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John H. Frederick

William J. Hudson

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## SOURCES OF FEEDER AIRLINE BUSINESS†

### PART I: PASSENGER TRAFFIC

BY JOHN H. FREDERICK AND WILLIAM J. HUDSON

That the present commercial air transportation system in the United States is inadequate must be the fundamental assumption for any representation looking toward the inauguration of feeder airline operations to supplement the present trunkline services. This assumption has resulted in considerable loose talk about our need for feeder airlines and the benefits to accrue therefrom.

As in all services affected with a public interest the basis for need and the hoped for benefits of such a service may find expression in one or more of several ways according to the interests to be served in a particular community. Many people are not fully acquainted with the problems involved in the organization and development of feeder airlines yet often justify their establishment on no firmer grounds than those of civic pride and the desire to have a particular town designated as a stop. Such people believe they need the service because some nearby town has it or is supporting an airline application. Other groups will support feeder airline applications before the Civil Aeronautics Authority because their establishment will mean the building or improvement of an airport. Another source of pressure for feeder airlines is supplied by advocates of these services as a necessary adjunct to the national defense. It is, however, difficult to find anything distinctive in air transportation more essential to national defense than in any other transportation agency, except to the extent that airline facilities may be used in actual military

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† Editor's Note.—The authors presented the first of their series in the January, 1942 issue of this *Journal* in an article entitled "What Is a Feeder Airline?" In successive forthcoming issues there will appear "Part II: Air Mail" and "Part III: Air Cargo" of the "Sources of Feeder Airline Business" group. The series will conclude with an article of summary and analysis, yet to be entitled.

operations. In fact, the war policy announced by the Civil Aeronautics Board on December 12, 1941, suspended hearings on applications pending for new airlines and any extensions to present ones for such a period as it considers appropriate.<sup>1</sup> To date, however, neither the Civil Aeronautics Board nor the War Department has seen fit to call for further extension of present airlines or the establishment of new ones.

To attack the problem of feeder airlines on the basis of civic pride or under the guise of national defense would lead to an uneconomic development of such transportation agencies paralleling to some extent the hasty and unwise railroad construction of the latter part of the last century. Such a situation is what all sincere thinking persons wish to avoid in air transportation.

There are occasions when feeder airline service to a community would serve to promote its business interests through faster transportation and communication and would enable it to compete on a more equal basis with another close by town that already has direct airline service. Moreover, there are those who, with a broader understanding of the social and economic implications of air transportation, approach the problem of an expanded air transport system from the point of view of what it would mean to the nation as a whole. They think of air transportation in terms of creating additional leisure, as contributing to speedier and more efficient methods of distribution, and the manner in which it could add to the total wealth and welfare of not only a particular community but the nation as a whole.

In the development of transportation in the United States there has been little coordinated planning. This has unfortunately been true of air transportation even though this naturally competitive industry has been brought to a high degree of monopoly by deliberate government policy. There has been, nevertheless, an expression of dissatisfaction from many sources over the manner in which the pattern of air transportation has been evolving.<sup>2</sup> The first step in a sound appraisal of the merits of a feeder airline program is the determination of the specific objectives to be accomplished by the undertaking. In other words, how adequate are present air transport

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1. Under the authority contained in the President's Executive Order of December 13, 1941, full utilization and control of civil aviation facilities in time of war by the War Department was provided. See "Air Transport Association of America," news release for December 23, 1941, and *The Journal of Air Law and Commerce*, "War Policy Announced by CAB," January, 1942, pp. 82-83.

2. See "Airlines Need 'Star Routes'," T. Park Hay, *Aero Digest*, January, 1938, pp. 24-26; "Opportunity for Feeder Lines," *Aero Digest*, March, 1938, p. 32; "NAA Assails CAA for Inaction and Lack of Leadership in Expansion," *American Aviation*, August 1, 1940, p. 8.

facilities and what are some of the basic facts pointing toward or away from the development of a national feeder airline program?

In answering these and many other related questions a number of factors must be considered. Specifically: How many of our people have direct air transport service and where are they located? How adequate are our present airports and where are they located? How large or small are the several areas which might be given additional services, and can such communities or trade areas support a program of airline expansion when it becomes possible? There are also questions of potential increased airmail, passenger, and express traffic which must be answered separately, all of which will play a part in determining sound public policy for the future expansion of our air transport system. While the solution to some of these questions will require the test of actual experiment and operations, it is possible at this time to present a composite picture of the air transport situation of the nation as it exists today and to point out certain inadequacies and regional inequalities of service.<sup>3</sup>

For the purpose of this survey the United States has been divided into nine geographic divisions based on the classification used by the Bureau of Census.<sup>4</sup> This arrangement differs somewhat from the major railroad operating territories prescribed by the Interstate Commerce Commission. To have used the latter classification would have entailed dealing in parts of states which would serve no good purpose. Besides it would probably be unwise to attempt to analyze the status of air transportation on the same basis as railroad operations because while the broad problems of each are somewhat similar, they differ sufficiently to merit treatment on different bases, and we have already permitted railroad philosophy to influence air transportation development too much.<sup>5</sup>

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3. It is important to keep in mind the distinction between the question at hand and two others which are a part of the same general problem of feeder airlines. The present investigation is concerned with the adequacy of the present commercial air transportation services. The other two aspects which are not considered at this time are whether or not the air transport industry or the government can support a nationwide feeder airline program and the probable effect such a program, if carried out, will have on the present channels of distribution and the transportation scheme as a whole.

4. *New England*: Maine, New Hampshire, Vermont, Connecticut, Massachusetts, Rhode Island; *Middle Atlantic*: New York, New Jersey, Pennsylvania; *East North Central*: Ohio, Indiana, Illinois, Michigan, Wisconsin; *West North Central*: Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas; *South Atlantic*: Delaware, District of Columbia, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida; *East South Central*: Kentucky, Tennessee, Alabama, Mississippi; *West South Central*: Arkansas, Louisiana, Oklahoma, Texas; *Mountain*: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada; *Pacific*: Washington, Oregon, California.

5. *American Aviation*, November 1, 1941, expresses keen dissatisfaction with the attitude of Mr. Ralph Budd, president of the Chicago, Burlington and Quincy Railroad, then Transportation Commissioner to the National Defense Advisory Commission, that air transportation is "unworthy of serious consideration as a transportation medium."

Passenger traffic is fast approaching the stage where it is the greatest source of operating revenue for the airlines. The rapid growth of this type of traffic is attributed largely to a generally improved safety record, satisfactory business conditions, and in part to improved and more intensive airline promotion and selling. Air passenger revenues in 1941 accounted for approximately 66 per cent of airline earnings.<sup>6</sup> In determining the sources of potential passenger traffic we are principally interested in where people are located and how many of them now have direct air transport services. We want to know the extent of air transport services and facilities in one portion of the country as compared with another. We want an explanation of the inequalities of development, if they exist, and why they have come about as there are some common misconceptions of what areas of the country are underdeveloped and which have made the most progress in air transportation.

*How scheduled passenger services are geographically distributed.* According to the 1940 Census, the population of the United States totals 131,669,275. The distribution of population of the United States by geographic division and the proportion of population with scheduled commercial air service in 1940 is given in Table I. It will be seen that of the total number of people, 39,262,344 are living in the 211 towns and cities that have direct air transport services by scheduled carriers. Typically, the Middle Atlantic region consisting

TABLE I.

*Distribution of Population by Geographic Divisions and Proportion of Population with Scheduled Air Passenger Service in 1940\**

Geographic Division	Total population in U. S.	Per cent of total population in U. S.	Population with scheduled air service	Per cent of total population with air scheduled service	Per cent of total divisional population with scheduled air service
New England .....	8,437,290	6.41	1,700,819	4.33	20.16
Middle Atlantic .....	27,539,487	20.92	12,072,556	30.74	43.84
East North Central....	26,626,342	20.22	9,231,334	23.51	34.67
West North Central....	13,516,990	10.27	3,194,473	8.14	23.63
South Atlantic .....	17,823,151	13.54	3,672,265	9.35	20.60
East South Central....	10,778,225	8.18	1,656,444	4.22	15.37
West South Central....	13,064,525	9.92	2,758,834	7.03	21.12
Mountain .....	4,150,003	3.15	1,044,769	2.66	25.18
Pacific .....	9,733,262	7.39	3,930,850	10.01	40.38
<b>TOTALS .....</b>	<b>131,669,275</b>	<b>100.00</b>	<b>39,262,344</b>	<b>100.00</b>	<b>29.08</b>

\* Compiled from the 16th Census of the United States, 1940, Bureau of the Census, 1941, and the Airline Traffic Survey, September, 1940, Civil Aeronautics Board, 1941.

6. See, John H. Frederick, *Commercial Air Transportation*, Richard D. Irwin, Inc., Chicago, 1942, p. 296.

of New York, New Jersey, and Pennsylvania shows the greatest concentration of population with 20.92 per cent of the total for the country. More people in this division (30.74 per cent) have direct access to commercial air services than in any other part of the United States. The East North Central division with approximately the same percentage of population as the Middle Atlantic ranks second in the number of persons having direct air transport services, 23.51 per cent of the total. The Pacific division, while it ranks seventh, with 7.39 per cent of total population, has the third largest population with direct airline service amounting to 10.01 per cent. It is probably coincidental that this region with about one-third the population of the Middle Atlantic section, has the same ratio with reference to the per cent of population with air service. In each of the remaining divisions the percentage of total population exceeds the corresponding figure for the number of people served although the variation is not great in any instance.

The outstanding fact to be observed from Table I is the dispersion that exists between the percentages of divisional population now having direct access to scheduled air services. Here again the Middle Atlantic region is predominant with 43.84 per cent of population having such facilities. This high ratio is accounted for because the large population centers of New York City, Buffalo, Philadelphia, and Pittsburgh are in this region. Bearing out the identical population ratios referred to above, the Pacific division with 40.38 per cent shows approximately the same degree of development as the Middle Atlantic section. The large cities of Los Angeles and San Francisco give prominence to this region. The East North Central division with the large cities of Cleveland, Chicago, Detroit, and Milwaukee and serving 34.67 per cent of the population ranks third in passenger traffic development.

It is of particular interest to note that the Mountain district stands higher than the remaining divisions, all of larger population and smaller land area, with service for 25.18 per cent of its people. While the better showing of the Middle Atlantic, East North Central, and Pacific divisions are attributable to the predominance of large concentrations of population, such a characteristic is not present in the Mountain area. It thus appears that this region's high relative position is due to a smaller population and a larger number of points served as contrasted to a large concentration of population at a few points and a smaller number of points served. The remaining five divisions show a variation of only 8.6 per cent in the amount of

population served, the highest per cent being 23.63 in the West North Central section and the lowest 15.37 per cent in the East South Central division.

*The influence of large urban populations in air transportation analysis.* Mere casual observation of the statistics given in Table I may well lead to the mistaken conclusion that in the development of air transportation services undue preference has been given to the northeastern<sup>7</sup> and Pacific coast sections of the country; this, however, is not altogether true. It is the inclusion in these figures of the population of the major cities in these sections that tends to distort the real picture. The data presented in Table II may serve to modify this impression since the influence of the fourteen major cities in the United States of over 500,000 population is removed from the figures for each division.

Under the arrangement in Table II the Middle Atlantic region now ranks second in total population but has declined to last place in the proportion of its people with direct air services, only 8.51 per cent. For this region we see a slightly more than 5 per cent decrease in its aggregate population, but a 35 per cent decrease in the number of people served in that division. Although there is less than one per cent change in the total per cent of population in the Pacific division the decline in the number of people served is from 40.38 to 23.60 per cent. A rather prominent decline is also noted in the East North Central division, the drop being from 34.67 to 13.63 per cent in the number of people served. Less significant declines may be observed in the New England, West North Central, and South Atlantic regions. It is worth noting that due to the absence of large cities in the East South Central, West South Central, and Mountain divisions there is no change in the percentages for these areas.

The changes just described in the relative positions of the several geographic divisions serve to illustrate the extremely strong influence that large concentrations of population exercise on the air transportation scene. They also serve to emphasize the care that should be used in the interpretation of such data. That the Middle Atlantic, Pacific, and North East Central states are much more advanced over the other states in the development of air services is subject to some

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7. A recent brief filed with the Civil Aeronautics Board (Docket Nos. 2-401(B)2 et al.) protests that of a total of 5942 miles of new air routes for which certificates of convenience and necessity have been granted since August, 1938, only 1306 miles or 22 per cent were granted to airlines operating west of a line extending from Winnipeg south to Brownsville, the approximate geographical middle of the United States. What relevance does such a comparison have to the determination of policy for the granting of air routes?

TABLE II

*Distribution of Population by Geographic Divisions and Proportion of Population with Scheduled Air Passenger Service in 1940\**

Adjusted to Remove Influence of 14 Cities with Population of 500,000 and Over

Geographic Division	Total population in U. S.	Per cent of total population in U. S.	Population with scheduled air service	Per cent of total population with air scheduled service	Per cent of total divisional population with scheduled air service
New England .....	7,666,474	7.01	930,003	5.51	12.13
Middle Atlantic .....	16,905,598	15.47	1,438,667	8.51	8.51
East North Central....	20,140,274	18.43	2,745,266	16.25	13.63
West North Central....	12,700,942	11.62	2,378,435	14.08	18.73
South Atlantic .....	16,300,960	14.91	2,150,074	12.73	13.19
East South Central....	10,778,225	9.86	1,656,444	9.80	15.37
West South Central....	13,064,525	11.95	2,758,834	16.33	21.12
Mountain .....	4,150,003	3.80	1,044,769	6.18	25.18
Pacific .....	7,594,449	6.95	1,792,037	10.61	23.60
<b>TOTALS .....</b>	<b>109,301,450</b>	<b>100.00</b>	<b>16,894,519</b>	<b>100.00</b>	<b>15.46</b>

\* Compiled from the *16th Census of the United States, 1940*, Bureau of the Census, 1941, and the *Airline Traffic Survey, September, 1940*, Civil Aeronautics Board, 1941.

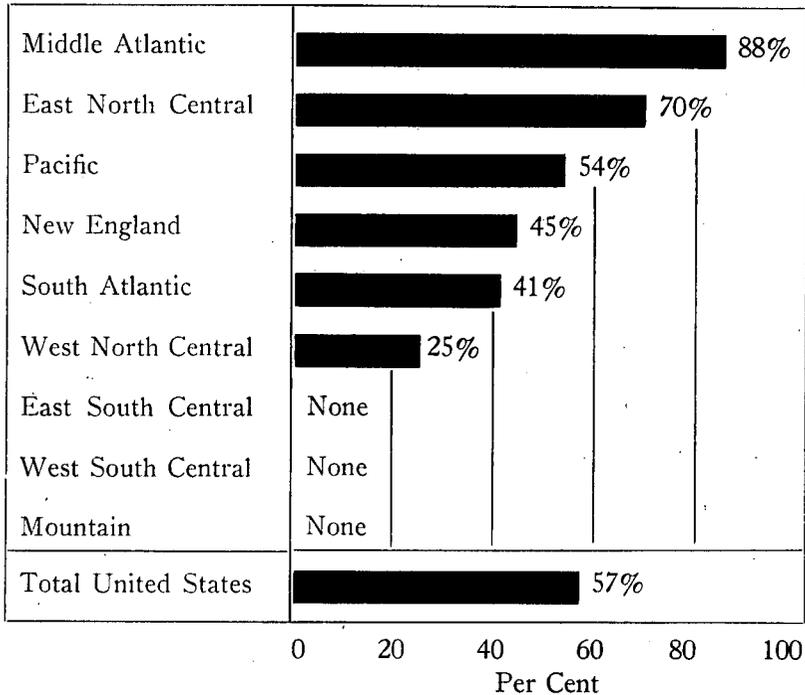
Total population of the following 14 cities of over 500,000 is 22,367,825: Baltimore, Boston, Buffalo, Chicago, Cleveland, Detroit, Los Angeles, Milwaukee, New York, Philadelphia, Pittsburgh, St. Louis, San Francisco, and Washington, D. C.

qualification. A high ratio of population served, as has been demonstrated, does not mean that adequate air facilities are available with regard to the area as a whole. For while the larger urban centers may have these facilities, the remaining and extremely important segment of population living without these centers is at a distinct disadvantage by being without them.

Figure I graphically illustrates, by division, the percentage of population with scheduled air service located in cities with populations of 500,000 or over. The divisions are arranged by rank of the largest percentage of population served. The importance of these large centers as the potential source of air passenger traffic for each division is clearly indicated. In the Middle Atlantic division 88 per cent of the population with direct scheduled air transportation is located in New York City and Buffalo. Second in rank is the East North Central division with 70 per cent of the people served living in such large cities as Chicago, Detroit, Cleveland, and other urban centers. These large urban centers are of decreasing importance in the remainder of the divisions. Percentages for the East and West South Central and Mountain divisions are not shown inasmuch as

FIGURE I

*Divisional Percentage of Population with Scheduled Air Service Located in Cities of 500,000 and Over*



there are no large centers of population located within them. It is significant that of the total population in the United States having direct access to scheduled airlines the fourteen largest urban centers account for approximately 57 per cent of the total.

*The geographic distribution of the cities served by scheduled air carriers.* Further evidence that a large proportion of population served in a specific or closely defined area is not necessarily indicative of the degree of development of its air transportation facilities is offered in Table III. Comparison of the figures in this table with those in Table I discloses decided differences between the population factor and the percentage of cities served in a geographic division. Whereas the Middle Atlantic and East North Central divisions contain almost forty-four per cent of the cities and towns of over 5000 population, together, they have scheduled services available to only 3.52 and 5.57 per cent, respectively, of the com-

munities in their areas. At the other extreme the East South Central and Mountain regions, which account for slightly more than eight per cent of the total cities and towns, have services to 24.70 and 38.55 per cent, respectively, of the communities in their divisions. Among the remaining divisions there is relatively little change in their standings as between the factors of population and communities served. They tend to cluster rather closely together and each display to a varying degree the characteristics of the divisions just analyzed. The foregoing contrast of the degree of development of air terminals in the several divisions suggests that where there are large concentrations of population, there is a tendency toward the intensive development of air transport traffic at a relatively few centers, and where there is a dispersion of population over a large area, the development of traffic is extensive, covering an increased number of cities.

TABLE III

*Distribution by Geographic Division of Scheduled Air Passenger Service to Cities and Towns in the United States in 1940\**

Geographic Division	No. of cities and towns over 5000 population	Per cent of total cities and towns	No. of cities and towns over 5000 population with scheduled air service	Per cent of total cities and towns with scheduled air service	Per cent of cities and towns in division with scheduled air service
New England.....	222	10.93	17	8.06	7.66
Middle Atlantic.....	454	22.35	16	7.58	3.52
East North Central.....	431	21.22	24	11.37	5.57
West North Central.....	205	10.09	28	13.27	13.66
South Atlantic .....	209	10.29	31	14.69	14.83
East South Central.....	85	4.19	21	9.95	24.70
West South Central.....	195	9.60	22	10.43	11.28
Mountain .....	83	4.09	32	15.17	38.55
Pacific .....	147	7.24	20	9.48	13.60
TOTALS .....	2,031	100.00	211	100.00	10.39

\* Compiled from the 16th Census of the United States, 1940, Bureau of the Census, 1941, and the Airline Traffic Survey, September, 1940, Civil Aeronautics Board, 1941.

*Present sources of airline passenger traffic.* In the preceding analysis the discussion of the place occupied by large urban centers in the apportionment of air service facilities was given particular emphasis, so much in fact, that their relevance as a present source of passenger traffic might well be assumed. The surveys of airline passenger traffic made by the Civil Aeronautics Board in November, 1939, and September, 1940, measure their significance in terms of their actual traffic generating ability.

Of the fourteen cities of 500,000 population and over (see footnote of Table II) twelve are included among the top fourteen cities of the nation by rank in order of passengers originated at or destined for those cities.<sup>8</sup> A total of 248,574 passengers were tabulated for the terminal points included in the November, 1939, survey. These twelve cities alone accounted for 152,060 passengers or 61 per cent of the total. An identical percentage of the passengers tabulated in the September, 1940, survey was attained by these same cities, when they contributed 258,251 passengers out of a total of 421,749 passengers recorded. In the following commentary on the September, 1940, survey, the Civil Aeronautics Board succinctly sums up the position of large cities with respect to air passenger traffic:

A striking characteristic of air passenger traffic is its high degree of concentration among relatively few air stations. 3.6 per cent of the total number of air stations accounted for half the number of passengers, 13.0 per cent of the air stations for three-quarters of the passengers, and 30.2 per cent of the air stations for 90 per cent of the passengers. The remaining air stations, amounting to 70 per cent of the total, produced, of course, only 10 per cent of total traffic.<sup>9</sup>

TABLE IV

*Summary by Geographic Division of Origination and Destination Survey of Revenue Passenger Traffic, November, 1939, and September, 1940\**

Geographic Division	November, 1939 <sup>1</sup>		September, 1940 <sup>2</sup>	
	Number of passengers	Per cent of total	Number of passengers	Per cent of total
New England .....	17,694	7.12	32,547	7.72
Middle Atlantic .....	61,270	24.65	108,020	25.61
East North Central.....	58,981	23.73	99,663	23.63
West North Central.....	16,263	6.54	27,892	6.61
South Atlantic .....	31,730	8.75	49,741	11.79
East South Central .....	8,780	3.53	14,086	3.34
West South Central .....	18,155	7.31	27,948	6.63
Mountain .....	8,153	3.28	13,817	3.28
Pacific .....	27,548	11.09	48,035	11.39
TOTALS .....	248,574	100.00	421,749	100.00

<sup>1</sup> Includes 181 stations and co-stations.

<sup>2</sup> Includes 203 stations and co-stations.

\* Compiled from the *Airline Traffic Survey (Origination and Destination)*, November, 1939, and September, 1940, Civil Aeronautics Board, Washington, D. C., 1940 and 1941.

8. These twelve cities, by rank in order of passenger origination and destination, are as follows: New York, Chicago, Washington, D. C., Detroit, Boston, Los Angeles, Cleveland, San Francisco, Pittsburgh, Philadelphia, St. Louis, and Buffalo. The cities of Milwaukee and Baltimore ranked thirty-third and forty-eighth, respectively. See *Airline Traffic Survey (Origination and Destination)*, September, 1940, Volume I, Civil Aeronautics Board, Washington, D. C., 1941.

9. *Airline Traffic Survey (Origination and Destination)*, September, 1940, Volume I, Civil Aeronautics Board, Washington, D. C., p. 1.

When the airline passengers tabulated in the two surveys by the Civil Aeronautics Board are allocated to the several geographic divisions, the proportion of traffic originated at or destined for each division corresponds roughly to the distribution of population between those regions, as given in Table I. Eight of the fourteen major cities are situated in the Middle Atlantic and East North Central divisions and account for approximately fifty per cent of all passenger traffic. Inter-city travel between New York, Chicago, Detroit, Buffalo, and Cleveland is responsible for the greater part of the total traffic of these two regions. Practically all New England traffic is centered in the cities of Boston and Providence and amounts to only 7.72 per cent of the total passengers tabulated. In the South Atlantic division the overwhelming percentage of passenger traffic has its point of origination or destination at Washington, D. C. Baltimore accounts for but a minor portion of the divisional traffic. The major source of traffic in the Pacific division is the interchange between San Francisco and Los Angeles. Only a small amount of the traffic originated in this division is destined for New York or other points east. The importance of the West North Central, East and West South Central and Mountain divisions, as contributors to present air passenger travel is not great since, together, they are responsible for less than twenty per cent of total revenue passengers.

*Air passenger traffic and consumer purchasing power.* The preponderance of actual passenger traffic in the Middle Atlantic and East North Central divisions has been pointed out as due to the dense populations and, consequently, larger cities located in those

TABLE V

*The Distribution by Geographic Division of Income Tax Returns in the United States for 1938\**

Geographic Division	Number of income tax returns, 1938	Per cent of total returns	Persons per income tax return
New England .....	533,111	8.68	15.83
Middle Atlantic .....	1,864,437	30.37	14.77
East North Central.....	1,389,350	22.63	19.16
West North Central .....	44,874	7.24	30.38
South Atlantic .....	547,858	8.92	32.53
East South Central .....	170,464	2.78	63.23
West South Central .....	344,691	5.61	37.90
Mountain .....	158,339	2.58	26.21
Pacific .....	686,860	11.19	14.17
<b>TOTALS</b> .....	<b>6,139,984</b>	<b>100.00</b>	<b>21.44</b>

\* Compiled from: *Population and Its Distribution*, Sixth Edition, 1941, New York, J. Walter Thompson Company.

regions. This further suggests a relationship between the population of the several regions served by scheduled air carriers and total purchasing power.

Two of the common indices of consumer purchasing power for a geographical or marketing area are those of "persons per income tax return" and "retail sales." In Table V we find that, as measured by income tax returns for 1938, the largest earnings per capita are found in the highly industrialized and commercial regions of New England, Middle Atlantic, East North Central and Pacific divisions. Each of these divisions was well ahead of the United States average of 21.44 persons per income tax return in 1938 and the present tax law will undoubtedly place them in an even more prominent position. The remaining five divisions, which are predominantly agricultural, are to varying degrees below the national average. The East South Central division is outstanding because of the paucity of large individual earnings which ranks it two hundred per cent under the average for the United States.

Retail sales in the United States totaled \$42,041,790,000 in 1940. The extent to which commercial airlines have tapped the sources of potential passenger traffic as measured by this index, is suggested in Table VI, which shows the amount of sales accounted for by each geographic division and the proportion of divisional sales which were made in the cities served by scheduled air carriers.

If consumer purchasing power reached by scheduled airlines is any measure of the adequacy of air transportation facilities then we are indeed much better off in this respect than the study of population and cities served would indicate. In every instance the divisional percentage of retail sales reached by the airlines is considerably larger than similar comparisons of population and cities. This is to be expected since air terminals have tended to be located at the larger cities which are also the high points of business activity. Even so, Table VI indicates a huge reservoir of purchasing power that remains untapped in each of the divisions of the country.

The amount of retail sales reached directly by scheduled airline services ranges from 29.66 per cent in the West North Central division to 52.94 per cent in the Pacific. Both the Middle Atlantic and East North Central areas show a relatively high percentage of sales covered with 51.26 and 46 per cent, respectively. The New England section, which ranks second in the number of persons per income tax return, is in eighth position with only 30.40 per cent of

TABLE VI

*Distribution by Geographic Division of Retail Sales in the United States and the Proportion of Sales in Cities with Scheduled Air Service in 1940\**

Geographic Division	Amount of retail sales (add 000)	Per cent of total retail sales in U. S.	Amount of retail sales made in cities served (add 000)	Per cent of total retail sales made in cities served	Per cent of total divisional retail sales made in cities served
New England.....	\$ 3,318,214	7.89	\$1,008,693	5.75	30.40
Middle Atlantic .....	10,291,937	24.48	5,275,724	30.07	51.26
East North Central....	9,251,114	22.00	4,255,882	24.25	46.00
West North Central....	4,138,883	9.84	1,227,432	6.99	29.66
South Atlantic .....	4,368,947	10.39	1,878,987	10.71	43.01
East South Central....	1,845,037	4.39	727,921	4.15	39.45
West South Central....	3,101,358	7.38	1,261,570	7.19	40.68
Mountain .....	1,427,541	3.39	635,198	3.62	44.50
Pacific .....	4,298,759	10.22	2,275,675	12.97	52.94
TOTALS .....	\$42,041,790	100.00	\$17,547,082	100.00	41.74

\* Compiled from the *16th Census of the United States, 1940*, Bureau of the Census (1941), and the *Airline Traffic Survey, September, 1940*, Civil Aeronautics Board (1941).

its retail sales reached by scheduled airlines. Three divisions show a larger percentage of retail sales in cities served by scheduled airlines as compared to their share of total sales; three reflect the same percentage for each category; and three less than their percentage contribution to total retail sales.

*Summary and some general conclusions.* When we bring together the salient facts of the preceding analysis we find that:

1. Of the 131,700,000 people in the United States in 1940, only 39,000,000 or about 29 per cent had direct access to scheduled airline service.

2. More than half of the population now served (57 per cent) live in fourteen cities of 500,000 people and over and eight of these cities are located in the northeastern portion of the country.

3. When the influence of the populations of these large cities is removed, just 15.5 per cent of the remaining population has direct access to airlines.

4. Only ten per cent of the more than 2,000 cities of over 5,000 people are served by scheduled carriers.

5. Passenger traffic is highly concentrated among relatively few cities with approximately 61 per cent of actual air traffic originated at, or destined to, fourteen major cities.

6. About 42 per cent of the total retail sales in 1940 were made in the cities and towns served by scheduled airlines.

7. There is a high correlation between population and retail sales in cities now served and the actual volume of passenger traffic of the nine geographic divisions.

8. The divisional analysis shows some evidence of an inverse relationship between density of population and the number of cities with scheduled airline service.

9. The Mountain and Pacific divisions rank first and second, respectively, in over-all scheduled air services, and contrary to popular belief, the Middle Atlantic and New England regions rank eighth and ninth in order of scheduled airline services.

We have, therefore, a general picture of air passenger services from the standpoint of the scope of national development today. While these general considerations will not apply with equal force to specific areas, say individual states or some groups of states, they are sufficiently accurate to serve as the basis for some definite conclusions as to the need for feeder airline services.

From the point of view of a coordinated national air transportation system, there is little indication of a specific plan of development. Some characteristics of the scope of air passenger services have been brought together in Table VII and each geographic division has been assigned a number indicating its rank for each category.<sup>10</sup> The random distribution of these values among the several divisions is fairly indicative of the fact that previous airline develop-

TABLE VII

*Geographic Divisions Ranked According to the Extent of Development of Scheduled Air Passenger Service in 1940*

Geographic Division	Divisional Rank of Air Passenger Service According To				
	Population served	Population served (adjusted) <sup>1</sup>	Cities and towns served	Airports utilized	Retail sales in cities and towns served
New England .....	8	8	8	2	8
Middle Atlantic .....	1	9	9	8	2
East North Central .....	3	6	4	9	3
West North Central .....	5	4	3	3	9
South Atlantic .....	9	7	2	5	5
East South Central .....	7	5	6	1	7
West South Central.....	6	3	5	7	6
Mountain .....	4	1	1	4	4
Pacific .....	2	2	7	6	1

<sup>1</sup> See Table II.

10. The states were tabulated separately and new combinations of six, eight, and twelve divisions used to try to find some regrouping that was homogeneous, but the same general inconsistencies appeared in each new arrangement.

ment of air passenger services has lacked both planning and coordination. When viewed from the standpoint of the industry, a general pattern of passenger service growth may be observed. It is not suggested that the design has been the result of a conscious effort to formulate a national air transportation policy; rather, it seems to have been the outgrowth of the efforts of the industry to make the business pay. It has taken form as an intensive development of air routes and passenger services between cities of large populations with the expectancy of the largest immediate volume of traffic. This presumption is borne out in the preceding analysis of the sources of airline passenger traffic.

It seems to be clear that, while we have succeeded in tying together the most important commercial and industrial centers of the nation by commercial air transportation, scant attention has been given to opening this new transportation agency to the hundreds of smaller communities of the nation. We still have a long way to go before we can boast of a national air transport system of adequate proportions. The social and economic need for a well planned and coordinated feeder airline system to supplement present trunk line operations becomes apparent when we consider that insofar as retail sales are a measure of consumer purchasing power, only 42 per cent has been tapped. Couple this with the fact that just 30 per cent of our people have direct access to scheduled airline facilities and a startling inadequacy is seen. In other words, 58 per cent of consumer purchasing power is approximately 70 per cent unexploited in the field of air transportation.

Although the volume of air passenger traffic has increased rapidly from a bare quarter of a million passengers in 1930 to almost four millions in 1941, we have as yet seen only the beginning of mass acceptance of air travel. A couple of years ago one estimate of "reasonable projections for future years" was:<sup>11</sup>

1940	2.2-2.6 millions
1941	2.9-3.3 millions
1942	3.7-4.1 millions
1943	4.3-4.7 millions
1944	4.7-5.2 millions

In both 1940 and 1941, these estimates were exceeded by several hundred thousand revenue passengers, and the present growth of air travel would move the trend value for 1944 to nearly nine million

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11. See *The Air Lines*, Stern, Wampler & Co., Inc., Chicago, 1940, p. 4.

passengers. But is this increase in traffic to come only from the cities that now have scheduled airline service? An eight-day survey of air passenger traffic, taken from August 1 to August 8, 1941, by members of the Air Transport Association of America showed that 67.5 per cent of air travel during the period was for business reasons and 32.5 per cent was for personal reasons.<sup>12</sup> From the standpoint of business travel alone, present air stations could undoubtedly furnish nine million airline passengers in 1944. But air transportation is no longer a novelty to the American people, and it is to be expected that as they become more familiar with the advantages afforded by it, the pressure for the expansion of air transport facilities will come not only from the big cities but also from the smaller communities not now served. It is hardly likely that we can have a continued vertical expansion of air passenger traffic through the increase of scheduled flights between the cities now served without also broadening considerably the base of air transportation through horizontal expansion. This means feeder airlines.

It is, however, difficult to anticipate the extent to which air passenger traffic can be developed on feeder routes. The prime advantage present trunkline air carriers have over ground transportation is speed over the long haul. Air transportation saves time. What the potentialities of feeder airlines will be in competition with ground transportation over the short haul is problematical. We must recognize that the private automobile will remain with us as a convenient and fast mode of travel for short trips so that feeder airlines will undoubtedly have certain limitations on their ability to attract passenger traffic over the short haul. That this may not be such a limiting factor as some believe is indicated in Table VIII. This demonstrates clearly that very substantial air travel can be developed between points situated relatively short distances apart. It must be borne in mind, however, that of the cities shown in this table each has a combined population in excess of 400,000, much larger than would be the combined population of any two points served by typical feeder airlines. It is unlikely that a large passenger traffic can be developed on many feeder routes between cities less than one hundred miles apart.

The primary passenger transportation function of feeder airlines will be to provide the means whereby a traveler can make the entire trip to some distant point by using only one agency of trans-

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12. *Business Week*, September 13, 1941, p. 18.

TABLE VIII

*Airline Traffic Between Points Less Than 100 Miles Apart\**

Cities	Air miles apart	Air Traffic	Passengers per day
Washington—Richmond .....	96	338	11
Boston—Portland .....	96	559	19
New York—Philadelphia .....	95	2,269	76
Boston—Hartford .....	94	544	18
Pittsburgh—Akron .....	94	159	5
Los Angeles—Bakersfield .....	93	135	4
Charleston—Columbia .....	93	147	5
New York—Hartford .....	92	1,064	35
Cincinnati—Louisville .....	91	515	17
Detroit—Lansing .....	85	173	6
Chicago—Milwaukee .....	82	247	8
San Francisco—Sacramento .....	79	246	8
Minneapolis—Rochester .....	72	334	11
Cincinnati—Dayton .....	56	154	5
Boston—Providence .....	49	167	6
Washington—Baltimore .....	38	156	5
Houston—Galveston .....	38	142	5
Cleveland—Akron .....	32	111	4
Dallas—Fort Worth .....	30	167	6

\* Compiled from the *Airline Traffic Survey (Station to Station)*, September, 1940, Civil Aeronautics Board (1941).

portation, rather than having to change from bus to train to plane as is so often the case now. To the extent that feeder airlines can eliminate delay and inconvenience in the arrangement of air travelers' itineraries so will their usefulness to the nation be enhanced.