20.2	36.8	52.3

1/ Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Cumulative Percent Distribution of Total Enplanements 1/
(Starting with least concentrated points)

Hub Size and Year	Less Than 30%	40%	50%	60%	70%	80%	90%
Large Hubs:							
1988	32.5%	45.7%	66.1%	86.7%	86.7%	89.3%	97.9%
1984	44.8	49.8	75.6	94.2	94.2	100.0	
1979	61.1	73.4	86.9	99.3	99.3	100.0	
Medium Hubs:							
1988	36.2	56.7	71.5	82.5	92.0	100.0	
1984	49.4	73.4	88.3	95.0	100.0		
1979	22.4	57.3	85.5	97.2	99.2	100.0	
Small Hubs:							
1988	19.6	51.7	77.9	92.4	98.5	99.1	100.0
1984	11.7	33.3	63.5	83.7	91.3	96.9	99.0
1979	3.7	18.4	47.0	69.8	79.2	89.8	89.8
Non Hubs:							
1988	0.0	7.8	17.1	35.5	47.4	61.6	68.2
1984	0.0	8.9	22.3	32.7	36.8	48.1	59.4
1979	0.8	2.8	8.6	32.4	42.5	50.7	57.7
Total:							
1988	31.5	47.1	66.7	85.2	87.5	91.1	97.7
1984	42.0	51.2	75.3	92.0	93.4	98.4	98.8
1979	47.6	63.1	79.7	93.3	94.9	96.8	97.1

1/ Although distributed based on dominant carrier share, these data reflect total enplanements for all carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Distribution of Enplanements
Based on Dominant Carrier Share

Hub Size and Year	Number of Enplanements for Dominant Carriers (000)								Other Carrier's Enplanements 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	40 to 49.9%	30 to 39.9%	Under 30%		
Calendar 1988:										
Large Hubs	6,018	22,589	6,337	—	36,930	28,509	14,537	21,531	179,743	316,194
Medium Hubs	—	—	4,358	4,436	4,358	4,519	4,876	6,333	42,185	71,065
Small Hubs	—	212	139	1,109	2,328	3,482	3,254	1,429	17,371	29,325
Non-Hubs	3,012	541	1,024	714	950	392	266	0	2,592	9,490
Total	9,030	23,342	11,858	6,259	44,566	36,902	22,933	29,293	241,891	426,074
Calendar 1984:										
Large Hubs	—	—	10,401	—	23,769	27,828	3,946	23,796	152,964	242,704
Medium Hubs	—	—	—	1,567	1,836	3,280	4,199	6,195	33,394	50,471
Small Hubs	199	394	941	1,074	2,468	3,114	1,711	627	11,932	22,461
Non-Hubs	3,288	780	707	211	469	502	272	—	1,962	8,190
Total	3,487	1,174	12,049	2,852	28,542	34,724	10,128	30,618	200,252	323,826
Calendar 1979:										
Large Hubs	—	—	1,138	—	13,110	11,864	8,720	31,359	144,582	210,773
Medium Hubs	—	—	290	557	2,929	5,686	5,807	2,603	27,573	45,445
Small Hubs	2,366	—	1,951	1,443	3,084	3,226	1,264	264	10,716	24,315
Non-Hubs	5,808	834	846	900	1,760	377	89	30	3,191	13,834
Total	8,174	834	4,225	2,900	20,883	21,153	15,880	34,256	186,062	294,367

1/ Total enplanements of the non-dominant carriers.

SOURCE: DOT Form 41, Schedule T-3.

Point Concentration
Percentage Distribution of Enplanements
Based on Dominant Carrier Share

Hub Size and Year	Percent Distribution of Enplanements for Dominant Carrier Share								Other Carrier's Share 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	40 to 49.9%	30 to 39.9%	Under 30%		
Calendar 1988:										
Large Hubs	1.9%	7.1%	2.0%	—	11.7%	9.0%	4.6%	6.8%	56.8%	100.0%
Medium Hubs	—	—	6.1	6.2	6.1	6.4	6.9	8.9	59.4	100.0
Small Hubs	—	0.7	0.5	3.8	7.9	11.9	11.1	4.9	59.2	100.0
Non-Hubs	31.7	5.7	10.8	7.5	10.0	4.1	2.8	—	27.3	100.0
Total	2.1	5.5	2.8	1.5	10.5	8.7	5.4	6.9	56.8	100.0
Calendar 1984:										
Large Hubs	—	—	4.3	—	9.8	11.5	1.6	9.8	63.0	100.0
Medium Hubs	—	—	—	3.1	3.6	6.5	8.3	12.3	66.2	100.0
Small Hubs	0.9	1.8	4.2	4.6	11.0	13.9	7.6	2.8	53.1	100.0
Non-Hubs	40.1	9.5	8.6	2.6	5.7	6.1	3.3	—	24.0	100.0
Total	1.1	0.4	3.7	0.9	8.8	10.7	3.1	9.5	61.8	100.0
Calendar 1979:										
Large Hubs	—	—	0.5	—	6.2	5.6	4.1	14.9	68.6	100.0
Medium Hubs	—	—	0.6	1.2	6.4	12.5	12.8	5.7	60.7	100.0
Small Hubs	9.7	—	8.0	5.9	12.7	13.3	5.2	1.1	44.1	100.0
Non-Hubs	42.0	6.0	6.1	6.5	12.7	2.7	0.6	0.2	23.1	100.0
Total	2.8	0.3	1.4	1.0	7.1	7.2	5.4	11.6	63.2	100.0

1/ Total enplanements of the non-dominant carriers.

SOURCE: DOT Form 41, Schedule T-3.

CHANGES IN ENPLANEMENTS AT DOMESTIC POINTS

Table I-13 and I-14

Objective: To show the distribution of domestic airports by change in domestic enplanements for the 1979-1988 and 1984-1988 periods.

Data Sources: DOT Form 41, Schedule T-3 (Domestic) for large certificated carriers and DOT Form 298-C for commuter carriers. Data are limited to airports in the 48 contiguous states.

Observations/Interpretation: For the 1979-1988 comparison, 521 airports were included. 249 airports (48 percent) had a decrease in enplanements. (See Appendix for a detailed listing of enplanements for all airports.) 272 airports (52 percent) had an increase in enplanements, 139 of which exceeded 50 percent. The aggregate increase in enplanements at all airports was 50.0 percent from 1979 to 1988.

For the 1984-1988 comparison, 314 airports (61 percent) had an increase in enplanements, including 120 which had an increase exceeding 50 percent. 202 airports (39 percent) had a decrease in enplanements. The aggregate increase in enplanements at all airports was 31.4 percent from 1984 to 1988.

From 1979 to 1984 total enplanements grew 14.3 percent, or at a compound annual rate of 2.7 percent. From 1984 to 1988 total enplanements grew 31.4 percent for a compound annual rate of 7.1 percent.

Appendices A, B, C and D list the airports with reported traffic in the years 1979, 1984, and 1988.

CHANGES IN ENPLANEMENTS AT DOMESTIC AIRPORTS 1979-1988

Airports With An Increase in Enplanements, 1979-1988

Percent Increase	Number
Less than 10.0%	36
10.0 - 49.9%	97
50.0% and over	139
Total	272

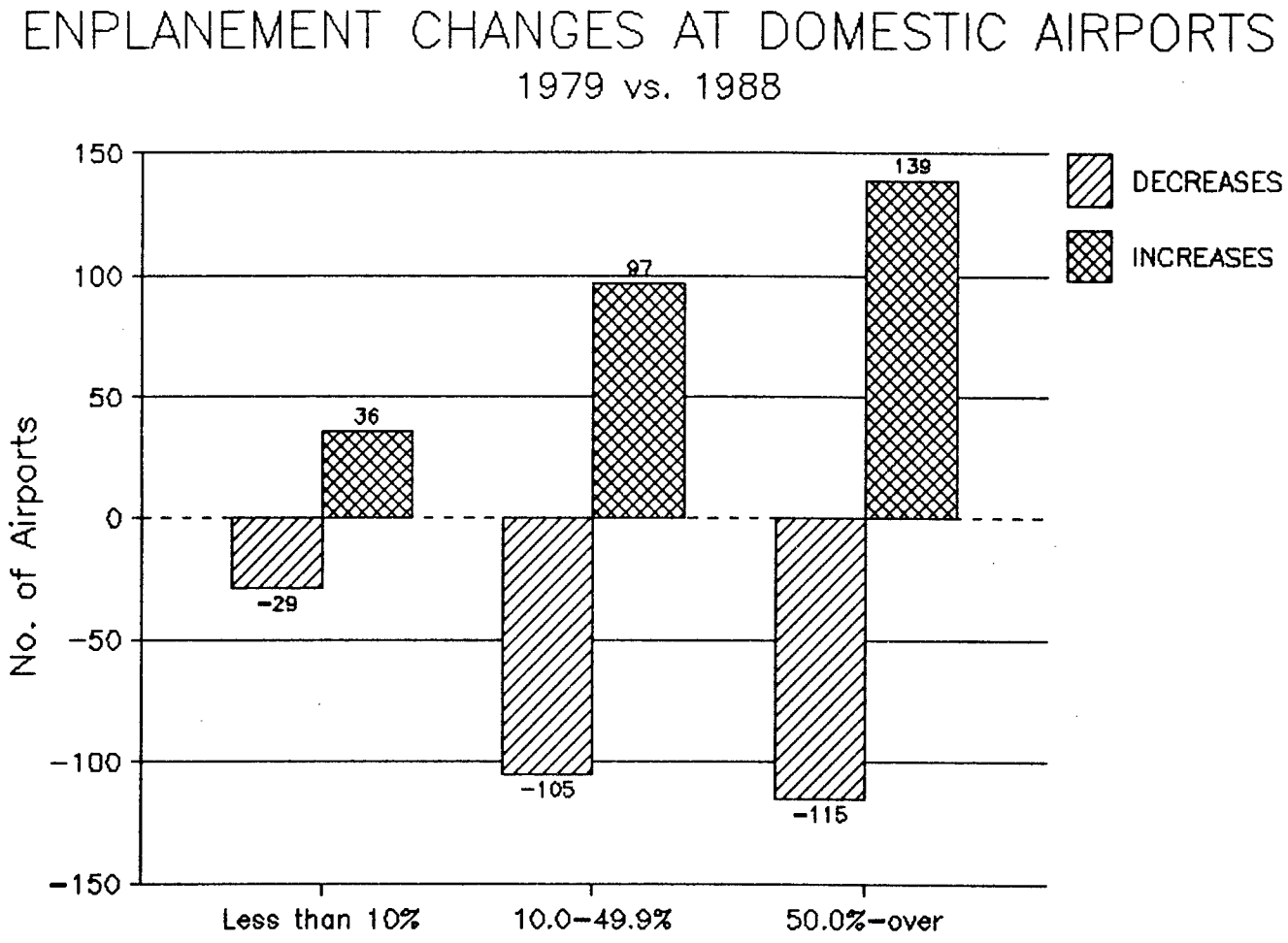
Airports With A Decrease in Enplanements, 1979-1988

Percent Decrease	Number
Less than 10.0%	29
10.0 - 49.9%	105
50.0 - 99.9%	115
Total	249

Airports Served in 1988 but not in 1979: 48
Airports Served in 1979 but not in 1988: 193
Total Airports Served in 1979 and/or 1988: 762

Note: Includes only airports served in both 1979 and 1988.

Source: DOT Form 41, Schedule T-3 (Domestic) and DOT Form 298-C. Data are limited to airports in the 48 contiguous states.


ENPLANEMENT CHANGES AT DOMESTIC AIRPORTS
1979 vs. 1988
No. of Airports
150
100
50
0
-50
-100
-150
36
-29
97
-105
139
-115
Less than 10%
10.0-49.9%
50.0%-over
DECREASES
INCREASES

CHANGES IN ENPLANEMENTS AT DOMESTIC AIRPORTS 1984-1988

Airports With An Increase in Enplanements, 1984-1988

Percent Increase	Number
Less than 10.0%	38
10.0 - 49.9%	156
50.0% and over	120
Total	314

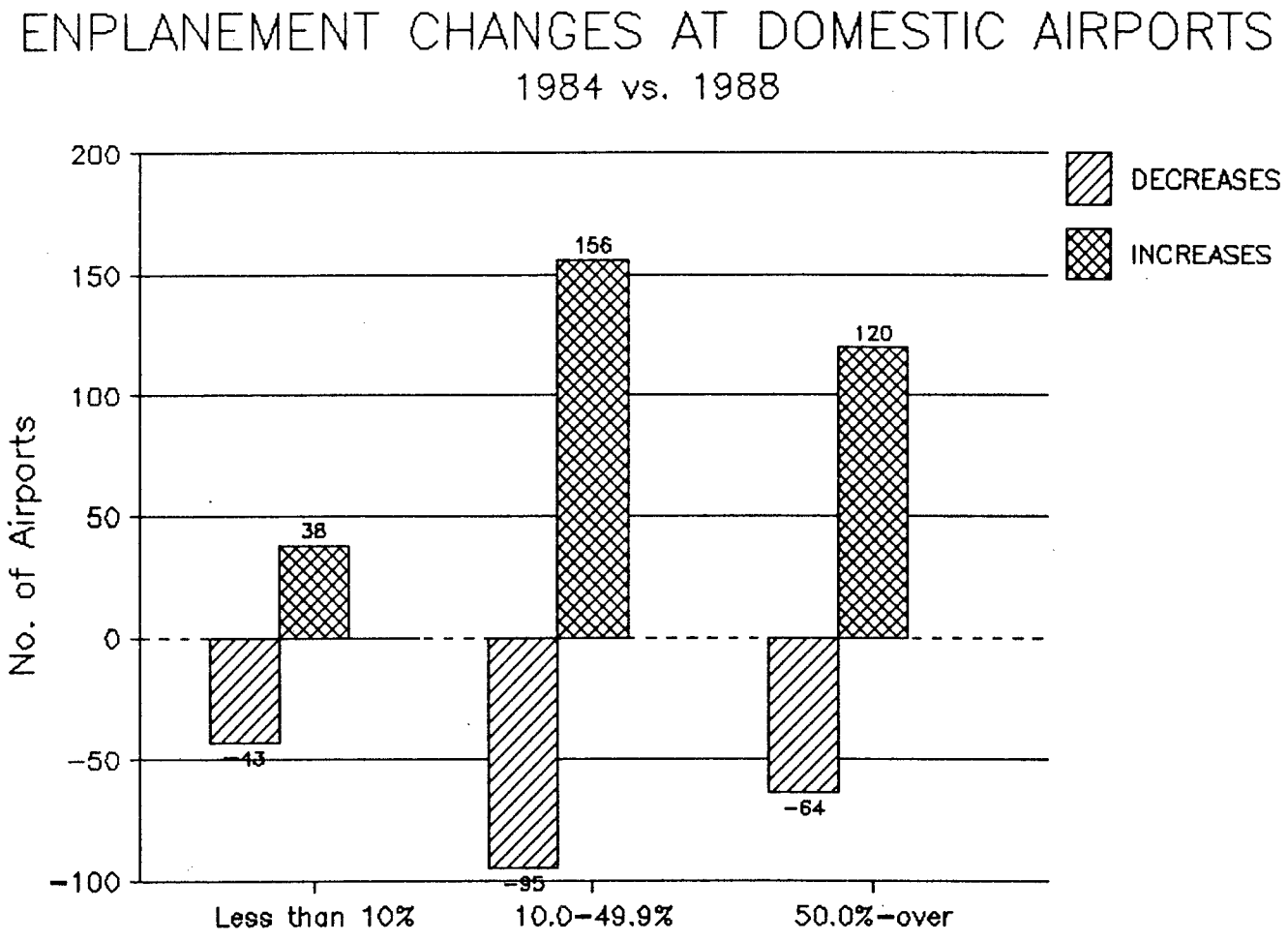
Airports With A Decrease in Enplanements, 1984-1988

Percent Decrease	Number
Less than 10.0%	43
10.0 - 49.9%	95
50.0 - 99.9%	64
Total	202

Airports Served in 1988 but not in 1984: 53
Airports Served in 1984 but not in 1988: 77
Total Airports Served in 1979 and/or 1988: 646

Note: Includes only airports served in both 1984 and 1988.

Source: DOT Form 41, Schedule T-3 (Domestic) and DOT Form 298-C. Data are limited to airports in the 48 contiguous states.


ENPLANEMENT CHANGES AT DOMESTIC AIRPORTS
1984 vs. 1988
DECREASES
INCREASES
No. of Airports
200
150
100
50
0
-50
-100
38
-43
156
-95
120
-64
Less than 10%
10.0-49.9%
50.0%-over

CHANGES IN SERVICE FREQUENCY AT DOMESTIC POINTS, 1979-1988

Tables I-15 and I-16

Objective: To show the distribution of points by percent change in frequency between July 1979 and July 1988. The distribution has a breakdown of 40 seats and under and over 40 seats to identify how larger and smaller points were affected.

Data Sources: OAG tapes.

Observations/Interpretation: A total of 497 points are included in the July 1979/July 1988 comparison. Of this total 227, or 45.7 percent, had decreases in weekly frequency for this period. 181 of these were small points served by aircraft averaging 40 seats or under and 46 averaged more than 40 seats. A total of 270 points, or 54.3 percent, had increases in weekly frequency. The 270 were almost evenly divided between those served with aircraft with 40 or fewer seats (133 points) and more than 40 seats (137 points). These data indicate that most of the points which have had reductions in weekly frequency were points served by smaller aircraft, by a factor of almost 4 to 1. Increases in frequency were split equally between smaller and larger points. Almost 75 percent of the large aircraft points had frequency improvements (137 out of 183).

CHANGES IN FREQUENCY AT DOMESTIC POINTS
July 1979 - July 1988

Points With An Increase in Frequency, July 1979 - July 1988

Percent Increase	Number	40 Seats and Under	Over 40 Seats
Less than 10%*	38	20	18
10.0 - 50.0%	101	42	59
50.1 - 100.0%	79	36	43
100.1% & over	52	35	17
Total	270	133	137

Points With a Decrease in Frequency, July 1979 - July 1988

Percent Decrease	Number	40 Seats and Under	Over 40 Seats
Less than 10%	27	18	9
10.0 - 50.0%	140	110	30
50.1 - 99.9%	60	53	7
Total	227	181	46
All Points	497	314	183

* Includes points with no change in frequency. Classification of points by average seating capacity is based on July 1988. Includes only points served in both years.

Source: Official Airline Guide, July 1979 and July 1988.

PERCENT DISTRIBUTION OF DOMESTIC POINTS
BY CHANGE IN FREQUENCY
July 1979 - July 1988

	Percent of Total Points		
	Number	40 Seats and under	Over 40 Seats
Increase of --			
Less than 10%	7.6	6.4	9.8
10.0 - 50.0%	20.3	13.4	32.2
50.1 - 100.0%	15.9	11.5	23.5
100.1% & over	10.5	11.1	9.3
Total	54.3	42.4	74.9
Decrease of --			
Less than 10%	5.4	5.7	4.9
10.0 - 50.0%	28.2	35.0	16.4
50.1% - 99.9%	12.1	16.9	3.8
Total	45.7	57.6	25.1
All Points	100.0	100.0	100.0

Source: Table I-15.

CHANGES IN SERVICE FREQUENCY AT DOMESTIC POINTS, 1984-1988

Table I-17 and I-18

Objective: To show the distribution of points by percent change in frequency between July 1984 and July 1988. The distribution has a breakdown of 40 seats and under and over 40 seats to identify how larger and smaller points were affected.

Data Sources: OAG tapes.

Observations/Interpretation: A total of 494 points are included in the July 1984/July 1988 comparison. Of this total, 233, or 47.1 percent, had decreases in weekly frequency for this period. 159 of these were served by aircraft averaging 40 seats or under and 74 averaged more than 40 seats. A total of 261 points, or 52.8 percent, had increases in weekly frequency. Of the 261 points, 152 were served by aircraft with 40 seats and under and 109 were served by aircraft with more than 40 seats. As in the 1979-1988 comparison, most points with decreases in frequency were points served by small aircraft.

CHANGES IN FREQUENCY AT DOMESTIC POINTS
July 1984 - July 1988

Points With An Increase in Frequency, July 1984 - July 1988

Percent Increase	Number	40 Seats and Under	Over 40 Seats
Less than 10%*	58	40	18
10.0 - 50.0%	128	65	63
50.1 - 100.0%	54	34	20
100.1% & over	21	13	8
Total	261	152	109

Points With a Decrease in Frequency, July 1984 - July 1988

Percent Decrease	Number	40 Seats and Under	Over 40 Seats
Less than 10%	39	16	23
10.0 - 50.0%	152	107	45
50.1% - 99.9%	42	36	6
Total	233	159	74
All Points	494	311	183

* Includes points with no change in frequency. Classification of points by average seating capacity is based on July 1988. Includes only points served in both years.

Source: Official Airline Guide, July 1984 and July 1988.

PERCENT DISTRIBUTION OF DOMESTIC POINTS
BY CHANGE IN FREQUENCY
July 1984 - July 1988

	Percent of Total Points		
	Number	40 Seats and under	Over 40 Seats
Increase of --			
Less than 10%	11.7	12.9	9.8
10.0 - 50.0%	25.9	20.9	34.4
50.1 - 100.0%	10.9	10.9	10.9
100.1% & over	4.3	4.2	4.4
Total	52.8	48.9	59.6
Decrease of --			
Less than 10%	7.9	5.1	12.6
10.0 - 50.0%	30.8	34.4	24.6
50.1% - 99.9%	8.5	11.6	3.3
Total	47.2	51.1	40.4
All Points	100.0	100.0	100.0

Source: Table I-17.

COMPARISON OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-19

Objective: To trace all single-plane markets of July 1979 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observation/Interpretation: Of the 7,748 single-plane markets served in July 1979 and/or July 1988, 2,434, or 31.4 percent, were not served in 1988, 1,515 (19.6 percent) were served by the same number of carriers in both periods; 547 (7.1 percent) were served by fewer carriers in 1988; and 3,252 (42.0 percent) were served by more carriers in 1988 than in 1979.

If only the 5,400 single-plane markets served in July 1979 are considered, the breakdown is: 2,434 (45.1 percent) not served in 1988; 1,515 (28.1 percent) served by the same number of carriers: 547(10.1 percent) served by fewer carriers; and 904 (16.7 percent) served by more carriers in 1988.

The table also summarizes the data for markets which had competitive service in 1979, i.e., were served by two or more carriers. There were 1,458 such markets and the 1988 breakdown for them is as follows: 178 (12.2 percent) not served in 1988; 371 (25.4 percent) served by the same number of carriers in both years; 547 (37.5 percent) served by fewer carriers; and 362(24.8 percent) served by more carriers.

This table demonstrates the dramatic change in the domestic route structures. For example, of the 3,942 single-carrier markets which received service under a linear route structure in July 1979, 2,256, or 57 percent, were not receiving service nine years later under a hub and spoke route structure. But in July 1988, there were 2,348 "new" markets (mainly spoke to hub segments) which were receiving service and which were not being served in July 1979. Most of the markets in these groups are commuter carrier markets at the low end of the spectrum in terms of passengers.

Virtually all of the 538 markets which were served by three or more carriers in 1979 continued to receive service in 1988, although about half (49.8 percent) were served by fewer carriers in 1988.

SERVICE CHANGES IN MARKETS SERVED IN JULY 1979
July 1979 - July 1988

Number of Carrier Serving, July 1979	Total Markets	Number of Markets, July 1988 -- Not Served	Same No. of Carriers	Fewer Carriers	More Carriers	Percent of Total Markets Not Served	Same No. of Carriers	Fewer Carriers	More Carriers
0	2,348	--	--	--	2,348	--	--	--	100.0
1	3,942	2,256	1,144	--	542	57.2	29.0	--	13.7
2	920	157	258	279	226	17.1	28.0	30.3	24.6
3	322	18	75	151	78	5.6	23.3	46.9	24.2
4	116	3	22	57	34	2.6	19.0	49.1	29.3
5	52	0	10	28	14	0.0	19.2	53.8	26.9
6	22	0	3	12	7	0.0	13.6	54.5	31.8
7	13	0	2	10	1	0.0	15.4	76.9	7.7
8 or more	13	0	1	10	2	0.0	7.7	76.9	15.4
Total, markets served in July 1979 and/or July 1988	7,748	2,434	1,515	547	3,252	31.4	19.6	7.1	42.0
Total, markets served in July 1979	5,400	2,434	1,515	547	904	45.1	28.1	10.1	16.7
Total, markets served by 2 or more carriers in July 1979	1,458	178	371	547	362	12.2	25.4	37.5	24.8

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-20

Objective: To trace the competitive status of single-plane markets served in July 1979 to July 1988. In matrix form, the table compares the number of carriers serving the markets in 1979 with the number serving in 1988.

Data Sources: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-19, which summarizes the data here. This table shows, for example, that of 3,942 single-carrier markets in July, 1979, 2,256 were not served in July 1988, 1,144 were still served by one carrier, 376 were served by 2 carriers, 117 by 3 carriers, 38 by 4 carriers, 4 by 5 carriers, 6 by 6 carriers, and 1 by 7 carriers. A total of 2,348 markets were served in July 1988 but not in July 1979. The following shows the changes in the number of markets by number of carriers providing single-plane service:

Number of Carriers	Number of Single-Plane Markets July 1979	July 1988	Change
1	3,942	3,481	-461
2	920	1,054	134
3	322	413	91
4	116	192	76
5	52	83	31
6	22	45	23
7	13	22	9
8 or more	13	24	11
Subtotal, Competitive Markets	1,458	1,833	375
Total	5,400	5,314	-86

Except for monopoly markets, which decreased from 3,942 to 3,481, all categories of markets showed increases. While overall the total number of markets receiving single-plane service was down 1.6 percent (from 5,400 to 5,314), the decrease was entirely attributable to the decline in monopoly markets. Virtually all of these were either commuter markets or local service markets served on linear patterns in 1979 which were unrelated to actual passenger demand.

DISTRIBUTION OF MARKETS SERVED BY NUMBER
OF PARTICIPANTS
July 1979 and July 1988

Number of Carriers Serving in 1979	Number of Carriers Serving in 1988									
	0	1	2	3	4	5	6	7	8+	Total
0	0	1,981	301	49	14	3	0	0	0	2,348
1	2,256	1,144	376	117	38	4	6	1	0	3,942
2	157	279	258	130	59	26	7	3	1	920
3	18	63	88	75	41	19	10	5	3	322
4	3	12	19	26	22	15	12	2	5	116
5	0	2	7	10	9	10	5	5	4	52
6	0	0	3	3	4	2	3	2	5	22
7	0	0	1	2	3	3	1	2	1	13
8 or more	0	0	1	1	2	1	1	2	5	13
Total	2,434	3,481	1,054	413	192	83	45	22	24	7,748

Note: Limited to 48 Contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPARISON OF NONSTOP MARKETS SERVED, 1979-1988

Table I-21

Objective: To trace all nonstop markets of July 1979 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observations/Interpretation: Of the 3,420 nonstop markets served in July 1979 and/or July 1988, 967, or 28.3 percent, were not served in 1988, 908 (26.5 percent) were served by the same number of nonstop carriers in both periods; 334 (9.8 percent) were served by fewer nonstop carriers in 1988; and 1,211 (35.4 percent) were served by more nonstop carriers in 1988 than in 1979.

Considering only the 2,614 markets served in July 1979, the breakdown is: 967 (37.0 percent) not served in 1988; 908 (34.7 percent) were served by the same number of nonstop carriers; 334 (12.8 percent) served by fewer nonstop carriers; and 405 (15.5 percent) served by more nonstop carriers in 1988.

The table also summarizes the data for markets which had competitive nonstop service in 1979, i.e., were served by two or more nonstop carriers. There were 809 such markets and the 1988 breakdown for them is as follows: 76 (9.4 percent) not served in 1988; 256 (31.6 percent) served by the same number of nonstop carriers in both years; 334 (41.3 percent) served by fewer nonstop carriers; and 143 (17.7 percent) served by more nonstop carriers.

SERVICE CHANGES IN NONSTOP MARKETS SERVED IN JULY 1979
July 1979 - July 1988

Number of Carrier Serving, July 1979	Total Markets	Number of Markets, July 1988				Percent of Total Markets			
		Not Served	Same No. of Carriers	Fewer Carriers	More Carriers	Not Served	Same No. of Carriers	Fewer Carriers	More Carriers
0	806	--	--	--	806	--	--	--	100.0
1	1,805	891	652	--	262	49.4	36.1	--	14.5
2	580	69	212	197	102	11.9	36.6	34.0	17.6
3	142	6	29	79	28	4.2	20.4	55.6	19.7
4	48	1	10	31	6	2.1	20.8	64.6	12.5
5	19	0	5	11	3	0.0	26.3	57.9	15.8
6	9	0	0	8	1	0.0	0.0	88.9	11.1
7	4	0	0	3	1	0.0	0.0	75.0	25.0
8 or more	7	0	0	5	2	0.0	0.0	71.4	28.6
Total, Markets served in July 1979 and/or July 1988	3,420	967	908	334	1,211	28.3	26.5	9.8	35.4
Total, Markets served in July 1979	2,614	967	908	334	405	37.0	34.7	12.8	15.5
Total, Markets served by 2 or more carriers in July 1979	809	76	256	334	143	9.4	31.6	41.3	17.7

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1979-1988

Table I-22

Objective: To trace the competitive status of nonstop markets served in July 1979 to July 1988. In matrix form, the table compares the number of nonstop carriers serving the markets in 1979 with the number of nonstop carriers serving in 1988.

Data Sources: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-21, which summarizes the data here. The table shows, for example, that of 1,805 nonstop markets served by one carrier in July 1979, 891 were not served nonstop in July 1988, 652 were still served by one nonstop carrier, 211 were served by 2 nonstop carriers, 41 by 3 nonstop carriers, and 10 by 4 nonstop carriers. A total of 806 nonstop markets in July 1988 were not served nonstop in July 1979. The following shows the changes in the number of nonstop markets by number of carriers providing nonstop service:

Number of Carriers	Number of Nonstop Mkts. July 1979	July 1988	Change
1	1,805	1,615	-190
2	580	557	- 23
3	142	169	+ 27
4	48	73	+ 25
5	19	23	+ 4
6	9	8	- 1
7	4	3	- 1
8 or more	7	5	- 2
Subtotal, Comp. Mkts.	809	838	+ 29
Total	2,614	2,453	-161

DISTRIBUTION OF NONSTOP MARKETS SERVED, BY NUMBER OF NONSTOP PARTICIPANTS
July 1979 and July 1988

Number of Carriers Serving in 1979	Number of Nonstop Carriers in 1988									Total
	0	1	2	3	4	5	6	7	8+	
0	0	724	74	4	3	1	0	0	0	806
1	891	652	211	41	10	0	0	0	0	1,805
2	69	197	212	72	25	3	2	0	0	580
3	6	33	46	29	19	7	2	0	0	142
4	1	9	6	16	10	4	1	1	0	48
5	0	0	4	2	5	5	2	1	0	19
6	0	0	2	4	0	2	0	0	1	9
7	0	0	2	0	0	1	0	0	1	4
8 or more	0	0	0	1	1	0	1	1	3	7
Total	967	1,615	557	169	73	23	8	3	5	3,420

Note: Limited to 48 contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPARISON OF NONSTOP MARKETS SERVED, 1984-1988

Table I-23

Objective: To trace all nonstop markets of July 1984 to show the competitive status of their service in July 1988.

Data Sources: OAG tapes.

Observations/Interpretation: Of the 3,081 nonstop markets served in July 1984 and/or July 1988, 628, or 20.4 percent, were not served in 1988, 1,076 (34.9 percent) were served by the same number of nonstop carriers in both periods; 507 (16.5 percent) were served by fewer nonstop carriers in 1988; and 870 (28.2 percent) were served by more nonstop carriers in 1988 than in 1984.

Considering only the 2,474 markets served in July 1984, the breakdown is: 628 (25.4 percent) not served in 1988; 1,076 (43.5 percent) served by the same number of nonstop carriers; 507 (20.5 percent) served by fewer nonstop carriers; and 263 (10.6 percent) served by more nonstop carries in 1988.

The table also summarizes the data for markets which had competitive nonstop service in 1984, i.e., were served by two or more nonstop carriers. There were 978 such markets and the 1988 breakdown for them is as follows: 66 (6.7 percent) not served in 1988; 319 (32.6 percent) served by the same number of nonstop carriers in both years; 507 (51.8 percent) served by fewer nonstop carriers; and 86 (8.8 percent) served by more nonstop carriers.

SERVICE CHANGES IN NONSTOP MARKETS SERVED IN JULY 1979
July 1984 - July 1988

Number of Carrier Serving, July 1984	Total Markets	Number of Markets, July 1988				Percent of Total Markets			
		Not Served	Same No. of Carriers	Fewer Carriers	More Carriers	Not Served	Same No. of Carriers	Fewer Carriers	More Carriers
0	607	--	--	--	607	--	--	--	100.0
1	1,496	562	757	--	177	37.6	50.6	--	11.8
2	594	58	238	238	60	9.8	40.1	40.1	10.1
3	215	8	56	132	19	3.7	26.0	61.4	8.8
4	78	0	13	59	6	0.0	16.7	75.6	7.7
5	40	0	8	31	1	0.0	20.0	77.5	2.5
6	21	0	3	18	0	0.0	14.3	85.7	0.0
7	11	0	0	11	0	0.0	0.0	100.0	0.0
8 or more	19	0	1	18	0	0.0	5.3	94.7	0.0
Total, Markets served in July 1984 and/or July 1988	3,081	628	1,076	507	870	20.4	34.9	16.5	28.2
Total, Markets served in July 1984	2,474	628	1,076	507	263	25.4	43.5	20.5	10.6
Total, Markets served by 2 or more carriers in July 1984	978	66	319	507	86	6.7	32.6	51.8	8.8

Source: Official Airline Guide, July 1984 and July 1988.

COMPETITIVE STATUS OF SINGLE-PLANE MARKETS SERVED, 1984-1988

Table I-24

Objective: To trace the competitive status of nonstop markets served in July 1984 to July 1988. In matrix form, the table compares the number of nonstop carriers serving the markets in 1984 with the number of nonstop carriers serving in 1988.

Data Source: OAG tapes.

Observations/Interpretation: This is a backup table to Table I-23, which summarizes the data here. The table shows, for example, that of 1,496 nonstop markets served by one carrier in July 1984, 562 were not served nonstop in July 1988, 757 were still served by one nonstop carrier, 155 were served by 2 nonstop carriers, 17 were served by 3 nonstop carriers, 4 were served by 4 nonstop carriers, and one was served by 5 nonstop carriers. A total of 607 nonstop markets in July 1988 were not served nonstop in July 1984. The following shows the changes in the number of nonstop markets by number of carriers providing nonstop service:

Number of Carriers	Number of Nonstop Mkts. July 1984	July 1988	Change
1	1,496	1,615	+119
2	594	557	- 37
3	215	169	- 46
4	78	73	- 5
5	40	23	- 17
6	21	8	- 13
7	11	3	- 8
8 or more	19	5	- 14
Subtotal, Comp. Mkts.	978	838	-140
Total	2,474	2,453	- 21

DISTRIBUTION OF NONSTOP MARKETS SERVED, BY NUMBER OF NONSTOP PARTICIPANTS
July 1984 and July 1988

Number of Carriers Serving in 1984	Number of Nonstop Carriers in 1988									
	0	1	2	3	4	5	6	7	8+	Total
0	0	563	41	2	1	0	0	0	0	607
1	562	757	155	17	4	1	0	0	0	1,496
2	58	238	238	49	11	0	0	0	0	594
3	8	43	89	56	18	1	0	0	0	215
4	0	11	23	25	13	5	1	0	0	78
5	0	2	8	10	11	8	1	0	0	40
6	0	0	1	7	8	2	3	0	0	21
7	0	1	2	1	3	2	2	0	0	11
8 or more	0	0	0	2	4	4	1	3	5	19
Total	628	1,615	557	169	73	23	8	3	5	3,081

Note: Limited to 48 contiguous states.

Source: Official Airline Guide, July 1979 and July 1988.

COMPETITION IN SINGLE-PLANE MARKETS SERVED BY MAJOR CARRIERS

Table I-25

Objective: To analyze the markets served by each of the major carriers in July 1979, July 1984 and July 1988, and break down the markets served by the number of carriers serving the market. This will show the growth in the number of markets served by each carrier and the extent to which competitive service is provided in a carrier's markets, as well as the changes which have occurred since 1979.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

Observations/Interpretation: All major carriers showed an increase in the number of single-plane markets served between July 1979 and July 1988, while the industry had a small reduction in number of markets from 5,400 to 5,314. With the exception of 2 and 3 carrier markets of Trans World, all majors showed increases in all market groups between 1979 and 1988.

The data show a tremendous expansion of service by the majors, reflecting the internal growth in their own service, acquisitions, and the expansion of service by code-sharing commuters. While many more single-plane monopoly city-pairs were served by the major carriers in 1988 compared to 1984, service in many more competitive markets was also added.

For all carriers, 1988 single-plane service competition was comparable to 1984.

NUMBER OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

Carrier	Month	Number of Markets by Number of Carriers Serving								Total Markets
		1	2	3	4	5	6	7	8+	
American	July '79	109	113	80	36	20	13	3	8	382
	July '84	246	141	96	43	35	31	16	25	633
	July '88	413	312	177	118	52	31	17	24	1,144
Continental	July '79	50	52	39	15	9	7	2	3	177
	July '84	18	63	36	34	24	12	10	11	208
	July '88	191	147	99	57	43	27	13	22	599
Delta	July '79	255	123	73	43	23	8	11	12	548
	July '84	250	155	141	68	41	27	14	32	607
	July '88	431	357	185	110	61	33	15	21	1,213
Eastern	July '79	223	153	69	51	21	7	10	9	543
	July '84	173	147	124	65	35	21	14	28	607
	July '88	229	167	117	54	36	24	15	16	658
Northwest	July '79	96	48	31	23	12	6	6	7	229
	July '84	53	40	32	29	18	12	8	18	210
	July '88	387	156	76	47	19	17	8	18	728
Pan American	July '79	0	0	1	4	0	3	0	2	10
	July '84	2	6	9	12	7	13	7	22	78
	July '88	0	5	10	8	10	6	7	14	60
Piedmont	July '79	255	67	19	13	7	4	2	1	368
	July '84	244	135	57	21	18	7	3	15	500
	July '88	524	182	98	40	16	17	8	13	898

NUMBER OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

Carrier	Month	Number of Markets by Number of Carriers Serving								Total Markets
		1	2	3	4	5	6	7	8+	
Trans World	July '79	60	97	79	25	17	9	7	8	302
	July '84	59	53	56	29	23	18	15	29	282
	July '88	147	85	56	39	34	21	16	23	421
United	July '79	259	189	93	29	20	13	3	9	615
	July '84	235	147	110	67	38	23	18	26	664
	July '88	292	230	127	106	44	29	17	18	863
USAir	July '79	254	107	52	25	19	7	5	5	474
	July '84	224	113	86	37	19	12	8	16	515
	July '88	310	156	136	71	39	21	13	14	760
All Carriers	July '79	3,942	920	322	116	52	22	13	13	5,400
	July '84	3,539	1,024	443	189	94	53	29	41	5,412
	July '88	3,481	1,054	413	192	83	45	22	24	5,314

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

PERCENT OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

Carrier	Month	Percent of Markets by Number of Carriers Serving								Total Markets
		1	2	3	4	5	6	7	8+	
American	July '79	28.5	29.6	20.9	9.4	5.2	3.4	0.8	2.1	100.0
	July '84	38.9	22.3	15.2	6.8	5.5	4.9	2.5	3.9	100.0
	July '88	36.1	27.3	15.5	10.3	4.5	2.7	1.5	2.1	100.0
Continental	July '79	28.2	29.4	22.0	8.5	5.1	4.0	1.1	1.7	100.0
	July '84	8.7	30.3	17.3	16.3	11.5	5.8	4.8	5.3	100.0
	July '88	31.9	24.5	16.5	9.5	7.2	4.5	2.2	3.7	100.0
Delta	July '79	46.5	22.4	13.3	7.8	4.2	1.5	2.0	2.2	100.0
	July '84	41.2	25.5	23.2	11.2	6.8	4.4	2.3	5.3	100.0
	July '88	35.5	29.4	15.3	9.1	5.0	2.7	1.2	1.7	100.0
Eastern	July '79	41.1	28.2	12.7	9.4	3.9	1.3	1.8	1.7	100.0
	July '84	28.5	24.2	20.4	10.7	5.8	3.5	2.3	4.6	100.0
	July '88	34.8	25.4	17.8	8.2	5.5	3.6	2.3	2.4	100.0
Northwest	July '79	41.9	21.0	13.5	10.0	5.2	2.6	2.6	3.1	100.0
	July '84	25.2	19.0	15.2	13.8	8.6	5.7	3.8	8.6	100.0
	July '88	53.2	21.4	10.4	6.5	2.6	2.3	1.1	2.5	100.0
Pan American	July '79	0.0	0.0	10.0	40.0	0.0	30.0	0.0	20.0	100.0
	July '84	2.6	7.7	11.5	15.4	9.0	16.7	9.0	28.2	100.0
	July '88	0.0	8.3	16.7	13.3	16.7	10.0	11.7	23.3	100.0
Piedmont	July '79	69.3	18.2	5.2	3.5	1.9	1.1	0.5	0.3	100.0
	July '84	48.8	27.0	11.4	4.2	3.6	1.4	0.6	3.0	100.0
	July '88	58.4	20.3	10.9	4.5	1.8	1.9	0.9	1.4	100.0

PERCENT OF MARKETS SERVED, BY NUMBER OF CARRIERS SERVING, MAJOR CARRIERS
July 1979, July 1984 and July 1988

Carrier	Month	Percent of Markets by Number of Carriers Serving								Total Markets
		1	2	3	4	5	6	7	8+	
Trans World	July '79	19.9	32.1	26.2	8.3	5.6	3.0	2.3	2.6	100.0
	July '84	20.9	18.8	19.9	10.3	8.2	6.4	5.3	10.3	100.0
	July '88	34.9	20.2	13.3	9.3	8.1	5.0	3.8	5.5	100.0
United	July '79	42.1	30.7	15.1	4.7	3.3	2.1	0.5	1.5	100.0
	July '84	35.4	22.1	16.6	10.1	5.7	3.5	2.7	3.9	100.0
	July '88	33.8	26.7	14.7	12.3	5.1	3.4	2.0	2.1	100.0
USAir	July '79	53.6	22.6	11.0	5.3	4.0	1.5	1.1	1.1	100.0
	July '84	43.5	21.9	16.7	7.2	3.7	2.3	1.6	3.1	100.0
	July '88	40.8	20.5	17.9	9.3	5.1	2.8	1.7	1.8	100.0
All Carriers	July '79	73.0	17.0	6.0	2.1	1.0	0.4	0.2	0.2	100.0
	July '84	65.4	18.9	8.2	3.5	1.7	1.0	0.5	0.8	100.0
	July '88	65.5	19.8	7.8	3.6	1.6	0.8	0.4	0.5	100.0

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states. Percentages may not add to 100.0 due to rounding.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

SUMMARY OF SINGLE PLANE MARKETS SERVED BY MAJORS

Table I-26

Objective: To present summary figures for the major carriers showing the total number of single-plane markets served by each carrier in July 1979, July 1984 and July 1988.

Data Sources: OAG tapes. Data include code-sharing affiliates so this must be recognized in interpreting the results.

Observations/Interpretation: All major carriers showed an increase in the number of single-plane markets served. While Pan American had the largest percentage increase -- a 500 percent increase, with markets increasing from 10 to 60 -- numerical increases for some of the other carriers were much larger. American had an increase of 762 markets, Delta, 665 markets, Piedmont, 530 markets, and Northwest 499 markets. The fact that the majors showed increases across the board while the industry had a slight decline reflects the fact that much of the commuter service which appeared under the commuter carrier codes in 1979 was included under the major carrier codes in 1988.

CHANGE IN NUMBER OF MARKETS SERVED, MAJOR CARRIERS
July 1988 vs. July 1979 and July 1984

Carrier	Total Markets Served			Percent Change	
	July 1979	July 1984	July 1988	1988/1979	1988/1984
American	382	633	1,144	199.5%	80.7%
Continental	177	208	599	238.4	188.0
Delta	548	728	1,213	121.4	66.6
Eastern	543	607	658	21.2	8.4
Northwest	229	210	728	217.9	246.7
Pan American	10	78	60	500.0	- 23.1
Piedmont	368	500	898	144.0	79.6
Trans World	302	282	421	39.4	49.3
United	615	664	863	40.3	30.0
USAir	474	515	760	60.3	47.6
All Carriers	5,400	5,412	5,314	- 1.6	- 1.8

Note: Includes service provided by code-sharing commuters. Data limited to 48 contiguous states.

Source: Official Airline Guide, July 1979, July 1984 and July 1988.

COMPETITION FROM TOP 3 COMPETITORS IN MAJOR CARRIERS' TOP 100 O&D MARKETS

Tables I-27 and I-28

Objective: To show the percentage share of revenue passenger miles of each major carrier in its top 100 RPM markets and the percentage shares of its 3 top competitors for the years 1979, 1984 and YE September 30, 1988.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation: Table I-27 shows that all major carrier face substantial competition in their top markets. In all cases, the 1979-1984 comparisons of major carrier shares show a decline and all but one (Pan American) of the 1979-1988 comparisons also show a decline. The 1984-1988 changes show increases for 6 carriers and decreases for 4 carriers. The changes for the 3 top competitors of each major were fairly evenly balanced: for 1979-1984, 5 up, 5 down; for 1984-1988, 4 up and 6 down; and for 1979-1988, 5 up, 5 down.

In 1979, five major carriers' percentage shares exceeded those of the 3 top competitors: American, Delta, Eastern, United and USAir. By 1984, only one carrier's share exceeded that of the top 3 competitors: United's. That same pattern held true for the YE September 30, 1988.

Table I-28 is a backup table and shows the individual percentage RPM shares of the top 3 competitors of each major carrier.

RPM SHARES OF MAJORS AND THREE TOP COMPETITORS
IN TOP 100 RPM MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

Carrier	Percentage Share of RPM in Top 100 Markets of Each Major		
	1979	1984	1988
American	48.3	31.0	23.3
3 top competitors	41.9	39.6	48.4
Continental	33.9	11.9	22.6
3 top competitors	42.5	53.4	46.1
Delta	48.2	28.7	27.5
3 top competitors	40.4	40.5	39.9
Eastern	49.4	25.0	22.9
3 top competitors	32.0	36.3	40.8
Northwest	23.8	14.2	19.7
3 top competitors	47.5	53.8	50.9
Pan American	7.6	6.9	7.9
3 top competitors	74.1	50.2	48.7
Piedmont	30.1	16.4	16.8
3 top competitors	56.3	51.3	39.4
Trans World	38.1	16.3	16.8
3 top competitors	54.0	50.4	51.4
United	43.8	40.6	37.0
3 top competitors	41.9	31.6	35.7
USAir	47.3	13.5	17.0
3 top competitors	33.0	56.5	47.3

Source: Origin-Destination Survey of Airline Pasenger Traffic, Table 10.

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

1979		1984		1988*	
Carrier	% of RPM	Carrier	% of RPM	Carrier	% of RPM
American	48.3	American	31.0	American	23.3
United	19.5	United	27.2	United	26.3
Trans World	19.2	Trans World	8.3	Continental	12.9
Braniff	3.2	Delta	4.1	Trans World	9.2
Continental	33.9	Continental	11.9	Continental	22.6
United	29.6	United	27.3	United	23.8
American	6.5	American	17.4	American	12.9
Trans World	6.4	Trans World	8.7	Trans World	9.4
Delta	48.2	Delta	28.7	Delta	27.5
Eastern	30.1	Eastern	15.5	United	15.4
National	6.1	American	16.1	American	13.7
American	4.2	United	8.9	Continental	10.8
Eastern	49.4	Eastern	25.0	Eastern	22.9
Delta	28.2	Delta	15.4	Delta	16.9
United	2.1	United	10.7	United	13.4
Northwest	1.7	American	10.2	Continental	10.5
Northwest	23.8	Northwest	14.2	Northwest	19.7
United	31.2	United	29.7	United	26.1
Western	9.2	American	16.8	American	13.6
Delta	7.1	Trans World	7.3	Continental	11.2
Pan American	7.6	Pan American	6.9	Pan American	7.9
United	47.4	United	20.4	United	20.1
Northwest	14.0	American	16.6	American	14.3
Continental	12.7	Eastern	13.2	Continental	14.3

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

1979		1984		1988*	
Carrier	% of RPM	Carrier	% of RPM	Carrier	% of RPM
Piedmont	30.1	Piedmont	16.4	Piedmont	16.8
Eastern	22.4	Eastern	27.4	Eastern	16.9
Delta	22.0	Delta	15.0	Delta	12.1
United	11.9	People Express	8.9	Continental	10.4
Trans World	38.1	Trans World	16.3	Trans World	16.8
American	27.9	United	22.0	United	22.1
United	22.9	American	19.7	American	14.7
Continental	3.2	Eastern	8.7	Contiental	14.6
United	43.8	United	40.6	United	37.0
American	19.6	American	18.7	American	14.4
Trans World	16.2	Trans World	7.8	Contiental	13.1
Continental	6.1	Continental	5.1	Trans World	8.2
USAir	47.3	USAir	13.5	USAir	17.0
American	13.4	American	21.6	United	22.6
Trans World	12.0	United	20.1	American	14.0
Northwest	7.6	Trans World	14.8	Trans World	10.7

* Year ended September 30, 1988.

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

1979		1984		1988*	
Carrier	% of RPM	Carrier	% of RPM	Carrier	% of RPM
American	48.3	American	31.0	American	23.3
United	19.5	United	27.2	United	26.3
Trans World	19.2	Trans World	8.3	Continental	12.9
Braniff	3.2	Delta	4.1	Trans World	9.2
Continental	33.9	Continental	11.9	Continental	22.6
United	29.6	United	27.3	United	23.8
American	6.5	American	17.4	American	12.9
Trans World	6.4	Trans World	8.7	Trans World	9.4
Delta	48.2	Delta	28.7	Delta	27.5
Eastern	30.1	Eastern	15.5	United	15.4
National	6.1	American	16.1	American	13.7
American	4.2	United	8.9	Continental	10.8
Eastern	49.4	Eastern	25.0	Eastern	22.9
Delta	28.2	Delta	15.4	Delta	16.9
United	2.1	United	10.7	United	13.4
Northwest	1.7	American	10.2	Continental	10.5
Northwest	23.8	Northwest	14.2	Northwest	19.7
United	31.2	United	29.7	United	26.1
Western	9.2	American	16.8	American	13.6
Delta	7.1	Trans World	7.3	Continental	11.2
Pan American	7.6	Pan American	6.9	Pan American	7.9
United	47.4	United	20.4	United	20.1
Northwest	14.0	American	16.6	American	14.3
Continental	12.7	Eastern	13.2	Continental	14.3

RPM SHARES OF MAJORS AND THREE LEADING COMPETITORS
IN TOP 100 MARKETS OF EACH MAJOR CARRIER
1979, 1984 & YE SEPT. 30, 1988

1979		1984		1988*	
Carrier	% of RPM	Carrier	% of RPM	Carrier	% of RPM
Piedmont	30.1	Piedmont	16.4	Piedmont	16.8
Eastern	22.4	Eastern	27.4	Eastern	16.9
Delta	22.0	Delta	15.0	Delta	12.1
United	11.9	People Express	8.9	Continental	10.4
Trans World	38.1	Trans World	16.3	Trans World	16.8
American	27.9	United	22.0	United	22.1
United	22.9	American	19.7	American	14.7
Continental	3.2	Eastern	8.7	Contiental	14.6
United	43.8	United	40.6	United	37.0
American	19.6	American	18.7	American	14.4
Trans World	16.2	Trans World	7.8	Contiental	13.1
Continental	6.1	Continental	5.1	Trans World	8.2
USAir	47.3	USAir	13.5	USAir	17.0
American	13.4	American	21.6	United	22.6
Trans World	12.0	United	20.1	American	14.0
Northwest	7.6	Trans World	14.8	Trans World	10.7

* Year ended September 30, 1988.

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

MARKET SHARE BY COMPETITOR OF EACH MAJOR CARRIER'S TOP 100 MARKETS

Table I-29

Objective: To present the total RPM's and percentage shares in each major carrier's top 100 markets for 1979, 1984 and YE September 30, 1988 and compare this with RPM's of all competitors in these markets to see what changes have occurred since 1979.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation: As shown in Table I-27, generally carrier RPM shares declined from 1979 to 1988. The top 100 markets were of less relative importance to a carrier because of the general expansion in the number of markets served, as shown in Table I-26.

Because of the growth in overall traffic, most carriers' 100 market RPM in 1988 were greater than 1979, but for three carriers, American, Eastern and Trans World, they were lower. Carriers entered many markets in this period which they had been precluded from serving prior to 1978. Many of these were larger markets in which it was not possible to gain large market shares, particularly in the short run. With all of the new entry which occurred, competition was more intense in most markets and it was more difficult to maintain market share.

ANALYSIS OF COMPETITION IN AMERICAN'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
American	100	19,118,217	48.3	100	17,462,729	31.0	100	15,715,704	23.3
Competitors									
USAir	30	245,972	0.6	59	647,271	1.1	82	1,130,115	1.7
Braniff	70	1,278,445	3.2	47	856,646	1.5	60	1,711,581	2.5
Continental	36	696,282	1.8	79	2,125,942	3.8	94	8,732,328	12.9
Delta	74	1,258,851	3.2	87	2,314,444	4.1	99	4,858,657	7.2
Eastern	73	365,527	0.9	79	1,122,826	2.0	68	1,149,416	1.7
Frontier	15	7,793	0.0	54	257,379	0.5	—	—	—
National	8	233,998	0.6	—	—	—	—	—	—
Northwest	32	300,166	0.8	74	1,820,624	3.2	91	2,943,513	4.4
Ozark	12	87,884	0.2	36	213,392	0.4	—	—	—
Piedmont	12	10,819	0.0	39	181,877	0.3	45	251,632	0.4
Republic	14	55,026	0.1	75	709,971	1.3	—	—	—
Texas Int'l	9	206,741	0.5	—	—	—	—	—	—
Trans World	67	7,614,382	19.2	76	4,696,478	8.3	90	6,222,148	9.2
United	45	7,724,753	19.5	99	15,357,479	27.2	99	17,750,251	26.3
Pan American	—	—	—	61	1,860,787	3.3	49	2,355,206	3.5
People Express	—	—	—	6	926,010	1.6	—	—	—
Western	12	14,145	0.0	55	1,519,974	2.7	—	—	—
Southwest	1	13,687	0.0	6	590,313	1.0	16	819,510	1.2
World	—	—	—	5	976,563	1.7	—	—	—
America West	—	—	—	—	—	—	35	1,019,980	1.5
All Other	—	389,518	1.0	—	2,732,318	4.8	—	2,784,789	4.1
Total	**100**	**39,622,206**	**100.0**	**100**	**56,373,023**	**100.0**	**100**	**67,444,780**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN CONTINENTAL'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Continental	100	7,058,145	33.9	100	6,119,860	11.9	100	17,247,157	22.6
Competitors									
American	32	1,360,742	6.5	99	8,987,151	17.4	100	9,857,635	12.9
Braniff	68	1,045,060	5.0	50	316,153	0.6	71	938,858	1.2
Delta	33	161,146	0.8	87	1,931,637	3.7	99	5,891,803	7.7
Eastern	35	145,944	0.7	88	3,143,056	6.1	86	5,476,842	7.2
Frontier	15	206,470	1.0	63	859,719	1.7	—	—	—
National	7	525,177	2.5	—	—	—	—	—	—
Northwest	8	910,357	4.4	64	2,169,565	4.2	98	2,787,271	3.7
Pan American	2	289,910	1.4	48	1,972,600	3.8	52	3,910,190	5.1
Air West	24	160,474	0.8	—	—	—	—	—	—
Texas Int'l	23	371,241	1.8	—	—	—	—	—	—
Trans World	37	1,337,991	6.4	84	4,505,391	8.7	99	7,129,626	9.4
United	37	6,165,877	29.6	96	14,044,621	27.3	99	18,097,602	23.8
Western	36	819,396	3.9	56	1,510,924	2.9	—	—	—
Southwest	6	59,925	0.3	17	681,173	1.3	16	940,871	1.2
USAir	—	—	—	59	484,368	0.9	79	1,065,473	1.4
People Express	—	—	—	4	1,527,634	3.0	—	—	—
Republic	11	7,200	0.0	89	1,108,959	2.2	—	—	—
World	—	—	—	5	878,416	1.7	—	—	—
America West	—	—	—	1	14,825	0.0	26	820,112	1.1
Piedmont	3	12,971	0.1	43	78,147	0.2	66	486,865	0.6
All Other	—	177,501	0.9	—	1,185,524	2.3	—	1,516,498	2.0
Total	**100**	**20,815,527**	**100.0**	**100**	**51,519,723**	**100.0**	**100**	**76,166,803**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN DELTA'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Delta	100	12,804,565	48.2	100	11,284,712	28.7	100	15,615,518	27.5
Competitors									
American	45	1,106,161	4.2	95	6,326,665	16.1	100	7,754,503	13.7
USAir	35	86,191	0.3	60	339,546	0.9	79	651,029	1.1
Braniff	78	728,981	2.7	25	547,747	1.4	50	996,065	1.8
Continental	16	31,538	0.1	47	801,753	2.0	99	6,095,965	10.8
Eastern	85	8,003,159	30.1	92	6,085,203	15.5	83	5,603,340	9.9
National	23	1,618,659	6.1	—	—	—	—	—	—
Northwest	48	471,940	1.8	73	613,651	1.6	97	1,595,091	2.8
Ozark	29	83,382	0.3	50	120,053	0.3	—	—	—
Piedmont	27	52,655	0.2	71	440,567	1.1	70	559,943	1.0
Pacific Southwest	1	81,269	0.3	—	—	—	3	130,416	0.2
Republic	54	227,497	0.9	94	500,395	1.3	—	—	—
Texas Int'l	9	161,751	0.6	—	—	—	—	—	—
Trans World	61	132,291	0.5	86	2,104,088	5.4	95	4,475,040	7.9
United	65	435,527	1.6	99	3,502,807	8.9	100	8,718,107	15.4
Western	10	134,841	0.5	15	69,750	0.2	—	—	—
Pan American	—	—	—	70	1,527,215	3.9	59	2,086,097	3.7
People Express	—	—	—	8	2,643,131	6.7	—	—	—
Southwest	1	17,719	0.1	5	143,729	0.4	4	184,169	0.3
World	—	—	—	2	513,978	1.3	—	—	—
America West	—	—	—	—	—	—	9	191,413	0.3
All Other	—	375,831	1.4	—	1,724,430	4.4	—	2,028,141	3.6
Total	**100**	**26,553,957**	**100.0**	**100**	**39,289,430**	**100.0**	**100**	**56,684,837**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN EASTERN'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Eastern	100	13,286,299	49.4	100	11,977,652	25.0	100	12,082,628	22.9
Competitors									
American	38	388,698	1.4	83	4,882,846	10.2	100	5,128,559	9.7
USAir	33	101,842	0.4	50	608,525	1.3	90	1,430,520	2.7
Braniff	72	391,439	1.5	36	247,776	0.5	62	1,229,136	2.3
Continental	11	105,440	0.4	49	1,745,319	3.6	99	5,561,145	10.5
Delta	80	7,572,024	28.2	97	7,350,999	15.4	95	8,954,373	16.9
National	35	2,965,248	11.0	—	—	—	—	—	—
Northwest	61	444,568	1.7	72	594,730	1.2	94	1,126,003	2.1
Piedmont	29	64,864	0.2	72	759,330	1.6	81	851,904	1.6
Republic	42	71,279	0.3	89	463,606	1.0	—	—	—
Trans World	64	238,707	0.9	79	3,670,062	7.7	88	4,832,666	9.1
United	75	568,241	2.1	96	5,124,114	10.7	99	7,069,531	13.4
Western	7	227,587	0.8	19	141,249	0.3	—	—	—
Pan American	—	—	—	72	2,618,882	5.5	57	3,569,932	6.8
People Express	—	—	—	20	4,404,244	9.2	—	—	—
Southwest	—	—	—	6	216,441	0.5	5	85,552	0.2
World	—	—	—	5	523,729	1.1	—	—	—
America West	—	—	—	4	51,931	0.1	9	466,302	0.9
All Other	—	460,091	1.7	—	2,503,130	5.2	—	475,075	0.9
Total	**100**	**26,886,327**	**100.0**	**100**	**47,884,565**	**100.0**	**100**	**52,863,326**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN NORTHWEST'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Northwest	100	6,022,000	23.8	100	6,481,970	14.2	100	10,315,335	19.7
Competitors									
American	33	1,424,026	5.6	82	7,660,801	16.8	100	7,140,931	13.6
USAir	30	125,303	0.5	48	481,687	1.1	84	584,813	1.1
Alaska	3	362,397	1.4	8	247,061	0.5	3	214	0.0
Braniff	74	505,524	2.0	18	148,148	0.3	61	749,917	1.4
Continental	20	1,180,567	4.7	67	1,379,674	3.0	91	5,874,980	11.2
Delta	19	1,790,853	7.1	47	1,579,032	3.5	99	3,001,739	5.7
Eastern	63	1,629,771	6.4	73	1,465,309	3.2	78	1,253,891	2.4
National	10	97,968	0.4	—	—	—	—	—	—
Ozark	28	50,211	0.2	37	181,630	0.4	—	—	—
Pan American	4	538,167	2.1	47	1,596,126	3.5	44	2,005,341	3.8
Republic	40	385,838	1.5	79	1,658,966	3.6	—	—	—
Trans World	48	667,121	2.6	42	3,344,004	7.3	95	4,949,589	9.4
United	77	7,894,211	31.2	98	13,560,498	29.7	100	13,697,066	26.1
Western	28	2,333,077	9.2	50	2,073,287	4.5	—	—	—
People Express	—	—	—	8	824,362	1.8	—	—	—
Piedmont	6	4,107	0.0	27	192,917	0.4	60	214,252	0.4
World	—	—	—	5	976,563	2.1	—	—	—
America West	—	—	—	—	—	—	17	346,859	0.7
Southwest	—	—	—	—	—	—	11	347,812	0.7
All Other	—	266,071	1.1	—	1,743,046	3.8	—	1,950,483	3.7
Total	**100**	**25,277,212**	**100.0**	**100**	**45,595,081**	**100.0**	**100**	**52,433,222**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN PAN AMERICAN'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Pan American 1/	6	533,458	7.6	100	4,002,407	6.9	100	5,032,901	7.9
Competitors									
Braniff	6	359,276	5.1	39	411,313	0.7	44	869,645	1.4
Continental	6	902,651	12.7	70	2,131,595	3.6	97	9,155,034	14.3
Northwest	6	996,392	14.0	74	2,009,772	3.4	94	2,363,296	3.7
United	6	3,370,073	47.4	96	11,929,867	20.4	99	12,812,295	20.1
Western	5	816,267	11.5	32	1,470,975	2.5	—	—	—
American	—	—	—	90	9,714,555	16.6	100	9,155,519	14.3
USAir	—	—	—	63	842,698	1.4	81	2,179,353	3.4
Delta	—	—	—	96	3,908,278	6.7	92	6,258,469	9.8
Eastern	—	—	—	82	7,706,365	13.2	85	6,577,160	10.3
People Express	—	—	—	18	3,890,831	6.7	—	—	—
Piedmont	—	—	—	60	547,652	0.9	80	1,242,626	1.9
Pacific Southwest	—	—	—	3	372,598	0.6	4	285,063	0.4
Republic	—	—	—	67	521,405	0.9	—	—	—
Trans World	—	—	—	70	4,400,336	7.5	91	6,001,027	9.4
Southwest	—	—	—	10	445,107	0.8	3	89,150	0.1
World	—	—	—	7	982,150	1.7	—	—	—
All Other	—	120,905	1.7	—	3,135,878	5.4		1,823,588	2.9
Total	**6**	**7,104,022**	**100.0**	**100**	**58,423,782**	**100.0**	**100**	**63,845,126**	**100.0**

1/ Pan American did not serve 100 domestic markets in 1979.

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN PIEDMONT'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Piedmont	100	1,339,660	30.1	100	2,681,995	16.4	100	4,014,318	16.8
Competitors									
American	5	192,594	4.3	28	1,307,941	8.0	99	2,332,498	9.8
USAir	24	53,889	1.2	77	399,801	2.4	89	517,251	2.2
Braniff	6	12,339	0.3	7	175,471	1.1	17	135,025	0.6
Continental	2	55,812	1.3	11	125,121	0.8	61	2,493,272	10.4
Delta	31	976,750	22.0	86	2,449,450	15.0	91	2,893,944	12.1
Eastern	46	997,776	22.4	74	4,474,558	27.4	79	4,044,079	16.9
National	4	13,556	0.3	—	—	—	—	—	—
Northwest	4	17,716	0.4	18	200,198	1.2	51	344,440	1.4
Republic	11	17,232	0.4	29	50,514	0.3	—	—	—
Trans World	8	210,259	4.7	43	447,894	2.7	60	2,140,440	9.0
United	33	526,764	11.9	76	778,642	4.8	89	2,445,511	10.2
Ozark	7	2,722	0.1	33	51,670	0.3	—	—	—
Pan American	—	—	—	33	891,461	5.5	42	2,007,889	8.4
People Express	—	—	—	15	1,457,476	8.9	—	—	—
America West	—	—	—	—	—	—	4	203,155	0.9
All Other	—	27,905	0.6	—	827,905	5.1	—	307,697	1.3
Total	**100**	**4,444,974**	**100.0**	**100**	**16,320,097**	**100.0**	**100**	**23,879,519**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN TRANS WORLD'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
Trans World	100	14,601,829	38.1	100	8,356,611	16.3	100	11,120,423	16.8
Competitors									
American	75	10,699,335	27.9	95	10,135,320	19.7	100	9,725,555	14.7
USAir	32	501,024	1.3	72	1,050,036	2.0	76	1,079,935	1.6
Braniff	72	317,363	0.8	42	376,797	0.7	70	1,037,910	1.6
Continental	38	1,209,220	3.2	62	1,974,889	3.8	96	9,678,629	14.6
Delta	78	370,487	1.0	95	2,164,800	4.2	100	5,601,928	8.5
Eastern	66	362,694	0.9	94	4,447,656	8.7	83	4,951,388	7.5
Frontier	16	121,189	0.3	54	252,089	0.5	—	—	—
National	8	71,655	0.2	—	—	—	—	—	—
Northwest	40	377,266	1.0	73	1,068,348	2.1	93	2,378,173	3.6
Pacific Southwest	3	107,904	0.3	1	265,261	0.5	1	134,893	0.2
United	53	8,781,529	22.9	99	11,287,002	22.0	99	14,622,801	22.1
Western	9	247,749	0.6	51	526,334	1.0	—	—	—
Ozark	22	51,119	0.1	37	609,910	1.2	—	—	—
Pan American	—	—	—	54	2,221,029	4.3	33	3,131,661	4.7
People Express	—	—	—	12	3,375,125	6.6	—	—	—
Piedmont	12	21,310	0.1	30	219,746	0.4	60	580,301	0.9
Republic	27	10,059	0.0	86	524,498	1.0	—	—	—
World	—	—	—	6	523,810	1.0	—	—	—
America West	—	—	—	5	56,756	0.1	18	620,800	0.9
Southwest	—	—	—	5	701	0.0	18	456,357	0.7
All Other	—	487,506	1.3	—	1,900,928	3.7	—	1,112,408	1.7
Total	**100**	**38,339,238**	**100.0**	**100**	**51,337,706**	**100.0**	**100**	**66,233,162**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN UNITED'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
United	100	21,852,360	43.8	100	23,429,929	40.6	100	26,052,443	37.0
Competitors									
American	45	9,768,678	19.6	95	10,764,576	18.7	98	10,115,026	14.4
USAir	10	41,681	0.1	47	535,814	0.9	75	1,257,802	1.8
Braniff	82	582,410	1.2	33	285,533	0.5	52	853,463	1.2
Continental	45	3,019,369	6.1	82	2,923,314	5.1	99	9,220,461	13.1
Delta	50	425,741	0.9	84	1,153,156	2.0	98	3,720,986	5.3
Eastern	60	649,596	1.3	73	1,273,243	2.2	70	1,359,198	1.9
Frontier	7	138,270	0.3	42	571,135	1.0	—	—	—
National	13	165,321	0.3	—	—	—	—	—	—
Northwest	57	2,024,570	4.1	81	2,618,542	4.5	94	3,764,708	5.4
Pan American	5	538,312	1.1	56	1,691,961	2.9	49	2,276,545	3.2
Trans World	65	8,056,192	16.2	67	4,507,740	7.8	88	5,773,993	8.2
Western	31	1,837,496	3.7	51	2,095,828	3.6	—	—	—
People Express	—	—	—	7	905,814	1.6	—	—	—
Pacific Southwest	2	81,404	0.2	8	832,833	1.4	7	484,599	0.7
Republic	17	14,504	0.0	74	509,015	0.9	—	—	—
Southwest	—	—	—	8	178,219	0.3	13	423,801	0.6
World	—	—	—	9	1,375,866	2.4	—	—	—
America West	—	—	—	2	9,751	0.0	41	981,191	1.4
Piedmont	10	20,780	0.0	36	153,168	0.3	51	360,891	0.5
All Other	—	626,362	1.3	—	1,861,636	3.2	—	3,673,960	5.2
Total	**100**	**49,843,046**	**100.0**	**100**	**57,677,073**	**100.0**	**100**	**70,319,067**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

ANALYSIS OF COMPETITION IN USAIR'S TOP 100 RPM MARKETS
1979, 1984 & YE SEPT. 30, 1988

	1979			1984			YE SEPT. 30, 1988		
	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM	No. of Markets	RPM (000)	Percent of RPM
USAir	100	2,663,673	47.3	100	3,646,609	13.5	100	6,295,377	17.0
Competitors									
American	75	753,224	13.4	74	5,838,417	21.6	98	5,209,544	14.0
Braniff	28	28,065	0.5	15	197,041	0.7	27	304,548	0.8
Delta	38	251,196	4.5	77	740,348	2.7	93	1,587,020	4.3
Eastern	86	353,750	6.3	94	1,510,953	5.6	89	2,046,788	5.5
Northwest	14	426,809	7.6	36	519,441	1.9	94	1,056,593	2.8
Trans World	60	675,759	12.0	71	3,994,315	14.8	79	3,966,215	10.7
United	43	243,365	4.3	92	5,435,952	20.1	100	8,409,337	22.6
Western	1	159,213	2.8	10	92,956	0.3	—	—	—
Continental	—	—	—	19	649,334	2.4	98	3,759,386	10.1
Pan American	—	—	—	59	929,387	3.4	58	1,700,991	4.6
People Express	—	—	—	20	1,714,504	6.3	—	—	—
Piedmont	16	18,369	0.3	60	328,321	1.2	78	419,988	1.1
Republic	13	8,546	0.2	51	203,699	0.8	—	—	—
World	—	—	—	3	519,484	1.9	—	—	—
Alaska	—	—	—	—	—	—	13	263,027	0.7
America West	—	—	—	—	—	—	22	278,640	0.8
Pacific Southwest	—	—	—	—	—	—	20	1,205,811	3.2
Southwest	—	—	—	—	—	—	5	185,560	0.5
All Other	—	53,891	1.0	—	687,714	2.5	—	448,585	1.2
Total	**100**	**5,635,860**	**100.0**	**100**	**27,008,475**	**100.0**	**100**	**37,137,410**	**100.0**

Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10.

COMPETITION IN THE TOP 50 DOMESTIC MARKETS

Table I-30

Objective: To show the changes in carrier market shares in the top 50 RPM markets based on 1988 rankings and to measure the change in average number of carriers per market.

Data Sources: Origin-Destination Survey of Airline Passenger Traffic, Table 10.

Observations/Interpretation:

Following the removal of route restrictions in 1978, carriers were free to enter markets they previously could not serve. New entrants also entered some of these markets. As a result, the average number of carriers per market in the top ranked RPM markets increased as follows:

	Carriers with a 1% or more Share of RPM	
Year	Total, Top 50 markets	Average per Market
1979	266	5.3
1984	425	8.5
1988	437	8.7

The change from 1979 to 1988 in the average market was a 64 percent increase in carriers, or roughly an increase of 3.4 carriers per market. These markets represent about 25 percent of total domestic RPM traffic.

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Los Angeles-New York	1988	1	7,589,640	AA23 UA23 TW16 CO14 PA13 DL03 EA03 NW02 AL01 BN01 HP01 MG01
	1984	1	6,915,700	AA30 UA21 TW14 PE09 WO07 PA06 CL04 EA03 CO02 AL01 DL01 NW01
	1979	1	5,131,099	AA45 TW27 UA24 UK02 CL01 EA01 NA01
New York-San Francisco	1988	2	4,987,612	UA35 AA18 TW17 CO13 PA08 DL03 NW03 EA02 AL01 BN01
	1984	2	3,475,773	UA31 AA26 TW20 PA11 CO03 EA03 DL02 AL01 BN01 NW01 UK01
	1979	2	3,496,897	AA37 UA30 TW29 UK02 DL01 EA01
Honolulu-Los Angeles	1988	3	3,925,364	UA25 DL18 CO17 AA10 GM07 HA07 TW06 PA06 NW04
	1984	3	3,427,060	UA41 WA17 AA15 WO11 NW07 PA05 CO03
	1979	3	3,249,678	UA42 CO23 WA15 PA09 NW07 BN03 UK01
Miami-New York	1988	4	2,390,860	EA53 PA26 CO09 TW07 AA01 BN01 DL01 PI01
	1984	5	2,180,382	EA62 PA19 JW05 PE04 QS03 TW02 PI01 CH01
	1979	4	2,324,920	EA59 NA23 DL10 BN03 CH02 UK02
Chicago-Los Angeles	1988	5	2,138,421	UA50 AA20 CO12 BN04 NW04 TW04 HP02 WN02 DL01 EA01
	1984	13	1,376,750	UA37 AA30 CO13 CL06 TW04 NW03 BN02 DL01 EA01 RC01 WA01
	1979	5	2,204,348	AA36 UA26 CO25 TW12
Chicago-New York	1988	6	2,084,909	UA44 AA23 CO15 ML10 TW04 PA02 AL01 NW01 PI01
	1984	4	2,221,828	AA29 UA28 ML17 PE09 TW08 PA04 CL01 EA01 NW01 PI01
	1979	7	1,704,506	AA45 TW29 UA23 NW02 AL01 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Honolulu-San Francisco	1988	7	2,037,651	UA35 CO17 HA16 DL13 AA10 NW09 TW01
	1984	7	1,823,068	UA42 NW21 WA17 PA10 AA05 CO04
	1979	8	1,656,244	UA49 WA18 NW17 PA14 UK02
Ft. Lauderdale-New York	1988	8	2,010,082	DL47 EA26 CO12 TW11 PI02 AA01 BN01 UA01
	1984	8	1,722,192	DL55 EA38 QS06
	1979	6	1,907,983	EA41 DL40 NA17 TW01 UK01
Los Angeles-Washington	1988	9	1,943,725	UA32 AA21 CO14 TW11 NW05 AL04 BN04 DL03 EA03 PA02
	1984	11	1,423,644	UA35 AA32 TW14 AL05 CO03 EA03 NW02 BN01 DL01 PA01 WA01
	1979	11	1,168,067	AA42 UA26 TW25 DL02 EA02 BN01 CO01 NA01 UK01
Boston-Los Angeles	1988	10	1,791,145	AA32 UA20 TW18 CO09 NW07 DL05 EA04 PA03 AL02 PI01
	1984	15	1,233,911	AA35 TW28 UA18 NW05 AL03 CO03 DL03 EA03 BN01 RC01
	1979	12	1,109,671	AA53 TW40 UA05 DL01 EA01 UK01
New York-Orlando	1988	11	1,625,262	EA30 DL27 CO18 TW13 PA03 AA02 BN02 PI02 AL01 UA01
	1984	22	975,936	EA48 DL19 PA12 QS09 NY04 PI03 TW03 PE01
	1979	22	789,262	EA66 NA18 DL14
Honolulu-New York	1988	12	1,583,922	CO30 UA28 TW15 AA12 PA10 DL03 NW02
	1984	10	1,528,799	UA48 AA31 PA09 WO07 WA02 CO01 NW01
	1979	20	863,055	UA84 BN10 UK03 NW02 PA01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
San Francisco-Washington	1988	13	1,556,522	UA54 TW14 CO07 AA05 BN04 DL04 EA04 NW04 AL03 PA01
	1984	19	1,044,033	UA52 TW17 AA09 AL05 CO04 EA04 NW02 BN01 DL01 FL01 PA01 WA01
	1979	17	914,789	UA44 TW36 AA13 DL02 EA02 UK01
Dallas/Ft. Worth-New York	1988	14	1,519,792	AA56 DL16 BN11 CO05 TW05 PA03 AL01 EA01 NW01 PI01 UA01
	1984	12	1,397,941	AA60 DL18 BN06 TW05 PA04 PI02 AL01 EA01 ML01 UA01 UK01
	1979	15	938,848	AA53 BN42 DL03 EA01 UK01
Boston-San Francisco	1988	15	1,459,134	UA37 TW29 AA09 NW07 CO06 DL05 AL02 EA02 PA01 UK01
	1984	17	1,065,729	UA35 TW34 AA11 EA04 NW04 AL03 CO03 DL03 RC02 BN01
	1979	18	885,257	TW52 UA27 AA18 DL01 EA01 UK01
Chicago-San Francisco	1988	16	1,428,882	UA64 AA17 CO05 BN03 NW03 TW03 DL02 EA01 WN01
	1984	18	1,058,316	UA45 AA27 PA11 CO05 NW03 TW03 BN01 EA01 RC01 WA01
	1979	9	1,212,385	AA42 UA36 TW20 UK01
Los Angeles-Miami	1988	17	1,400,171	EA51 PA27 CO09 DL04 AA02 BN02 UA02 NW01 TW01
	1984	24	935,614	EA66 PA15 AA04 CO04 DL04 TW02 UA02 BN01 QS01 UK01
	1979	14	952,137	NA60 WA22 EA06 DL04 UK03 AA02 BN01 CO01
Denver-New York	1988	18	1,311,500	UA51 CO35 TW08 AA02 AL01 BN01 DL01 NW01
	1984	14	1,293,789	UA48 CO27 TW11 AA04 PE03 FL02 AL01 DL01 EA01 JW01
	1979	16	924,808	UA59 TW34 CO03 DL02 BN01 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
New York-West Palm Beach	1988	19	1,293,137	EA34 CO23 DL22 TW17 AA01 BN01
	1984	9	1,633,534	PE43 EA28 DL13 PA08 QS05 TW02 QH01
	1979	39	567,099	EA50 NA42 DL05 QH02 UK01
New York-Phoenix	1988	20	1,193,094	AA24 TW20 CO19 HP16 UA06 EA04 DL03 NW03 AL02 BN02 PI01
	1984	26	836,930	AA47 TW25 UA07 EA06 CO04 DL03 RC03 AL02 BN02 NW01 WA01
	1979	36	607,508	AA64 TW32 AL01 BN01 CO01 DL01 UK01
Chicago-Phoenix	1988	21	1,181,383	UA31 AA22 HP17 ML12 WN05 CO04 BN03 NW02 TW02 DL01 EA01
	1984	36	706,261	AA43 UA29 RC10 CO06 TW03 BN02 NW02 WA02 DL01 EA01 FL01
	1979	26	761,456	AA64 TW36
Houston-New York	1988	22	1,171,440	CO76 AA06 TW06 PA04 DL03 PI02 AL01 EA01 NW01
	1984	6	1,864,307	PE46 EA14 CO12 DL11 PA08 TW04 AA02
	1979	24	779,637	EA51 DL31 BN09 UK03 AA02 CO02 NA02
New York-San Diego	1988	23	1,146,174	AA29 CO24 TW18 UA11 DL04 BN03 AL02 EA02 HP02 NW02 PA02
	1984	33	723,246	AA53 UA15 TW10 CO07 AL04 NW04 EA03 WA02 DL01 RC01
	1979	58	462,817	AA78 UA19 DL01 NA01 UK01
New York-Tampa	1988	24	1,033,385	EA34 CO21 DL18 TW12 PA05 PI04 AA02 NW01 UA01
	1984	16	1,208,830	PE37 EA29 DL22 PA06 TW03 PI02 NY01
	1979	30	711,394	EA52 DL31 NA15 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Atlanta-New York	1988	25	1,029,164	DL54 EA34 PA04 TW03 AA02 AL01 PI01 UA01
	1984	30	765,572	DL55 EA35 RC03 PI02 TW02 PA01 UK01
	1979	23	782,496	DL55 EA41 PI02 UK01
New York-Seattle	1988	26	1,024,544	UA42 TW20 CO12 NW11 AA06 DL04 EA02 AL01
	1984	27	815,134	UA61 TW12 NW08 AA06 CO05 EA03 DL02 RC01 WA01
	1979	41	546,876	UA60 NW32 EA03 TW02 UK02
Detroit-Los Angeles	1988	27	959,506	NW58 AA10 UA09 CO08 WN05 DL04 BN02 TW02 EA01 GM01
	1984	20	1,026,378	UA44 AA30 RC13 DL03 BN02 CO02 TW02 EA01 NW01
	1979	25	765,379	AA61 UA33 DL02 TW02 NW01
Chicago-Las Vegas	1988	28	949,082	UA31 ML24 AA19 HP12 BN03 CO03 DL03 EA01 NW01 TW01 WN01
	1984	40	633,840	UA69 AA16 TW05 WA05 BN01 CO01 FL01 OZ01 RC01
	1979	27	741,346	TW57 UA41 AA01
Las Vegas-New York	1988	29	924,099	AA22 CO02 HP20 TW11 UA11 BN05 DL04 EA04 NW02
	1984	50	553,655	TW30 AA27 UA25 EA06 DL03 WA02 BN01 CO01 FL01 NW01 OZ01 PA01 RC01
	1979	32	686,281	TW58 UA32 AA06 BN02 DL01 NA01 UK01
Honolulu-Seattle	1988	30	888,155	UA39 NW30 HA27 CO02 DL02 AA01
	1984	31	762,428	UA50 NW44 WA06
	1979	13	1,034,486	NW43 UA29 CO14 BN12 WA01 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Los Angeles-Philadelphia	1988	31	876,606	UA32 TW30 AA07 CO07 AL06 EA06 DL04 NW03 PA03 UK01
	1984	28	795,201	TW36 UA32 EA12 AA07 AL04 CO04 DL02 NW02 BN01
	1979	28	741,130	TW47 AA28 UA22 DL01 EA01 UK01
Houston-Los Angeles	1988	32	850,441	CO76 WN16 AA04 DL02 NW01
	1984	23	957,107	CO38 MC25 WN18 EA10 AA03 PA03 DL02 UA01
	1979	34	613,238	CO65 NA28 TI05 BN01 UK01
Atlanta-Los Angeles	1988	33	812,759	DL68 EA19 AA03 CO03 UA03 BN01 NW01 TW01
	1984	44	579,231	DL63 EA29 AA03 FL02 NW01 RC01 UA01 UK01
	1979	35	609,095	DL67 EA31 TW01 UK01
Miami-San Francisco	1988	34	812,008	EA44 PA26 UA09 CO06 DL06 AA03 BN03 TW02 NW01
	1984	38	675,479	EA62 PA14 AA07 CO04 DL04 TW03 UA03 BN02 UK01
	1979	19	867,391	NA57 EA27 UK08 AA04 DL02 WA01
Chicago-Honolulu	1988	35	795,620	UA64 AA21 CO08 TW03 DL02 NW02
	1984	21	990,588	UA70 AA16 WA11 NW02 CO01 PA01
	1979	10	1,199,395	UA87 CO08 NW04 BN02
Los Angeles-Seattle	1988	36	767,123	UA34 AS16 DL15 PS11 AL09 AA05 CO05 HP02 NW01 PA01
	1984	41	585,782	UA47 WA29 PS14 NW06 CO03
	1979	29	716,402	UA51 WA30 NA13 NW04 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Dallas-Los Angeles	1988	37	726,762	AA49 DL23 BN19 CO06 UA02 NW01
	1984	43	580,184	AA53 DL28 BN12 CO02 TW02 UA01 UK01
	1979	21	846,620	DL43 AA39 BN09 TI08 UK01
Los Angeles-San Francisco	1988	38	722,504	UA25 AL19 PS19 AA18 PA08 TW04 DL03 EA02 CO01 NW01
	1984	32	757,404	PA35 UA34 OC13 WA06 DL05 TW04 AA01 PA01
	1979	37	593,825	UA34 WA23 PS14 TW11 DL08 AA03 RW03 UK03 BN02 NA01
Chicago-Miami	1988	39	711,065	EA32 UA27 ML17 DL08 PA08 BN02 TW02 AA01 CO01 PI01 TW01
	1984	52	546,682	EA32 DL17 NW15 UA14 CL12 QH04 PI02 OZ01 RC01 TW01 UK01
	1979	31	703,277	EA44 DL40 NW13 UK02 UA01
Chicago-San Diego	1988	40	700,393	UA39 AA24 CO13 BN08 HP04 TW03 WN03 DL02 EA02 NW02
	1984	74	431,505	AA35 UA30 TW12 CO11 NW03 RC03 WA03 FL02 OZ02
	1979	47	506,368	AA64 UA34 CO01
Atlanta-San Francisco	1988	41	673,284	DL67 EA18 UA05 AA03 CO03 BN01 NW01 TW01
	1984	55	509,910	DL63 EA29 AA02 NW02 FL01 RC01 UA01 UK01
	1979	49	494,804	DL69 EA29 TW01 UK01
Chicago-Denver	1988	42	667,762	UA64 CO19 AA08 ML07 NW01
	1984	49	559,466	UA40 CO30 AA17 FL04 OZ04 TW02
	1979	33	669,119	CO46 UA34 TW18 OZ01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Boston-Chicago	1988	43	661,661	UA46 AA19 ML13 NW10 CO06 AL02 DL01 PI01 TW01
	1984	45	578,347	UA42 AA37 NW09 TW05 AL03 PI02 RC01
	1979	43	532,377	AA40 TW29 UA28 AL01
New York-Washington	1988	44	655,665	PA35 EA32 CO19 UA09 TW04 AA01
	1984	35	710,235	EA35 NY32 PE23 PA07 TW03
	1979	42	537,321	EA73 AA08 BN08 NA03 RC02 TW02 UK02
Philadelphia-San Francisco	1988	45	655,494	UA54 TW12 CO07 AA06 AL06 NW06 DL05 EA03 PA01
	1984	58	497,850	UA45 TW20 AA10 CO05 EA05 NW05 AL03 DL03 BN02
	1979	52	486,721	TW49 UA37 AA08 DL03 EA02 UK01
Boston-New York	1988	46	647,196	PA32 EA31 CO25 PI04 TW03 AA02 NW01
	1984	25	848,262	EA38 PE35 NY11 PI06 PA04 AA02 TW02 DL01 NW01
	1979	60	451,966	EA76 AA11 DL06 TW04 BN02 AL01 UK01
Boston-Orlando	1988	47	636,586	DL50 EA34 PI05 AA03 CO03 UA02 AL01 NW01 TW01
	1984	57	498,480	DL50 EA34 NW06 PI05 AL01 NY01 QS01
	1979	96	302,962	EA64 DL28 NW07 AL01
Dallas-San Francisco	1988	48	633,039	AA42 DL26 BN21 UA06 CO03
	1984	51	550,025	AA54 DL22 BN12 PA06 UA02 EA01 NW01 UK01
	1979	59	455,451	AA58 DL40 BN01 UK01

City-Pair Market Shares, Top 50 Markets Ranked by Passenger Miles
1979, 1984 and Year Ending September 30, 1988

City-Pair	Year	Rank	Pass. Miles (000)	Carrier Market Shares (%)
Chicago-Dallas	1988	49	608,688	AA51 ML15 BN12 UA10 DL09 CO01 TW01
	1984	39	665,341	AA50 ML19 UA10 DL09 BN07 OZ02
	1979	46	512,284	AA53 BN45 DL01 OZ01
Dallas-Washington	1988	50	605,022	AA46 DL23 BN20 CO03 UA02 AL01 EA01 ML01 NW01 PI01 TW01
	1984	65	455,165	AA60 BN14 DL07 PI05 AL04 ML04 CB02 EA01 OZ01 UA01
	1979	84	339,575	BN56 AA40 DL02 EA01 UK01

Carrier Decoding:

AA = American, AL = USAir, AS = Alaska, CL = Capitol, CO = Continental, DL = Delta, EA = Eastern, FL = Frontier, GM = Air American, HA = Hawaiian, JK = Sunworld, LP = Hawaii Express, MC = Muse, MG = MGM Grand, ML = Midway, NW = Northwest, NY = New York Air, OC = Air Cal, OZ = Ozark, PA = Pan American, PE = People Express, PI = Piedmont, PS = Pacific Southwest, QG = Sky West, OH = Air Florida, QS = Northeastern, RC = Republic, SI = Jet America, TV = Transamerica, TW = Trans World, UA = United, UK = Unknown carrier, WA = Western, WN = Southwest, WO = World.

SOURCE: Origin-Destination Survey of Airline Passenger Traffic, Table 10, 1979, 1984 and YE September 30, 1988.

RELIANCE OF MAJOR CARRIERS ON THEIR HUBBING COMPLEXES

Table I-31

Objective: To measure the relative importance of each major carrier's connecting hubs by comparing total departures and enplanements at the hubs to the carrier's system totals.

Data Sources: Airport Activity Statistics, Table 1, 1979, 1984, 1988. Data for 1988 are preliminary.

Observations/Interpretation:

These data show that the connecting hubs of each major carrier have become increasingly important as measured by relative share of total departures or enplanements. From 1979 to 1984, all carriers had increases in the hub percentages for both departures and enplanements. From 1984 to 1988, all except American and Continental had increases in both measures and for the 1979-1988 period all carriers had increases in both measures. The ranges for the percentages for each measure and for each year are as follows:

	Departures		Enplanements	
1988	Percent	Carrier	Percent	Carrier
High	54.4	United	57.6	United
Low	29.8	Pan American	35.2	Pan American
1984				
High	49.8	Continental	56.1	United
Low	27.1	Pan American	30.5	Pan American
1979				
High	42.8	United	48.6	United
Low	4.7	Piedmont	3.7	Piedmont

SHARES OF DEPARTURES AND ENPLANEMENTS AT CONNECTING HUBS, MAJOR CARRIERS
1979, 1984 AND 1988

		Departures and Enplanements						Percent of Carrier Total					
		1979		1984		1988		1979		1984		1988	
Carrier	Hub	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements
American	Chicago	50,192	4,476,203	63,596	4,807,880	95,400	7,855,332	13.3	14.4	16.0	14.1	12.5	12.2
	Dallas/Ft.Worth	44,897	3,481,762	100,099	9,292,719	131,265	13,104,037	11.9	11.2	25.1	27.2	17.2	20.4
	Los Angeles	20,464	2,202,260	15,183	1,786,516	40,072	3,795,140	5.4	7.1	3.8	5.2	5.3	5.9
	Nashville	7,101	331,973	4,850	266,028	31,131	2,032,937	1.9	1.1	1.2	0.8	4.1	3.2
	Raleigh/Durham	0	0	0	0	36,463	2,402,570	—	—	—	—	4.8	3.7
	San Francisco	11,550	1,104,591	7,757	746,567	27,849	1,972,749	3.1	3.6	1.9	2.2	3.6	3.1
	Hub Total	134,204	11,596,789	191,465	16,899,720	362,180	31,162,765	35.5	37.4	48.0	49.5	47.5	48.5
	System Total	378,394	31,013,463	398,696	34,123,667	763,109	64,269,556	100.0	100.0	100.0	100.0	100.0	100.0
Continental	Cleveland	0	0	1,701	147,216	18,762	861,809	—	—	1.2	1.3	3.6	2.3
	Denver	29,369	2,078,755	32,933	2,522,702	80,497	5,858,541	18.7	21.1	22.9	22.7	15.6	15.6
	Houston	14,225	905,484	35,934	2,652,943	78,719	5,553,810	9.1	9.2	25.0	23.9	15.2	14.8
	Newark	333	18,520	1,033	113,628	63,247	4,528,720	0.2	0.2	0.8	1.0	12.2	12.0
	Hub Total	43,927	3,002,759	71,701	5,436,689	241,225	16,802,880	28.0	30.4	49.8	48.9	46.6	44.6
	System Total	157,099	9,873,384	143,921	11,113,981	517,259	37,635,871	100.0	100.0	100.0	100.0	100.0	100.0
Delta	Atlanta	111,087	10,448,048	120,819	9,935,973	141,619	12,744,120	20.3	25.9	23.3	26.6	17.7	21.3
	Cincinnati	11,696	589,069	19,165	945,756	45,932	2,758,638	2.1	1.5	3.7	2.5	5.7	4.6
	Dallas/Ft.Worth	20,461	1,615,560	49,293	3,303,746	75,476	5,394,738	3.7	4.0	9.5	8.9	9.4	9.0
	Los Angeles	6,572	764,365	5,955	694,576	34,285	3,072,968	1.2	1.9	1.1	1.9	4.3	5.1
	Orlando	8,618	783,001	9,012	810,006	22,504	1,975,338	1.6	1.9	1.7	2.2	2.8	3.3
	Salt Lake City	0	0	1,750	71,607	56,171	3,791,900	—	—	0.3	0.2	7.0	6.3
	Hub Total	158,434	14,200,043	205,994	15,766,654	375,988	29,737,702	28.9	35.3	39.7	42.2	46.9	49.6
	System Total	547,568	40,273,003	318,619	37,340,957	801,117	59,969,345	100.0	100.0	100.0	100.0	100.0	100.0

SHARES OF DEPARTURES AND ENPLANEMENTS AT CONNECTING HUBS, MAJOR CARRIERS
1979, 1984 AND 1988

Carrier	Hub	Departures and Enplanements						Percent of Carrier Total					
		1979		1984		1988		1979		1984		1988	
		Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements
Eastern	Atlanta	102,847	8,313,699	110,324	7,592,817	104,313	7,552,698	18.4	19.5	20.7	19.9	23.6	21.2
	Boston	15,806	1,699,652	16,346	1,795,710	17,642	1,663,573	2.8	4.0	3.1	4.7	4.0	4.7
	Miami	45,828	4,179,654	43,754	4,295,887	44,521	5,031,121	8.2	9.8	8.2	11.3	10.1	14.1
	New York	41,312	4,517,471	36,377	4,133,657	30,987	3,281,591	7.4	10.6	6.8	10.9	7.0	9.2
	Hub Total	205,793	18,700,476	206,801	17,818,071	197,463	17,528,933	36.9	43.8	38.9	46.8	44.7	49.3
	System Total	557,682	42,723,882	531,870	38,080,957	441,645	35,587,185	100.0	100.0	100.0	100.0	100.0	100.0
Northwest	Detroit	12,608	744,614	10,593	987,781	78,246	5,527,914	7.5	6.4	6.3	4.4	16.1	15.4
	Memphis	0	0	0	0	62,630	3,784,644	—	—	—	—	12.9	10.6
	Milwaukee	8,601	380,073	5,257	254,750	11,428	721,072	5.1	3.3	3.1	1.9	2.4	2.0
	Minneapolis/ St. Paul	24,251	1,851,983	36,071	2,898,852	79,399	6,336,751	14.5	15.9	21.5	21.9	16.3	17.7
	Seattle	9,247	957,104	8,037	806,163	7,255	763,893	5.5	8.2	4.8	6.1	1.5	2.1
	Hub Total	54,707	3,933,774	59,958	4,547,546	238,958	17,134,274	32.6	33.8	35.8	34.4	49.2	47.9
	System Total	167,622	11,636,017	167,570	13,215,484	486,164	35,783,704	100.0	100.0	100.0	100.0	100.0	100.0
Pan American	Miami	2,981	380,324	17,469	1,449,572	16,570	1,788,894	3.8	4.1	12.4	10.4	10.3	10.7
	New York	6,551	1,063,379	20,577	2,787,704	31,266	4,101,816	8.3	11.5	14.6	20.0	19.5	24.5
	Hub Total	9,532	1,443,703	38,046	4,237,276	47,836	5,890,710	12.1	15.6	27.1	30.5	29.8	35.2
	System Total	78,581	9,274,291	140,639	13,913,063	160,263	16,754,383	100.0	100.0	100.0	100.0	100.0	100.0

SHARES OF DEPARTURES AND ENPLANEMENTS AT CONNECTING HUBS, MAJOR CARRIERS
1979, 1984 AND 1988

		Departures and Enplanements						Percent of Carrier Total					
		1979		1984		1988		1979		1984		1988	
Carrier	Hub	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements
Piedmont	Baltimore	667	15,512	19,434	945,242	44,897	2,505,550	0.4	0.3	7.2	6.6	9.3	9.2
	Charlotte	7,245	187,585	51,045	3,147,112	90,423	6,018,082	4.3	3.4	19.0	22.0	18.7	22.2
	Dayton	0	0	16,236	884,328	25,978	1,599,130	—	—	6.0	6.2	5.4	5.9
	Hub Total	7,912	203,097	86,715	4,976,682	161,298	10,122,762	4.7	3.7	32.2	34.9	33.4	37.3
	System Total	168,601	5,478,715	269,139	14,273,887	483,440	27,116,924	100.0	100.0	100.0	100.0	100.0	100.0
Trans World	Los Angeles	15,412	1,700,956	6,637	927,311	8,366	1,056,501	5.2	7.5	3.2	5.0	2.6	4.2
	New York	25,793	2,756,802	23,068	3,083,279	28,776	3,685,422	8.8	12.2	11.1	16.7	9.0	14.7
	San Francisco	10,876	1,135,086	4,943	625,346	3,775	585,145	3.7	5.0	2.4	3.4	1.2	2.3
	St. Louis	36,623	2,422,839	57,916	4,540,747	108,345	7,868,432	12.4	10.7	27.9	24.6	33.9	31.3
	Hub Total	88,704	8,015,693	92,604	9,176,683	149,262	13,195,500	30.2	35.5	44.7	49.6	46.7	52.5
	System Total	294,205	22,573,167	207,304	18,486,164	319,381	25,122,636	100.0	100.0	100.0	100.0	100.0	100.0
United	Chicago	67,650	5,950,436	101,625	8,689,535	138,890	13,409,958	14.5	16.8	19.0	21.2	22.3	23.8
	Denver	29,146	2,575,016	60,331	5,172,966	67,636	6,409,292	6.3	7.3	11.3	12.6	10.8	11.4
	Los Angeles	33,357	3,102,756	28,238	3,083,641	29,062	3,387,567	7.2	8.8	5.3	7.5	4.7	6.0
	San Francisco	40,452	3,307,451	47,079	3,945,782	47,574	4,794,392	8.7	9.4	8.8	9.6	7.6	8.5
	Seattle	16,170	1,316,801	13,541	1,321,351	18,380	1,785,887	3.5	3.7	2.5	3.2	2.9	3.2
	Washington	12,561	949,790	10,043	790,852	37,600	2,664,466	2.7	2.7	1.9	1.9	6.0	4.7
	Hub Total	199,336	17,202,250	260,857	23,004,128	339,142	32,451,552	42.8	48.6	48.8	56.1	54.4	57.6
	System Total	466,089	35,372,896	534,568	41,010,078	623,942	56,326,106	100.0	100.0	100.0	100.0	100.0	100.0

SHARES OF DEPARTURES AND ENPLANEMENTS AT CONNECTING HUBS, MAJOR CARRIERS
1979, 1984 AND 1988

		Departures and Enplanements						Percent of Carrier Total					
		1979		1984		1988		1979		1984		1988	
Carrier	Hub	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements	Departures	Enplanements
USAir	Indianapolis	9,235	370,179	8,504	345,346	13,966	794,370	3.2	2.6	2.6	2.0	2.7	2.4
	Los Angeles	0	0	1,644	163,517	42,480	2,641,566	—	—	0.5	1.0	8.2	8.1
	Philadelphia	17,412	984,784	19,277	1,025,987	36,294	2,421,229	6.1	7.0	5.8	6.0	7.0	7.5
	Pittsburgh	48,855	2,661,516	81,024	4,800,683	100,850	7,143,910	17.0	18.9	24.4	28.2	19.4	22.0
	San Francisco	0	0	1,064	106,547	30,308	2,040,012	—	—	0.3	0.6	5.8	6.3
	Hub Total	75,502	4,016,479	111,513	6,442,080	223,898	15,041,087	26.3	28.6	33.6	37.8	43.0	46.3
	System Total	287,602	14,060,431	332,068	17,046,890	520,572	32,466,061	100.0	100.0	100.0	100.0	100.0	100.0

Note: Departures are scheduled aircraft departures completed. Enplanements include total passengers enplaned in scheduled service.

Source: Airport Activity Statistics, Table 1, 1979, 1984 and 1988. 1988 data are preliminary.

MARKETS REQUIRED TO REACH 25 AND 50 PERCENT OF SELECTED MAJOR AND NATIONAL CARRIER ORIGIN-DESTINATION PASSENGERS AND NONSTOP SEGMENT REVENUE PASSENGER-MILES.

Table I-32

Objective: One measure of carrier size and competitive vulnerability is the number of markets it serves. A carrier serving few markets can be more readily injured by additional competition in those markets.

The following two tables are designed to show the number of markets required to provide one quarter and one half of a carriers passengers and passenger-miles.

Data Sources: Two alternative data sources were used, nonstop segment revenue passenger miles from the ER-586 and T-9 segment data, which are weighted by market distance, and actual local passengers from the Origin-Destination Survey, Table 10.

Observation/Interpretation: The tables generally show that those carriers that have been successful have expanded the number of markets required to reach the major portion of their traffic, lessening any dependence on only a few markets. Three major carriers that have not been as successful domestically as the other majors, Eastern, Pan American, and Trans World, have actually seen an increase in their dependence on a relatively few markets through a reduction in the number of markets required to reach 25 or 50 percent of their passengers or RPM's.

Markets Required to Reach 25 and 50 Percent
of Selected Major and National Carrier Origin-Destination
Passengers, 1979, 1984, and Y.E. September 1988 1/

Carrier 2/	1988		1984		1979	
	25%	50%	25%	50%	25%	50%
American Airlines	30	143	15	60	10	37
Air California	—	—	4	9	2	5
America West Airlines	5	19	3	10	—	—
Braniff Inc.	10	30	5	12	12	41
Continental Airlines	20	72	10	30	8	26
Frontier Airlines	—	—	13	65	8	39
Texas Inter. Airlines	—	—	—	—	5	16
People Express	—	—	3	7	—	—
New York Air	—	—	1	2	—	—
Delta Air Lines	37	154	27	78	24	79
Western Airlines	—	—	7	27	5	19
Eastern Air Lines	8	45	6	47	6	48
Midway Airlines	3	10	2	3	—	—
Air Florida	—	—	4	10	3	6
Northwest Airlines	22	107	7	29	7	23
Hughes Airwest	—	—	—	—	8	25
North Central Airlines	—	—	—	—	12	41
Southern Airways	—	—	—	—	9	34
Republic	—	—	27	94	20	71
Pan American Airways	2	4	3	8	1	1
National Airlines	—	—	—	—	4	12
TWA, Inc.	5	19	5	15	7	23
Ozark Air Lines	—	—	6	13	6	17
Southwest Airlines	7	54	6	18	2	6
Muse Air Corporation	—	—	1	3	—	—
United Airlines	18	76	19	73	20	76
USAir	20	81	13	63	14	50
Piedmont	33	154	14	77	9	35
Pacific Southwest Airlines	4	11	4	10	3	8

1/ Passengers are those derived from the 10 percent sample in the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local.
2/ Corporate name and ownership that of carrier in 1988. Subsidiary or merged carriers are indented.

Markets Required to Reach 25 and 50 Percent of Selected Major and National Carrier Revenue Passenger-Miles, 1979, 1984, and Y.E. September 1988 1/

Carrier 2/	1988		1984		1979	
	25%	50%	25%	50%	25%	50%
American Airlines	11	32	7	21	7	23
Air California	—	—	4	8	N/A	N/A
America West Airlines	5	13	3	6	—	—
Braniff Inc.	5	10	3	5	6	16
Continental Airlines	11	35	5	12	3	9
Frontier Airlines	—	—	6	14	5	12
Texas Inter. Airlines	—	—	—	—	3	7
People Express	—	—	3	6	—	—
New York Air	—	—	2	4	—	—
Delta Air Lines	16	48	12	39	11	30
Western Airlines	—	—	2	10	4	11
Eastern Air Lines	11	32	13	40	16	40
Midway Airlines	3	8	2	4	—	—
Air Florida	—	—	6	13	—	—
Northwest Airlines	9	28	5	13	5	13
Hughes Airwest	—	—	—	—	9	19
North Central Airlines	—	—	—	—	5	17
Southern Airways	—	—	—	—	7	18
Republic	—	—	12	34	10	31
Pan American Airways	2	4	3	6	2	3
National Airlines	—	—	—	—	4	12
TWA, Inc.	5	19	5	15	7	23
Ozark Air Lines	—	—	6	13	6	17
Southwest Airlines	8	21	6	14	N/A	N/A
Muse Air Corporation	—	—	2	4	—	—
United Airlines	9	28	7	27	7	30
USAir	12	36	6	22	12	35
Piedmont Aviation	12	32	10	28	10	26
Pacific Southwest Airlines	4	10	3	9	N/A	N/A

1/ Revenue passenger-miles are those flown on domestic nonstop flight segments, ER-586 and T-9 segment data.
2/ Corporate name and ownership that of carrier in 1988. Subsidiary or merged carriers are indented.

CONCENTRATION IN CITY-PAIR MARKETS

Table I-33

Objective: To analyze city-pair concentration by comparing passengers and RPM's distributed by dominant carrier share. Changes over time indicate whether concentration is increasing or decreasing.

Data Sources: DOT Origin-Destination Survey, Table 12.

Observations/Interpretation: In contrast to point concentration, these exhibits reveal that concentration has declined in city pairs in each density category. As with points, the picture is quite different from one density category to another. While concentration in the more dense city pairs (500 passengers per day) has changed only modestly, the change has been dramatic in all other density categories. The only deviation from a general decline in concentration is for the more concentrated large city pairs, which still account for less than 10 percent of the traffic in large city pairs. Interestingly, however, in every instance the largest change was from 1979 to 1984, before concentration developed at the connecting hubs.

City-Pair Concentration
Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share 1/

Period and City-Pair Density Based on O&D Passengers Per Day	Number of RPM's (000)						
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%	Total
Calendar 1988:							
50-100	727	886	1,103	2,286	3,207	15,419	23,628
101-200	1,089	1,219	2,987	2,907	4,577	17,308	30,087
201-500	871	2,106	4,382	6,379	8,695	27,441	49,873
500+	899	2,050	5,926	10,235	20,951	82,164	122,214
Total	3,575	6,261	14,397	21,807	37,429	142,332	225,802
Calendar 1984:							
50-100	888	873	1,204	2,046	3,007	10,411	18,430
101-200	987	732	2,094	2,735	3,475	11,438	21,463
201-500	1,716	945	2,015	6,952	7,631	17,359	36,618
500+	373	2,436	1,682	12,356	16,336	61,209	94,392
Total	3,964	4,987	6,995	24,090	30,449	100,418	170,903
Calendar 1979:							
50-100	2,132	2,043	2,186	2,816	2,586	4,161	15,925
101-200	2,320	2,499	3,602	3,301	4,586	5,070	21,378
201-500	2,662	2,067	4,135	7,262	9,157	7,804	33,087
500+	156	744	3,612	8,379	17,065	37,212	67,169
Total	7,270	7,354	13,535	21,758	33,394	54,247	137,558

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share 1/

Period and City-Pair Density Based on O&D Passengers Per Day	Percent Distribution of RPM's						
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%	Total
Calendar 1988:							
50-100	3.1%	3.8%	4.7%	9.7%	13.6%	65.3%	100.00%
101-200	3.6	4.1	9.9	9.7	15.2	57.5	100.00
201-500	1.7	4.2	8.8	12.8	17.4	55.0	100.00
500+	0.7	1.7	4.8	8.4	17.1	67.2	100.00
Total	1.6	2.8	6.4	9.7	16.6	63.0	100.00
Calendar 1984:							
50-100	4.8	4.7	6.5	11.1	16.3	56.5	100.00
101-200	4.6	3.4	9.8	12.7	16.2	53.3	100.00
201-500	4.7	2.6	5.5	19.0	20.8	47.4	100.00
500+	0.4	2.6	1.8	13.1	17.3	64.8	100.00
Total	2.3	2.9	4.1	14.1	17.8	58.8	100.00
Calendar 1979:							
50-100	13.4	12.8	13.7	17.7	16.2	26.1	100.00
101-200	10.9	11.7	16.8	15.4	21.5	23.7	100.00
201-500	8.0	6.2	12.5	21.9	27.7	23.6	100.00
500+	0.2	1.1	5.4	12.5	25.4	55.4	100.00
Total	5.3	5.3	9.8	15.8	24.3	39.4	100.00

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Cumulative Percent Distribution of RPM's 1/
(Starting With Most Concentrated City-Pairs)

Period and City-Pair Density Based on O&D Passengers Per Day	90% or More	80% or More	70% or More	60% or More	50% or More
50-100 (Psgrs. per day):					
1988	3.1%	6.9%	11.6%	21.3%	34.9%
1984	3.8	9.5	16.0	27.1	43.4
1979	13.4	26.2	39.9	57.6	73.8
101-200:					
1988	3.6	7.7	17.6	27.3	42.5
1984	4.6	8.0	17.8	30.5	46.7
1979	10.9	22.6	39.4	54.8	76.3
201-500:					
1988	1.7	5.9	14.7	27.5	44.9
1984	4.7	7.3	12.8	31.8	52.6
1979	8.0	14.2	26.7	48.6	76.3
500+					
1988	0.7	2.4	7.2	15.6	32.7
1984	0.4	3.0	4.8	17.9	35.2
1979	0.2	1.3	6.7	19.2	44.6
Total:					
1988	1.6	4.4	10.8	20.5	37.1
1984	2.3	5.2	9.3	23.4	41.2
1979	5.3	10.6	20.4	36.2	60.5

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Cumulative Percent Distribution of RPM's 1/
(Starting With Least Concentrated City-Pairs)

Period and City-Pair Density Based on O&D Passengers Per Day	Less Than 50%	60%	70%	80%	90%
50-100 (Psgrs. per day):					
1988	65.3%	78.9%	88.6%	93.3%	97.1%
1984	56.5	72.8	83.9	90.4	95.1
1979	26.1	42.3	60.0	73.7	86.5
101-200:					
1988	57.5	72.7	82.4	92.3	96.4
1984	53.3	69.5	82.2	92.0	95.4
1979	23.7	45.2	60.6	77.4	89.1
201-500:					
1988	55.0	72.4	85.2	94.0	98.2
1984	47.4	68.2	87.2	92.7	95.3
1979	23.6	51.3	73.2	85.7	91.9
500+					
1988	67.2	84.8	92.7	97.5	99.2
1984	64.8	82.1	95.2	97.0	99.6
1979	55.4	60.8	93.3	98.7	99.8
Total:					
1988	63.0	79.6	89.3	95.7	98.5
1984	58.8	76.6	90.7	94.8	97.7
1979	39.4	63.7	79.5	89.3	94.6

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Distribution of Total RPM's (True O&D)
Based on Dominant Carrier Share

Period and City-Pair Density Based on O&D Passengers Per Day	Number of Dominant Carrier RPM's (000)						Other Carrier's RPM's 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%		
Calendar 1988:								
50-100	690	752	831	1,486	1,758	5,629	12,482	23,628
101-200	1,031	1,035	2,222	1,894	2,494	6,218	15,193	30,087
201-500	832	1,785	3,278	4,145	4,811	10,330	24,693	49,873
500+	836	1,728	4,429	6,608	11,251	28,844	68,519	122,214
Total	3,389	5,299	10,760	14,133	20,314	51,020	120,887	225,802
Calendar 1984:								
50-100	851	745	905	1,319	1,645	4,012	8,954	18,430
101-200	941	620	1,564	1,754	1,892	4,490	10,200	21,463
201-500	1,643	797	1,494	4,439	4,203	6,953	17,090	36,618
500+	364	2,012	1,265	7,911	9,070	22,872	50,898	94,392
Total	3,799	4,174	5,228	15,424	16,811	38,326	87,142	170,903
Calendar 1979:								
50-100	2,033	1,728	1,639	1,826	1,414	1,729	5,555	15,925
101-200	2,218	2,129	2,696	2,144	2,531	2,190	7,470	21,378
201-500	2,596	1,733	3,072	4,683	5,056	3,409	12,537	33,087
500+	147	623	2,726	5,335	9,353	14,887	34,097	67,169
Total	6,993	6,213	10,134	13,990	18,354	22,216	59,658	137,558

1/ Total RPM's of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of RPM's (True O&D)
Based on Dominant Carrier Share

Period and City-Pair Density Based on O&D Passengers Per Day	Percent Distribution of Dominant Carrier RPM's						Other Carrier's RPM's 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%		
Calendar 1988:								
50-100	2.9%	3.2%	3.5%	6.3%	7.4%	23.8%	52.8%	100.00%
101-200	3.4	3.4	7.4	6.3	8.3	20.7	50.5	100.00
201-500	1.7	3.6	6.6	8.3	9.6	20.7	49.5	100.00
500+	0.7	1.4	3.6	5.4	9.2	23.6	56.1	100.00
Total	1.5	2.3	4.8	6.3	9.0	22.6	53.5	100.00
Calendar 1984:								
50-100	4.6	4.0	4.9	7.2	8.9	21.8	48.6	100.00
101-200	4.4	2.9	7.3	8.2	8.8	20.9	47.5	100.00
201-500	4.5	2.2	4.1	12.1	11.5	19.0	46.7	100.00
500+	0.4	2.1	1.3	8.4	9.6	24.2	53.9	100.00
Total	2.2	2.4	3.1	9.0	9.8	22.4	51.0	100.00
ndar 1979:								
50-100	12.8	10.9	10.3	11.5	8.9	10.9	34.9	100.00
101-200	10.4	10.0	12.6	10.0	11.8	10.2	34.9	100.00
201-500	7.8	5.2	9.3	14.2	15.3	10.3	37.9	100.00
500+	0.2	0.9	4.1	7.9	13.9	22.2	50.8	100.00
Total	5.1	4.5	7.4	10.2	13.3	16.2	43.4	100.00

1/ Total RPM's of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Distribution of Total True O&D Passengers
Based on Dominant Carrier Share 1/

Period and City-Pair Density Based on O&D Passengers Per Day	Number of Passengers (000)						
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%	Total
Calendar 1988:							
50-100	2,421	2,076	1,607	2,280	2,753	9,874	21,012
101-200	3,375	2,585	3,111	2,664	4,252	11,501	27,489
201-500	3,382	4,015	5,783	7,324	8,999	18,230	47,733
500+	2,014	4,047	7,163	14,060	29,062	80,367	136,714
Total	11,193	12,732	17,664	26,329	45,066	119,972	232,948
Calendar 1984:							
50-100	2,260	1,304	1,657	1,897	2,702	6,299	16,119
101-200	2,678	1,635	2,034	2,727	4,093	7,500	20,667
201-500	3,221	1,680	3,215	7,590	7,377	13,432	36,515
500+	1,233	3,231	3,654	19,023	23,887	62,954	113,982
Total	9,392	7,850	10,560	31,236	38,060	90,184	187,283
Calendar 1979:							
50-100	3,291	2,566	2,389	2,223	2,651	3,142	16,262
101-200	4,991	3,630	3,389	3,245	3,896	4,499	23,650
201-500	3,560	3,877	5,641	7,369	8,174	7,620	36,240
500+	286	2,407	8,439	14,376	16,591	30,650	72,744
Total	12,128	12,479	19,859	27,213	31,311	45,912	148,902

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of Total True O&D Passengers
Based on Dominant Carrier Share 1/

Period and City-Pair Density Based on O&D Passengers Per Day	Number of Passengers (000) 90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%	Total
Calendar 1988:							
50-100	11.5%	9.9%	7.7%	10.9%	13.1%	47.0%	100.00%
101-200	12.3	9.4	11.3	9.7	15.5	41.8	100.00
201-500	7.1	8.4	12.1	15.3	18.9	38.2	100.00
500+	1.5	3.0	5.2	10.3	21.3	58.8	100.00
Total	4.8%	5.5%	7.6%	11.3%	19.3%	51.5%	100.00%
Calendar 1984:							
50-100	14.0%	8.1%	10.3%	11.8%	16.8%	39.1%	100.00%
101-200	13.0	7.9	9.8	13.2	19.8	36.3	100.00
201-500	8.8	4.6	8.8	20.8	20.2	36.8	100.00
500+	1.1	2.8	3.2	16.7	21.0	55.2	100.00
Total	5.0%	4.2%	5.6%	16.7%	20.3%	48.2%	100.00%
Calendar 1979:							
50-100	20.2%	15.8%	14.7%	13.7%	16.3%	19.3%	100.00%
101-200	21.1	15.3	14.3	13.7	16.5	19.0	100.00
201-500	9.8	10.7	15.6	20.3	22.6	21.0	100.00
500+	0.4	3.3	11.6	19.8	22.8	42.1	100.00
Total	8.1%	8.4%	13.3%	18.3%	21.0%	30.8%	100.00%

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Cumulative Percent Distribution of Total O&D Passengers 1/
(Starting With Most Concentrated City-Pairs)

Period and City-Pair Density Based on O&D Passengers Per Day	90% or More	80% or More	70% or More	60% or More	50% or More
50-100 (Psgrs. per day):					
1988	11.5%	21.4%	29.1%	40.0%	53.1%
1984	14.0	22.1	32.4	44.2	61.0
1979	20.2	36.0	50.7	64.4	80.7
101-200:					
1988	12.3	21.7	33.0	42.7	58.2
1984	13.0	20.9	30.7	43.9	63.7
1979	21.1	36.4	50.7	64.4	80.9
201-500:					
1988	7.1	15.5	27.6	42.9	61.8
1984	8.8	13.4	22.2	43.0	63.2
1979	9.8	20.5	36.1	56.4	79.0
500+					
1988	1.5	4.5	9.7	20.0	41.3
1984	1.1	3.9	7.1	23.8	44.8
1979	0.4	3.7	15.3	35.1	57.9
Total:					
1988	4.8	10.3	17.9	29.2	48.5
1984	5.0	9.2	14.8	31.5	51.8
1979	8.1	16.5	29.8	48.1	69.1

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Cumulative Percent Distribution of Total O&D Passengers 1/
(Starting With Least Concentrated City-Pairs)

Period and City-Pair Density Based on O&D Passengers Per Day	Less Than 50%	60%	70%	80%	90%
50-100 (Psgrs. per day):					
1988	47.0%	60.1%	71.0%	78.7%	88.6%
1984	39.1	55.9	67.7	78.0	86.1
1979	19.3	35.60	49.3	64.0	79.1
101-200:					
1988	41.8	57.3	67.0	78.3	87.7
1984	36.3	56.1	69.3	79.1	87.0
1979	19.0	35.5	49.2	63.5	64.8
201-500:					
1988	38.2	57.1	72.4	84.5	92.9
1984	36.8	57.0	77.8	86.6	91.2
1979	21.0	43.6	63.9	79.5	90.2
500+					
1988	58.8	80.1	90.4	95.6	98.6
1984	55.2	76.2	92.9	96.1	98.9
1979	42.1	64.9	84.7	96.3	99.6
Total:					
1988	51.5	70.8	82.1	89.7	95.2
1984	48.2	68.5	85.2	90.8	95.0
1979	42.1	64.9	84.7	96.3	99.6

1/ Although distributed based on dominant carrier share, these data reflect total RPM's for all carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Distribution of True O&D Passengers
Based on Dominant Carrier Share

Period and City-Pair Density Based on O&D Passengers Per Day	Number of Dominant Carrier Passengers (000)						Other Carrier's Passengers 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%		
Calendar 1988:								
50-100	2,330	1,768	1,191	1,480	1,502	3,705	9,036	21,012
101-200	3,226	2,197	2,332	1,725	2,314	4,266	11,429	27,489
201-500	3,236	3,405	4,351	4,726	4,926	7,082	20,007	47,733
500+	1,930	3,415	5,341	9,089	15,719	29,786	71,434	136,714
Total	10,722	10,784	13,215	17,020	24,461	44,839	111,908	232,948
Calendar 1984:								
50-100	2,177	1,109	1,232	1,235	1,481	2,463	6,422	16,119
101-200	2,575	1,388	1,515	1,761	2,237	2,965	8,226	20,667
201-500	3,085	1,423	2,407	4,905	4,050	5,546	15,100	36,515
500+	1,194	2,741	2,715	12,237	13,385	23,949	57,760	113,982
Total	9,030	6,661	7,870	20,138	21,153	34,923	87,508	187,283
Calendar 1979:								
50-100	3,125	2,180	1,790	1,452	1,442	1,316	4,956	16,262
101-200	4,756	3,092	2,533	2,085	2,146	1,925	7,113	23,650
201-500	3,438	3,276	4,217	4,772	4,486	3,311	12,741	36,240
500+	272	2,004	6,425	9,194	9,120	12,284	33,449	72,749
Total	11,590	10,552	14,965	17,503	17,194	18,837	58,260	148,902

1/ Total passengers of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

City-Pair Concentration
Percentage Distribution of True O&D Passengers
Based on Dominant Carrier Share

Period and City-Pair Density Based on O&D Passengers Per Day	Number of Dominant Carrier Passengers (000)						Other Carrier's Passengers 1/	Total
	90% or More	80 to 89.9%	70 to 79.9%	60 to 69.9%	50 to 59.9%	Under 50%		
Calendar 1988:								
50-100	11.1%	8.4%	5.7%	7.0%	7.1%	17.6%	43.0%	100.00%
101-200	11.7	8.0	8.5	6.3	8.4	15.5	41.6	100.00
201-500	6.8	7.1	9.1	9.9	10.3	14.8	41.9	100.00
500+	1.4	2.5	3.9	6.6	11.5	21.8	52.3	100.00
Total	4.6	4.6	5.7	7.3	10.5	19.2	48.0	100.00
Calendar 1984:								
50-100	13.5	6.9	7.6	7.7	9.2	15.3	39.8	100.00
101-200	12.5	6.7	7.3	8.5	10.8	14.3	39.8	100.00
201-500	8.4	3.9	6.6	13.4	11.1	15.2	41.4	100.00
500+	1.0	2.4	2.4	10.7	11.7	21.0	50.7	100.00
Total	4.8	3.6	4.2	10.8	11.3	18.6	46.7	100.00
Calendar 1979:								
50-100	19.2	13.4	11.0	8.9	8.9	8.1	30.5	100.00
101-200	20.0	13.1	10.7	8.8	9.1	8.1	30.1	100.00
201-500	9.5	9.0	11.6	13.2	12.4	9.1	35.2	100.00
500+	0.4	2.8	8.8	12.6	12.5	16.9	46.0	100.00
Total	7.8	7.1	10.1	11.8	11.5	12.7	39.1	100.00

1/ Total passengers of the non-dominant carriers.

SOURCE: DOT Origin and Destination Survey, Table 12.

DISTRIBUTION OF ORIGIN-DESTINATION PASSENGERS AND PASSENGER-MILES BY MARKET DENSITY AND ROUTING GROUP, 1979, 1984, AND Y.E. SEPTEMBER 1988

Table I-34

Objective: Economic nonstop or single-plane transport by aircraft requires a minimum number of market passengers per day. On-line service requires a single carrier to serve both points, with a reasonable opportunity for passengers to utilize that single carrier's service. Absent single-plane or single-carrier service, multi-carrier service, or interline movement, must be utilized. The objective of this table is to show what the distribution of passengers and passenger-miles were in 1979, 1984, and Y.E. September 1988 by density and routing.

Data Source: Table 12 of the Origin-Destination Survey of Airline Passenger Traffic, which gives passenger routings by market -- single-plane, on-line, and interline.

Observations/Interpretation: Each density category of single-plane passenger movement has shown a decline in percentage of total passenger movement from 1979-1988, measured in terms of passengers or passenger-miles. On the other hand, interline passenger travel, the least appreciated by passengers, has virtually disappeared between 1979 and 1984, even in the markets under 50 passengers per day.

The reduction in single-plane and near disappearance of interline travel can be attributed to the marked increase in on-line passenger travel. This on-line increase is directly related to the increased scope (size) of carrier operations, nearly all carriers now serving national, as opposed to regional markets, and the rise of the hub/spoke system, which has enabled passengers to make generally convenient on-line connections in most passenger markets on any of the major carriers.

Distribution of Origin-Destination Passengers and Passenger-Miles by Market Density and Routing Group, 1979, 1984, and Y.E. September 1988

Year and Routing	Passenger Density per Day 0-50	51-100	101-200	201-500	Over 500	Total
Passengers						
1979 Single-Plane	18.4	56.4	77.5	86.6	92.8	70.2
On-Line	37.6	31.9	15.8	9.2	4.0	16.2
Interline	44.0	11.7	6.7	4.2	3.2	13.5
	100.0	100.0	100.0	100.0	100.0	99.9
1984 Single-Plane	14.9	43.6	65.0	79.1	92.4	71.5
On-Line	60.7	50.2	30.9	17.9	5.8	22.2
Interline	24.4	6.2	4.1	2.9	1.8	6.2
	100.0	100.0	100.0	99.9	100.0	99.9
1988 Single-Plane	12.2	34.5	51.5	70.9	89.1	65.6
On-Line	80.8	62.3	46.0	27.2	9.5	31.8
Interline	7.0	2.8	2.5	1.9	1.4	2.6
	100.0	100.1	100.0	100.0	100.0	100.0
Passenger-Miles						
1979 Single-Plane	10.8	43.9	68.0	80.8	88.9	63.5
On-Line	41.6	41.8	23.1	13.5	6.1	20.5
Interline	47.7	14.2	8.9	5.7	4.9	16.0
	100.1	99.9	100.0	100.0	99.9	100.0
1984 Single-Plane	8.3	29.6	52.1	69.7	85.7	60.7
On-Line	66.6	62.6	42.4	26.4	11.3	31.4
Interline	25.0	7.8	5.4	3.8	3.1	7.9
	99.9	100.2	99.9	99.9	100.1	100.0
1988 Single-Plane	6.2	20.2	36.3	58.6	81.1	54.1
On-Line	86.1	76.5	60.7	39.0	16.9	42.6
Interline	7.7	3.3	3.0	2.4	2.0	3.3
	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Origin-Destination Survey of Airline Passenger Traffic, Table 12. Data rounded to nearest tenth.

PERCENTAGE DISTRIBUTION OF TOTAL ORIGIN-DESTINATION PASSENGERS AND PASSENGER-MILES BY MARKET DENSITY AND ROUTING, 1979, 1984, AND Y.E. SEPTEMBER 1988

Table I-35

Objective: As in the preceding Table I-30, the comparison of the movement of passengers and the associated passenger-miles by service enables us to judge what service changes have occurred. It does not tell us what the distribution of passengers is in total. This table is designed to show the overall percentage distribution of passengers and passenger-miles.

Data Source: Origin - Destination Survey of Airline Passenger Traffic, Table 10

Observations/Interpretation: In 1979 about 70 percent of all passengers travelled single-plane, with about 35 percent of the single-plane passengers in the very densest markets. Single-plane passengers now account for about 65 percent of all passengers, with about 40 percent of all passengers in the densest market interval. On-line passengers, other than single-plane, now account for about one-third of all passengers, about double the 1979 level, and interline passengers only about 3 percent, down from 1979's 13.5 percent.

On-line passengers have increased since 1984, again a reflection of the hub/spoke system generally adopted by carriers in the mid-eighties. The increase in on-line travel in the 1984-1988 period was at the expense of single-plane travel (which was down about 5 percentage points) and interline travel (down about 4 percentage points.)

Passenger-mile distributions are similar, with, however, a slightly lower percentage of passenger-miles in the upper density ranges. This is due to the distribution of passengers by distance interval, since the densest passenger markets are closer than 500 miles. Both the distribution of passengers by service routing and distance, and passengers by service routing and density are presented in graphic form below.

Table I-35
Page 1 of 1

Percentage Distribution of Total Origin-Destination Passengers and Passenger-Miles by Market Density and Routing, 1979, 1984, and Y.E. September 1988

Year and Routing	Passenger Density per Day 0-50	51-100	101-200	201-500	Over 500	Total
Passengers						
1979 Single-Plane	4.0	4.8	9.6	16.8	35.0	70.2
On-Line	8.3	2.7	2.0	1.8	1.5	16.2
Interline	9.7	1.0	0.8	0.8	1.2	13.5
Total	22.0	8.5	12.4	19.4	37.7	100.0
1984 Single-Plane	2.4	3.1	6.0	12.9	47.0	71.5
On-Line	9.9	3.6	2.9	2.9	2.9	22.2
Interline	4.0	0.4	0.4	0.5	0.9	6.2
Total	16.4	7.1	9.3	16.3	50.9	100.0
1988 Single-Plane	2.0	2.6	5.2	12.4	43.4	65.6
On-Line	13.2	4.7	4.6	4.7	4.6	31.8
Interline	1.1	0.2	0.2	0.3	0.7	2.6
Total	16.3	7.5	10.0	17.5	48.7	100.0
Passenger-Miles						
1979 Single-Plane	2.5	3.7	7.7	14.7	35.0	63.5
On-Line	9.5	3.5	2.6	2.5	2.4	20.5
Interline	10.9	1.2	1.0	1.0	1.9	16.0
Total	22.8	8.4	11.3	18.2	39.3	100.0
1984 Single-Plane	1.6	2.4	5.0	11.8	40.0	60.7
On-Line	12.4	5.1	4.1	4.5	5.3	31.4
Interline	4.7	0.6	0.5	0.6	1.4	7.9
Total	18.7	8.2	9.6	16.9	46.7	100.0
1988 Single-Plane	1.0	1.6	3.8	10.8	36.8	54.1
On-Line	15.2	6.2	6.4	7.2	7.7	42.6
Interline	1.4	0.3	0.3	0.4	0.9	3.3
Total	17.6	8.0	10.5	18.4	45.4	100.0

SOURCE: Appendices E and F. Data rounded to nearest tenth.

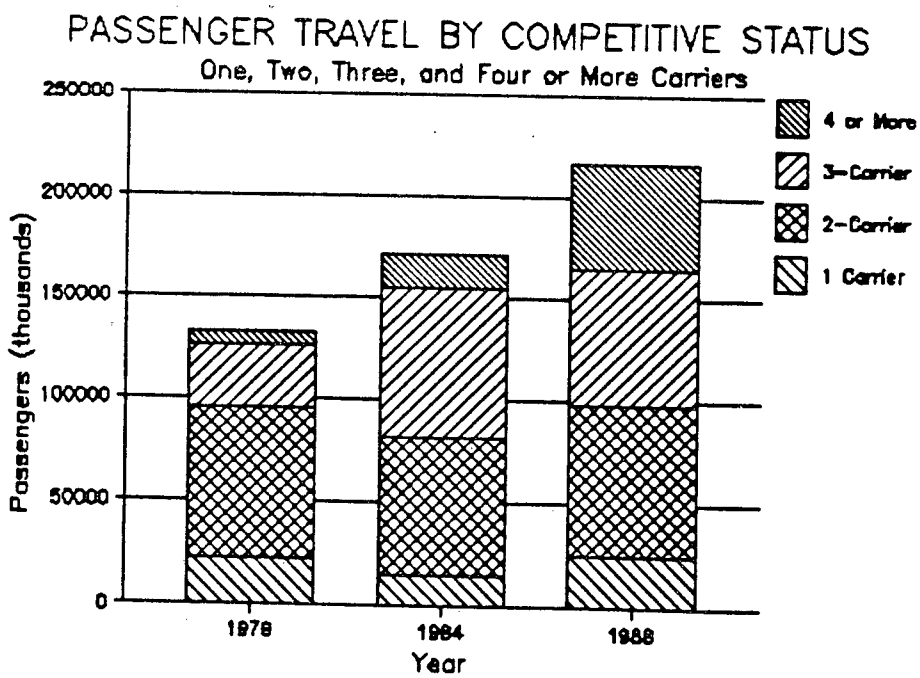
DISTRIBUTION OF ORIGIN-DESTINATION PASSENGERS BY COMPETITIVE CATEGORY AND DISTANCE, 1979, 1984, AND Y.E. SEPTEMBER 1988

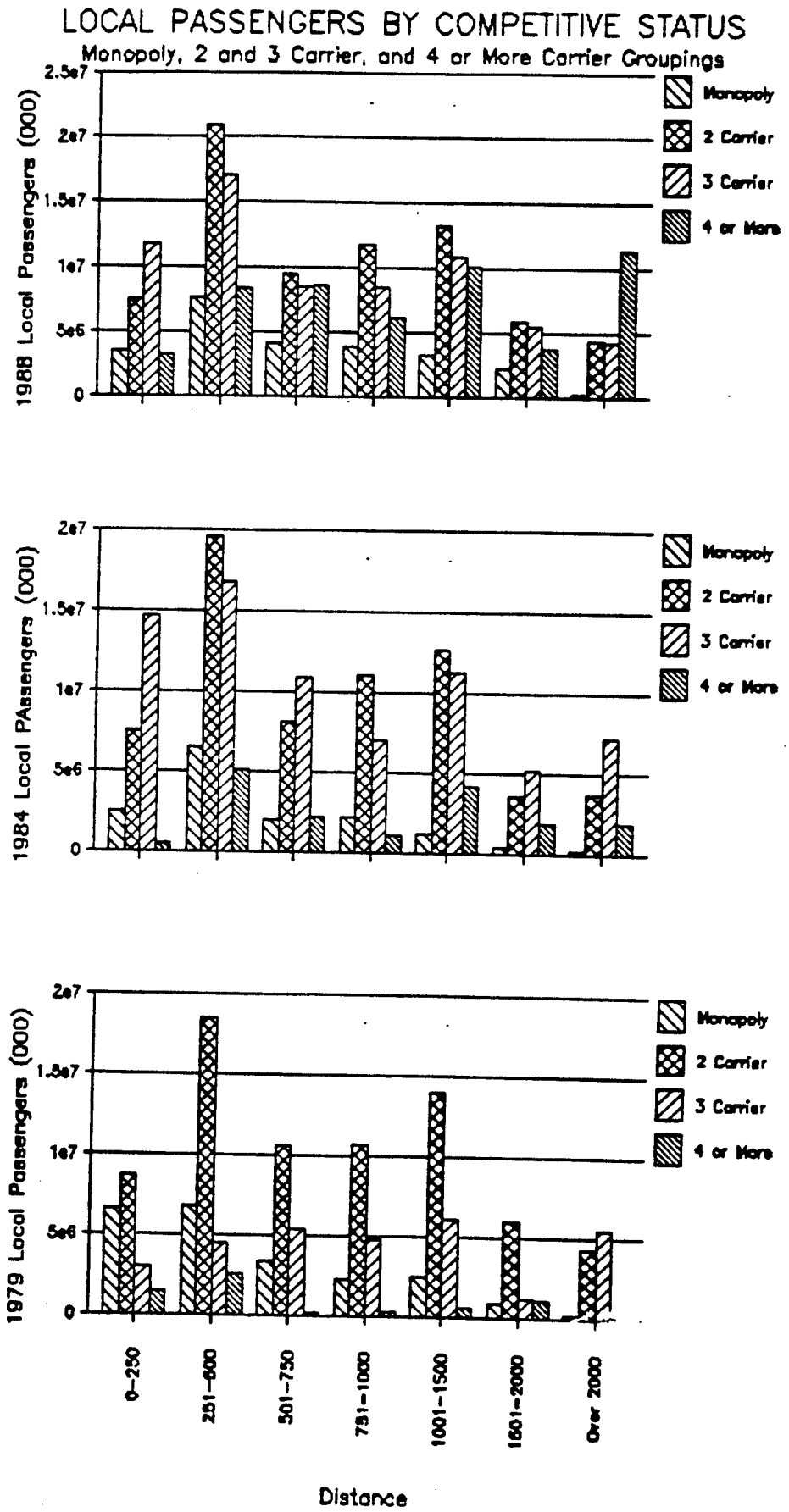
Table I-36

Objective: This table was developed to analyze the change in passenger distribution by mileage interval and competitive status.

Data Source/Assumptions: Data source was the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local. Competitive carriers were those with an on-line market share of 10 percent.

Observation/Interpretations: Examining the Total column indicates that single-carrier (monopoly) service has declined from 1979 to 1988 as a percentage, as has 2 carrier service. Three and more than three carrier market passengers account for 54.7 percent of all passengers in 1988, but 27.8 percent in 1979 and 52.6 percent in 1984. All data groups show a general shift downward (more competitive service) and to the right (more passengers are in the denser markets, proportionally).




LOCAL PASSENGERS BY COMPETITIVE STATUS
Monopoly, 2 and 3 Carrier, and 4 or More Carrier Groupings
1988 Local Passengers (000)
2.5e7
2e7
1.5e7
1e7
5e6
0
Monopoly
2 Carrier
3 Carrier
4 or More
1984 Local PAssengers (000)
2e7
1.5e7
1e7
5e6
0
Monopoly
2 Carrier
3 Carrier
4 or More
1979 Local Passengers (000)
2e7
1.5e7
1e7
5e6
0
Monopoly
2 Carrier
3 Carrier
4 or More
0-250
251-500
501-750
751-1000
1001-1500
1501-2000
Over 2000
Distance

Distribution of Origin-Destination Passengers
by Competitive Status and Distance, 1979, 1984,
and Y.E. September 1988

		Distance Interval							
		0-250	251-500	501-750	751-1,000	1,001-1,500	1,501-2,000	Over 2,000	Total
1979	Single Carrier	5.0	5.1	2.6	1.8	1.9	0.7	0.2	17.2
	2 Carriers	6.5	14.0	8.0	8.1	10.5	4.5	3.2	54.9
	3 Carriers	2.2	3.4	4.1	3.6	4.6	0.8	4.2	23.0
	Over 3 Carriers	1.1	2.0	0.1	0.2	0.4	0.9	0.1	4.8
	Total	14.8	24.5	14.8	13.7	17.4	6.9	7.7	99.9
1984	Single Carrier	1.5	3.8	1.1	1.3	0.7	0.3	0.1	8.8
	2 Carriers	4.4	11.4	4.7	6.5	7.4	2.1	2.2	38.6
	3 Carriers	8.6	9.8	6.3	4.1	6.6	3.0	4.2	42.6
	Over 3 Carriers	0.3	3.0	1.3	0.7	2.5	1.1	1.1	10.0
	Total	14.8	28.0	13.4	12.6	17.2	6.5	7.6	100.0
1988	Single Carrier	1.6	3.5	1.9	1.8	1.5	1.1	0.1	11.6
	2 Carriers	3.4	9.6	4.4	5.4	6.1	2.7	2,1	33.8
	3 Carriers	5.4	7.9	3.9	3.9	5.0	2.5	2.0	30.7
	Over 3 Carriers	1.5	3.9	4.0	2.8	4.7	1.8	5.3	24.0
	Total	11.9	24.9	14.2	13.9	17.3	8.1	9.5	100.1

Source: Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local.
Note: Percentages rounded to nearest tenth.

DISTRIBUTION OF ORIGIN DESTINATION PASSENGERS BY COMPETITIVE CATEGORY AND DENSITY, 1979, 1984, AND Y.E. SEPTEMBER 1988

Table I-37

Objective: This analysis seeks to determine the change in competitive status by market size (density).

Data Sources: The data source was the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local Passengers. Passenger markets with under 50 passengers per day were excluded. A "competitive carrier" was a carrier with at least a 10 percent share of the local passenger market.

Observations/Interpretations: Comparing the "Total" columns for the three years shows that passenger distribution in markets with three or more carriers rose from 4.8 percent of the total in 1979 to 24.0 percent in 1988. The three-carrier market passenger distribution rose to 42.6 percent in 1984 and declined to 30.7 percent in 1988. The single-carrier passenger percentage dropped markedly 1979-1984 and rose slightly, to 11.6 percent in 1988.

By density interval, all 1984 single carrier percentages decline from 1979, and increase in 1988, except the lowest density interval. Declines in both periods generally continue in two carrier markets, with three carrier market percentages up slightly.

The distributions in all three periods are heavily influenced by passengers in the very densest markets. Comparing passengers in the next lowest interval, 201-500 passengers per day, shows that the single-carrier portion, in that density interval, has increased slightly, but that the increases in 3, and 4 or more carrier market passengers have caused the 2 carrier market passenger percentage to fall substantially.

	Competitive Carrier Percentage in the 201-500 Passenger per Day Interval	
	1979	1988
Single Carrier	14.3	17.5
2-Carrier	67.2	46.3
3 Carrier	16.1	21.9
Over 3 Carriers	2.3	14.2
Total	99.9	99.9

Distribution of Origin-Destination Passengers
by Competitive Status and Density, 1979, 1984,
and Y.E. September 1988

Year and Routing		Passenger Density Per Day 51-100	101-200	201-500	Over 500	Total
1979	Single Carrier	4.6	5.7	3.7	3.3	17.3
	2 Carriers	4.1	7.3	17.2	26.2	54.8
	3 Carriers	1.2	2.7	4.1	15.0	23.0
	Over 3 Carriers	0.2	0.1	0.6	3.9	4.8
	Total	10.1	15.9	25.6	48.3	99.9
1984	Single Carrier	1.9	2.6	2.8	1.5	8.8
	2 Carriers	2.7	4.5	8.7	22.7	38.6
	3 Carriers	2.4	3.0	6.3	30.9	42.6
	Over 3 Carriers	1.3	1.0	1.8	5.9	10.0
	Total	8.3	11.1	19.6	61.0	100.0
1988	Single Carrier	1.7	2.7	3.7	3.5	11.6
	2 Carriers	2.1	3.4	9.7	18.6	33.8
	3 Carriers	3.1	2.9	4.6	20.1	30.7
	Over 3 Carriers	2.1	2.7	3.0	16.2	24.0
	Total	8.9	11.7	21.0	58.4	100.1

SOURCE: Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local.

NOTE: Percentages rounded to nearest tenth.

DISTRIBUTION OF TRANSPORTED ORIGIN-DESTINATION PASSENGERS BY COMPETITIVE STATUS AND DISTANCE, Y.E. SEPTEMBER 1988

Table I-38

Objective: This table was designed to test whether distribution of total passengers, local plus interline connecting, is any different than that of local market passengers alone.

Data Source: The data source is the Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local plus Connecting Passengers, Y.E. September 1988.

Conclusions: Using total passengers, as opposed to local passengers, in the market and competitive analysis changes the distribution of passengers only marginally in any of the sub-groupings. The only particular data of interest is the increase in the ratio of transported to local passengers in the 0-250 mile range, an indication that very short stage lengths tend to have a significantly higher proportion of connecting passengers.

Distribution of Transported Origin-Destination Passengers
by Competitive Status and Distance, Y.E. September 1988

	Distance Interval							
	0-250	251-500	501-750	751-1,000	1,001-1,500	1,501-2,000	Over 2,000	Total
Single Carrier	1.8	3.5	1.9	1.9	1.6	1.0	0.1	11.8
2 Carriers	4.1	9.8	4.5	5.2	5.9	2.8	2.0	34.3
3 Carriers	5.5	7.7	3.9	4.1	4.8	2.5	2.0	30.5
Over 3 Carriers	1.5	3.8	4.0	2.7	4.5	1.8	5.1	23.4
Total	12.9	24.8	14.3	13.9	16.8	8.0	9.2	99.9
Total Passengers	29,331	57,138	32,786	31,863	38,735	18,465	21,214	229,933
Local Passengers	26,057	54,004	30,894	30,281	37,532	17,483	20,437	216,689
Ratio: Total/Local	1.126	1.058	1.061	1.052	1.032	1.056	1.038	1.061

Source: Origin-Destination Survey of Airline Passenger Traffic, Table 10, Local and Total.

Note: Percentages rounded to nearest tenth, passengers in thousands.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR THE TOP 1,000 1988 MARKETS

Tables I-39 and I-40

Objective: These tables were designed to show the changes in the Herfindahl-Hirschman (HHI) indexes for the top 1,000 markets based on 1988 data over the 1979-1988 and 1984-1988 periods. As explained below, increases in the HHI indicate increased market concentration and decreases indicate a lessening of market concentration.

Data Source: Origin-Destination Survey of Airline Passenger Airline Passenger Traffic, Table 10.

Observations/Interpretation: The Herfindahl-Hirschman Index (HHI) is used as measure of market concentration. The index for any market is calculated by summing the squares of the percentage market shares of each participating carrier. For example, if in a given market in a given year American Airlines has a 45 percent share of enplanements, Trans World Airlines has a 35 percent share and United Airlines has a 20 percent share, the HHI would be:

$$(45)^2 + (35)^2 + (20)^2 =$$

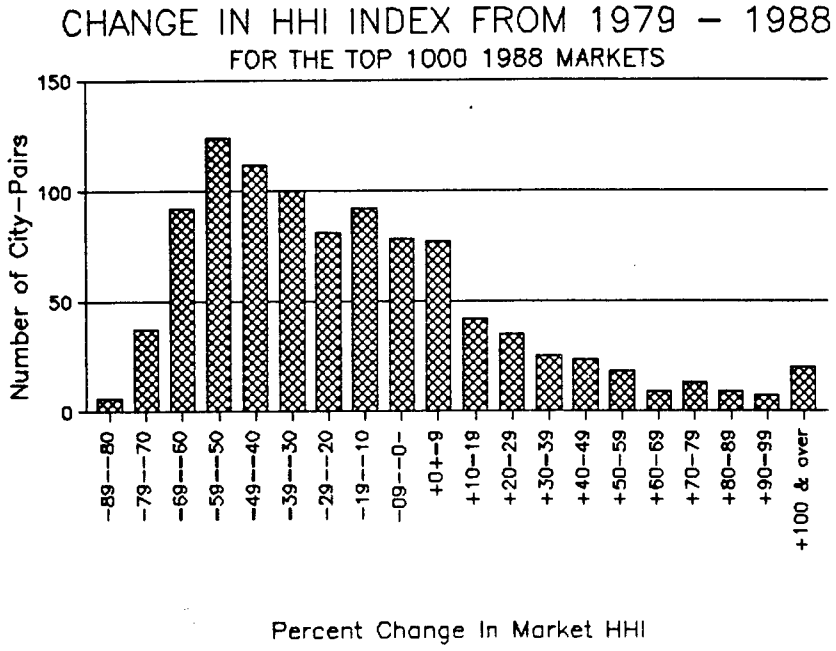
$$2,025 + 1,225 + 400 = 3,650$$

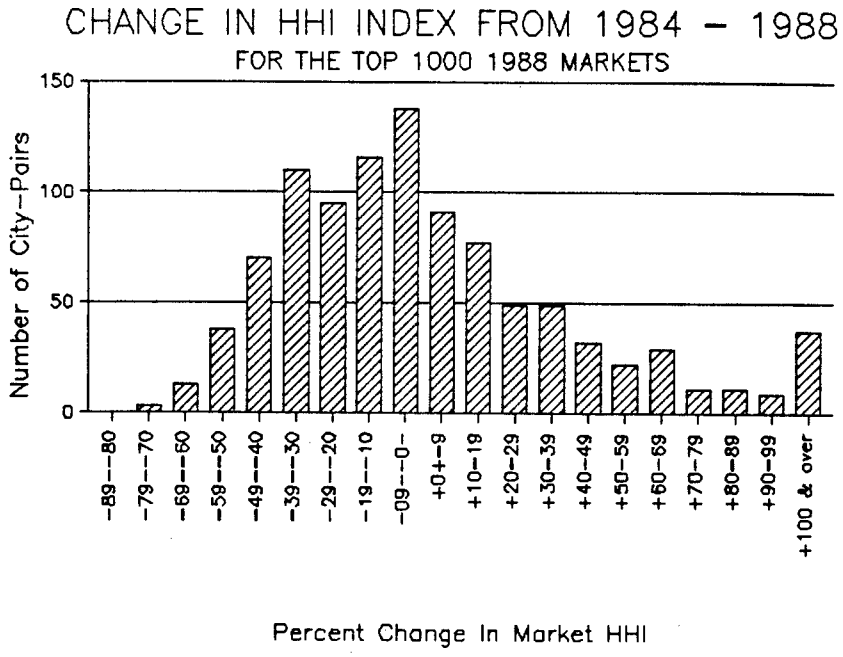
Tables I-35 and I-36 compares the changes in these indexes in the top 1,000 markets based on calendar year 1988 data.

Under the Justice Department standards an HHI below 1,000 indicates low concentration, between 1,000 and 1,800 moderate concentration, and above 1,800, high concentration. These standards, however, have been developed for markets of national scope and are not strictly appropriate for airline city-pair markets. Airline markets only rarely have more than four competitors and tend to have HHIs exceeding 2,000.

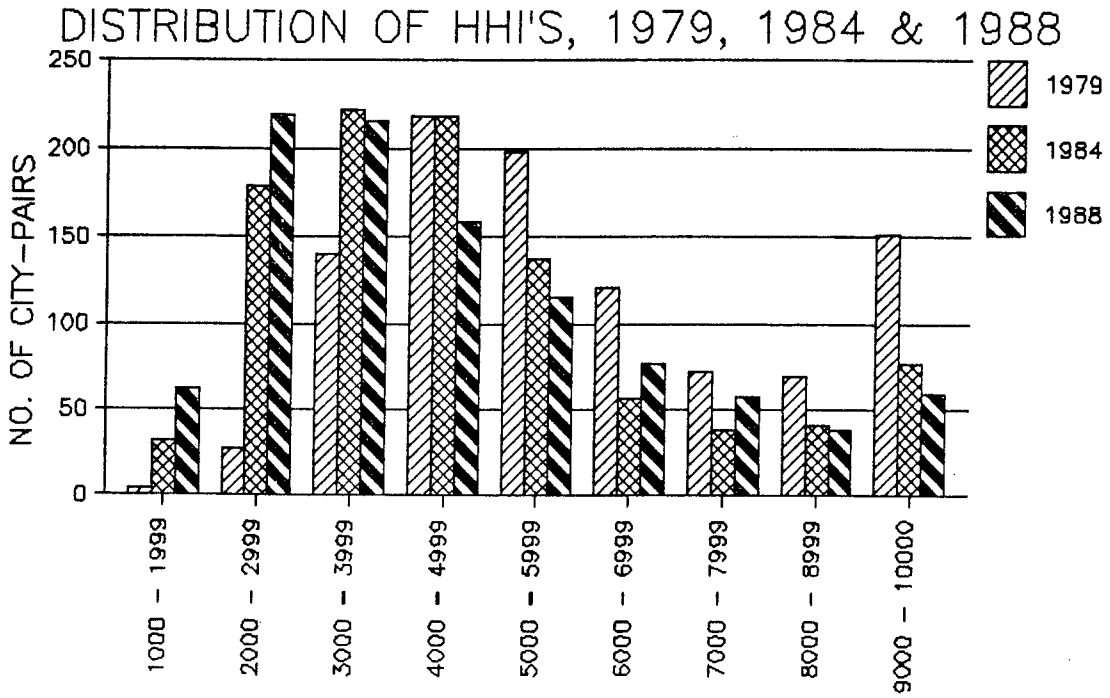
The distribution of the percentage changes in HHI between 1979 and 1988, shown in Table I-35 and the following chart, indicates that 722 of the 1,000 markets (72.2 percent) had decreases in the HHI. For these markets the reduction in the HHI would indicate a lessening of market concentration. For the remaining 278 markets (27.8 percent of the total) the HHI showed an increase between 1979 and 1988, indicating an increase in market concentration.

The distribution of the percentage changes in the HHI between 1984 and 1988, shown in Table I-36 and the following chart, indicates that 583 of the 1,000 markets (58.3 percent) had decreases in the HHI. For these markets the reduction in the HHI would indicate a lessening of market concentration. For the remaining 417 markets (41.7 percent) the HHI showed an increase between 1984 and 1988, indicating an increase in market concentration.


CHANGE IN HHI INDEX FROM 1979 – 1988
FOR THE TOP 1000 1988 MARKETS
Number of City–Pairs
150
100
50
0
-89--80
-79--70
-69--60
-59--50
-49--40
-39--30
-29--20
-19--10
-09--0-
+0+-9
+10-19
+20-29
+30-39
+40-49
+50-59
+60-69
+70-79
+80-89
+90-99
+100 & over
Percent Change In Market HHI


CHANGE IN HHI INDEX FROM 1984 – 1988
FOR THE TOP 1000 1988 MARKETS
Number of City–Pairs
150
100
50
0
-89--80
-79--70
-69--60
-59--50
-49--40
-39--30
-29--20
-19--10
-09--0-
+0+-9
+10-19
+20-29
+30-39
+40-49
+50-59
+60-69
+70-79
+80-89
+90-99
+100 & over
Percent Change In Market HHI

The chart below shows the distribution of the HHIs for the years 1979, 1984 and 1988. The two lowest intervals, 1000 to 1999 and 2000 to 2999, show successive increases from 1979 to 1988. The two highest intervals, 8000 to 8999 and 9000 and 10000, show successive declines. In all intervals from 4000 and up the number of markets in 1988 is below the number in 1979, indicating a decrease in concentration in the top 1,000 markets.



The top 1,000 markets based on O&D passenger totals for calendar year 1988 accounted for 72 percent of total O&D passengers.

The detailed listing of the HHIs for 1979, 1984 and 1988 is shown in Appendix S. Users are cautioned that the 3-letter code for multi-airport cities may be any of the valid three-letter codes for the city. Most frequently it will be the lowest code in alphabetical order, e.g., CGX for Chicago rather than ORD, or EWR for New York/Newark rather than JFK or LGA.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES,
TOP 1,000 1988 MARKETS, 1979-1988

Percent Change in HHI, 1979-1988	Number of Markets	Percent of Markets Simple	Percent of Markets Cumulative
-89 to -80	6	0.6	0.6
-79 to -70	37	3.7	4.3
-69 to -60	92	9.2	13.5
-59 to -50	124	12.4	25.9
-49 to -40	112	11.2	37.1
-39 to -30	100	10.0	47.1
-29 to -20	81	8.1	55.2
-19 to -10	92	9.2	64.4
- 9 to -.001	78	7.8	72.2
0 to 9	77	7.7	79.9
10 to 19	42	4.2	84.1
20 to 29	35	3.5	87.6
30 to 39	25	2.5	90.1
40 to 49	23	2.3	92.4
50 to 59	18	1.8	94.2
60 to 69	9	0.9	95.1
70 to 79	13	1.3	96.4
80 to 89	9	0.9	97.3
90 to 99	7	0.7	98.0
100 and over	20	2.0	100.0
Total	1,000	100.0	--

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES,
TOP 1,000 1988 MARKETS, 1984-1988

Percent Change in HHI, 1984-1988	Number of Markets	Percent of Markets Simple	Percent of Markets Cumulative
-79 to -70	3	0.3	0.3
-69 to -60	13	1.3	1.6
-59 to -50	38	3.8	5.4
-49 to -40	70	7.0	12.4
-39 to -30	110	11.0	23.4
-29 to -20	95	9.5	32.9
-19 to -10	116	11.6	44.5
- 9 to -.001	138	13.8	58.3
0 to 9	91	9.1	67.4
10 to 19	77	7.7	75.1
20 to 29	49	4.9	80.0
30 to 39	49	4.9	84.9
40 to 49	32	3.2	88.1
50 to 59	22	2.2	90.3
60 to 69	29	2.9	93.2
70 to 79	11	1.1	94.3
80 to 89	11	1.1	95.4
90 to 99	9	0.9	96.3
100 and over	37	3.7	100.0
Total	1,000	100.0	--

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR THE EIGHT HIGHLY CONCENTRATED HUBS, 1979-1988 AND 1984-1988

Table I-41

Objective: Changes in the Herfindahl-Hirschman indexes for markets involving the highly concentrated hubs which were included in the top 1,000 markets used for Tables I-35 and I-36 were summarized to determine if these markets tended to show more or less concentration between 1979 and 1988 and between 1984 and 1988.

Data Source: Origin-Destination Survey of Airline Passenger Traffic, Table 10

Observations/Interpretation:

The eight highly concentrated hubs had varying numbers of city-pair markets included in the top 1,000 markets analysis, ranging from 10 markets for Dayton to 40 markets for Minneapolis/St. Paul and St. Louis.

In the 1979-1988 comparison, 5 of the 8 hubs had more decreases in market HHIs than increases: Dayton, Salt Lake City, Cincinnati, St. Louis, and Pittsburgh. The three hubs which had more increases than decreases were Minneapolis/St. Paul, Memphis and Charlotte. The results are shown below:

Hub	City-Pairs in Top 1,000	Change in HHI	
		Percent Negative	Percent Positive
Dayton	10	60%	40%
Salt Lake City	23	57	43
Cincinnati	22	55	45
St. Louis	40	55	45
Pittsburgh	27	52	48
Minneapolis/St. Paul	40	45	55
Memphis	14	43	57
Charlotte	18	33	67

By these measures the HHI indexes would indicate that the largest markets of 5 hubs were less concentrated in 1988 than in 1979 and 3 were more concentrated.

In the 1984-1988 comparison, 3 of the 8 hubs had more decreases in market HHIs than increases and 5 had more increases. Pittsburgh, Cincinnati and Salt Lake City had more decreases, indicating less concen-tration. St. Louis, Charlotte, Dayton, Memphis and Minneapolis/ St. Paul had more increases, indicating greater concentration. The results are shown below:

Hub	City-Pairs in Top 1,000	Change in HHI	
		Percent Negative	Percent Positive
Pittsburgh	27	67%	33%
Cincinnati	22	64	36
Salt Lake City	23	52	48
St. Louis	40	40	60
Charlotte	18	33	67
Dayton	10	30	70
Memphis	14	21	79
Minneapolis/St. Paul	40	20	80

CHANGES IN THE HERFINDAHL-HIRSCHMAN INDEXES FOR
EIGHT HIGHLY CONCENTRATED HUBS, 1979-1988 AND 1984-1988

Hub	No. of City-Pairs	Change in HHI 1979-1988 Neg.	Change in HHI 1979-1988 Pos.	Change in HHI 1984-1988 Neg.	Change in HHI 1984-1988 Pos.	Percent Distribution 1979-1988 Neg.	Percent Distribution 1979-1988 Pos.	Percent Distribution 1984-198 Neg.	Percent Distribution 1984-198 Pos
Charlotte	18	6	12	6	12	33%	67%	33%	67%
Cincinnati	22	12	10	14	8	55	45	64	36
Dayton	10	6	4	3	7	60	40	30	70
Memphis	14	6	8	3	11	43	57	21	79
Minneapolis/St. Paul	40	18	22	8	32	45	55	20	80
Pittsburgh	27	14	13	18	9	52	48	67	33
St. Louis	40	22	18	16	24	55	45	40	60
Salt Lake City	23	13	10	12	11	57	43	52	48
Total*	194	97	97	80	114	50	50	41	59

* Includes duplications.

Source: Origin-Destination Survey of Airline Passenger Traffic - Domestic.

SERVICE TO LARGE AND MEDIUM HUBS FROM SMALL COMMUNITIES, SEPTEMBER 1989

Table I-42

Objective: To show the number of large and medium hubs served from small communities and to determine if there is a relationship between traffic levels and the number of hubs served.

Data Source: Appendix B and the September 15, 1989 Official Airline Guide

Observations/Interpretation: Service to 269 points which enplaned between 1,000 and 100,000 passengers in calendar year 1988 (Appendix B) was checked to determine how many large and medium hubs were served from each point. Satellite airports were excluded and a minimum level of 10 departures (2 per day, 5 days per week) was required to be counted as hub service. The results of the analysis are shown in Table I-38.

Eleven of the 269 small communities received service to 4 or more hubs, but none of these enplaned fewer than 25,000 passengers. Since this represents only 4 percent of the 269 communities analyzed, it can be seen that this is a fairly rare level of service which is only provided to points near clustered hubs such as Washington, Baltimore, Philadelphia, and New York. Three-hub service was received by 34 small communities or 13 percent of the total. Here again most enplaned 25,000 or more passengers -- only 6 were below that level. Two-hub service was received by small communities at all levels of enplanements, but it was relatively rare at points under 10,000 enplanements. Seventy-five (28 percent) of the 269 communities received two-hub service. Single hub service was received by 125 small communities (46 percent). This represents the norm for communities enplaning under 15,000 passengers per year. Finally, 14 small communities did not receive service to a large or medium hub. These points were tied into small hubs or other nonhubs. Ten of the small communities served in 1988 received no air service in September 1989.

Based on this analysis, the minimum traffic levels associated with various levels of hub service are:

Number of Hubs Served	Minimum Annual Enplanements
1	1,000
2	10,000
3	25,000
4 or more	50,000

These levels are merely approximations, not hard and fast rules, since some of the smallest traffic generators receive two-hub service.

SERVICE TO LARGE AND MEDIUM HUBS FROM SMALL COMMUNITIES, SEPTEMBER 1989

1988 Enplanements 1/	No. of Large & Medium Hubs Served					Not Served in Sept. 1989	Total	Percent of Total 2/						
	0	1	2	3	4 or more			0	1	2	3	4 or more	Not Served	Total
50,000 to 99,999	0	4	19	12	9	0	44	0	9%	43%	27%	21%	0	100
25,000 to 49,999	0	22	13	16	2	0	53	0	42	24	30	4	0	100
20,000 to 24,999	1	11	9	0	0	1	22	4	50	41	0	0	5	100
15,000 to 19,999	2	4	10	3	0	0	19	10	21	53	16	0	0	100
10,000 to 14,999	0	21	9	3	0	0	33	0	64	27	9	0	0	100
5,000 to 9,999	4	10	4	0	0	2	20	20	50	20	0	0	10	100
2,500 to 4,999	0	28	4	0	0	1	33	0	85	12	0	0	3	100
1,000 to 2,499	7	25	7	0	0	6	45	16	56	16	0	0	13	100
Total	14	125	75	34	11	10	269	5	46	28	13	4	4	100

1/ Total enplanements, certificated carrier plus commuter carriers. See Appendix B.
2/ Percentages may not add to 100 due to rounding.

Source: Appendix B and Official Airline Guide, September 15, 1989.

PART II

HUB-AND-SPOKE-SERVICE

PART II

HUB-AND-SPOKE SERVICE

Our discussion of the hub-and-spoke system of operation includes various comparisons with the linear system of operation. These comparisons are useful in understanding how hubbing works, and, more importantly, to demonstrate that hubbing is in fact a superior system for moving passengers.

Hubbing is an operational system whereby flights from numerous points arrive at and then depart from a common point within a short time frame so that passengers arriving from any given point can connect to flights departing to all other points. Put another way, feed traffic from spoke points is collected at hubs and then consolidated on flights going to destinations that are common to one or more points. In a linear operational system, by contrast, a carrier provides service by crisscrossing flights between the cities in its system with many flights involving stops at one or more intermediate points.

Under either a linear system of operation or a hubbing system, city-pair markets with larger traffic volumes receive single-plane service. Other cities receive quite different service under each operational system, however. In the hubbing system, smaller city-pairs will tend to be served primarily through connections at a hub complex. In the linear system, even smaller points will continue to receive varying degrees of single-plane service.

There will be a strong relationship between the traffic generating ability of a point and the number of linear flights it is made a part of. For example, a non-hub city may be an intermediate point on 10 flights between five larger city-pair markets whereas a small-hub city may be an intermediate point on 40 flights between a greater number of larger city-pair markets. In either case, however, these cities will have direct service to only a limited number of other points and, therefore, continue to rely on connecting service to reach other destinations.

Perhaps the most meaningful distinction between a linear and hubbing system of operations is that flights tend to be more channeled in the latter. While both linear and hubbing systems rely on a mixture of single-plane and connecting services, the former is a more spread-out system of flights with greater emphasis on a mixture of single-plane and connecting flights compared with a much more focused type of service in the hub-and-spoke system that relys heavily on channeling passengers through connecting points, particularly for the smaller city-pair markets. Table II-4 illustrates this. In 1979, United provided 11 single-plane flights a day between South Bend and seven other points. In July, 1988, United Commuter provided 10 daily single-plane flights from South Bend, all to its connecting hub at O'Hare. Similarily, in July, 1979, North Central provided eight single-plane flights between South Bend and seven other points. In July, 1988, Northwest (which ultimately absorbed North Central), provided four daily single-plane flights from South Bend, all to its hub at Detroit.

Another way of comparing linear and hubbing systems, is to look at maps of flight patterns for 1979 and 1988. Appendix K.) As can be seen using American as an example, its 1979 map is well covered by flights spread out across its system. In 1989, by contrast, a vast majority of flights are to American's various connecting hubs.

The hubbing system works by moving waves of aircraft through points in large numbers, called banks. Within limits, the larger the bank, the better able it is to crossconnect passengers. For example, a bank that consists of service to and from 50 points will have more passengers to crossconnect than one that consists of only 25 points, assuming similar passenger potential per point. With feed from 50 points, a departing flight with a 100-seat aircraft would only have to attract one passenger from each other spoke point to achieve a 50 percent load factor, even assuming no local traffic. With feed from only 25 points, it would need twice as many feed passengers from each spoke point to achieve the same load factor.

The competitive implications of concentration at hubs will be discussed later, but it is apparent that hubbing creates pressure toward increased concentration. In fact, hubbing will not work effectively without an element of concentration. Hubbing, therefore, provides an incentive for carriers to attempt to control traffic at their hubbing point. At the same time, hubbing provides an equally strong incentive for a carrier to expand geographically. It can only crossconnect passengers at its hub if

it provides service to their ultimate destinations. When Piedmont elected to establish a hub at Charlotte it was a "regional" carrier with service focused in the East. For Charlotte to succeed as a hub, Piedmont had to expand service to major cities nationwide. Of course a number of factors have contributed to the push for carriers to expand in recent years, but hubbing played a major role in that trend. So hubbing has contributed to the process that has greatly expanded the numbers of competitors overall in city-pair markets, but, at the same time, it is a process that will not work in the absence of concentration at connecting hubs.

This is an important concept to consider. If it is concluded that the hubbing process tends to result in a non-competitive behavior in particular markets, but overall provides superior service, then care would have to be taken so that "fixing" the more limited problem did not weaken the process overall.

Service Effects of Hubbing

One way to evaluate the service effects of hubbing is to examine the broad industry statistics provided elsewhere in the study. How many carriers are serving how many points and city pairs, etc.

While certainly useful, that is not enough. Certain of the data tend to be conflicting (fewer carrier choices at points but greater carrier choices in city-pairs). Broad based statistics can also be misleading. As an example, a great many city-pairs that lost service when hubbing evolved were small points linked together as intermediate points on linear routes. The linear service was not provided to carry passengers between such points, but to move passengers from each point to other larger cities. So a statistic that shows that a number of city-pairs lost service may have little meaning.

A different approach is to make comparisons of service at actual points between 1979, when carriers predominantly provided linear service, and 1988. We have compared service at connecting hubs with similar points that are not connecting hubs, and we have compared current hub-and-spoke service with the previous linear service at a concentrated hub and two smaller spoke points at highly concentrated hubs. These comparisons suggest that generally hubbing is a much more efficient means of moving passengers. 1/

The first comparisons are shown in Tables II-1, II-2, and II-3. In the first table service at two concentrated connecting-hub complexes is compared with service at two similar points in terms of population and buying income that have not become connecting

1/ Not efficient in terms of costs, but the ability to move passengers when and where they wish to travel.

hubs. As would be expected, the service changes at the connecting hubs are quite dramatic, resulting in far more service than the communities would otherwise enjoy.

Tables II-2 and II-3 highlight the more focused nature of the hub-and-spoke system compared with the linear system. A vast majority of points that receive service now receive frequent daily service. Under the linear system, many points received only one or two daily flights. Note that the 1988 service is nonstop service only. One stop flights were not included because those transversing a connecting hub require the same ground time as a on-line connecting flight, and time constraints did not permit us to distinguish between flights that crossed a hub and those that did not.

The third comparison is shown in Tables II-4, II-5. These tables compare service at two small-hub spoke points of Dayton and Charlotte -- South Bend for Dayton and Columbia, S.C. for Charlotte.

Discussed in more detail in the narrative proceeding Table II-4, in 1979, South Bend received good service to Chicago, adequate service to Cleveland, and useful service to Detroit and Boston. Service to eight other cities consisted of either one or two flights, generally with one or more intermediate steps, and often

poorly timed for South Bend. Services to these points were simply by-products of linear service patterns aimed at serving other markets. In 1988, by contrast, South Bend had frequent, well-timed flights to eight connecting-hub complexes. A total of 46 daily flights were timed to hit connecting banks at the respective hubs, and each flight, therefore, connected to other flights serving scores of cities nationwide.

Columbia, in 1979, had service to 26 cities. Twenty of these 26 cities received only one, often poorly timed, multi-stop flight a day. Only two cities received good service, Atlanta with 13 flights a day, and Charlotte, with six flights a day. In 1988, Columbia received good, direct service only to the same two cities, Atlanta and Charlotte. Nevertheless, because these points are now well-developed connecting hubs, Columbia has excellent service to over a hundred cities throughout the country and its traffic has flourished.

Still another way to compare linear and hubbing systems is to consider the service impact of adding service to a new city. First, in the linear system it could be added as an intermediate stop on an existing (or new) round-trip flight, between other larger cities as follows:

A --- New Point --- C --- D

"New Point" receives a single, round trip flight between three other points and has to rely on connecting service to all other points. Because this is a linear system of operation, the connecting opportunities at the other points will tend to be limited.

Adding "New Point" to a major hubbing complex, on the other hand, would result in single-plane service only to the hub, but convenient connections to dozens of other cities. The trade off here, between less single-plane service for a great amount of convenient connecting service, is clearly positive. Moreover, in a hubbing situation it will be easier to provide "New Point" with frequent service which is also clearly a service advantage. This is precisely what has happened as the hubbing system has evolved. Even very small spoke points generally receive three or more round trips a day to one or more connecting hubs, and the flights typically include an early departing flight and late returning flight. While this frequent service to connecting hubs is typically with much smaller aircraft, the use of smaller aircraft to smaller points is more efficient, and the trade off of aircraft size for frequency has proven to be positive, particularly since a new generation of aircraft has been developed to serve smaller feed points.

Still another method for evaluating service is service quality as measured by load factor. It is difficult to compare load factors between city-pairs in a linear system with city-pairs in a hubbing

system due to the different structures of these systems. In a linear system, load factor on multi-stop flights will typically vary considerably segment-by-segment and be much higher on the segments closest to the large traffic generating points. In a hubbing system, loads are consolidated at the connecting hubs rather than built segment-by-segment. If quality of service is to be a problem in a hubbing system, however, it would surface at concentrated hubs. Thus, one way to evaluate this issue is to compare load factors at concentrated hubs with those at unconcentrated hubs. This comparison is shown in tables II-24 through II-31, and a quality-of-service problem is not evident. While the hubbing carriers have distinct load factor advantages over competitors at their hubs, their load factors tend to be even lower than average load factors at unconcentrated hubs. This type of evidence is not conclusive, however. For example, if hub concentration results in higher prices, load factors may appear reasonable because traffic levels are depressed. The pricing phase of the study may help us evaluate this possibility.

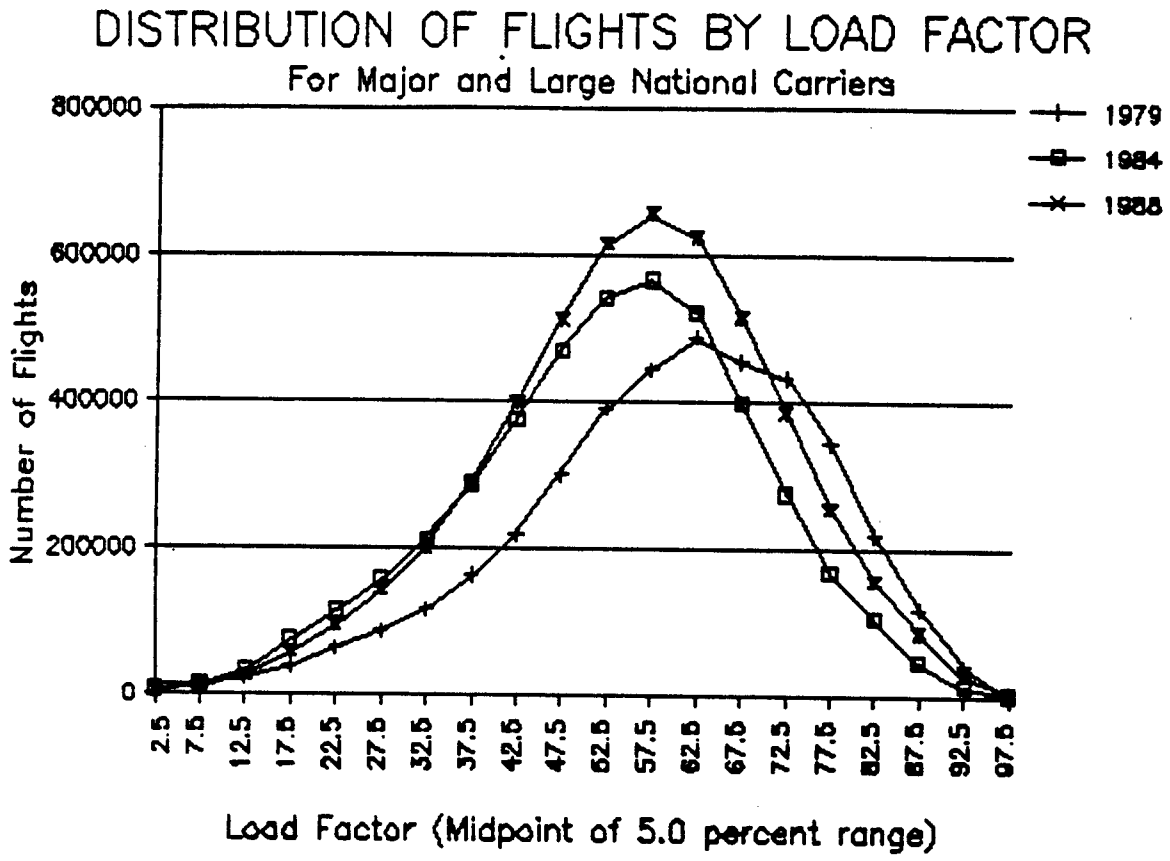
Another way to evaluate quality of service with load factor is to determine if, and how, the hub-and-spoke system has shifted the distribution of load factor. As indicated, under the linear system we would expect high segment load factors at the ends of linear flights and lower segment load factors in the middle segments. Did the hub-and-spoke system, which consolidates loads at connecting hubs alter this?

From an theoretical point of view, the ideal distribution would show a quick increase, so as to have few flights with low load factors, remain relatively high through the upper load factor ranges, and drop quickly in the high load factor ranges so as to not leave any unaccommodated passengers.

As shown, on the following chart, the 1988 distribution approaches a "normal" distribution, being less skewed toward higher load-factor flights than the 1979 distribution, slightly more than the 1984 distribution. The 1988 distribution is also not as flat in the middle ranges. This distribution reduces the economic cost and likelihood of "spillage", or passengers denied boarding because of the unavailability of seats, as well as economic loss due to flights operated with too few passengers.

Competitive Effects

An often expressed concern about hubbing is that it results in concentration that, in turn, results in monopoly service to smaller spoke cities where the hubbing carrier may control service and price. As discussed earlier, by its very nature hubbing results in concentration, and, in fact, will not work without some degree of concentration. Of course, the term concentration has a negative connotation, and it is easy to focus on this aspect of hubbing which, on its face, appears undesirable. For example, the last comparison made on Table II-1 shows that the number of spoke points receiving monopoly service have increased dramatically at the two connecting hubs and has declined at the other points.


DISTRIBUTION OF FLIGHTS BY LOAD FACTOR
For Major and Large National Carriers
800000
600000
400000
200000
0
Number of Flights
1979
1984
1988
2.5
7.5
12.5
17.5
22.5
27.5
32.5
37.5
42.5
47.5
52.5
57.5
62.5
67.5
72.5
77.5
82.5
87.5
92.5
97.5
Load Factor (Midpoint of 5.0 percent range)

Taken alone, that piece of information raises concerns. Tables II-6, II-7 and II-8, however, put a somewhat different complexion on the issue of concentration.

Tables II-2 through II-3, have already shown that much of the concentration at two dominated hubs is the result of adding new service to smaller, shorter-haul spoke points.

Tables II-6 through II-8 focus specifically on the small hub and non-hub spoke points of three concentrated connecting hubs. These tables show that virtually all small hubs and a vast majority of non hubs have done well with hub-and-spoke service. Note that a small hub like Akron, Ohio is a monopoly spoke that contributes to Piedmonts' concentration at Dayton. It is also a monopoly spoke at six other connecting hubs, in turn contributing to each of those hub carrier's dominance at their hubs. Nevertheless, Akron has available hundreds of connections to many points as a result of being a spoke city to each of those hubs and, obviously, when Akron passengers move beyond one of the connecting hubs various competitive alternatives are typically available.

Therefore, if we look behind concentration and focus on the actual service provided, the development of connecting hubs has clearly improved service for local travelers to and from the hubs and has also provided new service options for the spoke points that are connected to them. Thus, structurally, hubbing appears to provide substantial benefits to the traveling public. This does not fully address service quality, however.

Spoke points with service could still be underserved, although this would appear to run counter to the very concept of hubbing which relies on building traffic flows over connecting hubs. Moreover, even though the hub spoke points we have observed generally seem to be receiving better service, the service may be overpriced. Both of these concerns are minimized at the smaller spoke points by two factors. First, regardless of the service quality and price factors in the local hub markets, the availability of service in many of them represents new travel opportunities for travelers. Would travelers be better off without these opportunities? Second, most traffic at spoke points is not local traffic, but uses the service to connect to more distant points. For these passengers Dayton or Charlotte is just one of several travel alternatives and thus the emergence of these connecting hubs has intensified competition for such travelers despite the concentration that exists in local hub markets.

We have prepared several tables containing information about hub concentration. Many large and medium hubs are very concentrated and certain tendencies are appearing that cause concern, as will be discussed. However, as the proceeding examples at Dayton and Charlotte show, concentration statistics have to be viewed with great caution. Concentration has partly resulted from the addition of new service to connecting hubs. Moreover, passengers travel in city-pair markets and competition in city-pair markets has increased not despite the concentration at hubbing points but <u>partly because of it</u> as discussed above.

By any measure, concentration at many points has increased significantly as carriers have developed their hub-and-spoke networks. Most large hubs other than coastal cities are at least moderately concentrated connecting hubs. Six large hubs are now far more concentrated than the most concentrated hub in 1979 (Tables II-9 and II-10). At almost one half of the large hubs 50 percent or more of the departures are by a single carrier. At 20 of the 27 large hubs two carriers control 50 percent or more of departures, compared with 9 of 27 in 1979 (Table II-11). In 1979 the spread between hub-dominant carriers and their largest competitors exceeded 15 percent at only four large hubs. In 1988 that spread was exceeded at 20 hubs (Table II-12). At medium hubs, concentration changes are not nearly so dramatic but are nevertheless extensive, particularly at a few of them.

We next looked at hub competition by analyzing nonstop competition, and breaking it down by type of spoke point served (based on hub size), and status of the competition (hub carrier, code-affiliate, other end point hub carrier, non hub carriers). Table II-13 shows how hubbing carriers and their code-affiliate carriers work in tandem to dominate nonstop service at hubs. This theme is amplified in Tables II-14, II-15, II-16, and II-17. These tables also identify several areas of possible concern. At concentrated hubs, very little competition exists by carriers that do not hub at one end point. Since the competition exists from other hubbing carriers, most competitive service is to other large

or medium hubs. Inasmuch as city-pairs involving each hub and smaller spoke points would tend to be natural monopolies, lack of competition in those spoke markets is not necessarily a concern. However, Tables II-16 and II-17 reveal that nonstop monopolies often exist in large hub-to-large hub city pairs where we would expect to see competition. Nonstop monopolies even occur where both end points of the city-pair are concentrated hubs; i.e., there are numerous instances where hubbing carriers choose not to compete with one another even though competing services would appear likely.

Thus, one form of competition has faded at concentrated hubs (non-stop service by non-hubbing carriers), and non-stop competition by hub competitors appears to be lessening. Although city-pair markets in general appear to have more competitors than they did before hub-and-spoke systems were developed, this could change if the maturation of the hubbing process causes the markets to be further and further divided as appears to be the case at highly concentrated hubs. An important consideration, therefore, is whether the hubbing process can be expected to continue to develop by creating more-and-more highly concentrated hubs, and, if so, what can be done about it.

The data suggests that hub concentration is likely to increase but whether many additional hubs will become as dominated as the most concentrated are today is not clear. On the one hand, the trend

toward greater concentration has been inexorable at many large hubs. Once the level of single-carrier concentration has reached 40 percent, it has rarely been reversed. Instead it has tended to intensify, and single carrier concentration exceeds 40 percent at about one half of large and medium hubs. Aside from these tendencies in recent years, the move toward greater concentration appears to make sense from the individual carrier's standpoint. There are a number of factors at play in the industry today that place a premium on growth. Other things being equal, expansion can be expected to involve the least risk where a carrier already has a significant degree of concentration, and the most risk where another carrier already has a significant degree of concentration. This would seem to encourage carriers to expand by extending their dominance rather than by competing at other carriers' hubs.

On the other hand, the very highly concentrated hubs today have the lowest volumes of local traffic among large hubs. Does this suggest that it is too difficult to dominate a point with a large base of local traffic, or has the hubbing process simply not evolved to that point? The data do not offer guidance about the answer to this question.

In any event, although city-pair concentration is not as great as it was in 1979, there are indications that hubbing has eroded competition in some markets. Table II-16, for example, shows that

in a sampling of large city-pair markets of less than 1,000 miles, the number of single-plane competitors generally increased from 1979 to 1984 and they have since declined. Table II-18 and Table II-19 also show that these same markets generally are not subject to significant on-line connecting competition. Also, several very large city-pair markets have only one single-plane competitor and many of the same markets have very little on-line connecting competition. Has competition been chased away by an aggressive competitor offering superior service and price, or is this evidence of market power? The price section to follow may offer an answer.

Finally, service patterns of three hubs have been examined to illustrate how connecting banks function -- an unconcentrated hub (Boston), a highly concentrated hub (Minneapolis) and a concentrated hub dominated by two hubbing carrier (Denver). These are shown in Section II of Appendix K.

These charts show that the more carriers operating at a point, the less pronounced the peak/through pattern becomes, because the hub-and-spoke operations by the separate carriers spread out the connecting banks. These charts also show that the combination of a major carrier and it code affiliate create impressive connecting banks aimed at increasing traffic flows. Clearly this has implications for carriers who may try to compete. A carrier who attempts to compete for feed traffic would have to do so by

creating its own connecting banks which would be a formidable operational problem with a strong hubbing carrier already entrenched. Creation of a hubbing complex at another point may be the more efficient way to compete for the same feed traffic.

Load Factors

Although load factor is a measure of service quality it is also a measure of competitive intensity and it appears to have broad implications about hub-and-spoke systems.

The load factor analysis starts by focusing on city-pair dominance (rather than hub dominance). (Tables II-20 and II-22). These data show that dominant carriers in city-pair markets have a clear load factor advantage over other carriers and that this advantage intensifies with increases in the level of dominance. Significantly, this is not a new phenomenon. This tendency was nearly as strong in 1984 and 1979 as in 1988. What has changed dramatically since 1979 is the number of concentrated city-pair markets created as a result of hubbing (Table II-23). There is no way of determining whether dominance related load factor advantages may have been a motivating force behind hubbing, which gives a carrier a measure of control of traffic flows at it's hub, or is a by-product of a system that may have been prompted by the belief that its effectiveness stems from offering a superior service product. Nevertheless, the effect translates into very significant load factor advantages for dominant carriers at highly concentrated hubs (Tables II-4 through II-31). The dominant carrier has a significant load factor advantage in every instance, averaging over nine percentage points for these

hubs (Tables II-24 and II-27). Much of the load factor advantage for dominant carriers stems from their higher load factors in monopoly markets, compared either with their own competitive load factors or other carriers' monopoly load factors. Even in competitive markets, however, where the competing service is typically by other hubbing carriers who tend to offer equivalent frequency, the hubbing carrier at a highly concentrated hub generally has a significant load factor advantage. The dominant carrier is able to operate more flights profitably, and the weaker carriers, in terms of load factor, have to choose between cutting frequency or reducing yield (to boost load factor), or exiting the non-stop market. They apparently have made the latter choice in many instances at concentrated hubs.

Nevertheless, concentrated hubs are located at important cities which are generally included in the portfolio of markets served by other hubbing carriers. This fact tends to limit the degree of concentration in spite of the observed load factor advantage.

Curiously, overall average load factors in city-pair markets at concentrated hubs are lower than those at unconcentrated hubs. This is not simply a function of differences in the particular markets involved, because it systematically stems from much lower

load factors in competitive markets. One explanation for this could be that the hubbing carriers offer quality service (frequency) in order to maintain their dominant positions. If so, this clearly offers a short-run benefit to travelers in those markets but the long-run impact is less clear. The result may be to eventually drive out more competition, as the increasing dominance in recent years at many large hubs suggests. But as noted above there is probably a limit to this trend. At this point in the development of hubs it is sufficient to note that the higher load factors of hub-dominant carriers at their hubs are consistent with a superior service hypothesis.

One possible senario for the maturing process at connecting hubs is that a carrier gains control of traffic through expansion to many new points and then uses that leverage to push competitors out. As we have noted the highly concentrated hubs are all the smaller hubs in terms of local traffic potential. This suggests that points with larger local traffic bases may be too difficult to dominate with feed traffic.

Tables II-29 through II-31 show that load factor increases with city-pair density, without regard to degree of concentration. Nevertheless, the hub-dominant carrier's load factor advantage does not depend on city-pair density. Similarly, the number of competitors depress load factors in all but the largest unconcentrated city-pairs.

Table II-32 suggest a strong connection between degree of hub dominance and extent of the load factor advantage for the hubbing carrier.

COMPARISON OF SELECTED INFORMATION AT CONNECTING HUB CITIES AND SIMILAR CITIES THAT ARE NOT CONNECTING HUBS.

Tables II-1, II-2, and II-3

Objectives: To evaluate how the development of a connecting hub affects service at the hub compared with other cities and to compare linear and hub-and-spoke service at specific cities.

Data Sources: DOT's Origin-Destination Survey of Airline Passenger Traffic, Table 1, and Airport Activity Statistics of Certificated Route Air Carriers, the Official Airline Guide, and Sales and Market Management.

Observations/Interpretation: Table II-1 compares service at four points having similar populations and buying income, two of which became connecting-hub complexes (Dayton and Charlotte), and two of which did not (Columbus, Ohio, and Louisville).

As shown, service changes at the connecting hubs were quite dramatic compared with the other hubs. Dayton's population is very similar to Louisville's and about three-fourths of that of Columbus, and Dayton received less service than either of these points in 1979. Nevertheless, Dayton's service tripled, in terms of departures, and doubled in terms of seats, compared with much smaller increases for Columbus and a decline in service for Louisville. Similarly, Charlotte, with a population very close to Louisville's and less than that of Columbus, more than tripled its service in terms of departures, and increased its service almost four-fold, in terms of seats.

In terms of city-pairs served, Columbus and Louisville receive service to far fewer city pairs than in 1979, while Dayton receives service to the same total number, with almost twice as many nonstop city pairs. Moreover, as shown in Tables II-2 and II-3 (to be discussed next) a more detailed look at service at Charlotte and Dayton shows that many of the points that received single-plane service in 1979 received only one flight a day, often with one or two stops. Charlotte receives service to 50 percent more points and two and one-third more points nonstop.

The last comparison made shows that the number of spoke points receiving monopoly service has increased dramatically to the connecting hubs, and has declined to the other two hubs.

The Dayton Hub

It is easy to focus on the concentration aspect of hubbing which on its face appears to be undesirable. In July, 1988, Piedmont accounted for about three-fourths of departures and seats out of Dayton. Thirty-three of the 39 cities served nonstop out of Dayton were served by a single carrier, and Piedmont had the only nonstop service in 11 markets that were served by other carriers in 1979. These facts fit the mold of what one tends to think of when one thinks of a highly concentrated connecting hub -- a large amount of monopoly service with the dominant carrier squeezing out the competition.

There is much more to the picture than this, however. When we look at how Piedmont created its dominant position at Dayton, and compare 1988 service at Dayton with (1) service at comparable sized cities that are not connecting hubs and (2) Dayton's 1979 service, we began to gain a somewhat different perspective about the effects of hubbing (Table II-2).

First, Piedmont added service to 15 cities that did not receive service to Dayton in 1979. Thus, a significant part of Piedmont's concentration at Dayton results from providing a service that did not previously exist for travelers desiring to go to or beyond Dayton. And for every new local Dayton city-pair monopoly that was created by adding new service to Dayton, Piedmont simultaneously created new intermediate hub competition for travelers moving between the spoke point and dozens of beyond points served out of Dayton. This is one reason why city-pair markets are less concentrated at the same time hub-concentration has increased.

Second, almost twice as many cities received non-stop service to Dayton in 1988 as in 1979.

Third, three times as many cities received three or more round trips per day in 1988 as in 1978. Many of the cities with service to Dayton in 1979 received a single one-stop or two-stop flight that was part of a longer linear service pattern and consequently, was not well timed for service to Dayton.

Fourth, of the 13 small-hub and non-hub spoke points served in 1988, all received monopoly service by Piedmont. However;

- 10 of these 13 points did not receive service to Dayton in 1979.

- All service between similar sized cities and Dayton in 1979 was also monopoly service.

- Each of these spoke points had more competitors in 1988 than in 1979, and is therefore less concentrated.

- Each of these 13 smaller spoke points continues to receive service to points other than Dayton, including several other carriers' connecting hubs.

- Each of these 13 smaller spoke points receives better service now than it did in 1979, generally far superior because of the availability of frequent service to various connecting hubs.

The Charlotte Hub

In July of 1988, Piedmont accounted for a little more than 90 percent of the capacity at Charlotte. Sixty-four of the 73 cities served nonstop out of Charlotte were served by a single carrier, and Piedmont had the only nonstop service in 16 markets that were served nonstop by other carriers in 1979. However, as Table II-3 shows:

- Piedmont added service to 28 points that did not receive service to Charlotte in 1979, or 40 percent of the cities served in July, 1988.

- Twice as many cities received nonstop service to Charlotte in 1988 as in 1979.

- Four times as many cities received three or more round trips in 1988 as in 1979.

With regard to smaller cities served to Charlotte, only one of the 23 non-hub points that received service in 1988 had competing service to Charlotte by another carrier. However;

- 18 of these 23 cities did not receive any service to Charlotte in 1979.

- Most of these cities continue to receive service to other points, including other carriers' connecting hubs.

- Virtually all of these points receive frequent service that is superior to service received in 1979, when many cities received only one or two flights a day.

Therefore, if we look behind concentration and focus on the actual service provided, in terms of cities served and frequency, Piedmont's development of connecting hubs at Dayton and Charlotte has improved service for many O&D travelers at these hubs as well as provided new service options for the spoke points that are now connected to them. This does not fully address service quality because points with service could still be under serviced. At the smaller spoke points this concern is minimized by two factors, however. First, regardless of the service quality and price factors in the local hub markets, the availability of service in many of them represents new travel opportunities for travelers.

Would travelers be better off without these opportunities? Second, most traffic at spoke points is not local traffic, but uses the service to connect to more distant points. For these passengers Dayton or Charlotte is just one of several travel alternatives and thus the emergence of these connecting hubs should intensify competition for such travelers despite the concentration that exists in local hub markets.

Table II-1
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Comparison of Connecting Hub Cities to Similar-Sized Cities That Are Not Connecting Hubs

	Dayton		Columbus		Louisville		Charlotte	
Population (000) 1/	935		1,314		966		1,088	
EBI (000) 1/	$12,255		$17,062		$11,833		$13,438	
O&D Passengers (000) 2/	1,907		3,309		1,837		3,231	
Enplanements (000) 3/	2,140		1,759		1,014		6,620	
Departures: 4/								
1979 (July)	477		509		684		895	
1988 (July)	1,233		852		629		2,938	
Amount Increase	756		343		(55)		2,043	
Percent Increase	158%		67%		(8)%		228%	
Seats: 4/								
1979 (July)	45,744		52,210		60,072		72,120	
1988 (July)	98,631		77,210		55,987		274,497	
Amount Increase	52,887		25,000		(4,085)		202,377	
Percent Increase	116%		48%		(7)%		281%	
Number of Spoke Cities by Hub Class: 4/	All	Nonstop	All	Nonstop	All	Nonstop	All	Nonstop
1979: Large	18	12	24	16	26	14	17	11
Medium	14	6	13	6	10	4	9	6
Small	5	3	7	2	15	5	12	8
Nonhub	2	0	0	0	10	5	11	7
Total	39	21	44	24	61	28	49	32
1988: Large		19		14		11		21
Medium		7		9		8		13
Small		7		0		2		16
Nonhub		6		0		0		23
Total		39		23		21		73

Comparison of Connecting Hub Cities to
Similar-Sized Cities That Are Not Connecting Hubs

Number of Cities with 1,2, or 3+ round trips per day: 4/	1RT	2RT	3RT	1RT	2RT	3RT	1RT	2RT	3RT	1RT	2RT	3RT
1979 (all service)	12	9	18	20	8	16	31	11	19	12	16	21
1979 (nonstop service)	5	6	10	13	2	9	7	7	14	8	9	15
1988 (nonstop service)	2	7	30	1	6	16	4	2	15	2	9	60
Cities with Monopoly Service 4/	79		88	79		88	79		88	79		88
Large	12		17	13		9	17		7	8		15
Medium	8		4	9		4	8		3	9		12
Small	4		7	8		0	11		2	8		15
Nonhub	2		6	0		0	12		0	9		22
Total	26		34	30		13	48		12	34		64

1/ Sales and Marketing Management, 1988 Survey of Buying Power, Vol. 140, No. 11, Bell Communications, Inc., 633 Third Avenue, New York, NY 10017. Data for 1987.
2/ Origin-Destination Survey of Airline Passenger Traffic, Table 1, 1988, U.S. Department of Transportation.
3/ Airport Activity Statistics of Certificated Route Air Carriers, 1988, U.S. Department of Transportation.
4/ Official Airline Guide, July 1, 1979 and 1988.

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency) Nonstop	One-Stop	Two-Stop	July 1988 - Nonstop (Carrier/Frequency) Major Carriers	Code Affiliates
Points Served in 1979 and 1988					
Large Hubs					
Atlanta	DL/6, EA/7	EA/2		PI/6, DL/6, EA/7	EA*/2
Boston		EA/3, PI/1		PI/5	
Chicago	EA/3	PI/1		PI/10, UA/3	
Dallas	PI/2	EA/1		PI/4, AA/3	
Detroit		EA/2		PI/4	
Los Angeles		UA/2		PI/2	
Memphis	UA/2	PI/2		PI/2	
Miami	EA/1, PI/1			PI/5, PA/1	
NYC-LGA	EA/10	EA/3		PI/7	
Philadelphia	EA/4			PI/6	
Pittsburgh	EA/4			PI/4, AL/3	
St. Louis	EA/2			PI/3, TW/3	
San Francisco		EA/2, UA/2		PI/2	
Seattle		EA/1		PI/2	
Tampa	PI/1		EA/1	PI/6	
Washington	EA/4	EA/1, PI/2		PI/6	
Medium Hubs					
Baltimore		EA/1		PI/6	
Cleveland	EA/1	EA/1		PI/3	
Columbus	EA/1			PI/3	
Jacksonville	EA/1	EA/1		PI/5	
Nashville	PI/2			PI/4	
Raleigh/Durham	AK/2, PI/2, EA/2, UA/6			PI/8, AA/3, PA/1	PI*/4

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency) Nonstop	One-Stop	Two-Stop	July 1988 - Nonstop (Carrier/Frequency) Major Carriers	Code Affiliates
Points Served in 1979 and 1988					
Small Hubs					
Birmingham	UA/1	EA/1		PI/4	
Charleston, SC	EA/4			PI/4	
Charleston, WV		PI/1		PI/5	PI*/2
Chattanooga	ZN/2			PI/2	
Columbia, SC	EA/5, PI/1			PI/4, AA/2, UA/1	PI*/6
Daytona Beach	EA/1			PI/1	
Greensboro	DL/1, EA/3, PI/2, SG/3			PI/10	PI*/7
Knoxville	PI/2	PI/1		PI/4	PI*/3
Louisville		PI/1		PI/3	
Norfolk	PI/2	PI/1		PI/7	
Richmond	PI/3			PI/8	
Tallahassee		EA/2		PI/3	
Non Hubs					
Asheville	PI/2, WR/3			PI/6	PI*/6
Fayetteville	PI/1			PI/8, AA/2	
Florence	EN/4				PI*/6
Hickory	EN/7				PI*/9
Lynchburg			PI/1	PI/2	PI*/2
Myrtle Beach	PI/1		PI/1	PI/6	
Rocky Mount		PI/2			PI*/6
Tri City	PI/1, SG/3	PI/1		PI/6	PI*/1
Wilmington		PI/2		PI/6	PI*/4

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency) Nonstop	One-Stop	Two-Stop	July 1988 - Nonstop (Carrier/Frequency) Major Carriers	Code Affiliates
Points Served in 1988 but not 1979					
Large Hubs					
Denver				PI/2	
Houston				PI/4	
Minneapolis				PI/2	
NYC-EWR				PI/8	
NYC-JFK				PI/1	
NYC-Orlando				PI/5	
Medium Hubs					
Cincinnati				PI/2	
Dayton				PI/3	
Ft. Lauderdale				PI/3	
Ft. Myers				PI/1	
New Orleans				PI/4	
Indianapolis				PI/2	
Small Hubs					
Greenville, SC					PI*/6
Lexington				PI/2	
Roanoke				PI/7	
Savannah				PI/3	
Non Hubs					
Athens					PI*/6
Augusta				PI/2	PI*/7
Beckley					PI*/5
Bluefield					PI*/4
Brunswick					PI*/4
Charlottesville				PI/2	PI*/1
Danville					PI*/3
Greenville, NC					PI*/7
Hilton Head					PI*/5
Huntington				PI/3	PI*/4
Jacksonville, NC				PI/3	PI*/3
Kinston				PI/2	PI*/4
Macon					PI*/4
New Bern					PI*/5

CHARLOTTE
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency)			July 1988 - Nonstop (Carrier/Frequency)	
	Nonstop	One-Stop	Two-Stop	Major Carriers	Code Affiliates
Points Served in 1979 but not 1988					
Large Hubs					
San Diego		DL/1			
Medium Hubs					
Hartford		EA/1			
Syracuse		EA/1			
Tulsa		DL/1			
Small Hubs					
None					
Non Hubs					
London/Corbin		PI/1	PI/1		
Pinehurst	VL/2				

SOURCE: Official Airline Guide.

DAYTON
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency) Nonstop	One-Stop	Two-Stop	July 1988 - Nonstop (Carrier/Frequency) Major Carriers	Code Affiliates
Points Served in 1979 and 1988					
Large Hubs					
Atlanta	DL/6	DL/2		DL/2	
Boston		TW/2	AL/2	PI/2	
Chicago	TW/3, UA/2			AA/5, UA/5	
Dallas	AA2	AA/1		PI/3	
Denver	TW/1		NC/1	PI/1	
Detroit	AL/1, DL/1		DL/1		DL*/1, NW*/1, PI*/12
Los Angeles	TW/1	AA/1, TW/2		PI/1	
Minneapolis		NC/3		NW/2	
NYC-LGA	TW/3			PI/4	
Philadelphia	AL/1, TW/1	AL/2, NC/1, TW/1		PI/4	
Pittsburgh	AL/4, TW/2			AL/4	
St. Louis	AL/1, TW/4			TW/5	
San Francisco		TW/2		PI/2	
Tampa		DL/2		PI/2	
Washington	TW/2, UA/2			PI/6	
Medium Hubs					
Cincinnati	DL/2, NC/2, CH/3			DL/1	DL*/8
Cleveland	AL/1, CH/8				DL*/1, PI*/11
Columbus	DL/4, NL/1, AA/2				PI*/7
Indianapolis	AL/1, TW/1				DL*/1, PI*/8
Milwaukee	NC/3				NW*/2, DL*/2
Small Hubs					
Akron	CH/2			PI/3	PI*/3
Louisville	AL/2			PI/3	PI*/1
Toledo	DL/1			PI/2	
Points Served in 1988 but not 1979					
Large Hubs					
Charlotte				PI/5	
Miami				PI/2	
NYC-EWR				PI/4	
Orlando				PI/3	
Medium Hubs					
Baltimore				PI/1	
Nashville					AA*/3

DAYTON
Comparison of Scheduled Service
July 1, 1979 vs July 1, 1988

Spoke Point	July 1979 (Carrier/Frequency) Nonstop	One-Stop	Two-Stop	July 1988 - Nonstop (Carrier/Frequency) Major Carriers	Code Affiliates
Points Served in 1988 but not 1979					
Small Hubs					
Ft. Wayne				PI/1	PI*/2
Grand Rapids				PI/4	
Lexington					PI*/6
South Bend				PI/4	
Non Hubs					
Champaign				PI/4	
Evansville				PI/3	PI*/2
Flint				PI/3	PI*/1
Kalamazoo				PI/4	
Lafayette					PI*/4
Lansing				PI/3	
nts Served in 1979 but not 1988					
Large Hubs					
Kansas City	TW/1	TW/3			
Las Vegas			TW/2		
Phoenix		TW/1			
Medium Hubs					
Buffalo	AL/1	AL/1	AL/1		
Ft. Lauderdale		DL/1	DL/1		
Hartford		AL/1			
Omaha		UA/1			
Ontario		AA/1			
Rochester, NY		AL/1			
San Antonio			AA/1		
San Jose			TW/1		
Tucson			TW/1		
Small Hubs					
Albany, NY			AL/2		
Harrisburg		AL/1			
n Hubs					
Erie		AL/1			
Newport News		UA/1			

Source: Official Airline Guide

COMPARISON OF SINGLE-PLANE SERVICE, JULY 1979 AND JULY 1988, AT SOUTH BEND AND COLUMBIA, S.C.

Tables II-4 and II-5

Objectives: To illustrate the differences between linear and hub-and-spoke systems of operation, and to evaluate service at two small, monopoly spokes of highly concentrated hubs.

Data Source: The Official Airline Guide

Observations/Interpretation: Service to each of these points is vastly superior under the hub-and-spoke system.

South Bend: In 1979 South Bend had nine nonstop flights to Chicago and three flights to Cleveland, which provided well-timed service to each of these cities. South Bend also had four flights to Detroit, two of which provided useful service for South Bend. Service to nine other cities consisted of either one or two flights a day, generally with one or more intermediate stops, and often poorly timed for South Bend. For the most part, flights to these nine cities were simply by-products of linear service patterns aimed primarily at serving other cities. There was little demand for service between South Bend and such places as Kalamazoo, Jackson, La Crosse, Madison, and Ft. Wayne. United's single nonstop flight to Denver departed at 12:20 am, and North Central's flight to Minneapolis was a three-stop flight arriving at 11:55 pm. Thus, other than the flights to Chicago, Cleveland and Detroit, the single one-stop flights to Boston and Los Angeles were the only flights that provided meaningful service to South Bend passengers.

In contrast, in 1988 South Bend had frequent, well-timed flights to eight connecting hub complexes by eight different carriers. The hubbing carriers provided four flights in three instances, five flights in two instances, and either six, eight, or ten flights to the other three hubs, for a total of 46 flights most of which were timed to hit connecting banks. Most of the forty-six flights, therefore, connected to other flights serving dozens of cities nationwide.

Hubbing has clearly provided South Bend with service that is far more superior to that provided by the linear service structure that existed in 1979. This is reflected in the traffic, as enplanements have increased from 236,458 in 1979 to 342,224 in 1988. The growth is even more impressive since 1984, when the hubbing phenomenon really began to flourish. South Bend's enplanements had dropped to 206,248, thus South Bend's traffic has increased by two-thirds in the four years as hubbing has taken hold.

Columbia, S.C.: Columbia is another example of how hubbing has benefited small points, despite a decline in the number of departures. Departures dropped from 339 per week in July 1979, to 246 per week in July 1988 or almost 100 departures.

In 1979, only two points received good service from Columbia, Atlanta with 13 flights a day and Charlotte with six flights spread throughout the day. In addition, Boston received three flights (all multi-stop flights), and Charleston, S.C. received two flights timed early and late and thus offered reasonable service. Twenty-two other points received service; however, 20 received only one flight a day, 17 were multi-stop flights, and many were poorly timed for Columbia. As with South Bend, these flights to these cities were by-products of linear service patterns aimed primarily at serving other points.

In 1988, Columbia continued to receive good service to only two cities that received good service in 1979, Atlanta and Charlotte, (It also received limited service to other connecting hubs.) Nevertheless, because Atlanta and Charlotte have evolved into well-developed connecting hub complexes, Columbia travelers have excellent access to over a hundred cities with on-line connections at either Atlanta or Charlotte. With frequent service to and beyond these hubs, Columbia travelers have the convenience of traveling throughout the day to virtually any large city in the country. Here again, the improvement in service is reflected in the traffic response, where traffic increased from 438,673 enplanements in 1979 to 583,013 in 1988, a one-third increase. As with South Bend, moreover, the increase has been dramatic since 1984 when enplanements fell to 397,252. The growth from 1984 to 1988 was just over 50 percent.

Table II-4
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South Bend
Scheduled Service, July 1979 and 1988

From South Bend To	July 1979 United Flt. No. (No. of Stops)	Dept. Time	Arr. Time	North Central Flt. No. (No. of Stops)	Dept. Time	Arr. Time
Chicago	101(0)	7:00a	7:34a	852(0)	7:20a	7:50a
	875(0)	10:33a	11:11a	586(0)	10:38a	11:10a
	556(0)	1:57p	2:35p	858(0)	6:00p	6:30p
	975(0)	5:05p	5:43p	379(0)	8:38p	9:10p
	865(0)	9:30p	10:05p			
Detroit				853(2)	8:41a	11:05a
				585(0)	11:00a	12:34a
				851(1)	5:02p	7:03p
				859(1)	9:16p	11:25p
Cleveland	934(0)	6:15a	8:20a			
	732(0)	9:53a	11:40a			
	376(0)	4:23p	6:10p			
Boston	732(1)	9:53a	1:43p			
Denver	729(0)	12:15p	1:40p			
Ft. Wayne	986(0)	12:20a	12:46a			
	564(0)	10:20p	10:46p			
Hartford	376(1)	4:23p	8:11p			
Jackson				853(1)	8:41a	10:35a
				857(0)	5:02p	6:32p
Kalamazoo				853(0)	8:41a	10:02a
				859(0)	9:16p	10:37p
LaCrosse				379(2)	8:38p	11:10p
Los Angeles	101(1)	7:00a	10:35a			
Madison				379(1)	8:38p	10:27p
Minneapolis				379(3)	8:30p	11:15p

Flight Itineraries

United

101	SBN	ORD	LAX	
376	ORD	SBN	CLE	BDL
556	ORD	SBN	ORD	
564	LAX	DEN	SBN	FWA
729	FWA	SBN	DEN	
732	ORD	SBN	CLE	BOS
865	SBN	ORD		
875	BDL	CLE	SBN	ORD
934	SBN	CLE		
975	LGA	CLE	SBN	ORD
986	MSP	ORD	SBN	FWA

North Central

379	DTW	AZO	SBN	ORD	MSN	LSE	MSP	
585	ORD	SBN	DTW					
586	BOS	DTW	AZO	SBN	ORD			
852	DTW	JXN	SBN	ORD				
853	ORD	SBN	AZO	JKN	DTW			
857	ORD	SBN	JXN	DTW				
858	CLE	DTW	AZO	SBN	ORD			
859	ORD	SBN	AZO	DTW				

Table II-4
Page 2 of 3

South Bend
Scheduled Service, July 1979 and 1988

From South Bend To	July 1988 Nonstop Service Only							
	United				North Central			
	Carrier	Flt. No.	Dept. Time	Arr. Time	Carrier	Flt. No.	Dept. Time	Arr. Time
Chicago	AA*	4197	5:30a	6:15a	UA*	2667	5:45a	6:15a
	AA*	4275	7:20a	8:05a	UA*	2671	6:39a	7:14a
	AA*	4168	10:00a	10:45a	UA*	2673	8:09a	8:44a
	AA*	4279	11:54a	12:39p	UA*	2675	9:10a	9:45a
	AA*	4281	2:29p	3:14p	UA*	2679	11:39a	12:14p
	AA*	4218	3:59p	4:44p	UA*	2681	1:09p	1:44p
	AA*	4283	5:15p	6:00p	UA*	2685	2:09p	2:44p
	AA*	4186	8:15p	9:00p	UA*	2687	4:39p	5:14p
					UA*	2689	6:40p	7:15p
					UA*	2693	8:40p	9:15p
	ML*	1843	6:40a	7:15a				
	ML*	1849	9:45a	10:20a	CO*	4700	6:05a	6:45a
	ML*	1857	12:25p	1:00p	CO*	4706	11:40a	12:20p
	ML*	1869	3:15p	3:50p	CO*	4708	2:35p	3:15p
	ML*	1861	6:15p	6:50p	CO*	4710	4:05p	4:44p
Cincinnati	DL*	3111	6:25a	8:30a				
	DL*	3035	9:45a	12:00p				
	DL*	3194	11:40a	1:50p				
	DL*	3203	2:00p	4:09p				
	DL*	3287	3:05p	5:15p				
	DL*	3284	5:45p	7:50p				
Dayton	PI	414	6:00a	7:44a				
	PI	506	9:30a	11:12a				
	PI	34	2:10p	3:50p				
	PI	631	5:45p	7:29p				
Detroit	NW	1480	6:00a	7:49a				
	NW	1482	9:34a	11:22a				
	NW	1484	1:15p	3:03p				
	NW	1486	6:45p	8:34p				
Indianapolis	AL*	3841	7:00a	7:50a				
	AL*	3843	9:25a	10:15a				
	AL*	3845	12:40p	1:30p				
	AL*	3847	3:25p	4:15p				
	AL*	3849	5:25p	6:15p				
St. Louis	TW*	7491	7:09a	8:25a				
	TW*	7493	10:09a	11:26a				
	TW*	7489	1:19p	2:46p				
	TW*	7495	5:05p	6:22p				

Table II-4
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South Bend
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1988)

American

All	SBN	ORD

Continental

3035	SBN	CVG	
3111	SBN	CVG	LEX
3194	SBN	CVG	TOL
3203	SBN	CVG	
3247	SBN	CVG	CAK
3284	SBN	CVG	CHA

Midway

1861	SBN	MDW	BMI	SPI
All others	SBN	MDW		

Northwest

1480	SBN	DTW	ALB
All others	SBN	DTW	

Piedmont

34	SBN	DAY	EWR	
414	SBN	DAY	DCA	
506	SBN	DAY	MCO	
631	SBN	DAY	CLT	CAE

United

2667, 2671, 2689	FWA	SBN	ORD
All others	SBN	ORD	

USAir

All	SBN	IND

Source: Official Airline Guide

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

July 1979 Service

From Columbia To	United Flt. No. (No. of Stops)	United Dept. Time	United Arr. Time	North Central Flt. No. (No. of Stops)	North Central Dept. Time	North Central Arr. Time	Piedmont Flt. No. (No. of Stops)	Piedmont Dept. Time	Piedmont Arr. Time
Atlanta	878(1)	4:00a	5:22a	148(0)	7:43a	8:29a			
	945(0)	7:45a	8:39a	703(0)	12:57p	1:40p			
	337(0)	11:07a	12:00n	311(0)	5:05p	5:54p			
	267(0)	1:00p	1:53p	653(0)	9:00p	9:46p			
	906(0)	3:55p	4:49p	499(0)	9:35p	10:20p			
	124(0)	7:02p	7:55p						
	822(0)	9:00p	9:49p						
	495(0)	11:05p	11:53p						
Charlotte				370(0)	7:00a	7:29a	939(0)	10:40a	11:11a
				596(0)	11:10a	11:37a			
				358(0)	3:43p	4:10p			
				394(0)	7:25p	7:52p			
				680(0)	11:20p	11:46p			
Boston				148(1)	7:43a	11:40a	48(2)	4:33p	7:59p
				596(2)	11:40a	2:58p			
Washington				370(1)	7:00a	8:59a			
				394(1)	7:25p	9:39p			
Augusta	878(0)	4:00a	4:22a						
Beckley							939(4)	10:40a	2:02p
Bluefield							939(3)	10:40a	1:34p
Charleston, SC	170(0)	7:40a	8:04a						
	576(0)	9:05p	9:29p						
Chicago	882(1)	9:00p	11:25p						
Cincinnati							939(6)	10:40a	3:49p
Columbus, OH	124(2)	7:02a	10:42a						
Dallas	337(1)	11:07a	1:35p						
Dayton Beach				499(1)	9:35p	12:14a			
Greensboro				566(0)	10:53p	11:26p	939(1)	10:40a	12:00n
Huntington							939(5)	10:40a	2:45p
Lexington	124(1)	7:02p	9:40p						
Los Angeles	337(2)	11:07a	2:45p						
Memphis	495(1)	11:05p	12:40a						
Miami							3(0)	12:14p	1:45p
Nashville	878(2)	4:00a	6:20a						
NYC-EWR				358(1)	3:43p	6:08p			
NYC	504(0)	5:15p	6:45p						
Norfolk							48(1)	4:33p	6:15p
Philadelphia				596(1)	11:01a	1:28p			
Richmond							48(0)	4:33p	5:29p
Roanoke							939(2)	10:40a	12:42p

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1979)

Delta

124	CAE	ATL	LEX	CMH				
170	ATL	CAE	CHS					
267	CHS	CAE	ATL					
337	CAE	ATL	DFW	LAX				
495	CHS	CAE	ATL	MEM				
504	ATL	CAE	LGA					
527	LGA	CAE	CHS					
878	CAE	AGS	ATL	BNA				
882	CAE	ATL	ORD					
906	CAE	ATL						
945	CAE	ATL						

Eastern

148	CLE	CAE	ATL	BOS				
311	CAE	ATL						
358	CAE	CLT	EWR					
370	ATL	CAE	CLT	DCA				
394	CAE	CLT	DCA					
499	CAE	ATL	DAB					
566	DRW	ATL	CAE	GSO				
596	CAE	CLT	PHL	BOS				
653	EWA	DCA	ADU	CAE	ATL			
680	CAE	CLT						
703	CAE	ATL						

Piedmont

3	AVL	CAE	MIA					
48	MIA	CAE	RIC	ORF	BOS			
939	CAE	CLT	GSO	ROA	BLF	BKW	HTS	CVG

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

July 1988 Nonstop Service Only

From Columbia To	United				North Central				Piedmont			
	Carrier	Flt. No.	Dept. Time	Arr. Time	Carrier	Flt. No.	Dept. Time	Arr. Time	Carrier	Flt. No.	Dept. Time	Arr. Time
Atlanta	DL	278	6:40a	7:35a	EA	280	7:36a	8:30a				
	DL	707	8:25a	9:22a	EA*	3174	10:35a	11:35a				
	DL	1015	10:05a	11:04a	EA	714	12:34p	1:25p				
	DL	593	11:45a	12:42p	EA	1657	2:23p	3:17p				
	DL	1155	3:05p	4:02p	EA*	3212	3:40p	4:40p				
	DL	536	4:55p	5:51p	EA	244	6:05p	7:01p				
	DL	845	6:30p	7:23p	EA*	3176	7:40p	8:40p				
	DL	1097	9:54p	10:45p								
Charlotte	PI	661	6:50a	7:20a	AA	494	11:58a	12:30p	UA	587	4:00p	4:33
	PI	88	7:50a	8:24a								
	PI	324	10:55a	11:29a								
	PI*	5329	11:52a	12:37p								
	PI*	5398	2:02p	2:47p								
	PI	121	3:05p	3:39p								
	PI*	5340	4:15p	4:55p								
	PI*	5342	6:15p	6:55p								
	PI*	5347	7:29p	8:14p								
	PI*	5344	8:25p	9:10p								
Chicago	UA	375	8:00a	8:47a								
Raleigh	AA	1152	8:39a	9:30a	EA	670	3:27p	4:12p				
	AA	826	7:24p	8:15p								
New York (non-hub)	PI	474	7:00a	8:39a								
	PI	478	11:30a	1:09p								
	PI	562	5:00p	6:39p								
Washington (non-hub)	UA	1280	10:45a	11:57a	PI	950	6:35p	8:00p				
	UA	1263	6:55p	8:07a								

Columbia, South Carolina
Scheduled Service, July 1979 and 1988

Flight Itineraries (July 1988)

American

494	CAE	CLT	RDU	CLE		
826	CAE	RDU	EWR			
1152	CAE	RDU	EWR			

Delta

278	CAE	ATL	PNS	BTR	DFW	ABQ
536	CAE	ATL				
593	CAE	ATL				
707	CAE	ATL				
845	CAE	ATL				
1015	CAE	ATL	TLH			
1097	CAE	ATL	TYS			
1155	CAE	ATL	JAN			

Eastern

244	CAE	ATL	ORD	
280	CAE	ATL	MSP	
670	HSV	ATL	CAE	RDU
714	CAE	ATL	ROC	
1657	CAE	ATL		
3174	CAE	ATL		
3176	CAE	ATL		
3212	ILM	CAE	ATL	

Piedmont

88	CAE	CLT	DCA
121	CAE	CLT	CLE
324	CAE	CLT	ORD
474	CAE	EWR	
478	CAE	EWR	
562	CAE	EWR	
661	CAE	CLT	NAS
950	CAE	BWI	PHL
5329	CAE	CLT	
5340	CAE	CLT	
5342	CAE	CLT	
5344	CAE	CLT	
5347	CAE	CLT	
5398	CAE	CLT	RDU

United

375	CAE	ORD	TUL
587	CAE	CLT	ORD
1263	CAE	IAD	DTW
1280	CAE	IAD	BUF

Source: Official Airline Guide

SELECTED SERVICE INFORMATION AND ENPLANEMENTS FOR NON-HUB AND SMALL-HUB SPOKE POINTS OF THREE CONCENTRATED HUBS

Tables II-6, II-7, and II-8

Objectives: To evaluate overall service and competition at these monopoly spoke points.

Data Sources: The Official Airline Guide, DOT Form 41, Schedule T-9, and DOT 298-C Reports.

Observations/Interpretation: Virtually all small-hub monopoly spoke points at Charlotte, Dayton, and Minneapolis have experienced an increase in the number of competitors and, as a consequence, are themselves less concentrated than they were in 1979. Most of the current competitors are other hubbing carriers that have monopoly spokes from these points to their own connecting-hub complexes. Each of the small hub points has added to the concentration levels at the various connecting hubs, yet each clearly has competitive alternatives for travelers who desire to travel beyond the connecting hubs. In many instances, the monopoly spokes represent new service to the connecting hub, and the service, therefore, is primarily intended to feed connecting traffic to the hub, rather than to generate local traffic. That the hub-and-spoke service has been accepted by the traveling public is reflected in the enplanement data, where the growth rate has generally been very high. This is true even at small-hub points where the number of departures declined from 1979 to 1988. This suggests that the more focused hub service, which channels traffic through connecting hubs with fairly intense levels of service, has been better accepted by travelers than the previous linear service.

The non-hub points as a group have also experienced an increase in the number of competitors. As with the small hubs, these competitors tend to be hubbing carriers that have monopoly spokes from these points to their respective hubs. Most of these "monopoly" spokes, therefore have competitive alternatives to cities other than the hub, and most have experienced significant traffic growth, particularly since 1984 as hubbing became more intense.

CHARLOTTE
Selected Service Information and Enplanements
for Non-Hub and Small Hub Spoke Points

Spoke Points	Competition With 2+ RT 6 Days 7/79	Competition With 2+ RT 6 Days 7/88	Dominant Carrier Share 7/79	Dominant Carrier Share 7/88	Weekly Increase in Departures Number	Weekly Increase in Departures Percent	1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) CLT PI	ATL DL	ATL EA	ROU AA	BWI PI	CVG DL	IAD UA	PIT AL	ORD UA	BNA AA	Other-Number of Hubs/Freq.	Annual Enplanements (000) 1988	1984	1979
Non Hubs																				
Asheville	2	4	89%	44%	100	69	11	6	6	3	2					3		287	180	186
Athens	1	1	100	100	(1)	(2)	6											22	5	11
Augusta	1	3	100	39	101	144	8	10	7									234	182	205
Beckley	2	1	60	100	(4)	(9)	6											14	3	15
Bluefield	2	1	65	100	(12)	(23)	6											15	2	18
Brunswick	1	2	100	51	34	179	6	4										25	13	19
Charlottesville	1	3	100	52	89	148	5				4		5	6				134	87	64
Danville	2	1	61	100	(37)	(58)	3											13	1	2
Greenville	1	3	100	65	84	420	5			3								55	4	6
Fayetteville	2	3	78	46	10	7	6	7		3	1							219	179	159
Florence	2	2	54	54	13	17	6		4									45	20	32
Hickory	2	1	63	100	(9)	(13)	9											39	12	19
Hilton Head	2	2	68	53	(16)	(15)	5		8									62	5	6
Huntington	2	3	73	43	34	36	7											107	79	131
Jacksonville	1	2	100	72	28	58	5			3	2							111	93	47
Kinston	1	1	100	100	5	10	7				2							68	77	57
Lynchburg	2	3	56	56	(7)	(5)	5				6			5				94	51	50
Macon	2	3	57	47	66	140	4	7	5									49	62	93
Myrtle Beach	4	5	51	33	(1)	(1)	6	5	4	3								267	150	108
New Bern	1	2	100	72	28	60	4			3	3							61	9	22
Rocky Mount	1	1	100	100	20	100	6											22	1	5
Tri City	4	6	72	31	64	35	7	5	6			4				4		233	179	238
Wilminton, NC	1	3	100	72	31	34	8			3	3							200	123	89

Table II-6
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CHARLOTTE
Selected Service Information and Enplanements
for Non-Hub and Small Hub Spoke Points

Spoke Points	Competition With 2+ RT 6 Days		Dominant Carrier Share		Weekly Increase in Departures		1988 Connecting-Hub Service (Hub, Hubbing Carrier, Daily Freq.)										Other-Number of Hubs/Freq.	Annual Enplanements (000)		
	7/79	7/88	7/79	7/88	Number	Percent	CLT PI	ATL DL	ATL EA	ROU AA	BWI PI	CVG DL	IAD UA	PIT AL	ORD UA	BNA AA		1988	1984	1979
Small Hubs																				
Birmington	7	9	35%	30%	(49)	(11)	4	10	7							3	4/10	987	603	794
Charleston, SC	5	5	30	28	77	36	4	8	6		3		4		1			661	416	463
Charleston, WV	3	5	48	33	82	48	5	5				5		4	4			269	217	251
Chattanooga	3	5	68	30	61	42	7	7	8			3				3	1/3	311	238	295
Columbia, SC	5	5	39	39	(93)	(27)	10	7	7				2		1			583	397	439
Daytona Beach	2	5	89	36	73	55	1	3	4	2			2					441	244	394
Greensboro	5	6	44	55	68	17	17	6	5	7	5					2	1/1	999	787	695
Greensville, SC	2	6	65	32	167	152	11	10	9								1/3	593	369	346
Knoxville	6	8	43	31	129	51	7	7	8	3		6	3	3	3	6	2/7	628	436	490
Lexington	4	7	47	40	195	109	2	4	4			15		3	4	3	2/8	418	312	341
Louisville	8	10	28	37	(55)	(8)	3	6	3			14	1	4	4		8/24	1,080	927	1,141
Norfolk	4	10	48	45	284	75	9	5	5		5	2	5	4	4		4/11	1,583	1,575	937
Richmond	4	7	49	45	59	13	7	4	5	3	6	3	5	4	3		1/1	916	649	675
Roanoke	2	5	90	42	5	2	6	6		3	5	2	5	8				341	269	454
Savanah	3	5	43	29	59	36	3	6	5	3			1		1		1/1	531	413	385
Tallahassee	4	3	29	44	134	80	3	9	4									449	279	283

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, DOT Form 298-C.

DAYTON
Selected Service Information and Enplanements
for Non-Hub and Small Hub Spoke Points

Spoke Points	Competition With 2+ RT 6 Days 7/79	Competition With 2+ RT 6 Days 7/88	Dominant Carrier Share 7/79	Dominant Carrier Share 7/88	Weekly Increase in Departures Number	Weekly Increase in Departures Percent	1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) Day PI	ORD UA	ORD AA	CVG DL	DTW NW	MDW ML	PIT AL	BNA AA	IND AL	STL TW	Other-Number of Hubs/Freq.	Annual Enplanements (000) 1988	1984	1979
Non-Hubs																				
Champaign	2	5	61%	26%	71	43%	4			4		5			5	7		158	160	110
Evansville	3	7	42	26	183	193	4			7				5	3	10	1/4	247	199	258
Flint	2	3	61	46	7	8	4				7							133	119	122
Kalamazoo	2	6	53	23	55	31	4	5	5	3	6	5					1/3	218	127	142
Lafayette	3	4	40	35	(70)	(39)	4											21	23	26
Lansing	2	6	63	27	93	62	3	5	5	5	8	4						217	164	221
Small Hubs																				
Akron	3	6	55	45	66	40	6	3	2	6	5		10				1/2	364	164	217
Ft. Wayne	3	6	46	25	109	56	5	8	4	7	4	5			6		1/1	305	238	265
Grand Rapids	3	6	57	27	58	20	4	6	8	6	7	5	4				3/8	645	523	468
Lexington	4	6	47	40	195	109	6	4		15			3	3		2	4/13	418	312	341
Louisville	8	9	28	37	(55)	(8)	5	4		14	3		4		3	5	9/26	1,080	927	1,141
South Bend	3	8	43	24	128	56	4	10	8	6	4	5			5	4		342	206	236
Toledo	8	6	33	27	15	6	6	4		5	5		4			2	1/2	300	288	320

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, and DOT Form 198-C.

MINNEAPOLIS
Selected Service Information and Enplanements
for Non-Hub and Small Hub Spoke Points

Spoke Points	Competition With 2+ RT 6 Days 7/79	7/88	Dominant Carrier Share 7/79	7/88	Weekly Increase in Departures Number	Percent	1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.) MSP NW	ORD UA	ORD AA	MDW ML	DEN CO	DEN UA	DTW NW	STL TW	SLC DL	Other-Number of Hubs/Freq.	Annual Enplanements (000) 1988	1984	1979
Non-Hubs																			
Aberdeen	1	1	100%	100%	(20)	(37)	2										25	25	38
Appleton	[included with Oshkosh]						3	6								1/4	161	78	34
Bismarck	5	3	32	45	(83)	(45)	4				3				1		131	120	190
Bozeman	2	3	55	46	50	65	1				2				7		114	82	68
Brainerd	1	1	100	100	7	13	4										16	12	16
Duluth	1	1	100	100	(48)	(47)	8										120	81	140
Eau Claire	2	1	56	100	(57)	(59)	6										34	29	45
Grand Forks	3	1	54	100	(53)	(58)	6										89	75	105
Grand Rapids, MN	0	1	0	100	14	128	2										5	3	3
Great Falls	4	5	34	40	42	34	2				1				2		131	128	148
Green Bay	1	4	96	34	(11)	(5)	3	5	7	4		4				1/4	238	179	343
Hibbing	1	1	100	92	25	61	5										20	16	31
Int'l Falls	1	1	100	100	38	181	4										25	13	12
Jamestown	1	1	100	100	(14)	(44)	2										4	4	6
Kalamazoo	2	6	53	23	55	31	3	5	5	5		6				1/3	218	127	115
La Crosse	2	3	53	47	(25)	(34)	5	1	2								84	58	75
Mason City	1	2	100	66	47	124	5										14	5	13
Minot	2	2	48	50	(14)	(25)	3										77	55	70
Oshkosh	2	2	57	53	17	9	3									1/3	26	31	70
Peoria	2	7	83	24	127	59	3	4	6	5		1		12		1/4	199	177	234
Rapid City	3	4	42	41	12	10	2				6	4			1		161	123	165
Rhinelander	1	2	100	77	19	45	4										31	20	30
Rochester, MN	3	3	47	44	(51)	(40)	5		4					3			157	132	172
Rockford	3	1	36	100	(59)	(76)	3			5							15	23	13
Sioux City	2	5	58	29	9	7	5	1						3		1/1	2	2	6
Thief River Falls	1	1	100	100	3	14	2										6	4	13
Waterloo	2	7	74	27	121	106	5							4			59	54	85
Watertown	1	1	100	100	(16)	(30)	3										7	8	16

Table II-8
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MINNEAPOLIS
Selected Service Information and Enplanements
for Non-Hub and Small Hub Spoke Points

Spoke Points	Competition With 2+ RT 6 Days		Dominant Carrier Share		Weekly Increase in Departures		1988 Connecting-Hub Service (Hub, Hubbing Carrier, and Daily Freq.)									Other-Number of Hubs/Freq.	Annual Enplanements (000)		
							MSP	ORD		MDW	DEN		DTW	STL	SLC				
	7/79	7/88	7/79	7/88	Number	Percent	NW	UA	AA	ML	CO	UA	NW	TW	DL		1988	1984	1979
Small Hubs																			
Billings	4	5	37%	61%	47	19	3				3	3			3		285	313	358
Cedar Rapids	3	6	41	25	59	30	5	6	3			2	1	4		1/2	378	229	262
Des Moines	6	8	39	16	14	4	5	6	4	4		4			5	3/5	736	597	711
Fargo	3	2	52	59	(73)	(52)	6	1				2					195	153	198
Grand Rapids	3	7	57	27	58	20	2	6	9	5			7			5/18	645	523	468
Lincoln	4	6	59	23	(31)	(14)	4	3				2				1/1	253	154	245
Louisville	8	10	28	37	(55)	(8)	1	4	3				3	5		12/45	1,080	927	1,141
Moline	4	8	50	25	76	32	1	9	5	5				8			302	250	320
Sioux Falls	3	4	53	39	(103)	(47)	6	2				2		1			240	198	281
Spokane	6	5	30	55	51	12	2	2			3	2					772	643	878

SOURCES: Official Airline Guide, July 1, 1979 and 1988, DOT Form 41, Schedule T-3, DOT Form 298-C.

DOMINANT CARRIER AT LARGE AND MEDIUM HUBS.

Tables II-9 and II-10

Objective: To study the trends and extent of single-carrier concentration at large and medium hubs.

Data Sources: Dominance is measured both in terms of departures and enplanements. The data source for departures is Official Airline Guide tapes. This does not distinguish between major carriers and their code-sharing affiliates. For example, the share of departures shown at Pittsburgh for USAir includes the departures for its Allegheny Commuter code-sharing affiliates. Thus, one basic assumption is that, since code sharers' operations are keyed to their major-carrier affiliates' connecting banks, their traffic feed contributes to the major carriers' dominance at their hubs. Another fundamental assumption when using share of departures as a measure of dominance is that it serves as a good proxy for share of traffic.

The data source for enplanements is the Form 41 reports of the certificated carriers (schedule T-3). This measures dominance on the basis of the traffic of the major, hubbing carrier only.

Observations/Interpretations: Large Hubs: As is widely known, carrier concentration has increased very dramatically, particularly during the last four years. Concentration occurs when a carrier establishes and then builds a connecting-hub complex at a point. As evidenced by the degree of concentration, virtually all large hubs other than coastal cities serve as connecting complexes.

* The most concentrated large hub in 1979 was Pittsburgh, where USAir (then Alleghery) had about 60 percent of departures. Now, a single carrier accounts for 75 percent or more of the departures at six large hubs.

* At almost half of the large hub cities, 50 percent or more of the departures are by a single carrier.

* The more concentrated hubs tend to be those with the smallest local traffic base.

These concentration tables need to be viewed with caution. As discussed above, concentration often occurs as a result of adding a substantial volume of service to many new points. Also, discussed elsewhere, despite increasing hub concentrating city-pair concentration has been declining.

Medium Hubs: Concentration at medium hubs is much less dramatic than at large hubs but, nevertheless, has increased in recent years. Five medium hubs are now highly concentrated and in each instance, the hubbing carrier's dominance continues to increase.

In contrast to large hubs, where only two are now less concentrated than they were in 1979, about 40 percent of the medium hubs are less concentrated than they were in 1979. Also, whereas the concentration at most large hubs has rather steadily increased throughout the 10-year period since 1979, the level of concentration at most medium hubs dropped between 1979 and 1982 and continues to be less consistent except at the more concentrated hubs.

Perhaps the most striking observation is the number of medium hubs that are dominated by USAir or Piedmont. With these carriers combined, they will dominate 8 of the 15 most concentrated medium hubs, including virtually all medium hubs in the northeast.

DOMINANT CARRIER AT EACH MEDIUM HUB
(Based on Departures and 1988 FAA Hub Classifications)

Hub	March 1989		July 1988		July 1986		July 1984		July 1982		July 1979	
	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier
Cincinnati	83.1	DL	81.1	DL	63.3	DL	34.0	DL	39.4	DL	31.5	DL
Dayton	74.8/77.0	AL	73.9	PI	64.6	PI	39.6	PI	21.7	PI	26.4	TW
Baltimore	69.2/74.2	AL	67.5	PI	52.3	PI	43.9	PI	38.4	AL	26.3	AL
Raleigh/Durham	71.7	AA	65.0	AA	35.9	PI	22.1	EA	22.3	EA	39.6	EA
Nashville	69.3	AA	63.5	AA	50.4	AA	18.3	AL	20.3	AL	17.7	AA
Syracuse	58.2/65.9	AL	59.4	PI	50.4	PI	40.4	UR	39.2	UR	42.0	AL
Norfolk	52.9/57.7	AL	45.2	PI	41.6	PI	44.0	PI	39.1	PI	55.9	PI
El Paso	56.4	WN	56.6	WN	50.9	WN	57.7	WN	32.1	WN	56.0	CO
Rochester, NY	35.9/56.5	AL	33.2	AL	35.1	AL	41.3	AL	46.5	AL	55.6	AL
San Jose	52.4	AA	37.2	AA	25.7	OC	23.7	OC	23.3	OC	26.4	OC
Buffalo	40.7/51.8	AL	39.9	AL	43.0	AL	53.5	AL	63.8	AL	60.9	AL
Indianapolis	41.0/47.3	AL	43.3	AL	26.7	AL	19.0	AL	22.1	RU	28.0	AL
Sacramento	46.5	UA	42.7	UA	38.3	UA	30.0	OE	19.7	VB	20.5	PS
Jacksonville	37.4/41.0	AL	37.0	PI	27.5	PI	25.5	PT	29.5	EA	36.7	EA
Milwaukee	40.7	NW	41.7	NW	15.5	RC	27.9	RU	42.9	RC	48.2	NC
Portland	37.8	AS	42.0	AS	42.8	UA	23.9	QX	21.9	JT	33.9	UA
Cleveland	37.4	CO	29.4	CO	14.2	DL	22.8	UA	17.6	AL	44.3	UA
Austin	29.7	WN	31.9	WN	35.1	WN	28.2	WN	39.1	WN	28.7	WN
Reno	28.3	AA	32.3	AA	17.7	PS	20.9	UA	29.2	OC	38.2	UA
San Antonio	27.5	WN	29.2	WN	28.5	WN	32.1	WN	25.0	WN	21.0	BN
Ft. Myers	27.0	EA	39.0	EA	26.6	PT	26.8	PT	27.1	PT	33.0	EA
Hartford	26.9	DL	25.8	DL	17.0	DL	16.3	AL	20.3	AL	28.2	AL
Albuquerque	26.7	YV	27.6	WN	23.6	WN	24.4	WN	15.4	WN	21.8	TW
Tulsa	26.2	WN	27.7	WN	25.8	WN	14.5	WN	16.9	WN	20.0	AA
Oklahoma City	25.2	WN	25.8	WN	22.8	WN	13.4	WN	15.4	ZM	28.2	BN
Omaha	25.0	BN	12.4	HP	15.6	UA	18.6	JR	14.0	FL	22.9	UA
Ontario	23.3	AA	20.1	AA	14.7	UA	17.5	OC	22.5	OC	22.7	GW
Tucson	23.0	HP	21.4	HP	17.7	HP	11.6	EA	21.3	RC	26.1	RW
West Palm Beach	21.7	DL	23.3	DL	23.0	NY	11.6	GO	22.7	DL	25.5	DL
Columbus	14.7/21.6	DL/AL	16.0	DL	18.3	AL	21.3	AL	25.7	AL	36.3	TW
New Orleans	21.1	CO	25.2	CO	15.8	DL	17.5	DL	20.3	DL	22.9	DL

SOURCE: Official Airline Guide, July 1 of each year except 1989 (March 1).

DOMINANT CARRIER AT EACH LARGE HUB
(Based on Departures and 1988 FAA Hub Classifications)

Hub	March 1989		July 1988		July 1986		July 1984		July 1982		July 1979	
	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier	Share	Carrier
Charlotte	92.5/93.0	PI	91.6	PI	73.2	PI	52.2	PI	44.2	PI	45.4	EA
Pittsburgh	85.4/84.5	AL	83.9	AL	83.2	AL	72.6	AL	63.9	AL	59.2	AL
St. Louis	83.1	TW	84.2	TW	45.2	TW	37.5	TW	36.9	TW	32.6	TW
Memphis	81.0	NW	82.9	NW	69.5	RC	38.5	RC	33.0	RC	31.4	SO
Salt Lake City	79.6	DL	77.5	DL	71.4	WA	55.2	WA	41.8	WA	28.8	WA
Minneapolis	76.6	NW	77.6	NW	46.2	RC	35.0	RC	33.7	RC	29.9	NW
Detroit	62.7	NW	63.8	NW	56.5	RC	26.1	RC	26.8	RC	24.0	NC
Kansas City	56.8	BN	44.7	BN	44.6	EA	22.5	ZV	21.0	TW	26.8	BN
Atlanta	55.0	DL	54.7	DL	49.0	DL	47.2	DL	41.1	DL	42.0	DL
Houston	55.0	CO	54.8	CO	31.6	CO	24.7	CO	19.5	WN	13.5	WN
Dallas	50.5	AA	49.0	AA	46.6	AA	32.5	AA	35.7	AA	25.2	BN
Newark	50.3	CO	47.6	CO	44.6	PE	33.8	PE	17.7	PE	21.5	EA
Philadelphia	47.6/52.5	AL	45.6	AL	45.6	AL	35.1	AL	35.6	AL	46.3	AL
Denver	45.1	CO	50.1	CO	31.4	UA	27.4	UA	21.8	UA	22.8	FL
Phoenix	38.2	HP	35.1	HP	32.7	HP	17.8	RC	21.6	RC	22.1	RW
San Francisco	37.7	UA	29.2	UA	30.4	UA	21.0	UA	16.4	FN	27.4	UA
Las Vegas	37.5	HP	32.2	HP	12.2	HP	15.7	RC	19.0	RC	16.4	WA
Orlando	37.1	DL	33.8	DL	18.9	EA	16.2	EA	26.9	EA	37.0	EA
Chicago	34.2	UA	32.4	UA	34.9	UA	30.1	UA	18.0	UA	24.0	UA
Washington 1/	33.9	UA	22.4	UA	16.2	NY	11.9	AL	18.0	AL	18.6	AL
Seattle	33.4	AS	32.6	AS	25.3	UA	14.6	UA	12.9	RC	22.3	UA
Miami	25.5	EA	24.7	EA	22.9	EA	17.7	EA	24.9	EA	25.3	EA
Tampa	20.2/23.2	DL/AL	26.4	EA	17.8	EA	20.7	PI	23.9	EA	30.5	EA
Boston	21.7	DL	29.2	EA	23.6	EA	12.9	DL	15.9	DL	12.5	DL
Los Angeles	19.9	AA	19.4	AA	16.6	PS	13.9	PS	13.5	PS	13.2	UA
New York 2/	19.1	PA	18.7	PA	13.6	PA	12.2	PA	14.6	EA	16.3	EA
San Diego	16.3/18.5	DL/AL	16.8	DL	19.3	PS	18.6	PS	22.9	II	20.6	PS

1/ Includes DCA and IAD.
2/ Includes JFK and LGA.
SOURCE: Official Airline Guide, July 1 of each year except 1989 (March 1).

Table II-9
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DOMINANT CARRIER AT EACH LARGE HUB
Based on Enplanements
(and 1988 FAA Hub Classifications)

Hub	Calendar 1988		Calendar 1984		Calendar 1979	
	Share	Carrier	Share	Carrier	Share	Carrier
Charlotte	90.9%	PI	74.5%	PI	73.1%	EA
Pittsburgh	85.5	AL	77.2	AL	50.6	AL
Memphis	85.5	NW	46.7	RC	41.8	DL
St. Louis	82.4	TW	57.5	TW	43.5	TW
Salt Lake City	80.2	DL	70.6	WA	42.9	WA
Minneapolis/ St. Paul	78.3	NW	47.8	NW	40.2	NW
Detroit	59.4	NW	29.1	RC	20.2	AA
Atlanta	58.4	DL	52.6	DL	50.3	DL
Dallas	56.0	AA	50.4	AA	35.1	BN
Houston	51.9	CO	28.9	CO	17.2	TI
Chicago	45.1	UA	43.5	UA	28.3	UA
Denver	44.4	UA	40.0	UA	26.7	UA
Phoenix	44.1	HP	18.6	RC	25.6	AA
Newark	41.9	CO	48.6	PE	32.8	EA
Miami/ Ft. Lauderdale	37.9	EA	43.7	EA	40.1	EA
Philadelphia	36.6	AL	23.7	AL	23.5	EA
Las Vegas	33.7	HP	16.0	UA	23.3	WA
San Francisco/ Oakland	31.8	UA	32.3	UA	27.4	UA
Kansas City	27.0	BN	20.3	EA	32.8	TW
Orlando	26.8	DL	26.2	EA	45.5	EA
Seattle	26.2	UA	26.2	UA	27.9	UA
Washington 1/	23.1	UA	20.2	EA	25.3	EA
Tampa/St. Pete	20.1	EA	22.6	DL	33.6	EA
New York 2/	18.7	PA	20.9	EA	25.0	EA
Boston	17.5	DL	20.7	EA	24.0	DL
Los Angeles	16.7	AA	17.5	UA	17.0	PS
San Diego	16.7	AL	26.4	PS	30.9	PS

1/ Includes DCA and IAD.
2/ Includes LGA and JFK.

SOURCE: Form 41, T-3.

DOMINANT CARRIER AT EACH MEDIUM HUB
Based on Enplanements
(and 1988 FAA Hub Classifications)

Hub	Calendar 1988		Calendar 1984		Calendar 1979	
	Share	Carrier	Share	Carrier	Share	Carrier
Cincinnati	78.0%	DL	55.7%	DL	36.9%	DL
Dayton	74.7	PI	61.8	PI	35.5	TW
Raleigh/Durham	68.4	AA	27.4	PI	61.5	EA
Nashville	62.7	AA	21.9	AA	27.2	AA
Baltimore	57.4	PI	33.0	PI	24.6	EA
El Paso	53.3	WN	60.1	WN	58.8	CO
Syracuse	47.5	PI	28.7	AL	37.9	AL
Buffalo	45.2	AL	44.3	AL	53.8	AL
Norfolk	43.0	PI	45.3	PI	43.4	PI
Rochester, NY	42.5	AL	51.5	AL	43.6	AL
San Jose	41.0	AA	28.1	OC	37.2	PS
Milwaukee	40.7	NW	39.3	RC	22.9	RC
Austin	36.4	WN	34.3	WN	39.9	BN
Indianapolis	33.6	AL	24.1	AL	23.5	TW
Albuquerque	32.2	WN	33.4	WN	32.8	TW
San Antonio	31.4	WN	37.3	WN	34.8	BN
West Palm Beach	30.8	DL	26.0	DL	36.5	DL
Reno	30.7	AA	28.6	UA	44.1	UA
Tulsa	29.7	AA	21.1	AA	27.7	BN
Sacramento	28.8	UA	26.1	PS	41.1	PS
Omaha	28.7	UA	27.4	UA	31.9	UA
Ontario	27.5	AA	24.9	OC	24.2	OC
Oklahoma City	26.1	AA	21.6	AA	39.8	BN
Jacksonville	26.1	PI	27.2	DL	42.0	DL
Tucson	25.7	HP	14.9	AA	35.2	AA
Cleveland	25.2	AL	40.7	UA	47.8	UA
Portland	24.4	AL	32.8	UA	43.5	UA
New Orleans	22.5	CO	27.4	DL	38.7	DL
Columbus	21.2	AL	22.3	PE	42.2	TW
Ft. Myers	20.0	DL	36.9	EA	75.7	EA
Hartford	18.9	DL	20.4	AL	30.0	AL

SOURCE: Form 41, T-3.

TWO-CARRIER DEPARTURE SHARES AT LARGE AND MEDIUM HUBS

Table II-11

Objective: To study changes in the degree of two-carrier concentration, which is a measure of competitiveness.

Data Sources: Two-carrier shares were measured in terms of departures taken from Official Airline Guide tapes. These shares, therefore, include departures of code-sharing affiliates. The basic assumptions used here are that code-shares contribute to the major carriers' dominance and that departures can be used as a proxy for traffic.

Observations/Interpretation: Large Hubs: The change in concentration is almost as intense as the increase in single-carrier concentration. There was little change from 1979 to 1984, but two-carrier concentration has increased dramatically since.

* Now, two carriers control 50 percent or more of departures at all but seven of the 27 large hubs, and control 75 percent or more of departures at 10 large hubs.

* In 1979, by contrast, two carriers controlled 50 percent or more of departures at only 9 hubs, and 75 percent or more of departures at only 2 hubs.

* The two-carrier share at four hubs -- Atlanta, Denver, Dallas, and Houston -- reflects the presence of competing hub carriers.

Medium hubs: As with single-carrier concentration, two-carrier concentration at medium hubs declined significantly between 1979 and 1984, but has increased sharply since. Although less intense than at large hubs, two-carrier concentration is still high. Two-carriers account for 50 percent or more of departures at 19 of the 31 medium hubs.

Although the two-carrier share at medium hubs is not greatly different them in 1979, the following table reveals that concentration is much less evenly balanced between the two carriers than in 1979.

TWO CARRIER DEPARTURE SHARES AT LARGE HUBS
(Based on 1988 FAA Hub Classifications)

Two-Carrier Share					
March, 1989		July, 1984		July, 1979	
Hub	Share	Hub	Share	Hub	Share
CLT	95.3%	ATL	84.1%	ATL	80.5%
ATL	91.6	PIT	78.8	PIT	73.2
MEM	88.8	CLT	70.5	CLT	61.9
PIT	87.6	SLC	68.5	PHL	58.5
STL	87.3	MSP	66.9	MEM	56.4
DEN	84.0	STL	64.0	MSP	56.1
SLC	83.9	MEM	61.1	STL	54.4
DFW	80.9	DFW	53.7	ORL	51.3
MSP	80.8	DEN	52.5	TPA	49.9
HOU	75.1	CHI	45.9	DFW	45.6
EWR	69.6	PHL	45.4	MCI	45.2
DTW	69.4	EWR	41.8	SLC	42.3
PHL	66.6	HOU	41.1	DEN	41.7
CHI	65.1	MCI	36.5	SFO	40.5
MCI	63.2	DTW	36.3	PHX	40.3
SEA	60.1	TPA	36.1	MIA	39.8
PHX	59.9	PHX	34.9	CHI	39.7
SFO	56.7	SFO	34.2	SAN	39.2
ORL	55.6	SAN	29.2	EWR	39.0
WAS 1/	53.6	ORL	28.8	DTW	38.1
LAS	49.7	SEA	27.8	WAS	34.9
BOS	43.0	LAS	26.6	SEA	33.1
TPA	42.1	MIA	26.4	LAS	32.8
MIA	37.4	LAX	23.8	NYC	31.7
LAX	36.5	WAS	23.6	HOU	26.8
SAN	34.9	NYC	22.8	LAX	26.1
NYC 2/	33.2	BOS	22.2	BOS	23.0

Summary Comparisons

Two Carrier Share	Number of Points			Cumulative Totals		
	March 1989	July 1984	July 1979	March 1989	July 1984	July 1979
90% or more	2	0	0	2	0	0
80-89.9	7	1	1	9	1	1
70-79.9	1	2	1	10	3	2
60-69.9	6	4	1	16	7	3
50-59.9	4	2	5	20	9	8
40-49.9	3	4	7	23	13	15
30-39.9	4	5	9	27	18	24
20-29.9	0	9	3		27	27

1/ Includes DCA and IAD.
2/ Includes LGA and JFK.

SOURCE: Official Airline Guide, March 1, 1989 and July 1, 1984 and 1979.

TWO CARRIER DEPARTURE SHARES AT MEDIUM HUBS
(Based on 1988 FAA Hub Classifications)

March, 1989		July, 1984		July, 1979	
Hub	Share	Hub	Share	Hub	Share
Cincinnati	86.2%	ELP	69.6%	ORF	85.5%
Raleigh/Durham	86.1	BUF	66.9	ROC	78.5
Dayton	85.0	ROC	61.6	ELP	78.1
Baltimore	78.0	SYR	60.5	BUF	75.7
Nashville	76.8	ORF	59.5	MKE	67.6
Syracuse	73.7	BWI	58.2	FMY	62.9
El Paso	70.4	CVG	58.0	SYR	60.6
Norfolk	68.5	DAY	54.9	JAX	58.7
Rochester, NY	66.2	JAX	49.1	CLE	57.1
San Jose	65.6	FMY	44.2	CMH	55.6
Sacramento	65.3	SAT	44.1	RDU	54.3
Portland	65.0	SMF	43.6	RNO	51.8
Cleveland	64.9	MKE	43.3	BWI	51.6
Buffalo	62.9	SJC	43.3	PDX	51.4
Jacksonville, FL	60.2	RNO	41.5	OKC	48.1
Indianapolis, IN	57.4	AUS	41.4	AUS	47.2
Milwaukee	57.1	RDU	40.3	CVG	47.0
Austin	51.3	PDX	38.1	DAY	46.9
Albuquerque	51.1	ABQ	36.5	SJC	46.8
Reno	49.9	CLE	35.4	PBI	45.9
Oklahoma City	48.4	IND	34.1	IND	45.6
Tulsa	45.5	CMH	34.0	OMA	45.1
San Antonio	44.9	BNA	33.6	TUS	43.6
Hartford	43.2	MSY	31.0	BDL	43.1
West Palm Beach	42.9	ONT	29.0	SMF	39.8
Ontario	41.8	OMA	28.4	TUL	38.6
New Orleans	40.0	BDL	27.8	ABQ	38.4
Ft. Myers	39.9	TUL	26.1	ONT	37.8
Omaha	38.7	OKC	23.4	SAT	37.7
Tucson	37.0	PBI	22.1	MSY	36.3
Columbus	36.4	TUS	21.5	BNA	33.1

Summary Comparisons

Two Carrier Share	Number of Points			Cumulative Totals		
	March 1989	July 1984	July 1979	March 1989	July 1984	July 1979
90% or more	0	0	0	0	0	0
80.0-89.9	3	0	1	3	0	1
70.0-79.9	4	0	3	7	0	4
60.0-69.9	8	4	3	15	4	7
50.0-59.9	4	4	7	19	8	14
40.0-49.9	8	9	10	27	17	24
30.0-39.9	4	7	7	31	24	31
20.0-29.9	0	7	0		31	

SOURCE: Official Airline Guide, March 1, and July 1, 1984, and 1979.

TWO-CARRIER ENPLANEMENT SHARES AT LARGE AND MEDIUM HUBS

Table II-11a

Objective: To study changes in the degree of two-carrier concentration.

Data Sources: Two-carrier shares were measured in terms of enplanements taken from the Form 41, Schedule T-3. Since these include enplanements only for certificated carriers, the traffic for most code-sharing commuter affiliates at the various hubs are not included. To the extent such carriers tend to increase the hub carriers' dominance at concentrated hubs, this provides a conservative picture of hub concentration.

Observation Interpretations:

Large Hubs: The data show pronounced increases in two-carrier enplanement shares both in 1984 compared with 1979, and in 1988 compared with 1984. The major carriers, exclusive of most code-sharing affiliates, control 50 percent or more of enplanements at more than half of the large hubs (15 of 27), and control 75 percent or more of departures at 10 large hubs. In 1979, 75 percent or more of the traffic was controlled by two carriers at only two hubs. Florida points were among the more concentrated in 1979, but are among the least concentrated in 1988.

Medium Hubs: Two-carrier concentration declined greatly from 1979 to 1984 and has increased since. Two carriers account for 50 percent or more of the enplanements at 18 of the 31 medium hubs.

Table II-11a
Page 1 of 2

TWO-CARRIER ENPLANEMENT SHARES AT LARGE HUBS
(Based on 1989 FAA Hub Classifications)

Two-Carrier Share

Calendar 1988 Hub	Share	Calendar 1984 Hub	Share	Calendar 1979 Hub	Share
ATL	93.0%	CLT	93.1%	ATL	90.3%
CLT	93.0	ATL	92.8	CLT	85.5
MEM	91.6	STL	85.4	ORL	70.9
PIT	88.2	PIT	84.0	PIT	68.7
SLC	86.0	MEM	82.3	DFW	65.7
STL	85.9	MSP	79.3	TPA	64.7
DEN	85.0	SLC	78.8	MCI	64.6
MSP	83.5	DFW	68.3	MIA	63.0
DFW	79.0	CHI	67.5	SLC	60.8
HOU	76.3	DEN	65.0	STL	59.2
CHI	71.5	MIA	60.7	MSP	54.8
DTW	66.9	EWR	58.9	MEM	54.1
PHX	63.2	HOU	51.2	SAN	51.6
PHL	53.5	SFO	48.0	CHI	49.6
EWR	53.2	ORL	46.3	DEN	49.6
MIA	52.8	PHL	44.6	NYC 2/	48.5
MCI	49.4	TPA	44.1	SEA	48.2
SFO	45.3	SAN	42.8	BOS	47.9
SEA	45.1	SEA	42.2	EWR	47.4
LAS	44.3	DTW	40.4	SFO	46.2
ORL	41.3	BOS	39.5	PHL	45.3
TPA	39.3	MCI	39.4	PHX	44.7
WAS 1/	37.5	PHX	37.0	DTW	39.6
NYC 2/	35.5	NYC 2/	36.5	LAS	39.4
BOS	33.9	LAX	32.7	WAS 1/	37.2
LAX	31.6	LAS	30.9	LAX	33.8
SAN	30.4	WAS 1/	30.5	HOU	33.4

Summary Comparisons

Two-Carrier Share	Number of Points: Calendar 1988	Calendar 1984	Calendar 1979	Cumulative Totals: Calendar 1988	Calendar 1984	Calendar 1979
90% or more	3	2	1	3	2	1
80-89.9	5	3	1	8	5	2
70-79.9	3	2	1	11	7	3
60-69.9	2	4	6	13	11	9
50-59.9	3	2	4	16	13	13
40-49.9	5	7	9	21	20	22
30-39.9	6	7	5	27	27	27

1/ Includes DCA and IAD.
2/ Includes LGA and JFK.

SOURCE: Form 41, Schedule T-3.

TWO-CARRIER ENPLANEMENT SHARES AT MEDIUM HUBS
(Based on 1989 FAA Hub Classifications)

Two-Carrier Share

Calendar 1988 Hub	Calendar 1988 Share	Calendar 1984 Hub	Calendar 1984 Share	Calendar 1979 Hub	Calendar 1979 Share
CVG	81.9%	ELP	82.0%	FMY	98.1%
DAY	80.9	DAY	73.4	ELP	91.7
RDU	80.3	BUF	71.4	ROC	80.4
ELP	73.1	CVG	65.8	RDU	79.9
BNA	70.7	ROC	65.6	BUF	79.0
BWI	64.9	MKE	62.2	JAX	77.2
SYR	63.4	ORF	62.2	SYR	72.4
AUS	59.5	FMY	60.4	ORF	67.5
BUF	59.4	AUS	56.3	PBI	67.3
ROC	58.3	SAT	56.2	OKC	63.9
TUL	55.7	SJC	55.2	CVG	63.4
ORF	55.6	JAX	54.0	SJC	63.4
SJC	54.9	SYR	52.7	CMH	62.4
SMF	53.1	RDU	51.7	CLE	61.9
SAT	52.9	CLE	49.8	DAY	61.8
MKE	51.8	PBI	48.7	ABQ	61.4
PBI	51.4	RNO	48.2	AUS	60.3
OKC	50.2	BWI	46.3	SMF	59.4
CLE	49.6	SMF	46.0	PDX	58.9
JAX	49.6	ABQ	43.8	RNO	57.5
RNO	48.2	PDX	43.7	TUS	56.7
ONT	47.0	OKC	42.7	TUL	55.1
ABQ	45.7	CMH	42.0	MSY	55.0
MSY	44.8	MSY	41.7	SAT	52.6
IND	44.2	ONT	42.7	OMA	49.0
TUS	43.5	TUL	40.8	BDL	47.0
OMA	42.4	IND	39.4	BWI	46.8
PDX	41.6	BDL	38.8	MKE	45.5
BDL	36.0	BNA	38.2	IND	45.2
CMH	35.8	OMA	37.9	ONT	41.8
FMY	35.0	TUS	28.3	BNA	41.2

Summary Comparisons

Two-Carrier Share	Number of Points: Calendar 1988	Number of Points: Calendar 1984	Number of Points: Calendar 1979	Cumulative Totals: Calendar 1988	Cumulative Totals: Calendar 1984	Cumulative Totals: Calendar 1979
90% or more	-	-	2	-	-	2
80-89.9	3	1	1	3	1	3
70-79.9	2	2	4	5	3	7
60-69.9	2	5	10	7	8	17
50-59.9	11	6	7	18	14	24
40-49.9	10	12	7	28	26	31
30-39.9	3	4	-	31	30	-
20-29.9	-	1	-	-	31	-

SOURCE: Form 41, Schedule T-3.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER DEPARTURE SHARES AT LARGE AND MEDIUM HUBS.

Table II-12

Objective
To evaluate the competitive relationship between the most dominant carrier at each hub with its largest competitor.

Data Sources: Departures taken from Official Airline Guide tapes.

Observations/Interpretation: Large Hubs: The difference in share changed very little between 1979 and 1984 but the spread has grown rapidly since. In 1979 the spread was greater than 15 percentage points (not percent) at only four hubs. That spread is now exceeded in 20 of the 27 large hubs.

The increase in spread means different things for different hubs. For hubs like Charlotte, this tends to dramatize the amount of new service added by Piedmont. At hubs like St. Louis, this is more of a true indicator of concentration because many city pairs are now monopolies as the result of loss of competing service rather than the result of new service.

This increase in spread between the top two carriers reflects the fact, illustrated in later tables, that at concentrated hubs competition is largely limited to service to other connecting hubs by the other hubbing carriers.

Medium Hubs: As seen with other measures of concentration, the difference in shares of the top two carriers at medium hubs decreased from 1979 to 1984 then increased sharply by 1988. This, primarily, reflects the development of connecting-hub complexes at several medium hubs.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER DEPARTURE SHARE AT MEDIUM HUBS
(Based on 1988 FAA Hub Classifications)

March, 1989		July, 1984		July, 1979	
Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)
Cincinnati	80.0	ELP	45.8	BUF	46.1
Baltimore	70.4	BUF	40.1	ELP	33.9
Dayton	69.0	BWI	29.6	ROC	32.7
Nashville	61.8	ORF	28.5	CLE	31.5
Syracuse	58.1	DAY	24.3	MKE	28.8
Raleigh/Durham	57.3	ROC	21.0	ORF	26.3
Norfolk	46.9	SYR	20.3	RDU	24.9
Rochester, NY	46.8	SAT	20.1	RNO	24.6
El Paso	42.4	SMF	16.4	SYR	23.4
Buffalo	40.7	AUS	15.0	BWI	21.0
San Jose	39.2	MKE	12.5	CMH	17.0
Indianapolis, IN	37.2	ABQ	12.3	PDX	16.4
Sacramento	27.7	CLE	10.2	CVG	16.0
Milwaukee	24.3	CVG	10.0	JAX	14.7
Jacksonville	21.8	PDX	9.7	BDL	13.3
Ft. Myers	14.1	FMY	9.4	IND	10.4
Omaha	11.3	CMH	8.6	AUS	10.2
Hartford	10.6	OMA	8.6	MSY	9.5
Portland	10.6	ONT	6.0	TUS	8.6
San Antonio	10.1	BDL	4.8	OKC	8.3
Cleveland	9.9	SJC	4.1	ONT	7.6
Tucson	9.0	MSY	4.0	SJC	6.0
Austin	8.1	IND	3.9	DAY	5.9
Tulsa	6.9	RDU	3.9	ABQ	5.1
Columbus	6.8	OKC	3.4	PBI	5.1
Reno	6.7	BNA	3.0	FMY	4.7
Ontario	4.8	TUL	2.9	SAT	4.3
Albuquerque	2.3	JAX	1.9	TUL	2.9
New Orleans	2.2	TUS	1.7	BNA	2.3
Oklahoma City	2.0	PBI	1.1	SMF	1.2
West Palm Beach	0.5	RNO	0.3	OMA	0.7

Summary Comparisons

	Number of Points			Cumulative Totals		
Difference	March 1989	July 1984	July 1979	March 1989	July 1984	July 1979
0- 4.9%	5	12	6	5	12	6
5.0- 9.9	6	5	8	11	17	14
10.0-14.9	5	4	4	16	21	18
15.0-19.9	0	2	3	16	23	21
20.0-29.9	3	6	6	19	29	27
30.0-39.9	2	0	3	21	29	30
40.0-49.9	4	2	1	25	31	31
50.0-59.9	2			27		
60.0-69.9	2			29		
70.0-79.9	1			30		
80.0-89.9	1			31		
90% or more						

SOURCE: Official Airline Guide, March 1, and July 1, 1984 and 1979.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER DEPARTURE SHARE AT LARGE HUBS
(Based on 1988 FAA Hub Classifications)

Spread Between Dominant and Second Dominant Carriers

March, 1989		July, 1984		July, 1979	
Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)
CLT	90.7	PIT	66.4	PIT	45.2
PIT	83.2	SLC	41.9	PHL	34.1
STL	78.9	CLT	33.9	CLT	28.9
SLC	75.3	EWR	25.8	ORL	22.7
MEM	73.2	PHL	24.8	SLC	15.3
MSP	72.4	DTW	15.9	SFO	14.3
DTW	56.0	MEM	15.9	SEA	11.5
MCI	50.4	CHI	14.3	TPA	11.1
PHL	38.4	DFW	11.3	MIA	10.8
HOU	34.9	STL	11.0	STL	10.8
EWR	31.0	ATL	10.3	DTW	9.9
WAS	25.3	MIA	9.0	MCI	8.4
DFW	20.1	MCI	8.5	CHI	8.3
SFO	18.7	HOU	8.3	MEM	6.4
OAL	18.6	SAN	8.0	DFW	4.8
ATL	18.4	SFO	7.8	EWR	4.0
PHX	16.5	TPA	5.3	DEN	3.9
WAS	14.2	LAS	4.8	PHX	3.9
MIA	13.6	LAX	4.0	MSP	3.7
SEA	6.7	BOS	3.6	ATL	3.5
DEN	6.2	ORL	3.6	WAS	2.3
NYC	5.0	MSP	3.1	BOS	2.0
TPA	4.3	DEN	2.3	SAN	2.0
CHI	3.3	NYC	1.6	NYC	0.9
LAX	3.3	SEA	1.4	LAX	0.3
SAN	2.1	PHX	0.7	HOU	0.2
BOS	0.4	WAS	0.2	LAS	0.0

Summary Comparisons

Difference	Number of Points			Cumulative Totals		
	March 1989	July 1984	July 1979	March 1989	July 1984	July 1979
0- 4.9%	5	10	13	5	10	13
5.0- 9.9	3	6	4	8	16	17
10.0-14.9	2	4	5	10	20	22
15.0-19.9	4	2	1	14	22	23
20.0-29.9	2	2	2	16	24	25
30.0-39.9	3	1	1	19	25	26
40.0-49.9	0	1	1	19	26	27
50.0-59.9	2	0	0	21	26	
60.0-69.9	0	1	0	21	27	
70.0-79.9	4	0	0	25		
80.0-89.9	1	0	0	26		
90% or more	1	0	0	27		

SOURCE: Official Airline Guide, March 1, 1989 and July 1, 1984 and 1979.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER ENPLANEMENT SHARES AT LARGE AND MEDIUM HUBS

Table II-12a

Objective: To evaluate the competitive relationship between the most domiant carrier at each hub with its largest competitor, exclusive of commuter code-sharing affiliates.

Data Source: Form 41, Schedule T-3.

Observations/Interpretations: See comments under Table II-11a.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER ENPLANEMENT SHARES AT LARGE HUBS
(Based on 1989 FAA Hub Classifications)

Spread Between Dominant and Second Dominant Carriers

Calendar 1988		Calendar 1984		Calendar 1979	
Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)
CLT	88.8	PIT	70.4	CLT	60.7
PIT	82.8	SLC	62.4	PIT	32.5
MEM	79.4	CLT	55.9	MEM	29.5
STL	78.9	EWR	38.3	STL	27.8
SLC	74.4	DFW	32.5	MCI	26.4
MSP	73.1	STL	29.6	MSP	25.6
DTW	51.9	MIA	26.7	SLC	25.0
DFW	33.0	CHI	19.5	ORL	20.1
EWR	30.6	DTW	17.8	EWR	18.2
HOU	27.5	SFO	16.6	MIA	17.2
PHX	25.0	MSP	16.3	WAS	13.4
ATL	23.8	DEN	15.0	ATL	10.3
LAS	23.1	ATL	12.4	SAN	10.2
MIA	23.0	MEM	11.1	SFO	8.6
PHL	19.7	SEA	10.2	SEA	7.6
CHI	18.7	SAN	10.0	LAS	7.2
SFO	18.3	WAS	9.9	CHI	7.0
ORL	12.3	HOU	6.6	PHX	6.5
WAS	8.7	ORL	6.1	DFW	4.5
SEA	7.3	NYC	5.3	DEN	3.8
MCI	4.6	PHL	2.8	TPA	2.5
DEN	3.8	LAX	2.3	PHL	1.7
SAN	3.0	BOS	1.9	NYC	1.5
NYC	1.9	MCI	1.2	HOU	1.0
LAX	1.8	LAS	1.1	DTW	0.8
BOS	1.1	TPA	1.1	LAX	0.2
TPA	0.9	PHX	0.2	BOS	0.1

Summary Comparisons

Difference	Number of Points			Cumulative Totals		
	Calendar 1988	Calendar 1984	Calendar 1979	Calendar 1988	Calendar 1984	Calendar 1979
0-4.9%	7	7	9	7	7	9
5.0-9.9	2	4	5	9	11	14
10.0-14.9	1	4	3	10	15	17
15.0-19.9	3	5	2	13	20	19
20.0-29.9	5	2	6	18	22	25
30.0-39.9	2	2	1	20	24	26
40.0-49.9	-	-	-	20	24	26
50.0-59.9	1	1	-	21	25	26
60.0-69.9	-	1	1	21	26	27
70.0-79.9	4	1	-	25	27	
80.0-89.9	2	-	-	27		
90% or more	-	-	-			

SOURCE: Form 41, Schedule T-3.

DIFFERENCE BETWEEN DOMINANT CARRIER AND SECOND DOMINANT CARRIER ENPLANEMENT SHARES AT MEDIUM HUBS
(Based on 1989 FAA Hub Classifications)

Spread Between Dominant and Second Dominant Carriers

Calendar 1988		Calendar 1984		Calendar 1979	
Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)	Hub	Difference (Percentage Pts.)
CVG	74.1	DAY	50.2	FMY	53.3
DAY	68.5	CVG	45.6	RDU	43.1
RDU	56.5	ELP	38.2	CLE	33.7
BNA	54.7	ROC	37.4	RNO	30.7
BWI	49.9	CLE	31.6	BUF	28.6
ELP	33.5	ORF	28.4	PDX	28.1
SYR	31.6	ABQ	23.0	ELP	25.9
BUF	31.0	PDX	21.9	SMF	22.8
ORF	30.4	BWI	19.7	MSY	22.4
MKE	29.6	SAT	18.4	CMH	22.0
SJC	27.1	BUF	17.2	AUS	19.5
ROC	26.7	OMA	16.9	ORF	19.3
IND	23.0	MKE	16.4	SAT	17.0
ABQ	18.7	FMY	13.4	OKC	15.7
OMA	15.0	MSY	13.1	OMA	14.8
AUS	13.3	AUS	12.3	TUS	13.7
RNO	13.2	ONT	9.0	BDL	13.0
PBI	10.2	RNO	9.0	BNA	12.9
SAT	9.9	IND	8.8	SJC	11.0
ONT	8.0	SMF	6.2	CVG	10.4
TUS	7.9	BNA	5.6	DAY	9.2
PDX	7.2	SYR	4.7	JAX	6.8
CMH	6.6	PBI	3.3	ROC	6.8
FMY	5.0	RDU	3.1	ONT	6.6
SMF	4.5	CMH	2.6	PBI	5.7
TUL	3.7	BDL	2.0	ABQ	4.2
JAX	2.6	TUS	1.5	SYR	3.4
OKC	2.0	TUL	1.4	BWI	2.4
BDL	1.8	SJC	1.0	IND	1.8
CLE	0.8	OKC	0.5	MKE	0.3
MSY	0.2	JAX	0.4	TUL	0.3

Summary Comparisons

	Number of Points			Cumulative Totals		
Difference	Calendar 1988	Calendar 1984	Calendar 1979	Calendar 1988	Calendar 1984	Calendar 1979
0-4.9%	7	10	6	7	10	6
5.0-9.9	6	5	5	13	15	11
10.0-14.9	3	3	6	16	18	17
15.0-19.9	2	5	4	18	23	21
20.0-29.9	4	3	6	22	26	27
30.0-39.9	4	3	2	26	29	29
40.0-49.9	1	1	1	27	30	30
50.0-59.9	2	1	1	29	31	31
60.0-69.9	1			30		
70.0-79.9	1			31		
80.0-89.9						
90% or more						

SOURCE: Form 41, Schedule T-3.

NON-STOP SERVICE CONCENTRATION AT SELECTED LARGE AND MEDIUM HUBS

Tables II-13 through II-17

Objective: To evaluate competition at connecting hubs by segregating nonstop service by type of spoke point served (based on hub size) and status of the competitor (hub carrier, code-affiliate, other end point hub carrier, non-hub carrier). The hub selection includes most highly concentrated hubs, and a small number of other hubs. The hub selection was limited simply due to the time required to accumulate this data.

Data Sources: The Official Airline Guide.

Observations/Interpretation: Table II-13: This shows that at concentrated hubs not only is nonstop service dominated by the hubbing carriers and their code-affiliates, as expected, the principal nonstop competition comes from other hubbing carriers (those with hubs at the other end point of a city pair).

Table II-14: This shows how the hubbing carriers and their code-sharing affiliates combine to dominate nonstop service at hubs, with the major carrier focusing on service to the smaller spoke cities.

Table II-15: This amplifies the dominance of hubbing carriers and their code affiliates at concentrated hubs. In combination with the previous table, it also shows that participation by non-hubbing carriers is even more limited than a simple count of city-pair markets indicates. While other hubbing carriers tend to compete with comparable frequency, non-hubbing carriers typically offer one or two trips per city served. These tend to be so-called tag-end flights.

At less concentrated hubs, even the non-hubbing carriers operate comparable frequency. This suggests that non-hubbing carriers are actively competing at the less concentrated hubs.

Table II-16: This reveals several significant pieces of information which bear on nonstop competition at large hubs.

* At concentrated hubs, as expected, the hubbing carriers and their code-sharing affiliates have the only nonstop service to a high proportion of spoke points.

* At concentrated hubs, most nonstop competition occurs at large hubs, typically to other connecting hubs.

* At concentrated hubs, very few cities receive nonstop service by more than two carriers.

* At concentrated hubs, the hubbing carriers often provide the only nonstop service to other large and medium hubs, even to other carriers' connecting hubs.

* At less concentrated hubs, although the number of nonstop monopolies decreases, a high proportion of single-plane service continues to be by a single carrier. However, the monopoly (nonstop) service markets are not nearly as controlled by a single carrier. For example, the most dominant carrier at Boston does not have any monopoly nonstop to other large or medium hubs, but other hubbing carriers have numerous nonstop monopolies, mostly to their own connecting hubs.

Table II-17: This further amplifies the extent to which service to and from concentrated hubs is dominated by hubbing carriers. Other endpoint hub carriers occasionally have the only nonstop service to their own connecting hubs, and sometimes complete to their connecting hubs with non hubbing carriers. Generally, however, the hub-dominant carriers are competitive factors in virtually all city-pair markets involving their respective hubs as an end point.

An evaluation of the significance of what these tables show with respect to nonstop competition has to be tempered with the knowledge that there are other forms of competition to discipline service and price in many markets that have nonstop service; i.e., one-stop service and on-line connecting services. It is demonstrated elsewhere in this study that city-pair markets are significantly less concentrated now than they were before the hubbing system of service resulted in highly concentrated connecting hub complexes.

However, regardless of the ultimate assessment of the current competitive environment, there has to be an element of concern about increasing hub concentrating, on the one hand and the fact that non-hubbing carriers have stopped competing in most city pairs involving a highly concentrated hub, and even both hubbing carriers often do not compete in city pairs that involve two concentrated hubs. One competitive factor has been squeezed out and it is not clear that the weeding-out process has yet stabilized. Hubbing clearly has a tendency to divide city pair markets on a nonstop service basis, and notwithstanding other forms of competitive service (one stop and on-line connecting service), this tendency is troublesome.

Table II-13
Page 1 of 1

HUB CONCENTRATION
NUMBER OF POINTS SERVED BY HUBBING CARRIER
AND OTHER CARRIERS AT SELECTED HUBS

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Highly Concentrated Hubs:						
Charlotte	61	28	6	4	0	73
Pittsburgh	71	20	12	6	2	93
St. Louis	76	21	15	6	1	95
Cincinnati	44	26	11	10	4	64
Salt Lake City	48	18	7	5	2	58
Minneapolis	67	25	13	3	6	89
Dayton	26	13	8	0	4	39
Medium Concentrated Hubs:						
Philadelphia	32	20	19	18	16	70
Buffalo	11	1	9	3	5	22
Unconcentrated Hubs:						
Boston	8	18	24	23	18	67
Columbus	3	3	16	9	4	25
Two Carrier Hubs:						
Denver	72	19	15	4	7	97
Dallas	82	18	18	23 2/	6	108

1/ Carrier with an established connecting complex or most dominant carrier at hubs without a major connecting complex.
2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

Table II-14
Page 1 of 3

HUB CONCENTRATION
NUMBER OF POINTS SERVED NONSTOP BY HUBBING CARRIER
AND OTHER CARRIERS AT SELECTED HUBS, SEGREGATED BY HUB SIZE

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Highly Concentrated Hubs:						
Charlotte:						
Large	21	0	5	1	0	21
Medium	13	1	1	1	0	13
Small	16	6	0	1	0	16
Non-hub	11	21	0	1	0	23
Total	61	28	6	4	0	73
Pittsburgh:						
Large	26	0	10	3	0	26
Medium	22	0	2	2	1	23
Small	14	2	0	1	1	17
Non-hub	9	18	0	0	0	27
Total	71	20	12	6	2	93
St. Louis:						
Large	30	0	14	2	0	30
Medium	29	0	1	2	0	29
Small	13	3	0	1	0	15
Non-hub	4	18	0	1	1	21
Total	76	21	15	6	1	95
Cincinnati:						
Large	24	2	10	4	0	27
Medium	14	8	1	4	4	18
Small	6	10	0	2	0	13
Non-hub	0	6	0	0	0	6
Total	44	26	11	10	4	64
Salt Lake City:						
Large	17	0	7	3	0	17
Medium	15	2	0	0	0	16
Small	5	3	0	0	0	6
Non-hub	11	13	0	2	2	19
Total	48	18	7	5	2	58

Table II-14
Page 2 of 3

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Highly Concentrated Hubs:						
Minneapolis:						
Large	25	0	11	2	0	28
Medium	17	1	2	1	0	17
Small	10	6	0	0	1	11
Non-hub	15	18	0	0	5	33
Total	67	25	13	3	6	89
Dayton:						
Large	14	2	5	0	1	19
Medium	1	3	3	0	3	7
Small	6	5	0	0	0	7
Non-hub	5	3	0	0	0	6
Total	26	13	8	0	4	39
Medium Concentrated Hubs:						
Philadelphia:						
Large	9	2	12	9	3	22
Medium	16	1	7	8	2	21
Small	4	4	0	1	4	10
Non-hub	3	13	0	0	7	17
Total	32	20	19	18	16	70
Buffalo:						
Large	7	0	6	2	1	12
Medium	3	0	3	1	2	7
Small	1	1	0	0	0	1
Non-hub	0	0	0	0	2	2
Total	11	1	9	3	5	22
Unconcentrated Hubs:						
Boston:						
Large	7	0	14	11	1	23
Medium	1	1	10	6	0	16
Small	0	4	0	5	4	9
Non-hub	0	13	0	1	13	19
Total	8	18	24	23	18	67

Table II-14
Page 3 of 3

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Unconcentrated Hubs:						
Columbus:						
Large	1	0	11	4	1	14
Medium	2	2	5	5	3	10
Small	0	1	0	0	0	1
Non-hub	0	0	0	0	0	0
Total	3	3	16	9	4	25
Two-Carrier Hubs:						
Denver:						
Large	27	0	13	3	0	29
Medium	23	0	2	0	0	24
Small	14	2	0	1	1	15
Non-hub	8	17	0	0	6	29
Total	72	19	15	4	7	97
Dallas:						
Large	30	0	15	12	0	30
Medium	30	0	3	7	0	33
Small	21	1	0	4	0	21
Non-hub	1	17	0	0	6	24
Total	82	18	18	23 2/	6	108

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.
2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

Table II-15
Page 1 of 3

HUB CONCENTRATION
NUMBER OF DEPARTURES OPERATED BY HUBBING CARRIERS
AND OTHER CARRIERS AT SELECTED HUBS,
SEGREGATED BY HUB SIZE OF THE POINTS SERVED

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier		Unduplicated Total
				Large	Commuter	
Highly Concentrated Hubs:						
Charlotte:						
Large	94	0	25	2	0	121
Medium	46	4	3	1	0	54
Small	72	29	0	3	0	104
Non-hub	46	96	0	2	0	144
Total	258	129	28	8	0	423
Pittsburgh:						
Large	118	0	47	6	0	171
Medium	85	0	10	2	2	99
Small	55	18	0	1	2	76
Non-hub	26	102	0	0	0	128
Total	284	120	57	9	4	474
St. Louis:						
Large	154	0	59	2	0	215
Medium	104	0	2	14	0	120
Small	43	9	0	2	0	54
Non-hub	12	133	0	3	2	150
Total	313	142	61	21	2	539
Cincinnati:						
Large	70	4	24	13	0	111
Medium	38	50	3	5	9	105
Small	11	55	0	2	0	68
Non-hub	0	33	0	0	0	33
Total	119	142	27	20	9	317
Salt Lake City:						
Large	66	0	28	6	0	100
Medium	43	2	0	0	0	45
Small	14	4	0	0	0	18
Non-hub	22	39	0	4	6	71
Total	145	42	28	10	6	234

Table II-15
Page 2 of 3

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Highly Concentrated Hubs:						
Minneapolis:						
Large	164	0	56	6	0	226
Medium	42	1	15	3	0	61
Small	30	11	0	0	2	43
Non-hub	47	61	0	0	13	121
Total	283	73	71	9	15	451
Dayton:						
Large	41	18	30	0	1	90
Medium	1	26	6	0	3	36
Small	19	16	0	0	0	35
Non-hub	17	7	0	0	0	24
Total	78	67	36	0	4	185
Medium Concentrated Hubs:						
Philadelphia:						
Large	46	19	76	30	29	200
Medium	47	7	23	19	4	100
Small	11	29	0	1	15	56
Non-hub	9	118	0	0	47	174
Total	113	173	99	50	95	530
Buffalo:						
Large	28	0	28	2	2	60
Medium	5	0	10	3	3	21
Small	2	1	0	0	0	3
Non-hub	0	0	0	0	3	3
Total	35	1	38	5	8	87
Unconcentrated Hubs:						
Boston:						
Large	45	0	103	72	12	232
Medium	1	5	39	20	5	70
Small	0	39	0	11	13	63
Non-hub	0	72	0	0	57	129
Total	46	116	142	103	87	494

Table II-15
Page 3 of 3

	Hub Carrier 1/	Code Affiliate	Other Hubbing Carrier	Non-Hubbing Carrier Large	Non-Hubbing Carrier Commuter	Unduplicated Total
Unconcentrated Hubs:						
Columbus:						
Large	5	0	43	7	4	59
Medium	5	11	20	10	10	56
Small	0	2	0	0	0	2
Non-hub	0	0	0	0	0	0
Total	10	13	63	17	14	117
Two-Carrier Hubs:						
Denver:						
Large	224	0	50	4	0	278
Medium	128	0	3	0	0	131
Small	54	16	0	1	4	75
Non-hub	17	83	0	0	13	113
Total	423	99	53	5	17	597
Dallas:						
Large	262	0	92	23	0	377
Medium	192	0	12	52	0	256
Small	98	3	0	28	0	129
Non-hub	2	189	0	0	18	209
Total	554	192	104	103 2/	18	971

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.
2/ Mostly Southwest Airlines at Love Field.

SOURCE: July 1, 1988 Official Airline Guide.

Table II-16
Page 1 of 4

HUB CONCENTRATION
NUMBER OF NONSTOP COMPETITORS AT SELECTED HUBS
SEGREGATED BY HUB SIZE

Hub and Number of Competitors	Number of Points Served: Large Hub, Conx Hubs	Large Hub, Other	Medium Hub, Conx Hubs	Medium Hub, Other	Small Hubs	Non Hubs	Total Cities
Highly Concentrated Hubs:							
Charlotte:							
1: Hub Carrier 1/	5	10	6	6	15	22	64
Other							
2	4	1				1	6
3	1		1		1		3
4+							0
Total	10	11	7	6	16	23	73
Pittsburgh:							
1: Hub Carrier	4	9	6	12	15	27	73
Other							
2	8	2	4	1	2		17
3	2	1					3
4+							0
Total	14	12	10	13	17	27	93
St. Louis:							
1: Hub Carrier	3	12	6	20	14	19	74
Other						2	2
2	10	1	2	1	1		15
3	3						3
4+	1						1
Total	17	13	8	21	15	21	95
Cincinnati;							
1: Hub Carrier	4	9	3	8	11	6	41
Other	2		2				4
2	8	3	1	1	2		15
3	1		2	1			4
4+							
Total	15	13	8	10	13	6	64

Table II-16
Page 2 of 4

Hub and Number of Competitors	Number of Points Served: Large Hub, Conx Hubs	Large Hub, Other	Medium Hub, Conx Hubs	Medium Hub, Other	Small Hubs	Non Hubs	Total Cities
Highly Concentrated Hubs:							
Salt Lake City:							
1: Hub Carrier	4	5	1	15	6	15	46
Other						2	2
2	4	1				2	7
3	2						2
4+	1						1
Total	11	6	1	15	6	19	58
Minneapolis:							
1: Hub Carrier 1/	5	11	4	10	10	28	68
Other	2					4	6
2	5	1	2	1	1	1	11
3	4						4
4+							
Total	16	12	6	11	11	33	89
Dayton:							
1: Hub Carrier	4	10	1	1	7	6	29
Other	3		2				5
2	1		2	1			4
3	1						1
4+							
Total	9	10	5	2	7	6	39
Medium Concentrated Hubs:							
Philadelphia:							
1: Hub Carrier	1		2	4	4	10	21
Other	6	3	2		2	1	14
2	5	3	6	6	4	5	29
3	2	2		1		1	6
4+							0
Total	14	8	10	11	10	17	70

Table II-16
Page 3 of 4

Hub and Number of Competitors		Number of Points Served: Large Hub, Conx Hubs	Large Hub, Other	Medium Hub, Conx Hubs	Medium Hub, Other	Small Hubs	Non Hubs	Total Cities
Medium Concentrated Hubs:								
Buffalo:								
1:	Hub Carrier	1	4		2			7
	Other	3		4			2	9
2		3	1			1		5
3					1			1
4+								
	Total	14	5	4	3	1	2	22
Unconcentrated Hubs:								
Boston:								
1:	Hub Carrier					1	6	7
	Other	9	1	8	4	5	5	32
2		4	3	2	2		8	19
3		1	3			2		6
4+			2			1		3
	Total	14	9	10	6	9	19	67
Columbus:								
1:	Hub Carrier 1/					1	0	1
	Other	7	1	5	2			15
2		3	1	1	1			6
3		1	1	1				3
4+								
	Total	11	3	6	3	1	0	25
Two Carrier Hubs:								
Denver:								
1:	1st Hub Carrier	1		2	2	1	13	19
	2nd Hub Carrier				1	7	4	12
	Other	2		1			6	9
2:	Hub Carrier Only	3	11	1	16	5	6	42
	Hub and/or Other	1	1					2
3		7		1		2		10
4+		3						3
	Total	17	12	5	19	15	29	97

Table II-16
Page 4 of 4

Hub and Number of Competitors	Number of Points Served: Large Hub Conx Hubs	Large Hub Other	Medium Hub Conx Hubs	Medium Hub Other	Small Hubs	Non Hubs	Total Cities
Two Carrier Hubs:							
Dallas:							
1: 1st Hub Carrier				12	10	3	25
2nd Hub Carrier						1	1
Other			3			6	9
2: Hub Carrier Only	1	6	5	6	7	14	39
Hub and/or Other	4				1		5
3	10	6		6	3		25
4+	2	1		1			4
Total	17	13	8	25	21	24	108

1/ Carrier with established connecting complex or most dominant carrier at hubs without a major connecting complex.

SOURCE: July 1, 1988 Official Airline Guide.

HUB CONCENTRATION
COMPETITION SEGREGATED BY HUB SIZE AND
HUBBING STATUS OF COMPETITOR 1/

	Number of Points Served						
	Large Hub		Medium Hub				
Highly Concentrated Hubs:	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Charlotte:							
Single Carrier Markets:							
Hub Carrier							
Other Endpoint Hub Carrier	5	10	6	6	15	22	64
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	5						5
Hub Carrier & Other Hub and Non-Hub Carriers							
Hub Carrier & Non-hub Carriers		1			1	1	3
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers			1				1
Non-hub Carriers							
Total	10	11	7	6	16	23	73
Pittsburgh:							
Single Carrier Markets:							
Hub Carrier							
Other Endpoint Hub Carrier	4	9	6	12	15	27	73
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	10		3				13
Hub Carrier & Other Hub and Non-Hub Carriers							
Hub Carrier & Non-hub Carriers		3	1	1	2		7
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers							
Total	14	12	10	13	17	27	93

Highly Concentrated Hubs:	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
St. Louis:							
Single Carrier Markets:							
Hub Carrier	3	12	6	20	14	19	74
Other Endpoint Hub Carrier						2	2
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	13						13
Hub Carrier & Other Hub and Non-Hub Carriers	1		1				2
Hub Carrier & Non-hub Carriers		1	1	1	1		4
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers							
Total	17	13	8	21	15	21	95
Cincinnati:							
Single Carrier Markets:							
Hub Carrier	4	9	3	8	11	6	41
Other Endpoint Hub Carrier	2		2				4
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	8						8
Hub Carrier & Other Hub and Non-Hub Carriers		2	1				3
Hub Carrier & Non-hub Carriers	1		2	2	2		7
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers		1					1
Total	15	12	8	10	13	6	64

Highly Concentrated Hubs:	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Salt Lake City:							
Single Carrier Markets:							
Hub Carrier	4	5	1	15	6	15	46
Other Endpoint Hub Carrier							
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	5						5
Hub Carrier & Other Hub and Non-Hub Carriers	2						2
Hub Carrier & Non-hub Carriers		1				2	3
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers						2	2
Total	11	6	1	15	6	19	58
Minneapolis:							
Single Carrier Markets:							
Hub Carrier	5	11	4	10	10	28	68
Other Endpoint Hub Carrier	2						2
Other Carrier						4	4
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	8		2				10
Hub Carrier & Other Hub and Non-Hub Carriers	1						1
Hub Carrier & Non-hub Carriers				1	1	1	3
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers		1					1
Total	16	12	6	11	11	33	89

Table II-17
Page 4 of 7

	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Highly Concentrated Hubs:							
Dayton:							
Single Carrier Markets:							
Hub Carrier	4	10	1	1	7	6	29
Other Endpoint Hub Carrier	3		2				5
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	1						1
Hub Carrier & Other Hub and Non-Hub Carriers	1						1
Hub Carrier & Non-hub Carriers			1	1			2
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers			1				1
Non-hub Carriers							
Total	9	10	5	2	7	6	39
Medium Concentrated Hubs:							
Philadelphia:							
Single Carrier Markets:							
Hub Carrier	1		1	4	4	10	20
Other Endpoint Hub Carrier	5		2				7
Other Carrier							
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	1	3			2	1	7
Hub Carrier & Other Hub and Non-Hub Carriers	4		4				8
Hub Carrier & Non-hub Carriers							
Other Endpoint Hub Carriers Only		3	2	6	4	6	21
Other Endpoint Hub and Non-hub Carriers	2						2
Non-hub Carriers	1		1				2
Total		2		1			3
	14	8	10	11	10	17	70

Table II-17
Page 5 of 7

	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Medium Concentrated Hubs:							
Buffalo:							
Single Carrier Markets:							
Hub Carrier	1	4		2			7
Other Endpoint Hub Carrier	3		3				6
Other Carrier			1			2	3
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	1						1
Hub Carrier & Other Hub and Non-Hub Carriers							
Hub Carrier & Non-hub Carriers		1		1	1		3
Other Endpoint Hub Carriers Only	1						1
Other Endpoint Hub and Non-hub Carriers	1						1
Non-hub Carriers							
Total	7	5	4	3	1	2	22
Unconcentrated Hubs:							
Boston:							
Single Carrier Markets:							
Hub Carrier							
Other Endpoint Hub Carrier	9		8		1	6	7
Other Carrier		1		4	5	5	17
Competitive Markets:							15
Hub Carrier & Other Endpoint Hub Carriers	1		1				2
Hub Carrier & Other Hub and Non-Hub Carriers		2					2
Hub Carrier & Non-hub Carriers		4		1	3	7	15
Other Endpoint Hub Carriers Only	2		1				3
Other Endpoint Hub and Non-hub Carriers	2						2
Non-hub Carriers		2		1		1	4
Total	14	9	10	6	9	19	67

Table II-17
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	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Unconcentrated Hubs:							
Columbus:							
Single Carrier Markets:							
Hub Carrier					1		1
Other Endpoint Hub Carrier	7		4				11
Other Carrier			1	1			2
Competitive Markets:							
Hub Carrier & Other Endpoint Hub Carriers	1		1				2
Hub Carrier & Other Hub and Non-Hub Carriers							
Hub Carrier & Non-hub Carriers				1			1
Other Endpoint Hub Carriers Only	1						1
Other Endpoint Hub and Non-hub Carriers	2		1				3
Non-hub Carriers		3		1			4
Total	11	3	7	2	1	0	25
Two Carrier Hubs:							
Denver:							
Single Carrier Markets:							
1st Hub Carrier	1		2	2	1	13	19
2nd Hub Carrier				1	7	4	12
Other Endpoint Hub Carrier	2		1			6	9
Competitive Markets:							
Hub Carrier Only	3	11	1	16	5	6	42
Hub Carrier & Other Endpoint Hub Carriers	11		1				12
Hub Carrier & Non-hub Carriers		1			2		3
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers							
Total	17	12	5	19	15	29	97

Two Carrier Hubs:	Number of Points Served						
	Large Hub		Medium Hub				
	Conx Hubs	Other	Conx Hubs	Other	Small Hubs	Non Hubs	Total Cities
Dallas:							
Single Carrier Markets:							
1st Hub Carrier				12	10	3	25
2nd Hub Carrier						1	1
Other Endpoint Hub Carrier			3				3
Other Carrier						6	6
Competitive Markets:							
Hub Carrier Only	1	6	5	6	7	14	39
Hub Carrier & Other Endpoint Hub Carriers	14						14
Hub Carrier & Non-hub Carriers	2	6		7	4		19
Other Endpoint Hub Carriers Only							
Other Endpoint Hub and Non-hub Carriers							
Non-hub Carriers		1					1
Total	17	13	8	25	21	24	108

1/ Carriers are categorized as hub carriers at the idenified hub, hub carriers at the other endpoint and non-hub carriers.

TRAFFIC COMPOSITION AND NUMBERS OF COMPETITORS -- SELECTED LARGE HUB-TO-LARGE HUB CITY PAIRS

Table II-18

Objective: To study concentration trends in specific large City-pair markets.

Data Source: O&D Survey, Table 12.

Observations and Interpretations: Several trends are apparent:

- Very little on-line connecting traffic exists in large city-pair markets of less than 1,000 miles.
- In shorter-haul large markets (under 1,000 miles), the number of single-plane competitors generally increased from 1979 to 1984 and have not changed or decreased since.
- In longer-haul markets no apparent trend exists in the number of single-plane competitors.
- The clear-cut trend with regard to single-plane competitors is that non-hubbing carriers are exiting. In city-pairs where the number of single-plane competitors has increased, it is due to the emergence of new hub carriers.
- Several very large city pairs have only one single-plane competitor and several of these also have very little on-line connecting competition.

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
553	PIT-STL	88	194	71	65	2	TW (55.8), AL (33.6)	2.7%	—	—
		84	165	60	54	1	TW (62.0), AL (27.5)	1.5	—	—
		79	220	80	75	1	TW (50.0), AL (43.4)	1.0	—	—
589	CLT-CHI	88	350	128	106	12	PI (64.0), UA (20.3)	9.7	4	3
		84	280	102	87	8	PI (38.9), EA (24.9), (UA, 21.3)	8.2	3	2
		79	198	72	61	7	EA (82.3)	9.1	2	1
591	CHI-WAS	88	2,298	839	736	86	UA (45.7), ML (28.9), AA (10.7)	10.2	4	5
		84	2,091	763	702	42	UA (37.7), ML (23.5), AA (20.3)	5.5	2	2
		79	1,675	611	580	11	AA (37.3), UA (32.9), TW (22.2)	1.7	—	—
647	DFW-DEN	88	1,248	453	441	2	AA (37.0), UA (21.8), DL (18.3), CO (17.8)	0.4	—	—
		84	1,221	446	425	4	AA (32.4), DL (19.2), UA (17.4), FL (14.7), BN (11.4)	0.8	—	—
		79	910	332	318	4	BN (60.0), FL (23.7)	1.2	—	—
697	DEN-MSP	88	704	257	246	6	NW (35.4), UA (33.1), CO (27.0)	2.1	—	—
		84	755	275	268	2	CO (31.2), NW (25.5), UA (23.8), RC (14.1)	0.6	—	—
		79	480	175	167	1	WA (51.8), RC (22.0), 99 (20.8)	0.7	—	—

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
699	STL-WAS	88	728	266	222	37	TW (82.2)	14.1%	5	6
		84	565	206	190	9	TW (64.8), OZ (18.1)	4.3	2	2
		79	529	193	181	4	TW (84.6)	1.9	—	—
724	CHI-NYC	88	7,643	2,790	2,665	63	UA (42.5), AA (22.1), CO (14.7), ML (10.3)	2.2	—	—
		84	7,834	2,860	2,745	43	AA (27.0), AA (26.7), ML (18.7), PE (10.0)	1.1	—	—
		79	5,600	2,044	1,944	34	AA (43.2), TW (27.7), UA (22.0)	1.6	—	—
859	DFW-MSP	88	552	202	166	28	NW (40.8), AA (35.2)	13.7	3	3
		84	519	189	145	35	AA (36.4), NW (29.4), RC (10.6)	18.6	4	4
		79	342	125	113	5	BN (89.8)	3.9	2	2
860	BOS-CHI	88	2,025	739	673	37	UA (47.6), AA (18.9), ML (13.3)	5.0	2	4
		84	1,644	600	539	29	UA (40.8), AA (34.4)	4.8	1	1
		79	1,347	492	454	11	AA (38.1), UA (27.3), TW (25.9)	2.3	—	—
878	NYC-STL	88	1,405	513	450	43	TW (87.1)	8.4	4	3
		84	1,201	438	401	19	TW (69.2)	4.2	2	2
		79	1,115	407	373	11	TW (71.9), AA (15.3)	2.5	—	—

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
908	CHI-DEN	88	1,803	658	627	19	UA (60.2), CO (19.2)	2.8%	1	1
		84	1,435	524	485	25	UA (36.4), CO (31.9), AA (16.5)	4.7	2	2
		79	1,326	484	462	6	CO (38.9), UA (35.2), TW (13.2)	1.1	—	—
916	MSP-WAS	88	741	271	231	32	NW (84.0)	11.9	6	7
		84	668	244	199	37	NW (67.0), RC (13.7)	15.3	5	4
		79	516	188	164	14	NW (64.7), UA (12.8)	7.3	2	2
954	DEN-SFO	88	966	353	328	16	UA (70.9), CO (22.0)	4.4	2	2
		84	909	332	306	13	UA (50.5), CO (36.1)	3.8	1	1
		79	819	299	270	13	UA (54.6), WA (12.4), CO (12.3), TW (10.5)	3.9	2	2
1016	MSP-NYC	88	1,556	568	497	49	NW (76.2)	8.6	2	2
		84	1,863	680	616	39	NW (57.1), PE (20.3), RC (11.9)	5.7	1	1
		79	993	363	300	30	NW (66.3)	8.1	4	4
1040	BOS-STL	88	409	148	121	19	TW (81.5)	12.9	5	6
		84	277	101	76	9	TW (76.6)	9.3	4	3
		79	310	113	100	4	TW (52.5), AA (33.8)	3.3	1	1

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
1077	DFW-PIT	88	316	115	97	12	AA (47.2), AL (36.1)	10.1%	5	7
		84	258	94	76	11	AA (58.5), AL (22.2)	11.7	5	4
		79	235	86	75	2	AA (83.0)	2.8	1	1
1120	BOS-MSP	88	624	228	189	31	NW (82.6)	13.4	5	5
		84	482	176	151	14	NW (56.6), RC (29.2)	8.0	3	3
		79	333	122	90	16	NW (62.4)	13.2	4	2
1144	DEN-DTW	88	542	197	160	30	UA (41.3), CO (31.1), NW (11.5)	15.4	4	3
		84	492	179	148	26	UA (41.7), CO (26.1), FL (11.0)	14.2	5	5
		79	325	119	92	17	UA (49.5), FL (26.9)	14.0	3	3
1156	DTW-MIA	88	594	217	152	60	NW (30.3), EA (20.8), DL (17.5)	27.5	9	12
		84	447	163	123	35	EA (31.9), DL (21.9), RC (18.0)	21.1	4	4
		79	697	254	216	28	DL (47.9), EA (35.9)	11.1	2	1
1185	DFW-WAS	88	1,340	489	419	53	AA (44.2), DL (21.0), BN (18.9)	10.8	4	5
		84	972	355	288	51	AA (57.0), BN (13.8)	14.4	5	6
		79	615	224	199	10	BN (50.5), AA (37.5)	4.6	2	2

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
1310	DEN-PIT	88	233	84	69	11	AL (58.7), CO (27.7)	2.1%	3	2
		84	171	62	48	9	UA (42.1), AL (34.7)	0.6	5	5
		79	213	78	59	12	TW (40.0), UA (36.6)	0.7	2	2
1348	CLT-DEN	88	116	42	25	16	PI (57.4)	36.5	7	7
		84	86	31	18	11	PI (54.1)	35.8	4	3
		79	43	16	2	11	DL (11.4)	67.8	4	2
1389	DFW-NYC	88	2,960	1,080	943	92	AA (53.5), DL (14.7), BN (10.3)	8.5	3	3
		84	2,652	968	861	37	AA (56.8), DL (15.6)	5.8	1	1
		79	1,656	604	540	22	AA (49.2), BN (38.6)	3.6	2	2
1476	DEN-WAS	88	1,039	379	301	65	UA (47.6), CO (26.1)	17.1	6	8
		84	768	280	218	49	UA (34.0), CO (25.3)	17.4	4	4
		79	602	220	178	25	UA (45.7), TW (18.4), CO (13.0)	11.3	4	4
1539	LAX-MSP	88	837	305	242	51	NW (77.9)	16.8	5	5
		84	754	275	238	26	NW (56.7), RC (21.6)	9.4	3	2
		79	748	273	247	10	UA (57.3), NW (33.0)	3.8	1	1

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
1566	BOS-DFW	88	714	261	179	65	AA (41.5), DL (20.7)	24.8%	10	12
		84	664	242	205	18	AA (55.7), DL (18.7)	7.6	4	7
		79	362	132	110	11	AA (72.8), BN (10.1)	8.3	3	2
1630	DEN-NYC	88	2,075	757	645	84	UA (46.3), CO (32.8)	11.0	4	4
		84	1,958	715	593	90	UA (41.0), CO (26.5)	12.5	3	3
		79	1,368	499	421	40	UA (52.4), TW (28.3)	7.9	3	3
1716	DEN-MIA	88	444	162	104	51	CO (36.6), UA (26.5)	31.7	7	7
		84	379	139	85	46	UA (25.4), JW (15.1)	33.1	6	5
		79	346	126	94	25	CO (47.5), BN (22.7)	19.7	3	3
1767	BOS-DEN	88	680	248	194	43	CO (39.2), UA (38.7)	17.3	7	10
		84	503	183	128	40	UA (43.5), CO (19.0)	21.8	5	6
		79	378	138	106	19	UA (47.6), TW (28.7)	13.7	3	3
1988	DTW-LAX	88	1,294	472	291	162	NW (54.3)	34.3	9	13
		84	1,358	496	312	169	UA (31.5), AA (16.0), RC (12.2)	34.1	6	6
		79	988	361	300	39	AA (52.9), UA (29.7)	10.7	4	5

Traffic Composition for Selected Large City-Pair Markets
Selected Traffic Data and Competitive Indicators

Mileage	City-Pair	Year 9/30	Psgrs. Per Day	O&D Traffic (000) 1/ Total	Single Plane	Airline Connx.	Single-Plane Traffic — Carriers with a 10% or More of Total O&D: Percentages in ( )	Online connx. Traffic 2/ % of Total	# of Carrs	# of Hubs
2126	CLT-LAX	88	170	61	33	23	PI (53.8)	37.1%	5	4
		84	114	41	13	23	PI (29.6)	55.6	3	2
		79	96	35	17	14	UA (33.3), DL (13.7)	41.0	3	2
2259	PIT-SFO	88	307	112	68	37	AL (59.7)	32.5	7	9
		84	214	78	43	25	AL (54.7)	32.5	4	5
		79	267	97	73	14	TW (42.2), UA (30.2)	14.6	3	3
2300	LAX-WAS	88	2,242	816	497	279	UA (22.4), AA (15.6)	34.2	10	14
		84	1,572	574	387	151	UA (39.1), AA (25.0)	26.2	8	9
		79	1,281	468	379	42	AA (38.5), UA (22.9), TW (21.5)	9.0	3	2
2467	LAX-NYC	88	8,366	3,052	2,453	470	AA (19.5), UA (19.4), TW (13.2), PA (12.0), CO (11.4)	15.4	7	13
		84	7,478	2,729	2,332	271	AA (26.7), UA (18.2), TW (11.7) PE (9.5)	9.9	5	7
		79	5,932	2,165	1,931	86	AA (37.5), TW (22.4), UA (20.0)	3.9	1	2
2611	BOS-LAX	88	1,869	682	444	202	AA (28.5), UA (14.0), TW (12.6)	29.6	9	15
		84	1,271	464	311	110	AA (27.9), TW (21.4), UA (13.4)	23.6	8	11
		79	1,090	398	314	42	AA (44.1), TW (33.5)	10.5	3	3

1/ Excluding interline connecting traffic.
2/ The number of carriers are those with one percent or more of total traffic.

SOURCE: DOT O&D Survey, Table 12, Years Ended September, 1988, 1984 and 1979.

SINGLE PLANE AND ON-LINE CONNECTING TRAFFIC SHARES AT SELECTED LARGE HUB-TO-LARGE-HUB CITY PAIRS

Table II-19

Objective: To evaluate competition in specific city-pair markets.

Data Sources: DOT's O&D Survey, Table 12.

Observations/Interpretation:

- On-line connecting competition generally is not a significant factor in city-pair markets of less than 1,000 miles. Its competitive significance increases with distance as (1) the number of connecting hub alternatives increase, (2) connecting time constitutes less of a penalty compared with nonstop service, and (3) the number of single-plane competitors decrease.

- The single-plane competitors are virtually all hubbing carriers.

- Several very large city pair markets where on-line competition does not appear to be significant, have frequent nonstop service by a single carrier.

Table II-19
Page 1 of 1

Traffic Composition for Selected Large City-Pair Markets
Percentage Shares of Single-Plane and Online Connecting Traffic

Nonstop Mileage	City-Pair	Percent Single-Plane 1988	Percent Single-Plane 1984	Percent Single-Plane 1979	Percent On-Line Connt. 1988	Percent On-Line Connt. 1984	Percent On-Line Connt. 1979	1988 O&D Traffic	Nonstop Round Trips	Single-Plane Competitors
533	PIT-STL	91.4	90.0	93.2	2.7	1.5	1.0	70,980	8	2
589	CLT-CHI	83.4	85.3	84.3	9.7	8.2	9.1	127,600	13	2
591	CHI-WAS	87.7	91.9	94.8	10.2	5.5	1.7	838,640	48	3
647	DFW-DEN	97.3	95.4	95.8	0.4	0.8	1.2	453,030	21	4
697	DEN-MSP	95.6	97.1	95.7	2.1	0.6	0.7	257,060	14	3
699	STL-WAS	83.4	92.1	93.8	14.1	4.3	1.9	265,600	13	1
724	CHI-NYC	95.5	95.9	95.1	2.2	1.4	1.6	2,789,550	84	4
859	DFW-MSP	82.5	76.6	90.7	13.7	18.6	3.9	201,560	8	2
860	BOS-CHI	91.0	89.7	92.3	5.0	4.8	2.3	739,120	21	3
878	NYC-STL	87.6	91.4	91.7	8.4	4.2	2.5	512,770	15	1
908	CHI-DEN	95.2	92.4	95.4	2.8	4.7	1.1	658,250	31	2
954	DEN-SFO	93.0	92.3	90.3	4.4	3.8	4.2	352,590	24	2
916	MSP-WAS	85.2	81.4	87.0	11.9	15.3	7.3	270,530	9	1
1,016	MSP-NYC	87.5	90.6	82.6	8.6	5.7	8.1	567,800	14	1
040	BOS-STL	81.8	75.0	88.1	12.9	9.3	3.3	148,120	5	1
077	DFW-PIT	84.5	80.9	87.2	10.1	11.7	2.8	115,010	6	2
1,120	BOS-MSP	82.2	86.0	74.1	13.4	8.0	13.2	227,940	5	1
1,144	DEN-DTW	81.2	82.5	77.5	15.4	14.2	14.0	196,620	8	3
1,156	DTW-MIA	70.1	75.1	84.8	27.5	21.1	11.1	216,780	3	3
1,185	DFW-WAS	85.5	81.2	88.6	10.8	14.4	4.6	489,220	21	3
1,310	DEN-PIT	95.6	97.1	95.7	2.1	0.6	0.7	84,170	5	2
1,348	CLT-DEN	57.7	55.9	12.7	36.5	35.8	67.8	42,470	2	1
1,389	DFW-NYC	87.2	88.9	89.3	8.5	5.8	3.6	1,080,470	23	3
1,476	DEN-WAS	79.2	77.6	80.9	17.1	17.4	11.3	379,120	10	2
1,539	LAX-MSP	79.2	86.5	90.6	16.8	9.4	3.8	305,440	8	1
1,566	BOS-DFW	68.4	84.7	83.0	24.8	7.6	8.3	260,600	7	2
1,630	DEN-NYC	85.2	83.0	84.3	11.0	12.5	7.9	757,310	21	2
1,716	DEN-MIA	63.9	61.4	74.1	31.7	33.1	19.7	161,980	2	2
1,767	BOS-DEN	78.3	69.7	76.4	17.3	21.8	13.7	248,020	6	2
1,988	DTW-LAX	61.6	62.9	83.2	34.3	34.1	10.7	472,450	4	1
2,126	CLT-LAX	54.6	30.1	47.9	37.1	55.6	41.0	61,180	2	1
2,259	PIT-SFO	60.2	55.4	75.0	32.5	32.5	14.6	112,070	2	1
2,300	LAX-WAS	60.9	67.4	81.0	34.2	26.2	9.0	816,160	10	2
2,467	LAX-NYC	80.3	85.4	89.1	15.4	9.9	3.9	3,051,570	26	5
2,611	BOS-LAX	65.0	67.0	78.8	29.6	23.6	10.5	682,240	5	3

SOURCE: DOT O&D Survey, Table 12, Years Ended September 30, 1988, 1984, and 1979.

NONSTOP SEGMENT LOAD FACTORS IN CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT

Tables II-20 through II-23

Objective: To determine if any relationship exists between share of market and load factor, and if there are apparent quality-of-service questions raised by market dominance.

Data Sources: DOT's EQ-586 service segment and T-9 data. This set of load factor exhibits focuses on city-pair dominance rather than hub dominance. For city-pairs involving at least one large hub end-point these exhibits show load factors for 1979, 1984 and 1988 segregated by density and by degree of competition. The latter is evaluated in three different ways: (1) the percentage of traffic carried by the city-pair dominant carrier, (2) the number of competitors based on single-plane service, and (3) the number of competitors based on a 10% or greater share of RPM's. Note that previous exhibits have demonstrated a tremendous increase in concentration at large hubs since 1979.

Observations and Interpretations: Tables II-20 through II-22 show that the dominant carriers have a clear load factor advantage over other carriers and that this advantage intensifies with increases in city-pair concentration. The advantage tends to reflect both increases in the dominant carriers' load factors and decreases in the other carriers' load factors as concentration increases. The most dramatic change occurs when the dominant carries have 90 percent or more of the market. At that point the other carriers' load factors drop off sharply. Significantly, this is not a new phenomenon. This tendency was almost as strong in 1979 and 1984 as in 1988. The big change, however, is the degree of concentration. In terms of number of markets, 1984 is significantly more competitive than 1979 (approximately the same number of highly concentrated city-pairs but many more less concentrated city-pairs) and 1988 significantly less competitive (fewer markets in all concentration categories except the 90 percent or greater category which the number of city-pairs increased by 359 from 578 to 936). Although many of these monopoly city-pairs represent new service, the number of competitive city-pairs actually declined slightly.

This phenomenon (the relationship of load factor advantage to concentration) may be at least a partial explanation for the move to hubbing. Controlling traffic flows at a point allows a carrier to offer more frequency profitably and perhaps gain a disproportionate share of local traffic. Hubbing has proven to be an effective way of controlling traffic flows at a point. This may also explain why very few carriers without a hub at one end-point of a city-pair try to compete, and that even city-pairs with connecting hubs at each end-point are often served by only one of the hubbing carriers.

The load factors in Table II-20 through II-22 show that the load factor advantage related to city-pair dominance is relatively consistent for 1979, 1984 and 1988. What Table II-23 shows is how hubbing has expanded the impact of the phenomenon by greatly increasing concentration. Also, while a great deal of concentration can be attributed to the creation of new service to connecting hubs, the number of competitive markets has actually declined for all traffic density levels except for the very large city-pair markets (500 or more passengers per day).

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

City-Pair Market Density and Dominant Carrier Share of RPM's	Number of Markets	Load Factor		
		Total	Carrier Mkt-Dominant	Carrier Other
50 - 100 (Psgrs. Per Day)				
LESS THAN 50%	3	41.84	48.28	37.64
50 to 59.99	5	59.22	69.19	51.20
60 to 69.99	3	46.44	53.51	37.26
70 to 79.99	6	40.81	41.80	38.12
80 to 89.99	5	46.90	50.88	29.95
90 % OR MORE	190	57.46	57.44	61.09
101 - 200				
LESS THAN 50%	3	50.15	59.69	43.90
50 to 59.99	21	59.16	61.94	56.27
60 to 69.99	28	53.91	55.29	51.61
70 to 79.99	12	62.36	61.20	66.24
80 to 89.99	12	56.15	58.46	44.73
90 % OR MORE	314	59.18	59.30	41.87
201 - 500				
LESS THAN 50%	41	57.51	56.83	58.00
50 to 59.99	85	60.70	60.90	60.46
60 to 69.99	72	56.20	58.13	53.01
70 to 79.99	54	59.07	62.87	50.62
80 to 89.99	33	61.46	63.26	53.52
90 % OR MORE	340	62.98	63.27	39.67
501 - OR MORE				
LESS THAN 50%	136	63.45	65.10	62.50
50 to 59.99	151	62.62	64.66	60.25
60 to 69.99	96	63.63	65.93	59.83
70 to 79.99	46	66.21	69.50	58.40
80 to 89.99	15	63.62	66.65	51.47
90 % OR MORE	92	64.88	65.22	38.49
TOTAL				
LESS THAN 50%	183	63.03	64.47	62.20
50 to 59.99	262	62.21	63.95	60.18
60 to 69.99	199	61.98	64.19	58.32
70 to 79.99	118	63.93	67.12	56.35
80 to 89.99	65	61.86	64.38	51.25
90 % OR MORE	936	62.19	62.42	40.49

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

Table II-20
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NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/	Number of Markets	Load Factor		
			Carrier	
		Total	Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	26	42.63	43.01	22.03
Total	26	42.63	43.01	22.03
101 - 200				
Single Carrier	184	51.95	52.43	39.71
Two Carriers	1	39.38	45.46	30.50
Total	185	51.89	52.41	39.23
201 - 500				
Single Carrier	457	60.37	61.45	52.83
Two Carriers	73	52.28	54.46	49.45
Three Carriers	8	49.31	47.77	50.37
Total	538	59.10	60.70	51.58
501 OR MORE				
Single Carrier	145	65.45	66.25	62.47
Two Carriers	262	63.82	66.09	60.95
Three Carriers	89	59.34	61.73	57.22
Four or More	33	63.53	64.78	63.01
Total	529	63.41	65.46	60.78
TOTAL				
Single Carrier	812	61.90	62.56	58.42
Two Carriers	336	63.02	65.29	60.16
Three Carriers	97	59.06	61.38	57.00
Four or More	33	63.53	64.78	63.01
Total	1,278	62.14	63.51	59.80

1/ Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1988)

City-Pair Market Density and Number of Competitors Based on RPM Share 1/	Number of Markets	Load Factor		
			Carrier	
		Total	Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	191	57.44	57.42	59.36
Two Carriers	18	48.62	51.59	42.77
Three Carriers	3	40.34	54.41	30.03
Total	212	56.56	57.08	43.64
101 - 200				
Single Carrier	315	59.16	59.28	40.98
Two Carriers	67	58.54	59.58	56.52
Three Carriers	7	46.01	52.10	40.13
Four or More	1	41.43	51.44	35.56
Total	390	58.91	59.28	54.23
201 - 500				
Single Carrier	341	62.95	63.25	39.44
Two Carriers	218	59.25	60.92	56.36
Three Carriers	60	57.92	58.30	57.57
Four or More	6	55.35	63.14	51.17
Total	625	60.86	62.16	56.07
501 OR MORE				
Single Carrier	93	64.81	65.21	37.65
Two Carriers	270	63.91	66.29	60.31
Three Carriers	128	61.72	64.66	59.07
Four or More	45	64.69	65.09	64.51
Total	536	63.61	65.65	61.00
TOTAL				
Single Carrier	940	62.15	62.40	39.93
Two Carriers	573	62.68	64.79	59.35
Three Carriers	198	61.15	63.78	58.78
Four or More	52	64.55	65.05	64.31
Total	1,763	62.48	63.73	60.16

1/ Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1988.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

City-Pair Market Density and Dominant Carrier Share of RPM's	Number of Markets	Load Factor		
			Carrier	
		Total	Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
LESS THAN 50%	5	33.88	37.30	31.59
50 to 59.99	8	43.28	42.77	43.94
60 to 69.99	7	39.91	42.04	36.43
70 to 79.99	8	52.10	52.50	50.86
80 to 89.99	7	50.51	50.79	49.19
90 % OR MORE	173	52.38	52.44	41.86
101 - 200				
LESS THAN 50%	13	53.51	53.68	53.39
50 to 59.99	42	51.20	51.38	50.98
60 to 69.99	27	51.55	51.87	50.98
70 to 79.99	30	50.40	51.95	46.09
80 to 89.99	29	53.58	55.91	43.09
90 % OR MORE	218	56.94	57.03	47.09
201 - 500				
LESS THAN 50%	47	54.15	55.72	53.06
50 to 59.99	107	55.95	57.06	54.66
60 to 69.99	79	56.57	59.43	52.08
70 to 79.99	51	59.80	62.19	53.81
80 to 89.99	45	61.32	64.08	49.81
90 % OR MORE	154	61.02	61.52	39.18
501 - OR MORE				
LESS THAN 50%	132	60.94	62.53	59.90
50 to 59.99	118	58.04	60.56	55.32
60 to 69.99	90	58.38	62.70	51.73
70 to 79.99	34	59.19	64.24	48.19
80 to 89.99	17	58.43	61.70	45.45
90 % OR MORE	33	68.73	69.05	56.79
TOTAL				
LESS THAN 50%	197	60.23	61.78	59.21
50 to 59.99	275	57.16	59.18	54.92
60 to 69.99	203	57.47	61.19	51.67
70 to 79.99	123	58.47	62.07	49.99
80 to 89.99	98	58.98	61.72	47.54
90 % OR MORE	578	60.62	60.86	46.81

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/	Number of Markets	Load Factor		
		Total	Carrier	
			Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	17	46.56	47.50	34.11
Total	17	46.56	47.50	34.11
101 - 200				
Single Carrier	133	51.63	52.59	38.87
Two Carriers	2	48.62	50.83	43.56
Total	135	51.61	52.58	38.99
201 - 500				
Single Carrier	282	59.05	61.23	51.13
Two Carriers	86	50.65	52.48	48.47
Three Carriers	8	46.88	50.29	43.97
Total	376	56.88	59.58	49.84
501 OR MORE				
Single Carrier	79	62.92	64.40	60.52
Two Carriers	199	58.85	61.54	55.26
Three Carriers	100	59.64	61.76	57.85
Four or More	31	55.95	59.98	53.72
Total	409	59.52	62.10	56.72
TOTAL				
Single Carrier	511	60.07	61.40	56.58
Two Carriers	287	57.83	60.45	54.37
Three Carriers	108	59.42	61.56	57.61
Four or More	31	55.95	59.98	53.86
Total	937	58.77	61.03	55.76

1/ Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

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NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1984)

City-Pair Market Density and Number of Competitors Based on RPM Share 1/	Number of Markets	Load Factor		
		Total	Carrier Mkt-Dominant	Carrier Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	174	52.24	52.30	41.81
Two Carriers	28	47.16	48.53	44.17
Three Carriers	6	31.80	34.77	29.68
Total	208	51.13	51.72	43.08
101 - 200				
Single Carrier	221	56.86	57.01	44.17
Two Carriers	119	51.74	52.89	49.42
Three Carriers	16	52.93	52.52	53.31
Four or More	3	32.17	47.20	25.20
Total	359	54.67	55.63	49.63
201 - 500				
Single Carrier	157	60.95	61.47	39.23
Two Carriers	259	58.07	60.43	53.86
Three Carriers	55	54.10	56.02	52.49
Four or More	12	52.78	57.41	49.85
Total	483	58.12	60.36	53.10
501 OR MORE				
Single Carrier	34	68.44	68.88	53.54
Two Carriers	211	59.01	61.96	54.81
Three Carriers	125	60.37	62.76	58.39
Four or More	54	59.00	61.59	57.38
Total	424	60.01	62.90	56.80
TOTAL				
Single Carrier	586	60.50	60.79	45.37
Two Carriers	617	58.06	60.58	54.11
Three Carriers	202	59.06	61.68	57.53
Four or More	69	58.72	61.42	57.05
Total	1,474	58.89	60.91	55.81

1/ Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1984.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

City-Pair Market Density and Dominant Carrier Share of RPM's	Number of Markets	Load Factor		
			Carrier	
		Total	Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
LESS THAN 50%	10	40.06	38.47	41.56
50 to 59.99	13	52.77	54.27	51.03
60 to 69.99	20	48.76	52.92	42.74
70 to 79.99	22	54.13	58.87	43.23
80 to 89.99	19	60.50	64.00	45.99
90 % OR MORE	233	61.32	61.52	45.84
101 - 200				
LESS THAN 50%	14	46.64	50.08	44.33
50 to 59.99	35	58.21	58.46	57.91
60 to 69.99	35	60.70	65.48	53.43
70 to 79.99	42	57.19	61.79	46.66
80 to 89.99	32	60.05	62.60	48.41
90 % OR MORE	177	64.69	64.94	38.33
201 - 500				
LESS THAN 50%	23	53.09	59.78	48.46
50 to 59.99	84	61.11	61.49	60.65
60 to 69.99	68	62.31	64.48	58.68
70 to 79.99	61	63.77	67.49	54.94
80 to 89.99	64	63.25	64.79	55.94
90 % OR MORE	138	68.29	69.04	42.81
501 - OR MORE				
LESS THAN 50%	89	64.65	66.80	63.23
50 to 59.99	96	64.90	67.36	62.21
60 to 69.99	71	63.78	66.45	59.42
70 to 79.99	34	64.99	67.39	59.28
80 to 89.99	16	66.33	68.60	56.53
90 % OR MORE	25	75.15	76.29	49.68
TOTAL				
LESS THAN 50%	136	63.75	66.09	62.20
50 to 59.99	228	63.42	65.14	61.48
60 to 69.99	194	62.84	65.55	58.43
70 to 79.99	159	63.23	66.50	55.49
80 to 89.99	131	63.45	65.36	54.72
90 % OR MORE	573	67.04	67.55	44.92

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

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NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

City-Pair Market Density and Number of Competitors Based on Nonstop Service 1/	Number of Markets	Load Factor		
		Total	Carrier Mkt-Dominant	Carrier Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	15	59.78	60.10	53.42
Total	15	59.78	60.10	53.42
101 - 200				
Single Carrier	110	58.80	60.90	39.33
Two Carriers	1	34.99	64.28	20.16
Total	111	58.71	60.91	38.82
201 - 500				
Single Carrier	295	64.10	66.28	56.38
Two Carriers	49	61.12	62.99	58.54
Three Carriers	1	20.86	26.08	17.75
Total	345	63.52	65.78	57.26
501 OR MORE				
Single Carrier	62	68.48	71.15	62.38
Two Carriers	205	63.51	65.88	60.42
Three Carriers	50	65.98	68.57	64.29
Four or More	10	61.56	70.65	57.54
Total	327	64.99	67.62	62.05
TOTAL				
Single Carrier	482	65.33	67.47	58.86
Two Carriers	255	63.28	65.60	60.24
Three Carriers	51	63.28	68.54	64.25
Four or More	10	61.56	70.65	57.54
Total	798	64.53	66.87	61.26

1/ Number of competitors with at least one round trip per day.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

NONSTOP SEGMENT LOAD FACTORS
CITY-PAIRS WITH AT LEAST ONE LARGE HUB ENDPOINT
(Dominance Based on Share of City-Pair Traffic, Not Hub Dominance)
(Year Ended September, 1979)

City-Pair Market Density and Number of Competitors Based on RPM Share 1/	Number of Markets	Load Factor		
			Carrier	
		Total	Mkt-Dominant	Other
50 - 100 (Psgrs. Per Day)				
Single Carrier	233	61.32	61.52	45.84
Two Carriers	72	54.01	58.42	45.27
Three Carriers	10	41.60	40.67	45.57
Four or More	2	19.11	25.90	16.80
Total	317	58.58	60.42	44.81
101 - 200				
Single Carrier	181	64.58	64.92	37.12
Two Carriers	134	59.18	62.17	53.81
Three Carriers	18	48.66	52.02	45.57
Four or More	2	36.46	40.32	34.16
Total	335	61.09	63.42	52.40
201 - 500				
Single Carrier	141	67.85	68.77	45.88
Two Carriers	260	62.49	64.25	59.17
Three Carriers	30	56.16	62.55	50.29
Four or More	7	42.89	50.60	39.09
Total	438	62.97	65.37	57.36
501 OR MORE				
Single Carrier	27	75.09	76.34	52.81
Two Carriers	199	63.91	66.04	60.77
Three Carriers	87	64.01	66.79	62.04
Four or More	18	71.42	76.03	68.28
Total	331	65.03	65.37	57.36
TOTAL				
Single Carrier	582	66.96	67.57	47.15
Two Carriers	665	62.85	64.91	59.48
Three Carriers	145	63.05	65.99	60.91
Four or More	29	70.41	75.25	67.14
Total	1,421	63.89	66.08	60.49

1/ Number of carriers with a ten percent or greater share of RPM's.

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September 30, 1988.

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City-Pair Concentration
City Pairs With at Least One Large Hub Endpoint
Years Ended September 1988, 1984, and 1979

Density and Dominant Carrier Percentage of City-Pair RPM's 1/	Number of Markets			Percent Distribution		
	1988	1984	1979	1988	1984	1979
50 - 100 (Psgrs. per day)						
Less Than 50%	3	5	10	1	2	3
50 to 59.99	5	8	13	2	4	4
60 to 69.99	3	7	20	1	3	7
70 to 79.99	6	8	22	3	4	7
80 to 89.99	5	7	19	2	3	6
90 to 99.99	190	173	233	90	83	74
Total	212	208	317	100	100	100
101 - 200						
Less Than 50%	3	13	14	1	4	4
50 to 59.99	21	42	35	5	12	10
60 to 69.99	28	27	35	7	8	10
70 to 79.99	12	30	42	3	8	13
80 to 89.99	12	29	32	3	8	10
90 to 99.99	314	218	177	81	61	53
Total	390	359	335	100	100	100
201 - 500						
Less Than 50%	41	47	23	7	10	5
50 to 59.99	85	107	84	14	22	19
60 to 69.99	72	79	68	12	16	16
70 to 79.99	54	51	61	9	11	14
80 to 89.99	33	45	64	5	9	15
90 to 99.99	340	154	138	54	32	32
Total	625	483	438	100	100	100
501 or More						
Less Than 50%	136	132	89	25	31	27
50 to 59.99	151	118	96	28	28	29
60 to 69.99	96	90	71	18	21	21
70 to 79.99	46	34	34	9	8	10
80 to 89.99	15	17	16	3	4	5
90 to 99.99	92	33	25	17	8	8
Total	536	424	331	100	100	100
TOTAL						
Less Than 50%	183	197	136	10	13	10
50 to 59.99	262	275	228	15	19	16
60 to 69.99	199	203	194	12	14	14
70 to 79.99	118	123	159	7	8	11
80 to 89.99	65	98	131	4	7	9
90 to 99.99	936	578	573	53	39	40
Total	1,763	1,474	1,421	100	100	100

1/ Dominance based on share of city-pair traffic, not hub dominance.
SOURCE: ER-586 Service Segment and T-9 Data for Years Ended September 1988, 1984, and 1979.

NONSTOP LOAD FACTORS AT INDIVIDUAL LARGE HUB CITY PAIRS AND FOR GROUPS OF LARGE HUBS (GROUPED BY SHARE OF SINGLE-CARRIER DOMINANCE)

Tables II-24 Through II-31

Objective: To determine if any relationship exists between hub dominance and load factor and if there are any apparent quality of service questions raised by hub dominance.

Data Sources: DOT's ER-586 service segment and schedule T-9 data. These exhibits focus on the relationship of load factor to degree of hub dominance. Tables II-24 through II-28 examine load factors at individual hubs. Tables II-29 through II-31 examine load factors at groups of hubs, also segregated on the basis of single-carrier dominance, but with greater detail about the number of competitors.

Observations/Interpretation: Hub concentration results from an accumulation of concentrated individual city-pairs. On the basis of the load factor advantage dominant carriers have in individual city pairs, we would expect hub-dominant carriers to have a significant load factor advantage over other carriers. This is precisely what the data reflect (Tables II-24 through II-26). Considering that a swing of only one or two load factor points can have a tremendous impact on a carrier's profitability, the nine percentage point average load factor advantage for concentrated hub carriers over their competitors is quite large.

Much of the overall load factor advantage for the dominant carriers stems from the higher load factors in monopoly markets. Even in competitive markets, however, where the competing service is typically by other hubbing carriers who tend to offer equivalent frequency, the hubbing carrier at the highly concentrated hub generally has a significant load factor advantage, on average. It is not clear from the level of detail now available whether this load factor advantage stems from greater flow traffic, or an imbalance in the carriage of local traffic. In either event, this may offer an explanation of why concentrated hubs tend to become more-and-more concentrated over time. The dominant carrier is able to operate more flights profitably. The weaker carriers, in terms of load factor, have to choose between cutting frequency or reducing yield (to boost load factor) or exiting the market. They apparently have made the latter choice in many instances at concentrated hubs.

Curiously, overall average load factors in city-pair markets at concentrated hubs are lower than for those at unconcentrated hubs. This is not simply a function of differences in the particular

markets involved, because it systematically stems from much lower load factors in competitive markets. One explanation for this could be that the hubbing carriers offer quality service (frequency) in order to maintain their dominant position. If so, this clearly offers a short-term benefit to travelers in those markets but the long-run impact is less clear. The result may be to eventually drive out more competition, as the increasing dominance in recent years at many large hubs suggests. There is probably a limit to the dominance, however, since connecting hubs are located at important cities which are likely to be retained as spokes for many other hubbing carriers.

The higher load factors of hub-dominant carriers at their hubs are consistent with more attractive service.

Tables II-29 through II-31 show that load factor increases with city-pair density, without regard to degree of concentration. Nevertheless, the hub-dominant carriers' load factor advantage does not depend on city-pair density. Similarly, the number of competitors affects load factors in all but the largest unconcentrated city-pairs. This does not explain why load factors in competitive markets tend to be lower at more concentrated hubs where the average number of competitors is lower than at unconcentrated hubs.

Table II-27 shows that the load factor differentials are quite large at the most concentrated hubs, but not at medium concentrated hubs. The latter is affected by the fact that three of the four medium concentrated hubs are two-carrier hubs.

Table II-28 shows that concentrated hubs accounted for about 20 percent of the city-pairs involving nonstop service to a large hub.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
CHARLOTTE (PI-91.6%)				
Single Carrier	52	65.22	65.67	30.51
Multi-Carrier	8	58.16	59.80	55.74
Total	60	63.64	64.80	53.23
PITTSBURGH (AL-85.4%)				
Single Carrier	56	69.72	70.24	30.67
Multi-Carriers	16	55.82	62.75	48.89
Total	72	64.57	68.52	48.11
MEMPHIS (NW-83.6%)				
Single Carrier	51	59.00	59.17	52.61
Multi-Carriers	8	49.23	51.46	47.72
Total	59	57.11	58.47	48.47
ST. LOUIS (TW-82.8%)				
Single Carrier	56	62.52	62.55	33.56
Multi-Carriers	20	56.40	57.61	54.65
Total	76	60.55	61.46	54.56
SALT LAKE CITY (DL-79.3%)				
Single Carrier	39	55.19	55.34	35.33
Multi-Carriers	10	52.90	53.79	51.96
Total	49	54.31	54.96	51.55
MINNEAPOLIS-ST. PAUL (NW-77.6%)				
Single Carrier	53	63.93	64.33	53.62
Multi-Carriers	13	57.20	56.99	57.36
Total	66	62.00	63.24	56.84
SUB-TOTAL:				
Single Carrier	307	62.83	63.08	47.07
Multi-Carrier	75	55.49	57.66	53.22
Total	382	60.57	62.06	52.79

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
60 to 74.99% Share:				
-0-				
50 to 59.99% Share:				
DETROIT (NW-57.7%)				
Single Carrier	37	61.13	61.83	55.60
Multi-Carriers	24	61.64	62.92	60.76
Total	61	61.43	62.26	60.14
ATLANTA (DL-57.1%)				
Single Carrier	34	60.85	60.32	62.41
Multi-Carriers	57	59.97	60.08	59.83
Total	91	60.09	60.13	60.03
DALLAS (AA-54.9%)				
Single Carrier	42	61.37	64.56	55.57
Multi-Carriers	57	61.81	65.88	56.95
Total	99	61.74	65.65	56.78
HOUSTON (CO-50.5%)				
Single Carrier	65	58.03	58.88	55.70
Multi-Carriers	16	57.00	56.52	57.40
Total	81	57.67	58.29	56.58
SUB-TOTAL:				
Single Carrier	178	59.85	60.94	56.71
Multi-Carriers	154	60.74	62.84	58.44
Total	332	60.51	62.20	58.16
Less Than 50% Share:				
CHICAGO (UA-46.2%)				
Single Carrier	58	62.10	67.72	56.60
Multi-Carriers	80	62.88	67.56	58.36
Total	138	62.79	67.57	58.15

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
PHOENIX (HP-44.4%)				
Single Carrier	33	63.52	57.43	67.77
Multi-Carriers	21	63.27	57.40	65.68
Total	54	63.34	57.41	66.22
ORANGE COUNTY (AA-41.9%)				
Single Carrier	6	57.00	83.34	56.99
Multi-Carriers	8	65.81	68.86	60.80
Total	14	63.02	68.86	58.70
DENVER (UA-43.3%)				
Single Carrier	21	56.29	59.20	55.56
Multi-Carriers	61	62.48	67.96	58.27
Total	82	62.06	67.67	58.01
MIAMI (EA-40.6%)				
Single Carrier	11	59.91	43.16	60.97
Multi-Carriers	26	62.49	64.72	60.59
Total	37	62.16	64.32	60.67
PHILADELPHIA (AL-38.7%)				
Single Carrier	21	61.07	65.36	59.12
Multi-Carriers	27	60.20	60.08	60.25
Total	48	60.40	61.40	60.01
FT. LAUDERDALE (DL-35.3%)				
Single Carrier	14	65.79	65.18	65.84
Multi-Carriers	15	62.01	60.90	63.00
Total	29	62.86	61.13	63.95
SAN FRANCISCO (UA-34.8%)				
Single Carrier	16	66.43	61.40	67.55
Multi-Carriers	35	65.31	69.74	62.81
Total	51	65.46	69.14	63.59

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
HONOLULU (HA-34.2%)				
Single Carrier	7	71.20	69.25	71.56
Multi-Carriers	11	69.72	69.87	69.70
Total	18	69.87	69.78	69.88
LAS VEGAS (HP-33.6%)				
Single Carrier	19	64.72	59.13	68.57
Multi-Carriers	18	67.91	57.37	70.69
Total	37	67.04	58.12	70.23
KANSAS CITY (EA-31.0%)				
Single Carrier	12	57.98	61.55	54.51
Multi-Carriers	24	64.14	68.01	61.89
Total	36	63.02	66.53	60.78
LONG BEACH (AS-30.5%)				
Single Carrier	2	45.23	41.90	50.72
Multi-Carriers	4	49.55	38.79	50.64
Total	6	49.09	40.17	50.65
SEATTLE (UA-25.6%)				
Single Carrier	16	61.82	60.79	61.86
Multi-Carriers	22	61.06	67.73	58.27
Total	38	61.20	67.52	59.13
ORLANDO (DL-24.9%)				
Single Carrier	17	67.77	62.99	68.98
Multi-Carriers	28	61.15	56.62	63.39
Total	45	62.60	57.55	64.79
BURBANK (PS-23.8%)				
Single Carrier	6	52.44		52.44
Multi-Carriers	8	47.18	53.93	45.14
Total	14	49.07	53.93	48.23
WASHINGTON, D.C. (UA-21.7%)				
Single Carrier	43	56.24	45.44	57.18
Multi-Carriers	41	60.81	64.49	58.69
Total	84	59.58	62.98	58.31

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September 1988)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
TAMPA/ST. PETERSBURG (EA-20.7%)				
Single Carrier	22	60.22	58.22	60.34
Multi-Carriers	17	61.10	60.37	61.35
Total	39	60.75	60.10	60.89
OAKLAND (AA-20.1%)				
Single Carrier	8	60.52	57.35	61.74
Multi-Carriers	8	54.31	49.45	55.22
Total	16	57.26	54.28	58.07
BOSTON (EA-18.8%)				
Single Carrier	21	61.77	60.91	61.81
Multi-Carriers	23	60.87	60.55	60.94
Total	44	61.11	60.58	61.19
NEW YORK (CO-18.6%)				
Single Carrier	69	60.69	60.12	60.95
Multi-Carriers	71	62.34	58.63	63.06
Total	140	62.00	59.13	62.69
LOS ANGELES (UA-18.0%)				
Single Carrier	20	67.61	59.42	67.90
Multi-Carriers	32	66.02	68.34	65.28
Total	52	66.30	68.06	65.84
SAN DIEGO (AA-13.9%)				
Single Carrier	13	63.79	100.00	63.79
Multi-Carriers	14	65.83	70.85	63.88
Total	27	65.17	70.85	63.85
SUB-TOTAL:				
Single Carrier	455	62.58	61.38	62.89
Multi-Carriers	594	63.46	65.67	62.46
Total	1,049	63.30	65.11	62.55

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
PITTSBURGH (AL-77.6%)				
Single Carrier	46	59.90	60.67	46.52
Multi-Carriers	14	61.82	66.10	56.91
Total	60	60.84	62.59	55.79
Sub-Total:				
Single Carrier	46	59.90	60.67	46.52
Multi-Carriers	14	61.82	66.10	56.91
Total	60	60.84	62.59	55.79
60 to 74.99% Share:				
CHARLOTTE (PI-74.4%)				
Single Carrier	30	59.69	60.42	45.84
Multi-Carriers	17	54.09	57.48	50.25
Total	47	56.45	59.14	49.93
SALT LAKE CITY (WA-70.6%)				
Single Carrier	26	54.52	55.12	47.94
Multi-Carriers	11	54.88	57.39	52.81
Total	37	54.70	55.86	52.15
Sub-Total:				
Single Carrier	56	56.47	57.16	47.38
Multi-Carriers	28	54.52	57.43	51.73
Total	84	55.44	57.26	51.25

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
50 to 59.99 % Share:				
ST. LOUIS (TW-58.1%)				
Single Carrier	36	54.21	54.31	53.38
Multi-Carriers	33	56.87	59.15	54.18
Total	69	55.76	56.53	54.07
BURBANK (PS-52.5%)				
Single Carrier	7	58.24	54.06	59.35
Multi-Carriers	5	49.57	51.39	47.20
Total	12	52.87	51.88	53.62
ATLANTA (DL-52.2%)				
Single Carrier	38	55.81	56.74	54.71
Multi-Carriers	60	53.48	52.68	54.29
Total	98	53.71	53.11	54.33
DALLAS (AA-50.2%)				
Single Carrier	30	68.29	70.82	62.61
Multi-Carriers	58	55.80	63.85	48.43
Total	88	57.84	65.39	49.89
Sub-Total:				
Single Carrier	111	59.67	60.24	58.16
Multi-Carriers	156	54.88	58.23	51.57
Total	267	55.79	58.74	52.32

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
MINNEAPOLIS-ST. PAUL (NW-47.3%)				
Single Carrier	16	55.87	54.83	57.23
Multi-Carriers	31	55.14	57.03	52.90
Total	47	55.21	56.78	53.35
MEMPHIS (RC-46.0%)				
Single Carrier	19	54.60	56.75	51.74
Multi-Carriers	19	43.98	43.99	43.96
Total	38	47.16	48.75	45.81
FT. LAUDERDALE (DL-44.2%)				
Single Carrier	5	66.06	65.02	67.03
Multi-Carriers	18	59.89	56.40	62.15
Total	23	60.21	57.47	62.76
DENVER (UA-41.5%)				
Single Carrier	23	57.14	56.50	57.79
Multi-Carriers	54	61.62	59.80	63.19
Total	77	61.19	59.46	62.71
CHICAGO (UA-43.1%)				
Single Carrier	36	64.86	73.46	46.42
Multi-Carriers	71	57.85	60.07	56.09
Total	107	58.71	62.44	55.38
MIAMI (EA-43.1%)				
Single Carrier	12	53.96	56.43	49.21
Multi-Carriers	22	56.26	60.43	52.87
Total	34	56.06	59.94	52.67

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
LONG BEACH (SI-40.3%)				
Single Carrier	3	48.02		48.02
Multi-Carriers	2	69.19	73.63	60.44
Total	5	62.86	73.63	53.50
SAN FRANCISCO (UA-37.1%)				
Single Carrier	16	59.14	56.49	61.37
Multi-Carriers	30	62.01	66.72	59.85
Total	46	61.67	65.03	60.00
ORANGE COUNTY (DL-34.2%)				
Single Carrier	5	68.07	74.73	66.88
Multi-Carriers	4	63.97	75.41	58.65
Total	9	66.15	75.17	63.47
SAN DIEGO (PS-27.4%)				
Single Carrier	10	57.02	59.29	56.30
Multi-Carriers	10	61.83	65.05	61.43
Total	20	60.86	63.02	60.52
ORLANDO (EA-26.6%)				
Single Carrier	12	56.26	61.29	55.53
Multi-Carriers	23	58.13	59.48	57.59
Total	35	57.78	59.65	57.13
SEATTLE (UA-26.5%)				
Single Carrier	9	55.95	61.28	55.20
Multi-Carriers	17	57.39	65.02	54.44
Total	26	57.24	64.83	54.54

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
DETROIT (RC-26.4%)				
Single Carrier	12	61.78	61.67	61.83
Multi-Carriers	31	51.91	49.31	52.76
Total	43	52.96	51.13	53.59
HONOLULU (HA-25.2%)				
Single Carrier	4	81.10	60.28	81.14
Multi-Carriers	8	72.49	62.61	72.79
Total	12	74.37	62.57	74.66
OAKLAND (PS-24.9%)				
Single Carrier	8	61.31	59.74	61.41
Multi-Carriers	13	52.61	52.24	52.67
Total	21	57.00	54.47	57.29
PHILADELPHIA (AL-24.5%)				
Single Carrier	15	51.57	53.64	50.71
Multi-Carriers	24	55.82	59.37	55.46
Total	39	55.13	57.20	54.84
HOUSTON (WN-23.9%)				
Single Carrier	27	61.44	59.96	61.82
Multi-Carriers	34	56.30	58.17	56.15
Total	61	57.51	59.00	57.34
TAMPA/ST. PETERSBURG (DL-23.5%)				
Single Carrier	13	56.20	38.61	58.50
Multi-Carriers	26	56.57	51.94	58.39
Total	39	56.50	50.76	58.41

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
		Total	Carrier	
			Hub-Dominant	Other
Less Than 50% Share:				
BOSTON (EA-22.7%)				
Single Carrier	12	54.34	70.26	54.33
Multi-Carriers	26	60.03	59.86	60.07
Total	38	59.24	59.87	59.13
PHOENIX (RC-20.9%)				
Single Carrier	13	62.12	61.00	62.40
Multi-Carriers	25	58.01	57.23	58.18
Total	38	58.75	57.95	58.94
WASHINGTON, D.C. (EA-20.6%)				
Single Carrier	29	51.60	52.96	51.57
Multi-Carriers	32	58.98	60.50	58.64
Total	61	57.79	60.33	57.33
KANSAS CITY (TW-19.8%)				
Single Carrier	13	55.38	46.85	55.64
Multi-Carriers	27	52.87	53.14	52.78
Total	40	53.34	52.96	53.43
LAS VEGAS (UA-16.6%)				
Single Carrier	9	64.50	72.98	62.31
Multi-Carriers	21	62.91	69.18	61.35
Total	30	63.14	69.73	61.48
LOS ANGELES (WA-13.9%)				
Single Carrier	14	63.79	76.55	57.85
Multi-Carriers	34	61.92	64.75	60.98
Total	48	62.09	66.09	60.71

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT CARRIER SHARE OF ENPLANEMENTS
(Year Ended September, 1984)

Dominant Carrier %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
NEW YORK (EA-19.9%)				
Single Carrier	38	61.85	63.09	61.78
Multi-Carriers	88	58.65	60.62	58.29
Total	126	59.07	60.73	58.79
Sub-Total:				
Single Carrier	373	61.21	63.83	60.28
Multi-Carriers	690	59.39	60.65	58.91
Total	1,063	59.65	61.08	59.11

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
BURBANK (RW-78.8%)				
Single Carrier	6	69.06	66.67	71.93
Total	6	69.06	66.67	71.93
ORANGE COUNTY (RW-100.0%)				
Single Carrier	4	74.76	74.76	
Total	4	74.76	74.76	
Sub-Total:				
Single Carrier	10	71.40	71.21	71.93
Total	10	71.40	71.21	71.93
60 to 74.99% Share:				
CHARLOTTE (EA-73.2%)				
Single Carrier	18	67.97	69.46	57.13
Multi-Carriers	5	62.20	67.00	57.27
Total	23	66.49	69.05	57.21
Sub-Total:				
Single Carrier	18	67.97	69.46	57.13
Multi-Carriers	5	62.20	67.00	57.27
Total	23	66.49	69.05	57.21
50 to 59.99% Share:				
ATLANTA (DL-50.8%)				
Single Carrier	51	71.74	72.89	71.19
Multi-Carriers	50	64.11	64.97	63.02
Total	101	65.70	66.02	65.38
Sub-Total:				
Single Carrier	51	71.74	72.89	71.19
Multi-Carriers	50	64.11	64.97	63.02
Total	101	65.70	66.02	65.38

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
PITTSBURGH (AL-49.9%)				
Single Carrier	24	68.34	67.19	69.29
Multi-Carriers	31	64.30	66.50	63.28
Total	55	65.17	66.70	64.37
OAKLAND (UA-48.2%)				
Single Carrier	6	60.22	62.65	52.32
Multi-Carriers	6	53.15	57.31	51.74
Total	12	56.99	61.49	51.90
ORLANDO (EA-46.2%)				
Single Carrier	5	62.33	71.64	61.02
Multi-Carriers	23	62.01	66.11	57.44
Total	28	62.04	66.23	57.99
FT. LAUDERDALE (DL-45.3%)				
Single Carrier	4	54.58	66.73	51.86
Multi-Carriers	18	62.18	66.70	58.65
Total	22	61.70	66.70	58.04
HONOLULU (UA-43.4%)				
Single Carrier	5	75.33	76.97	72.41
Multi-Carriers	6	75.83	80.83	73.28
Total	11	75.72	79.47	73.16
ST. LOUIS (TW-42.6%)				
Single Carrier	28	65.97	67.11	64.66
Multi-Carriers	31	63.81	65.23	62.43
Total	59	64.47	65.84	63.07
MEMPHIS (DL-42.1%)				
Single Carrier	14	63.74	68.62	51.94
Multi-Carriers	24	58.33	63.43	57.21
Total	38	59.83	66.55	56.58

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NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
		Total	Carrier	
			Hub-Dominant	Other
Less Than 50% Share:				
MIAMI (EA-42.1%)				
Single Carrier	12	67.94	74.22	60.92
Multi-Carriers	26	60.11	67.65	56.06
Total	38	60.47	68.08	56.22
SALT LAKE CITY (WA-41.5%)				
Single Carrier	20	63.86	62.77	65.17
Multi-Carriers	13	62.44	64.03	61.85
Total	33	62.85	63.46	62.52
MINNEAPOLIS-ST. PAUL (NW-39.4%)				
Single Carrier	15	62.79	65.00	60.82
Multi-Carriers	29	55.52	52.51	58.21
Total	44	57.42	55.77	58.90
SAN FRANCISCO (UA-37.9%)				
Single Carrier	19	69.13	69.89	67.57
Multi-Carriers	35	64.17	66.41	63.18
Total	54	64.38	66.72	63.27
DALLAS (BN-35.5%)				
Single Carrier	30	68.75	66.53	70.65
Multi-Carriers	38	62.51	59.41	63.97
Total	68	63.73	61.26	65.05
KANSAS CITY (TW-33.0%)				
Single Carrier	18	58.53	65.21	55.37
Multi-Carriers	21	58.06	58.96	57.54
Total	39	58.15	60.10	57.08
TAMPA/ST. PETERSBURG (DL-32.7%)				
Single Carrier	10	65.85	74.56	64.20
Multi-Carriers	29	65.10	68.79	63.37
Total	39	65.21	69.23	63.51

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
SAN DIEGO (AA-30.8%)				
Single Carrier	6	66.03	69.86	62.21
Multi-Carriers	11	62.86	66.25	61.14
Total	17	63.37	67.05	61.27
CHICAGO (UA-28.3%)				
Single Carrier	50	70.06	73.49	65.08
Multi-Carriers	68	63.56	63.92	63.41
Total	113	64.47	66.25	63.55
SEATTLE (UA-28.2%)				
Single Carrier	7	68.67	13.74	68.68
Multi-Carriers	22	60.81	65.22	59.12
Total	29	61.19	65.22	59.75
NEW YORK (EA-27.8%)				
Single Carrier	49	66.58	69.77	65.62
Multi-Carriers	77	62.88	64.79	62.44
Total	126	63.30	65.47	62.78
DENVER (UA-26.9%)				
Single Carrier	28	65.45	67.48	62.70
Multi-Carriers	45	63.20	64.85	62.46
Total	73	63.45	65.35	62.48
PHOENIX (AA-26.3%)				
Single Carrier	13	64.19	68.08	63.14
Multi-Carriers	21	65.79	70.97	62.47
Total	34	65.54	70.71	62.60
LAS VEGAS (WA-25.7%)				
Single Carrier	19	69.29	67.55	70.28
Multi-Carriers	15	67.32	67.25	67.32
Total	34	67.91	67.49	67.98

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
INDIVIDUAL HUB DATA WITH HUBS SEGREGATED
BASED ON DOMINANT SHARE OF ENPLANEMENTS
(Year Ended September, 1979)

Dominant Carriers %/ Hub/Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
WASHINGTON, D.C. (EA-25.7%)				
Single Carrier	32	63.07	70.98	61.91
Multi-Carriers	44	63.09	71.33	61.43
Total	76	63.09	71.28	61.52
BOSTON (EA-25.2%)				
Single Carrier	18	59.92	66.29	56.36
Multi-Carriers	26	63.91	67.25	63.37
Total	44	63.52	67.04	62.85
LOS ANGELES (UA-24.5%)				
Single Carrier	19	64.82	65.39	64.49
Multi-Carriers	37	64.93	65.91	64.62
Total	56	64.92	65.87	64.61
PHILADELPHIA (AL-23.4%)				
Single Carrier	18	65.01	65.79	64.79
Multi-Carriers	27	60.32	73.77	59.28
Total	45	61.23	70.42	60.22
DETROIT (AA-20.8%)				
Single Carrier	11	62.05	69.67	53.46
Multi-Carriers	38	60.04	66.42	58.40
Total	49	60.26	67.21	58.06
Sub-Total:				
Single Carrier	503	66.35	69.33	64.22
Multi-Carriers	784	63.32	65.51	62.49
Total	1,287	63.73	66.24	62.68

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

Domestic Large Hubs
Selected Load Factor Differentials
Based on Dominant Carrier Share
(Year Ended September, 1988)

	Hub Dominant Carrier—Monopoly vs. Competitive LF	Hub Dominant Total vs. Other Total	Hub Dominant Competitive vs. Other Competitive
75% or More Share:			
Charlotte (PI-91.6%)	5.87 pts.	11.57 pts.	4.06 pts.
Pittsburgh (AL-85.4%)	7.49	20.41	13.86
Memphis (NW-83.6%)	7.71	10.00	3.74
St. Louis (TW-82.8%)	4.94	6.90	2.96
Salt Lake City (DL-79.3%)	1.55	3.41	1.83
Minneapolis (NW-77.6%)	7.34	6.40	(0.37)
Sub Total	5.42	9.27	4.44
60 to 74.9% Share:			
-0-			
50 to 59.99% Share:			
Detroit (NW-57.7%)	(1.09)	2.12	2.16
Atlanta (DL-57.1%)	0.24	0.10	0.25
Dallas (AA-54.9%)	(1.32)	8.87	8.93
Houston (CO-50.5%)	2.36	1.71	0.88
Sub Total	(1.90)	4.04	4.40
Less Than 50% Share:			
Chicago (UA-46.2%)	0.16	9.42	9.20
Phoenix (HP-44.4%)	0.03	(8.81)	(8.28)
Orange County (AA-41.9%)	14.48	10.16	8.06
Denver (UA-43.3%)	(8.76)	9.66	9.69
Miami (EA-40.6%)	(21.56)	3.65	4.13
Philadelphia (AL-38.7%)	5.28	1.39	(0.17)
Ft. Lauderdale (DL-35.3%)	4.28	(2.82)	(2.10)
San Francisco (UA-34.8%)	(8.34)	5.55	6.93
Honolulu (HA-34.2%)	(0.62)	(0.10)	(0.17)
Las Vegas (HP-33.6%)	1.76	(12.11)	(13.32)
Kansas City (EA-31.0%)	(6.46)	5.75	6.12
Long Beach (AS-30.5%)	3.11	(10.53)	(11.85)
Seattle (UA-25.6%)	(6.94)	8.39	9.46
Orlando (DL-24.9%)	6.37	(7.24)	(6.77)
Burbank (PS-23.8%)	0	5.70	8.79
Washington (UA-21.7%)	(19.05)	4.67	5.80
Tampa (EA-20.7%)	(2.15)	(0.79)	(0.98)
Oakland (AA-20.1%)	7.90	(3.79)	(5.77)
Boston (EA-18.8%)	0.36	(0.61)	(0.39)
New York (CO-18.6%)	1.49	(3.56)	(4.43)
Los Angeles (UA-18.0%)	(8.92)	2.22	3.06
San Diego (AA-13.9%)	29.15	7.00	6.97
Sub Total	(4.29)	2.56	3.21

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

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City-Pair Concentration
at Domestic Large Hubs
Grouped by the Hub Dominant Carrier's Share of Enplanements
Years Ended September 1988, 1984, and 1979

Hub-Dominant Carrier Share and Number of Competitors	Number of Markets			Percent Distribution		
	1988	1984	1979	1988	1984	1979
75% or More Share:						
Single Carrier	307	46	10	17	3	1/
Two Carriers	56	13		3	1	
Three Carriers	19	1		1	1/	
Four or More Carriers	0	0		0	0	
Multi-Carrier Total	75	14	0	4	1	
Total	382	60	10	21	4	1/
60 to 74.9% Share:						
Single Carrier		56	18		4	1
Two Carriers		22	5		1	1/
Three Carriers		5	0		1/	—
Four or More Carriers		1	0		1/	—
Multi-Carrier Total		28	5		2	1/
Total	0	84	23	0	6	2
50 to 59.9 % Share:						
Single Carrier	178	111	51	10	8	4
Two Carriers	118	117	45	7	8	3
Three Carriers	34	34	5	2	2	1/
Four or More Carriers	2	5	0	1/	1/	—
Multi-Carrier Total	154	156	50	9	10	4
Total	332	267	101	19	18	7
Less Than 40% Share:						
Single Carrier	455	373	503	26	25	35
Two Carriers	399	465	615	23	32	43
Three Carriers	145	162	140	8	11	10
Four or More Carriers	50	63	29	3	4	2
Multi-Carrier Total	594	690	784	34	47	55
Total	1,049	1,063	1,287	60	72	91
Total City-Pair Markets	1,763	1,475	1,421	100	100	100

1/ Less than 0.5 percent.

SOURCE: ER-586 Service Segment and T-9 Data for Years Ended September 1988, 1984, and 1979.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
50 - 100 (Enpl's per day)				
Single Carrier	55	54.65	54.70	46.58
Total	55	54.65	54.70	46.58
101 - 200				
Single Carrier	100	56.78	56.70	59.43
Two Carriers	2	35.86	39.33	32.96
Multi-Carriers	2	35.86	39.33	32.96
Total	102	56.49	56.59	53.78
201 - 500				
Single Carrier	116	64.57	64.92	43.96
Two Carriers	34	53.55	56.22	49.56
Three Carriers	4	54.36	55.36	53.67
Multi-Carriers	38	53.68	56.11	50.50
Total	154	61.56	63.33	49.90
501 or More				
Single Carrier	36	65.98	66.32	31.22
Two Carriers	20	58.19	60.94	54.59
Three Carriers	15	55.24	55.90	54.80
Multi-Carriers	35	56.71	58.85	54.71
Total	71	61.61	64.06	54.23
Total				
Single Carrier	307	62.83	63.08	47.07
Two Carriers	56	55.74	58.43	51.99
Three Carriers	19	55.10	55.81	54.62
Multi-Carriers	75	55.49	57.66	53.22
Total	382	60.57	62.06	52.79
Hubs : CLT MEM MSP PIT STL SLC				

60 to 74.9% Share:

-0-

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

Dominant Carrier %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
50 to 59.99% Share:				
50 - 100 (Enpl's per day)				
Single Carrier	24	56.62	55.41	60.89
Two Carriers	1	49.20	47.29	49.59
Multi-Carriers	1	49.20	47.29	49.59
Total	25	56.25	55.32	59.00
101 - 200				
Single Carrier	70	58.05	58.66	56.46
Two Carriers	4	50.94	50.11	51.53
Multi-Carriers	4	50.94	50.11	51.53
Total	74	57.52	58.28	55.77
201 - 500				
Single Carrier	64	59.08	60.39	55.64
Two Carriers	32	57.68	59.39	55.76
Three Carriers	7	60.50	59.46	61.35
Multi-Carriers	39	58.06	59.40	56.64
Total	103	58.59	60.00	56.26
501 or More				
Single Carrier	20	63.20	64.55	58.24
Two Carriers	81	62.00	64.00	59.48
Three Carriers	27	59.54	62.06	57.39
Four Carriers	2	58.87	59.23	58.61
Multi-Carriers	110	61.24	63.43	58.81
Total	130	61.45	63.59	58.78
Total				
Single Carrier	178	59.85	60.94	56.71
Two Carriers	118	61.20	63.20	58.75
Three Carriers	34	59.61	61.90	57.67
Four Carriers	2	58.87	59.23	58.61
Multi-Carriers	154	60.74	62.84	58.44
Total	332	60.51	62.20	58.16

Hubs : ATL DFW DAL DTW DET IAH HOU

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1988)

Dominant Carrier %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
50-100 (Enpl's per day)				
Single Carrier	112	58.65	58.61	58.66
Two Carriers	17	48.58	51.77	45.18
Three Carriers	3	40.34	39.18	40.62
Multi-Carriers	20	47.71	51.23	44.42
Total	132	57.25	57.27	57.23
101 - 200				
Single Carrier	145	60.94	61.86	60.58
Two Carriers	61	59.60	62.17	58.31
Three Carriers	7	46.01	47.04	45.74
Four or More	1	41.43	44.31	40.55
Multi-Carriers	69	58.84	61.63	57.50
Total	214	60.30	61.78	59.69
201 - 500				
Single Carrier	161	63.27	62.09	63.58
Two Carriers	152	60.45	61.19	60.09
Three Carriers	49	58.01	55.31	58.84
Four or More	6	55.35	32.14	57.24
Multi-Carriers	207	59.84	60.10	59.72
Total	368	61.19	60.72	61.37
501 or More				
Single Carrier	37	64.54	60.49	64.88
Two Carriers	169	64.83	67.85	62.83
Three Carriers	86	62.91	64.72	62.22
Four or More	43	64.88	66.17	64.61
Multi-Carriers	298	64.36	66.93	63.18
Total	335	64.37	66.83	63.31
Total				
Single Carrier	455	62.58	61.38	62.89
Two Carriers	399	63.60	66.29	61.93
Three Carriers	145	62.11	63.50	61.60
Four or More	50	64.73	65.94	64.48
Multi-Carriers	594	63.46	65.67	62.46
Total	1,049	63.30	65.11	62.55

Hubs : BOS BUR MDW ORD DEN FLL HNL MCI LAS LGB LAX MIA
: LGA JFK EWR OCR OAK MCO PHL PHX SAN SFO SNA SEA
: TPA PIE IAD DCA

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1988.

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
50 - 100 (Enpl's per day)				
Single Carrier	7	52.53	48.80	60.92
Total	7	52.53	48.80	60.92
101 - 200				
Single Carrier	15	53.98	53.98	60.88
Two Carriers	2	47.33	50.72	31.72
Multi-Carriers	2	47.33	50.72	31.72
Total	17	52.70	53.44	32.23
201 - 500				
Single Carrier	22	62.86	63.71	41.45
Two Carriers	8	63.42	68.18	55.74
Three Carriers	1	61.23	72.45	56.57
Multi-Carriers	9	63.33	68.27	55.80
Total	31	63.09	65.44	54.49
501 or More				
Single Carrier	2	58.59	61.82	28.98
Two Carriers	3	61.16	64.49	59.38
Multi-Carriers	3	61.16	64.49	59.38
Total	5	60.52	63.26	57.93
Total				
Single Carrier	46	59.90	60.67	46.52
Two Carriers	13	61.84	66.01	56.93
Three Carriers	1	61.23	72.45	56.57
Multi-Carriers	14	61.82	66.10	56.91
Total	60	60.84	62.59	55.79
Hub : PIT				

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
60 to 74.99% Share:				
50 - 100 (Enpl's per day)				
Single Carrier	14	53.43	53.83	49.99
Total	13	53.43	53.83	49.99
101 - 200				
Single Carrier	23	53.69	54.26	49.39
Two Carriers	3	54.00	60.98	42.67
Multi-Carriers	3	54.00	60.98	42.67
Total	26	53.72	54.62	48.01
201 - 500				
Single Carrier	18	60.47	61.13	33.17
Two Carriers	16	52.84	55.07	49.35
Three Carriers	2	50.85	54.84	48.27
Multi-Carriers	18	52.49	55.05	49.08
Total	36	55.78	58.36	48.49
501 or More				
Single Carrier	1	55.44	55.44	54.55
Two Carriers	3	58.85	58.12	59.98
Three Carriers	3	57.28	67.49	52.17
Four Carriers	1	52.21	45.64	53.91
Multi-Carriers	7	56.76	60.88	54.11
Total	8	56.61	59.54	54.11
Total				
Single Carrier	56	56.47	57.16	47.38
Two Carriers	22	54.32	56.09	52.56
Three Carriers	5	55.52	63.60	51.17
Four Carriers	1	52.21	45.64	53.91
Multi-Carriers	28	54.52	57.43	51.73
Total	84	55.44	57.26	51.25

Hubs : CLT SLC

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
		Total	Carrier	
			Hub-Dominant	Other
50 to 59.99% Share:				
50 - 100 (Enpl's per day)				
Single Carrier	30	50.95	51.64	49.77
Two Carriers	2	36.86	32.74	39.98
Multi-Carriers	2	36.86	32.74	39.98
Total	32	48.06	48.81	47.00
101 - 200				
Single Carrier	34	57.48	57.72	57.15
Two Carriers	9	47.89	50.25	45.50
Multi-Carriers	9	47.89	50.25	45.50
Total	43	54.36	55.51	52.95
201 - 500				
Single Carrier	39	60.07	59.64	60.15
Two Carriers	47	56.41	59.68	52.53
Three Carriers	8	49.70	49.58	49.77
Multi-Carriers	55	55.24	58.34	51.92
Total	94	56.76	58.87	53.66
501 or More				
Single Carrier	8	63.86	64.67	60.15
Two Carriers	59	55.85	57.72	53.75
Three Carriers	26	54.64	59.96	50.30
Four Carriers	5	52.81	59.96	47.16
Multi-Carriers	90	55.16	58.64	51.78
Total	98	55.86	59.42	52.04
Total				
Single Carrier	111	59.67	60.24	58.16
Two Carriers	117	55.49	57.77	52.91
Three Carriers	34	54.10	58.96	50.24
Four Carriers	5	52.10	59.96	47.16
Multi-Carriers	156	54.88	58.23	51.57
Total	267	55.79	58.74	52.32

Hubs : ALT BUR DFW DAL STL

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER'S SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1984)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
Less Than 50% Share:				
50 - 100 (Enpl's per day)				
Single Carrier	123	52.42	55.52	51.22
Two Carriers	26	49.74	45.49	51.54
Three Carriers	6	31.80	3.36	32.88
Multi-Carriers	32	48.89	45.23	50.35
Total	155	51.65	53.24	51.03
101 - 200				
Single Carrier	149	57.28	60.52	55.70
Two Carriers	105	52.25	53.09	51.88
Three Carriers	16	52.93	53.74	52.54
Four or More	3	32.17	16.51	36.77
Multi-Carriers	124	52.23	53.03	51.88
Total	273	54.84	57.04	53.83
201 - 500				
Single Carrier	78	61.05	63.85	60.12
Two Carriers	188	58.44	59.28	58.08
Three Carriers	44	55.05	54.94	55.08
Four or More	12	52.78	53.93	52.57
Multi-Carriers	244	57.61	58.57	57.25
Total	322	58.29	59.53	57.83
501 or More				
Single Carrier	23	70.72	77.92	69.16
Two Carriers	146	59.89	61.89	58.88
Three Carriers	96	61.83	62.48	61.61
Four Carriers	48	59.53	61.08	59.18
Multi-Carriers	290	60.46	61.95	59.90
Total	313	61.00	62.51	60.45
Total				
Single Carrier	373	61.21	63.83	60.28
Two Carriers	465	58.70	60.29	57.95
Three Carriers	162	60.73	61.43	60.49
Four Carriers	63	59.21	60.65	58.91
Multi-Carriers	690	59.39	60.65	58.91
Total	1,063	59.65	61.08	59.11

Hubs : BOS ORD MDW DEN DTW FLL HNL HOU IAH MCI LAS LGB
: LAX MEM MIA MSP EWR JFK LGA OAK MCO PHL PHX SAN
: SFO SNA SEA TPA PIE IAD DCA

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1984.

Table II-31
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NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
75% or More Share:				
50 - 100 (Enpl's per day)				
Single Carrier	2	71.36	78.85	61.01
Total	2	71.36	78.85	61.01
101 - 200				
Single Carrier	4	69.24	70.39	45.02
Total	4	69.24	70.39	45.02
201 - 500				
Single Carrier	4	72.70	71.20	75.08
Total	4	72.70	71.20	75.08
Total				
Single Carrier	10	71.40	71.21	71.93
Total	10	71.40	71.21	71.93
Hubs: BUR SNA				
60 to 74.99% Share:				
Single Carrier	7	66.23	69.07	56.28
Two Carriers	2	61.78	72.70	48.08
Multi-Carriers	2	61.78	72.70	48.08
Total	9	64.82	69.97	52.35
101 - 200				
Single Carrier	2	61.56	57.61	61.57
Two Carriers	1	52.11	50.21	61.28
Multi-Carriers	1	52.11	50.21	61.28
Total	3	58.97	50.24	61.55
201 - 500				
Single Carrier	9	68.99	69.53	26.06
Two Carriers	1	50.76	61.70	41.90
Multi-Carriers	1	50.76	61.70	41.90
Total	10	68.50	69.43	34.77

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
501 or More				
Two Carries	1	64.73	68.83	61.32
Multi-Carriers	1	64.73	68.83	61.32
Total	1	64.73	68.83	61.32
Total				
Single Carrier	18	67.97	69.46	57.13
Two Carriers	5	62.20	6700	57.27
Multi-Carriers	5	62.20	67.00	57.27
Total	23	66.49	69.05	57.21
Hubs: CLT				
50 to 59.99 % Share:				
50 - 100 (Enpl's per day)				
Single Carrier	10	64.54	67.14	64.24
Two Carriers	2	62.15	43.72	66.19
Three Carriers	1	70.06	76.17	66.14
Multi-Carriers	3	63.87	55.91	66.18
Total	13	64.38	62.49	64.67
101 - 200				
Single Carrier	12	68.10	69.61	67.54
Two Carriers	3	61.04	69.61	61.04
Three Carriers	1	65.04	66.15	63.91
Multi-Carriers	4	62.67	66.15	61.77
Total	16	67.34	69.22	66.68
201 - 500				
Single Carrier	17	72.08	71.97	72.15
Two Carriers	7	65.21	63.87	65.57
Multi Carriers	7	65.21	63.87	65.57
Total	24	69.36	69.84	69.14

NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
501 or More				
Single Carrier	12	74.03	75.08	73.52
Two Carriers	33	64.48	65.23	63.38
Three Carriers	3	58.04	60.90	55.58
Multi-Carriers	36	64.06	65.01	62.73
Total	48	65.16	65.67	64.52
Total				
Single Carrier	51	71.74	72.89	71.19
Two Carriers	45	64.49	65.17	63.60
Three Carriers	5	58.60	61.41	56.18
Multi-Carriers	50	64.11	64.97	63.02
Total	101	65.70	66.02	65.38
Hubs: ATL				
Less than 50% Share:				
50 - 100 (Enpl's per day)				
Single Carrier	214	61.12	65.60	59.41
Two Carriers	68	53.72	55.27	53.29
Three Carriers	9	40.65	40.24	40.66
Four or More	2	19.11	16.15	20.33
Multi-Carriers	79	51.98	55.08	51.24
Total	293	58.31	63.12	56.70
101 - 200				
Single Carrier	163	64.23	66.15	62.78
Two Carriers	130	59.18	64.13	57.61
Three Carriers	17	47.71	38.99	49.16
Four or More	2	36.46	33.35	36.95
Multi-Carriers	149	58.26	62.96	56.83
Total	312	60.78	64.80	58.92
201 - 500				
Single Carrier	111	67.28	67.47	67.17
Two Carriers	252	62.45	64.71	61.56
Three Carriers	30	56.16	57.34	55.93
Four or More	7	42.89	43.19	42.82
Multi-Carriers	289	61.69	64.16	60.78
Total	400	62.70	64.93	61.80

Table II-31
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NONSTOP SEGMENT LOAD FACTORS
DOMESTIC LARGE HUBS
GROUPED BY THE HUB DOMINANT CARRIER SHARE OF ENPLANEMENTS
AND SHOWN SEPARATELY BY CITY-PAIR DENSITY
(Year Ended September, 1979)

Dominant Carriers %/ Density	Number of Markets	Load Factor		
			Carrier	
		Total	Hub-Dominant	Other
501 or More				
Single Carrier	15	75.43	77.23	71.35
Two Carriers	165	63.80	65.82	62.91
Three Carriers	84	64.10	64.11	62.91
Four or More	18	71.42	76.49	68.95
Multi-Carriers	267	64.64	66.34	63.97
Total	282	65.02	67.23	64.08
Total				
Single Carrier	503	66.35	69.33	64.22
Two Carriers	615	62.68	65.12	61.69
Three Carriers	140	63.11	63.56	62.97
Four or More	29	70.41	75.77	67.84
Multi-Carriers	184	63.32	65.51	62.49
Total	1,287	63.73	66.24	62.68

Hubs: BOS ORD MDW DFW DEN DTW FLL HNL HOU IAH MCI LAS LAX MEM MIA MSP LGA EWR JFK OAK MCO PHL PHX PIT STL SLC SAN SFO SEA TPA IAD DCA

SOURCE: ER-586 Service Segment and T-9 Data for Year Ended September, 1979.

NONSTOP LOAD FACTORS AT HIGHLY CONCENTRATED HUBS FOR THE THIRD QUARTER OF 1984, 1986, AND 1988.

Table II-32

Objective: To determine how closely load factor changes can be tied to changes in concentration. The basis for this evaluation is third quarter load factors during the period when hub concentration greatly intensified, from 1984 through 1988, for each large and medium hub where a single carrier accounted for 75 percent or more of the hub's enplanements.

Data Sources: DOT's ER-586 service segment and schedule T-9 data.

Conclusions and Interpretation: Pittsburgh was highly concentrated throughout this period, and although USAir had a significant load factor advantage throughout, that advantage increased over time as USAir's dominance increased.

At Charlotte, Piedmont's load factor advantage increased dramatically in 1986, when its enplanements share exceeded 75 percent for the first time. Its load factor advantage dropped somewhat in 1988, but that appears to reflect that weaker, non-hubbing competitors exited a number of markets.

At Memphis, which was concentrated in 1984, moderately concentrated in 1986 and, highly concentrated in 1988, Republic/ Northwest's load factor advantage quickly grew even though competitive load factors held up.

At Minneapolis, the dominant carrier's load factor advantage jumped after Minneapolis became a highly concentrated hub.

At St. Louis and Salt Lake City, where the changes in concentration are not quite as dramatic, the connection with changes in load factors are not as clear. Nevertheless, through all three periods at each hub the dominant carrier had a distinct load factor advantage.

At Cincinnati, where concentration decreased from 1984 to 1986, the dominant carrier's load factors went from higher than competitors' load factors to lower. Then in 1988, after Cincinnati became a highly concentrated hub, Delta's load factors far exceeded those of its competitors.

Finally, at Dayton, Piedmont's load factor advantage jumped in 1988, when its concentration exceeded 75 percent, not because its load factors increased, but because its competitors'load factors dropped substantially.

These comparisons show a strong connection between hub dominance and load factor differentials between the hub-dominant carriers and other carriers.

Also, these comparisons show a strong connection between degree of hub dominance and average load factors. At six of the eight hubs, hub-dominant carrier load factors increased as their dominance increased. Similarly, the dominant carriers' load factor tended to increase in monopoly markets and decrease in competitive markets. On average, this pushed total average load factors up because of the increasing number of monopoly points served and the decreasing number of competitive points served.

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

Hub/Quarter/ Hub-Dominant Share	Number of Markets	Load Factor			Load Factor Differentials	
			Carrier			
		Total	Hub-Dominant	Other	Hub-Dominant: Monopoly vs. Competitive	Hub-Dominant Total vs. Other Total
Pittsburgh						
3rd Qtr. 1988 (75% or more):						
Single Carrier	58	72.10%	72.31%	19.58%	9.12 pts.	
Multi-Carriers	17	57.17	63.19	50.34		
Total	75	66.43	70.07	49.92		20.15 pts.
3rd Qtr. 1986 (75% or more):						
Single Carrier	55	68.36	68.78	47.80	(0.58)	
Multi-Carriers	12	62.93	69.36	56.97		
Total	67	66.41	68.91	56.38		12.53
3rd Qtr. 1984 (75% or more):						
Single Carrier	49	62.50	63.22	39.89	(0.25)	
Multi-Carriers	12	59.16	63.47	55.77		
Total	61	61.18	63.28	54.53		8.75
Charlotte						
3rd Qtr. 1988 (75% or more):						
Single Carrier	52	67.56	67.56	71.91	4.6	
Multi-Carriers	9	60.04	62.16	56.57		
Total	61	65.73	66.66	56.59		10.07
3rd Qtr. 1986 (75% or more):						
Single Carrier	33	65.81	66.06	41.93	3.15	
Multi-Carriers	20	58.68	62.91	52.44		
Total	53	61.56	64.57	52.26		12.31
3rd Qtr. 1984 (60 to 74.9%):						
Single Carrier	32	56.51	57.09	48.07	2.27	
Multi-Carriers	16	53.23	54.82	51.54		
Total	48	54.84	56.27	51.15		5.12

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

Hub/Quarter/ Hub-Dominant Share	Number of Markets	Load Factor			Load Factor Differentials	
			Carrier			
		Total	Hub-Dominant	Other	Hub-Dominant: Monopoly vs. Competitive	Hub-Dominar Total vs. Other Total
Memphis						
3rd Qtr. 1988 (75% or more):						
Single Carrier	49	63.77%	63.84%	61.29%	8.87 pts.	
Multi-Carriers	10	51.11	54.97	48.58		
Total	59	61.19	63.00	50.41		12.59 pts
3rd Qtr. 1986 (60 to 74.9%):						
Single Carrier	30	55.28	55.75	45.96	(3.39)	
Multi-Carriers	18	51.96	59.14	45.84		
Total	48	53.70	56.79	45.85		10.94
3rd Qtr. 1984 (Less than 50%):						
Single Carrier	22	51.55	52.25	50.41	9.91	
Multi-Carriers	16	41.88	42.34	41.59		
Total	38	45.77	47.49	44.19		3.30
Minneapolis						
3rd Qtr. 1988 (75% or more):						
Single Carrier	54	68.05	68.45	56.40	7.04	
Multi-Carriers	14	62.23	61.41	62.78		
Total	68	66.40	67.45	61.98		5.47
3rd Qtr. 1986 (Less than 50%):						
Single Carrier	28	60.22	59.76	60.59	(2.38)	
Multi-Carriers	29	62.82	62.14	63.71		
Total	57	62.26	61.71	62.90		(1.19)
3rd Qtr. 1984 (Less than 50%):						
Single Carrier	20	57.08	58.73	54.00	2.79	
Multi-Carriers	29	55.14	55.94	54.24		
Total	49	55.45	56.47	54.21		2.26

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

Hub/Quarter/ Hub-Dominant Share	Number of Markets	Load Factor			Load Factor Differentials	
			Carrier			
		Total	Hub-Dominant	Other	Hub-Dominant: Monopoly vs. Competitive	Hub-Dominant Total vs. Other Total
St. Louis						
3rd Qtr. 1988 (75% or more):						
Single Carrier	57	65.75%	65.97%	36.70%	6.32 pts.	
Multi-Carriers	20	58.76	59.65	57.55		
Total	77	63.59	64.67	56.75		7.92 pts.
3rd Qtr. 1986 (50 to 59.9%):						
Single Carrier	37	65.83	66.90	52.97	5.40	
Multi-Carriers	35	59.01	61.50	56.24		
Total	72	62.09	64.69	55.85		8.84
3rd Qtr. 1984 (50 to 59.9%):						
Single Carrier	42	59.78	61.29	51.44	(0.29)	
Multi-Carriers	30	58.32	61.58	54.56		
Total	72	59.00	61.41	53.85		7.56
Salt Lake City						
3rd Qtr. 1988 (75% or more):						
Single Carrier	40	60.52	60.59	41.09	2.26	
Multi-Carriers	10	55.55	58.33	52.77		
Total	50	58.63	60.06	52.63		7.43
3rd Qtr. 1986 (75% or more):						
Single Carrier	33	61.89	62.84	45.20	(3.10)	
Multi-Carriers	10	61.75	65.94	57.56		
Total	43	61.82	63.81	56.16		7.65
3rd Qtr. 1984 (60 to 74.9%):						
Single Carrier	27	58.39	58.56	56.32	(2.00)	
Multi-Carriers	11	57.71	60.56	55.39		
Total	38	58.06	59.19	55.51		3.68

Nonstop Segment Load Factors
Highly Concentrated Domestic Large Hubs
(Third Quarters 1988, 1986, and 1984)

Hub/Quarter/ Hub-Dominant Share	Number of Markets	Load Factor: Total	Load Factor: Carrier: Hub-Dominant	Load Factor: Carrier: Other	Load Factor Differentials: Hub-Dominant: Monopoly vs. Competitive	Load Factor Differentials: Hub-Dominant Total vs. Other Total
Cincinnati						
3rd Qtr. 1988 (75% or more):						
Single Carrier	32	57.23%	57.54%	48.61%	4.59 pts.	
Multi-Carriers	16	50.55	52.95	47.75		
Total	48	55.14	56.61	47.87		8.74 pts.
3rd Qtr. 1986 (Less than 50%):						
Single Carrier	18	53.60	54.30	51.45	12.30	
Multi-Carriers	13	48.93	42.00	53.50		
Total	31	51.61	50.84	52.78		(1.94)
3rd Qtr. 1984 (50 to 59.9%):						
Single Carrier	18	51.31	51.01	52.72	8.83	
Multi-Carriers	12	43.10	42.18	43.69		
Total	30	48.41	49.19	46.84		2.35
Dayton						
3rd Qtr. 1988 (75% or more):						
Single Carrier	31	56.55	57.81	48.26	0.0	
Multi-Carriers	1	40.33	57.81	40.33		
Total	32	55.71	57.81	45.94		11.87
3rd Qtr. 1986 (60 to 74.9%):						
Single Carrier	26	57.67	57.98	55.81	2.49	
Multi-Carriers	9	52.56	55.49	50.58		
Total	35	56.54	57.69	53.00		4.69
3rd Qtr. 1984 (60 to 74.9%):						
Single Carrier	22	49.18	46.48	57.30	2.34	
Multi-Carriers	4	45.63	48.82	40.40		
Total	26	48.66	46.77	53.83		(7.06)

SOURCE: ER-586 Service Segment and T-9 Data for Quarter Ended September 30, 1988, 1986, and 1984.