
by

John B. Lansing
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Preface
This report continues the series of national travel market surveys begun in 1955 by the Survey Research Center of the University of Michigan. No report was issued covering travel in 1963. The earlier reports have been reprinted in two volumes, The Travel Market 1955, 1956, 1957, and The Travel Market \(1958,1959-1960\), and 1961-1962. Two special reports have been issued, The Changing Travel Market, which is a summary of the earlier reports issued in 1964, and Mode Choice in Intercity Travel: A Multivariate Statistical Analysis, also issued in 1964 and available from the Librarian of the Institute for Social Research.
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## The Sample

This report is based on two types of data collection, personal interviews and reinterviews by telephone and mail with people previously interviewed in person. A total of 1574 personal interviews vere taken from November 4, 1964 onwards. Interviewing was extended over a protracted period in order to reduce the number of designated respondents from whom no interview was obtained, but was virtually complete by December 31, 1964. Interviewing was combined with a study of the 1964 presidential election. A probability sample of the adult population
were interviewed after the election. The travel questions were asked in the post-election survey.

For reasons which are not fully understood the response rate in the pre-election survey was low, and the additional loss between the first and second waves would have made the effective response rate for the travel survey unacceptably low. To prevent this result 131 extra interviews were taken on the travel questions exclusively. In addition, extraordinary efforts were made to reinterview all respondents in the first wave, including in a few instances authorization to interviewers to offer to pay respondents for their cooperation when the interviewers believed this expedient would be helpful. The 1574 interviews which were finally taken represent a response rate for the travel questions of about 80 per cent of the original cross-section.

The research plan called for reinterviews to cover trips taken in the half-year after the first interview. Telephone reinterviews could be attempted only with families who had telephones and were willing to give the number to the interviewer. In March 1965 there were 1196 such families. Of these 96 per cent were successfully reinterviewed on the telephone concerning their trips since the first interview, most of the losses being people who had moved since the previous interview. In June 1965 there were 1161 families with whom a second wave of telephone reinterviews could be attempted. Of these 96 per cent were successfully reached. There were no losses due to refusal to be reinterviewed in June:

An attempt was made to reach. by mail people who had no telephone. A usable mail address was obtained from 255 of the original sample of people who had been interviewed in person. A brief questionnaire was mailed to
these addresses in June 1965, and 139, or 54 per cent, returned usable questionnaires in time to be included in the tabulations.

Total Number of Adults in the U.S.
As of the middle of 1965 there were about $122,000,000$ adults aged 18 years or over in the civilian population resident in this country. To convert estimates of the percentage of all adults to estimates of the number of adults in a category this base may be used.

## Definition of a Trip

In this report a trip is defined as a round trip to a place 100 miles or more away.

## Use of Weighted Data

The trips reported in detail in the interviews do not constitute an unbiased sample of all trips. Trips by frequent travelers are inadequately represented. In the personal interviews in the fall of 1964 only the most recent trip by each mode of travel by each family was covered. To represent trips of different types in their proper proportions a system of weights has been used based primarily on the 1963 Census of Passenger Transportation. The assumption has been made that the distribution of trips by mode, purpose, and distance shown in Table 14 is as accurate as any available estimate. The total weight to be assigned to any type of trip (as defined by a cell in Table 14) has been based upon the share of total travel represented by trips of that type as shown in that cell in that table. That total weight has been divided evenly among the trips in the sample falling in that category. In weighted tabulations, therefore, it is reasonable to assume that the bias arising from underrepresentation of trips by frequent travelers
has been greatly reduced if not eliminated.

## Acknowledgments

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## SUMMARY

## Air Travel

In one year 11 per cent of the adult population take one or more trips by air.

The proportion of the adult population who ever have taken an air trip has been risiag at about 1.8 per cent per year since 1955 . As of 1964 it had reached 39 per cent. The increase in experience with air travel has been especially noticeable in the group 65 years old and over.

People who live 25 miles or more from the nearest airport are much less likely to take air trips than those who live closer to an air cerminal.

People who are no longer living in the state where they were born are much more likely to take air trips than non-migrants.

## Vacation Travel

Of all heads of families 57 per cent say they have a vacation of a week or more during a twelve month period.

Multiple vacations are important. Df all heads of families 19 per cent took two or more vacations. If each of theix vacations is counted separately, half of all vacations are taken by the people who have two or more vacations a year.

Most people take a trip during their vacation. Of heads of families who had at least one vacation three out of four took at least one vacation trip.

## Terminals and the Speed of Common Carrier Service

The time people spend getting to and from the terminal is an important part of the time they spend on trips by common carrier. For air travel people report they allow typically 68 minutes between when they start for the aixport and the time of scheduled departure. After the flights from arrival at the terminal to arrival at final destination is 50 minutes.

Time spent in reaching rail and bus stations is somewhat less. Median time allowed to reach the railroad station is 49 minutes, while it takes 37 minutes to reach the final destination. To reach the bus station median time is 43 minutes and 31 minutes to final destination.

Most trips begin at people's homes rather than where they work. Of all common carrier trips 85 per cent start at people's homes.

The final destination of most common carrier trips is outside the central business district of the place visited. Only 42 per cent are to a point $0-2$ miles from the center.

## Having a Car at One's Destination

On 70 per cent of all auto trips it was "very important" to the travelers to have their own car for use after they reached their destination. This consideration should not be underestimated in analysis of why people drive.

## Multiple Destinations

On most trips people are not especially interested in visiting several places or seeing the country on the way. Only for a minority of trips, 21 per cent, are such considerations relevant.

Trips to New York and the Northesst Corridor
Travel to the Corridor is different from travel elsewhere in the United States primarily in one respect: the automobile accounts for an unusually low proportion ( 57 per cent) of trips which begin or end in the New York area.

## 1. Air Travel

The period since 1955 has been one of growth in air travel. The first part of this chapter is devoted to an examination of two basic trends: the increase in the frequency of air travel, and the increase in the proportion of the population who ever have flown. The situations in which people take their first air trips are examined. Two final sections of the chapter present a profile of the frequent air traveler and a special analysis of the effect of migration upon the frequency of air travel.

## A. Trends in the Frequency of Air Travel

Since 1955 the proportion of the adult population who take an air trip in a year has been increasing more or less regularly. From 1955 to 1964 the proportion rose from 7 to 11 per cent (Table l). Since the population of the country also has been rising, the actual number of air travelers has risen faster than the proportion who fly. An estimate of 11 per cent implies about $131 / 2$ million adults out of the adult civilian population of $122,000,000$.

One of the basic reasons for the increase in the percentage of the population who fly is the upward shift of the income distribution. People in the upper income groups continue to be much more likely to travel by air than those in the middle or lower ranges of the distribution of family incomes. The relation between the income of his family and whether an adult took an air trip is shown in Table 2 both for 1955 and for 1964. Similarity between the two years is the first impression one receives from study of this table. For example, in both 1955 and 1964 of those with income below $\$ 20001$ per cent took an air trip; of those with incomes of

4

Graph 1
Trend in Proportion of Adulta Traveling by Air


## TABLE 1

Trend in Proportion of Adults Traveling by Air ${ }^{\text {a }}$

Survey Year Per Cent of Adults Traveling by Air
19557
1956
7
1957
1958
9
1960
9
1962
10
1964
11
11
asources: "The Travel Market, 1961-1962", P. 33
and the $1964-1965$ Travel Survey.

TABLE 2
Use of Air by Family Income
(Percentage distribution of adults)

| Use of Atr | All Adults |  | Fanily Incone |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  | Under \$ $\$ 2000$ |  | \$2000-2999 |  | \$3000-3999 |  | \$4000-4999 |  |
|  | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 |
| Took one or more air trips last year | 7 | $11^{\text {a }}$ | $\underline{1}$ | $\underline{1}$ | $\underline{2}$ | 3 | 3 | 4 | 4 | 6 |
| For business reasons | 2 | 4 | * | * | * | * | 1 | * | 1 | 1 |
| ```For non-business reasons``` | 5 | 6 | 1 | 1 | 2 | 3 | 2 | 4 | 3 | 4 |
| For both businesa and non-businesa reasons | * | * | * | * | * | * | * | * | * | 1 |
| Did not take an air trip last year | 93 | 90 | 99 | 99 | 98 | 97 | 97 | 96 | 96 | 94 |
| Total | 100\% | 100\% | 100\% | $100 \%$ | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of adults | 8485 | 2963 | 1271 | 295 | 981 | 244 | 1364 | 278 | 1294 | 268 |
|  | \$5000 | -5999 | \$6000 | -7499 | \$7500 | 9999 | $\begin{array}{r} \$ 10, \\ 14 \\ \hline \end{array}$ | $\begin{aligned} & \text { 000- } \\ & 999 \\ & \hline \end{aligned}$ | $\begin{aligned} & \$ 15,0 \\ & \text { and } \\ & \hline \end{aligned}$ | Over |
| Use of Air | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 | 1955 | 1964 |
| Took one or more air trips last year | $\underline{5}$ | 4 | $\underline{9}$ | $\underline{9}$ | 12 | 10 | $\underline{22}$ | 21 | 40 | 36 |
| For business reasons | 2 | 1 | 2 | 2 | 4 | 5 | 7 | 9 | 11 | 14 |
| For non-business reasons | 3 | 3 | 7 | 7 | 7 | 5 | 14 | 11 | 24 | 6 |
| For both business and non-business reasons | * | * | * | * | 1 | * | 1 | 1 | 5 | 16 |
| Did not take an air trip last year | 95 | 96 | 91 | 91. | 88 | 90 | 78 | 79 | 60 | 64 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 1007 |
| Nunber of adults | 1094 | 345 | 896 | 449 | 709 | 434 | 389 | 431 | 257 | 219 |

$\$ 6,000-\$ 7,4999$ per cent took an air trip. When the percentages differ as between the years, it is usually by only one or two points.

This first impression of basic similarity is not entirely confirmed on closer study of the data. Over this period prices have risen. It took a higher income in 1964 than in 1965 to enjoy a given standard of living. In order to take the change in prices into account the relation between income and air travel has been plotted in Graph 2, with income converted into constant 1958 dollars. The graph shows an upward shift in the relation between income and air travel. Thus, people at a given level of real income are now more likely to fly than in 1955. This upward shift must be attributed to forces other than income. Indeed, it would be incautious to interpret the basic association between income and air travel as showing simply that people with more money will spend it on air travel. It is also true, for example, that people in executive positions are likely to travel on business and also are likely to be in the upper income groups. Even after allowance for such relationships, however, there is no question that income is one of the basic determinants of air travel.

4 second basic statistical distribution concerning the air travel market is the distribution showing how many air trips per year are taken by air travelers. It is not easy to estimate this distribution with any precision since it is not easy for people who travel often to tell an interviewer exactly how many air trips they take in a year. The distributions in Table 3, therefore, must be considered as approximations. The most likely error is that, since air travel carries some prestige, people exaggerate how many air trips they take.

It is remarkable how much stability there has been since 1955 in air travelers' estimates of the number of air trips they take. The proportion

## Graph 2

Comparison of the Per Cent of Adults in Different Income Groups Who Took Air Trips in 1955 and 1964


## TABLE 3

Trend in Frequency of Air Travel for Business and Non-Business Purposes
(Percentage distribution of adults who took trips)

| Business Trips | Year $^{\text {a }}$ |  |  |
| :--- | ---: | :---: | :---: |
|  |  |  |  |
| Number of Trips | 1955 | 1962 | 1964 |
|  |  |  | 40 |
| One | 39 | 40 | 40 |
| Two | 17 | 17 | 17 |
| Three | 9 | 10 | 11 |
| Four | 9 | 8 | 5 |
| Five to ten | 17 | 13 | 10 |
| Eleven or more | 9 | 12 | 17 |
|  |  |  |  |
| Total | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of adults | 94 | 209 | 131 |

## Non-Business Trips

Number of Trips

| One | 69 | 69 | 74 |
| :--- | ---: | ---: | ---: |
| Two | 17 | 15 | 14 |
| Three | 5 | 6 | 5 |
| Four | 5 | 5 | 4 |
| Pive to ten | 3 | 4 | 2 |
| Eleven or more | 1 | 1 | 1 |
|  |  |  |  |
| Tomber of adults | $100 \%$ | $100 \%$ | $100 \%$ |
| Munn |  |  |  |
|  | 206 | 370 | 214 |

[^0]
## Graph 3

Business Air Travelers Distributed by the Number of
Business Air Trips They Took Last Year

Per Cent


Number of Business Air Trips Taken Last Year
of those who flew on business who took only one business air trip was 39 per cent in 1955,40 per cent in 1962 , and 40 per cent in 1964. If those who take five or more trips on business are considered frequent business travelers, they were 26 per cent of all business travelers in 1955, 25 per cent in 1962 , and 27 per cent in 1964. There may have been some increase, however, in the proportion of business travelers who took eleven or more trips.

The distribution showing the number of non-business air trips taken by those who took at least one such trip shows the same general stability. About seven out of ten adults who took any non-business air trip took only one. Only a very few people, 3 to 5 per cent of all non-business air travelers, take five or more non-business air trips in one year.

An alternative way of looking at the same basic data is to disregard the distinction between business and non-business trips and consider the number of air trips for any purpose taken by those who took at least one air trip. This approach is taken in Table 4. It is possible to estimate the proportion of all air trips accounted for by those who travel with different frequency, and the results of such a calculation are shown in the second column of Table 4.

The air travelers who only fly once are the largest group of people, 60 per cent of all air travelers, but they account for only about 18 per cent of all air trips. At the other end of the distribution 7 per cent who take ten or more trips account for 48 per cent of all air trips - if their reports are accurate. As previously remarked, these people probably exaggerate how often they fly, no doubt unintentionally, so that it seems likely that they actually account for rather less than 48 per cent of all air trips. Estimates of the behavior of such a small group are also

TABLE 4
Total Frequency of Air Travel in the Last 12 Months
(Percentage distribution of adults who took air trips)

*Less than one-half of one per cent.
${ }^{\text {a }}$ Excludes 19 adults for whom total frequency of air travel was not ascertained.
bhese shares should be regarded as rough approximations. The air trips reported by frequent travelers may overestimate their. actual frequency of travel.

Graph 4
Cumulative Share of Total Air Trips Accounted for by
Those Who Travel with Different Frequency

subject to considerable sampling error. If five or more trips per year is considered the definition of a frequent air traveler, then the estimate in the table is that 12 per cent of all air travelers are frequent air travelers and frequent air travelers account for 58 per cent of all air travel. More cautiously, one might say that, when air travelers are ranked according to how much they fly, the top tenth account for roughly half of the air travel.

It is possible to make a comparison of these results with those recently reported by the Port of New York Authority in New York's Domestic Air Passenger Market, April 1963 through March 1964. This survey was based on questionnaires distributed to passengers in flight. Like the present survey it necessarily relies on people's estimates of the number of air trips they make per year. The convention was adopted, however, of counting a round trip as two trips rather than one, as in this report. The results were as follows:

| Number of Trips During Past Twelve Months |  | Per Cent of Seats Occupied |  |
| :---: | :---: | :---: | :---: |
| As Reported | Adjusted to Count |  |  |
| by P.N.Y.A. | A Round Trip as One | P.N.Y.A. | $\underline{\text { S.R.C. }}$ |
| 1-2 | 1/2-1 | 19 | 18 |
| 3-4 | 1 1/2-2 | 12 | 7 |
| 5-9 | $21 / 2-41 / 2$ | 16 | 16 |
| 10-19 | 5-9 1/2 | 16 | 10 |
| 20-39 | 10-19 1/2 | 17 | 48 |
| 40 plus | 20 plus | 20 |  |
| Total |  | 100\% | 100\% |

At the bottom of the distribution those tho reported only one rrip accúuited for 19 per cent in the P.N.Y.A. survey and 18 per cent in this survey, which is close agreement. At the top of the distribution, however, the
estimate from the inflight survey is that those taking ten or more round-trips a year accounted for only 37 per cent of the trips compared to 48 per cent from this survey. This result suggests that the estimate from this survey is high. The comparison, of course, is imperfect travelers to New York may very well not be typical of all air travelers. It is, perhaps, not so remarkable that the two distributions differ in the exact importance they ascribe to the very small group of very frequent travelers. It is more remarkable that they agree so closely about the share of the market accounted for by the flyers who take a single trip.
B. Trends in the Proportion of the Population Who Ever Have Flown

People who have done something once are likely to do it again. This common-sense observation has been shown to apply to air travel. People who have once flown are more likely to fly again than others of the same income, age, and other characteristics. (See, for example, The Changing Travel Market, Pp. 88-94 and 343.) It is, therefore, important to the air travel industry to estimate the rising proportion of the adult population who are experienced flyers.

As of late 196439 per cent of all adults in the United States had at some time taken an air trip. This proportion has been rising steadily since 1955, when it was 23 per cent. The increase has averaged very close to 1.8 per cent per year. This estimate is consistent with what people say about the year they took their first air trip, as will be discussed below (Table 7). To Indicate how closely such a trend fits the survey findings a colum has been added to Table 5 showing what the per cent of flyers would have been in each year from 1955 to 1964 if it had started at 23 per cent and risen 1.8 points each year. This method, of course,

TABLE 5
Trend in Proportion of Adults Who Were Experienced Aix Travelers ${ }^{a}$

| Survey Year | Per Cent of Adults Who Were Experienced | Hypothetical Trend Assuming Average Increase of 1.8 Per Cent Per Year |
| :---: | :---: | :---: |
| 1955 | 23 | 23.0 |
| 1956 | - | 24.8 |
| 1957 | 27 | 26.6 |
| 1958 | 29 | 28.4 |
| 1959 | - | 30.2 |
| 1960 | 28 | 32.0 |
| 1961 | - | 33.8 |
| 1962 | 36 | 35.6 |
| 1963 | - | 37.4 |
| 1964 | 39 | 39.2 |

${ }^{\text {a }}$ Sources: "The Travel Market, 1961-62", p. 23 and the 1964-1965 Travel Survey.

TABLE 6
Experience as an Air Traveler by Age of Adult, 1955 and 1964
(Percentage distribution of adults)

| Experience as | All Adults |  | 18-24 |  | 25-34 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| an Air Traveler | 1955 | $\underline{1964}$ | 1955 | 1964 | 1955 | 1964 |  |  |
| Have taken an |  |  |  |  |  | 47 |  |  |
| Have never taken an air trip | 75 | 61 | 72 | 68 | 66 | 53 |  |  |
| Not ascertained | 2 | - | 4 | - | 2 | - |  |  |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |  |  |
| Number of adults | 8485 | $3049{ }^{\text {a }}$ | 1009 | 346 | 1882 | 608 |  |  |
|  | 35-44 |  | 45-54 |  | 55-64 |  | $65+$ |  |
|  | -1955 | 1964 | 1955 | $\underline{1964}$ | 1955 | 1964 | 1955 | 1964 |
| Have taken an air trip | 25 | 45 | 24 | 37 | 18 | 36 | 9 | 27 |
| Have never taken an air trip | 74 | 55 | 75 | 63 | 81 | 64 | 89 | 73 |
| Not sscertained | 1 | - | 1 | - | 1 | - | 2 | - |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of adults | 1802 | 673 | 1509 | 573 | 1188 | 409 | 998 | 409 |

[^1]
## TABLE 7

## Year of First Air Trip

(Percentage distribution of adults)

| Year of First Air Trip | Per Cent of Adults |  |
| :---: | :---: | :---: |
|  | 1957 | 1964 |
| Have taken an air trip | 28 | 39 |
| Before 1940 | 2 | 2 |
| 1940-1949 | 10 | 10 |
| 1950-1955 | 12 | 10 |
| 1956-1957 | 2 | 4 |
| 1958 | * | 2 |
| 1959 | - | 2 |
| 1960 | - | 1 |
| 1961 | - | 1 |
| 1962 | - | 2 |
| 1963 | - | 2 |
| 1964 | - | 1 |
| Year not ascertained | 1 | 2 |
| Never have taken an $\qquad$ air trip | 72 | 61 |
| Total | 100\% | 100\% |
| Number of adults | 3149 | $3049{ }^{\text {a }}$ |
| Excludes 52 adults who experience was not as | ir travel ined. |  |

permits extrapolation into the future. It would lead to a projection that $4 i$ per cent of all adults will be experienced flyers by the end of 1965.

There are differences, of course, in the percentage of adults of different ages who are experienced. Broadly speaking, young people have not had so many years in which to take their first trip as people in their middle years. Older people belong to a generation for whom air travel was less common. These generalizations are less appropriate in 1964, however, than they were in 1955. Even of those 18-24 in 196432 per cent were experienced, while of those over 65,27 per cent were experienced.

It is possible to trace what has happened over the nine year period by remembering that everybody has aged nine years. Those 25-34 are all 34-43, which is perhaps close enough to $35-44$. It is not too far wrong, then, to consider those 25-34 in 1955 as members of the same cohort as those $35-44$ in 1964. It appears that 32 per cent of these people were experienced in 1955 and 45 per cent in 1964, an increase of 13 points. For the group who were $45-54$ in 1955 the increase was from 24 .per cent in 1955 to 36 per cent in 1964 , an increase of 12 points. For the oldest age group the comparison is not quite so neat since the oldest people among those 65 or more in 1964 were not 55-64 in 1955 - they were already over 65. Nevertheless, we may note that 18 per cent of those $55-64$ were experienced in 1964 and 27 per cent of those 65 or more were experienced nine years later. If it were not for that awkward point about the people over 75 the implication would be that about 9 per cent of this cohort of people took their first air trip during the period. In other words there has been a broadening of the air travel market into the older age groups over this period.

It is possible to ask people in what year they took their first air trip. The results of such a question, shown in Table 7 , show a reasonable distribution over the years. The answers indicate that 1 to 2 per cent of all adults took their first air trip in each year back to about 1950. This pattern is consistent with the trends shown in Table 5, as previously remarked.

As time goes on $i t$ will be increasingly necessary to take into account the mortality among experienced air travelexs, and it will take more than 2 per cent of new flyers to increase the proportion of all adults who are fiyers by 2 per cent. Up to now, however, there have been few experienced flyers in the oldest age groups, and correspondingly small losses from the group who are experienced.

## C. First Alr Trips

Since the expansion of the group of experienced flyers is of special interest, in this study an attempt was made to discover which air trips of those studied in detail were the first air trip for one or more of the party. Information was obtained about 71 air trips which met this specification. Their principal characteristics are shown in Table 8.

At present most of these air trips are non-business trips. Only 19 per cent were entirely on business, and even if trips partly on business are included, only 27 per cent can be considered business trips. Three out of four first air trips are entirely for non-business reasons. It would be interesting to know whether the same statement would have been true ten or fifteen years ago, buc cine data art uii available.

Most of the first air trips are for considerable distances. More than half are to places 500 miles or more away, including nearly four out
of ten to places 1000 miles or more away. It is for these long trips, of course, that aix travel has the greatest advantage in time saved over the other modes of travel.

About four out of ten of the first trips involve a single person traveling alone. The more common pattern is for the party to consist of two or more people. In this respect first air trips are by no means typical of all air trips. As will be discussed later in this report (see Table 27), of all air trips about 76 per cent involve only a single person. We may speculate that neophyte flyers find it reassuring to have a companion. It is also appropriate to note that larger parties are more typical of non-business than of business travel.

## D. Profiles of the Air Traveler and the Frequent Air Traveler

Air travelers are by no means typical of the population at large, and frequent air travelers are an even more select group. Selected characteristics of all adults are contrasted in Table 9 with the characteristics of all air travelers, infrequent air travelers, and frequent air travelers. The definition of "frequent" used in the preparation of this table is that the individual took four or more air trips in the year covered by the survey.

Of all adults only 7 per cent are members of families with incomes of $\$ 15,000$ a year or above. Of frequent air travelers, 51 per cent are from families at this income level. The infrequent air travelers fall in between: 19 per cent of them are from families with incomes of $\$ 15,000$ or more.

Air travelers also differ to some extent from the general population in age: they fall near the middle of the age distribution. The young
TABLE 8
Characteristics of First Air Trips(Weighted percentage distribution of air trips which werethe first air trip for one or more of the party traveling together)
A. Purpose Per Cent of Trips ..... 19
Partly business, business for some of the party ..... 8
Personal affairs ..... 18
Vacation and pleasure travel ..... 55
Total ..... 100\%
Number of first air trips ..... 68
B. Distance in Miles
100-199 ..... 7
200-299 ..... 11
300-399 ..... 15
400-499 ..... 11
500-749 ..... 13
750-999 ..... 5
1000-1499 ..... 19
1500 and over ..... 19
Total ..... $100 \%$
Number of first air trips ..... 71
C. Composition of the Party Who Went on the Trip
One adult ..... 39
Married couple ..... 18
Married couple plus children under 18 ..... 13
One adult plus other relatives or friends ..... 11
One adult plus business associates ..... 8
Other combinations ..... 11
Total ..... $100 \%$
Number of first air trips ..... 71

TABLE 9
Characteristics of Frequent and Infrequent Air Travelers, 1964 ${ }^{\text {a }}$
(Percentage distribution of adults)

| Family Income | $\begin{gathered} \text { All } \\ \text { Adults } \end{gathered}$ | All Air Travelers | Infrequent Air Travelers | Frequent Air Travelers |
| :---: | :---: | :---: | :---: | :---: |
| Under \$2000 | 10 | 1 | 1 | * |
| \$2000-2999 | 8 | 1 | 3 | * |
| \$3000-3999 | 9 | 4 | 5 | * |
| \$4000-4999 | 9 | 5 | 5 | 1 |
| \$5000-5999 | 11 | 5 | 6 | * |
| \$6000-7499 | 16 | 13 | 15 | 8 |
| \$7500-9999 | 15 | 15 | 16 | 14. |
| \$10,000-14,999 | 15 | 30 | 30 | 26 |
| \$15,000 and over | 7 | 26 | 19 | 51 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of adults | 2945 | 305 | 239 | 66. |

Age of Adult

| $18-24$ | 12 | 12 | 14 | 9 |
| :--- | ---: | ---: | ---: | ---: |
| $25-34$ | 20 | 23 | 23 | 21 |
| $35-44$ | 22 | 26 | 24 | 32 |
| $45-54$ | 19 | 19 | 17 | 24 |
| $55-64$ | 13 | 13 | 14 | 11 |
| 65 and over | 14 | -7 | 8 | 3 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of adults | 3049 | 319 | 253 | 66 |

Sex of Adult

| Male | 47 | 60 | 54 | 80 |
| :--- | ---: | ---: | ---: | ---: |
| Female | 53 | 40 | 46 | 20 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of adults | 3079 | 321 |  | 255 |

* Less than one-half of one per cent.
a Frequent air travelers are those who took 4 or more air trips in the survey year.
people under 25 and the old people over 65 are not likely to be frequent air travelers. The differences, however, are moderately large. Of all adults studied 26 per cent are under 25 or over 64. Of the frequent air travelers only 12 per cent are under 25 or over 64. Of the frequent air travelers 32 per cent are aged 35-44. In other words the frequent air traveler is more likely to be about 40 years old than any other age. Men and women make up roughly equal proportions of the infrequent air travelexs. The frequent air travelers are primarily men, however. Within this group the ratio is about four men to one woman. The people who travel frequently are primarily men traveling on business.


## E. The Effect of Migration on Air Travel

One of the basic motives for taking a non-business trip is to visit friends or relatives at a distance. People who have migrated to a new community are very likely to have friends or relatives to visit in the community which they left. These people, therefore, might be expected, in general, to take more trips than the general population, and, specifically, to take more air trips.

These expectations are supported by the data. People were asked whether they always have lived in the state where they are living now or moved into that state at some time in their lives. Of the interstate migrants 51 per cent have at some time taken an air trip compared to 32 per cent of the non-migrants (Table 10). If attention is restricted to air travel in the last. year, of the interstate migrants 15 per cent took at least one air trip compared to 8 per cent of the non-migrants. In other words, nearly twice as many of the migrants took an air trip (Graph 5).

TABLE 10

The Effect of Migration on Air Travel
(Percentage distribution of respondents)

## A. Whether Ever Have Taken an Air Trip

| Length of Residence in State Where Nov |
| :---: |
| Living |


| $\substack{\text { Moved into the State } \\ \text { at Some Time }}$ | Have Always <br> Lived in this State |
| :---: | :---: |
| 51 | 32 |
| 49 | 68 |
| $100 \%$ | $100 \%$ |
| 525 | 867 |


| Have taken an air trip | 39 | 51 | 32 |
| :--- | :---: | :---: | :---: |
| Never have flown | 61 | 49 | 68 |
|  | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of interviews | 1392 | 525 | 867 |

B. Air Travel Last Year

| Have taken an air trip | $10^{a}$ | 15 | 8 |
| :--- | :---: | :---: | :---: |
| Have not taken an air trip <br> in last year | 90 | 85 | 92 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of interviews | 1399 | 524 | 874 |

[^2]
## Graph 5

Air Travel by Interstate Migrants and Non-Migrants


A qualification must be entered at this point. People in the upper socio-economic groups are more likely to migrate than people of low social status. People who have been to college migrate more, have better jobs and higher incomes, and also take more air trips. It is not a simple matter to sort out the effects of income, education, and migration and say to what extent air travel is to be explained by the one rather than the other. More elaborate statistical analysis would be required than is reported here. What is shown, however, by Table 10 is that there is a clear association between past migration and air travel.

## II. Vacation Travel

One of the objectives of this study has been to measure the frequency of vacations and to assess the importance of multiple vacations. The main finding is that multiple vacations are surprisingly common. Many people do take more than one vacation in a year and often they take more than one trip. The automobile dominates the market for the trips people take on their second and third vacations, just as it dominates most of the travel market.

## A. The Frequency of Vacations

Just how many people have a vacation depends on exactly what one means by a vacation. In this study the frequency of vacations was estimated from answers to the following question:

Did (the head of the family being interviewed) have a vacation of a week or more anytime in the last 12 months?

As shown in Table 11 and Graph 6, 57 per cent of all heads of families did have a vacation. Of those with family incomes over $\$ 10,000,78$ per cent had a vacation.

The incidence of multiple vacations was estimated on the basis of answers to the following question, which was asked of those who did report having a vacation:

Did (the head of the family) take his vacation all at one time, or how?

Of all family heads 38 per cent reported a single vacation but 13 per cent reported two vacations and 6 per cent, three or more vacations. People with high incomes are more likely to have multiple vacations than others. Thirty per cent of heads of families over the $\$ 10,000$ income level enjoyed two or more vacations (Table 11 and Graph 6).

## TABLE 11

## The Frequency of Vacations

(Percentage distribution of family heads)


## Graph 6

Per Cent of Family Heads Who Had a Vacation of a Week or More in the Last Year


Per Cent of Family Heads with Vacations Who Took Vacation Trips Last Year


People who take more than one vacation naturally account for a larger proportion of all vacations than they represent of all people who took vacations. One way to look at the matter is to consider the per cent of all vacations accounted for by people who took different numbers of vacations. The people who took multiple vacations account for half (52 per cent) of all vacations. (Last section of Table 11.) From the point of view of the travel industry this way of looking at the matter is perhaps the most appropriate. Each vacation is, potentially, a vacation trip. Half of all the potential vacation trips are accounted for by the 19 per cent of the population who take two or more vacations.

## B. Whether People with Vacations Took Trips

Not all vacations are spent in travel. People may take short trips of under 100 miles or they may stay at home. Of all those who had one or more vacations, 27 per cent took no trip (Table 12). Most people, however, do take trips on their vacations. Of those with one vacation, 70 per cent took a trip. Of those with two vacations, only 20 per cent stayed near home both times, and 41 per cent took two trips. Of those with three vacations, 44 per cent took three trips - implying that 56 per cent stayed home for at least one of the three vacations. Only 13 per cent, however, stayed home for all three.

Vacation trips are not quite so highly concentrated as vacations as a result of this common tendency to stay home at least once. People with two or three vacations account for 38 per cent of all vacation trips. Thircy-eignt per ceut, however, fo a aiacabla fraction of the total vacation travel market.

## TABLE 12

## Number of Vacation Trips Taken by Family Heads

(Percentage distribution of vacations taken by family heads)

| A. Number of Vacation Trips | Per Cent of Heads Who Took One or More Vacations | One | Two | Three |
| :---: | :---: | :---: | :---: | :---: |
| None | 27 | 30 | 20 | 13 |
| One | 58 | 70 | 39 | 25 |
| Two | 10 | - | 41 | 18 |
| Three | 5 | - | - | 44 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of family heads | 899 | 608 | 201 | 90 |
| Number of vacations | 1280 |  |  |  |

B. Nunber of Vacations
One ..... 62
Two ..... 22
Three ..... 16
Total ..... $100 \%$
Number of vacation trips ..... 846

## C. Description of Vacation Trips

What peof'e did on their first, second, and third vacations is shown in Table 13. Fifty-seven per cent of all heads of families had a first vacation. Fourteen per cent stayed home, 4 per cent took a short trip, and 39 per cent took a trip of 100 miles or more away. Of those with incones over $\$ 10,000,63$ per cent took a trip. For the second and third vacations the distribution of activities is about the same as for the first - if one considers only the people who had them.

Most vacation trips, of course, are to destinations in the coterminous United States. Travel abroad, however, is becoming common among people in the upper income groups. On their first vacation, of those with incomes over $\$ 10,000,7$ per cent went to a foreign country.

The usual mode of transportation on a vacation is the automobile. On their first vacation 32 per cent traveled exclusively by car out of 39 per cent who took a trip by any method of transportation. Even of those with income over $\$ 10,000,48$ per cent traveled by auto only out of 63 per cent who traveled at all on their first vacation. For this group travel by air was in second place. Nine per cent traveled exclusively by air out of the 63 per cent who traveled at all. Even on people's second and third vacations the auto is the most frequently used method of transportation. It should perhaps be added that these results refer to a period prior to the recent development of family plans for air travel. These pricing arrangements may be changing patterns of vacation travel.

TABLE 13

Whether Took a Trip on First, Second, and Third Vacations

|  | $\begin{gathered} \text { First } \\ \text { Vacation } \end{gathered}$ |  | Second Vacation |  | $\begin{gathered} \text { Third } \\ \text { Vacation } \end{gathered}$ |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| A. Whether Took a Trip on This Vacation | Al1 | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ | A11 | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ | All | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ |
| Had this vacation | 57 | 78 | 19 | 29 | 6 | 11 |
| Took a trip 100 miles away | 39 | 63 | 11 | 21 | 4 | 7 |
| Took a ghorter trip | 4 | 4 | 2 | 2 | 1 | 1 |
| Stayed home | 14 | 11 | 6 | 6 | 1 | 3 |
| Did not have this |  |  |  |  |  |  |
| vacation | 43 | 22 | 81 | 71 | 94 | 89 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |

B. Where Family Head

Went on the Vacation

| vacation | 39 | 63 | 11 | 21 | 4 | 7 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| In the coterminous |  |  |  |  |  |  |
| U.S.A. | 37 | 54 | 10 | 19 | 3 | 6 |
| Alaska, Hawaii | * | 1 | * | 1 | * | * |
| Went to a foreign country | 1 | 7 | 1 | 1 | 1 | 1 |
| American territories | 1 | 1 | * | * | * | * |
| Did not take a trip |  |  |  |  |  |  |
| on this vacation | 18 | 15 | 8 | 8 | $\underline{2}$ | 4 |
| Did not have this |  |  |  |  |  |  |
| vacation | 43 | 22 | 81 | 71 | 94 | 89 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |

Whether Took a Trip on First, Second, and Third Vacations - continued

|  | First Vacation |  | SecondVacation |  | Third Vacation |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| C. Kinds of Transportation Used | A11 | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ | All | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ | All | $\begin{aligned} & \$ 10,000 \\ & \text { or Over } \end{aligned}$ |
| $\frac{\text { Took a trip on this }}{\text { vacation }}$ | 39 | 63 | 11 | 21 | 4 | 7 |
| Auto only | 32 | 48 | 9 | 18 | 3 | 5 |
| Air only | 3 | 9 | 1 | 2 | 1 | 2 |
| Rail only | 1 | 1 | * | * | * | * |
| Bus only | 1 | 2 | * | * | * | * |
| Auto and one or more common carriers | 1 | 2 | 1 | 1 | * | * |
| Combination of common carriers | 1 | 1 | * | * | * | * |
| Did not take a trip on this vacation | 18 | 15 | 8 | 8 | $\underline{2}$ | 4 |
| $\frac{\text { Did not have this }}{\text { vacation }}$ | 43 | 22 | 81 | 71 | 94 | 89 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of family heads | 1574 | 293 | 1574 | 293 | 1574 | 293 |

[^3]III. The Distribution of Trips by Mode, Purpose, and Distance

As discussed in the Preface, this study did not have a large enough sample nor was it so designed as to provide in itself the best available estimates of the distribution of all trips by distance, purpose, and mode of travel. An estimate of that distribution is shown in Table 14. This table is based primarily on the 1963 Census of Passenger Transportation, checked and supplemented as indicated in the footnotes to the table. The split between business and non-business for bus and rail is probably the weakest part of the table, but involves only a rather small proportion of all travel.

Table 15, unlike Table 14 , is a weighted distribution of trips from this survey. As far as business travel is concerned, because of the use of weights in Table 15 the first column of that table merely shows in different form the choice of mode for trips of different length implied by Table 14. The main results are that business travel of $100-199$ miles is primarily by auto while business travel of 500 miles or more is more than 80 per cent by aix. In the $200-499$ mile range the proportions by auto and air are more nearly even, implying keener competition between these two methods of travel.

The remaining three columns of Table 15 , while consistent with Table 14, present an additional breakdown of trips by purpose based on the results of this survey. Three categories of purpose are considered: trips partly on business or business for some of the party, trips on personal affairs, and vacation and pleasure travel. There are differences in choice of mode among these types of trip, espectally for distances of 500 miles or more. In that mileage bracket 71 per cent of the partly business trips are by air in contrast to 29 per cent of the trips on

TABLE 14
Estimated Distribution of All Trips by Mode, Purpose, and Distance, $1963^{1}$
(Percentage distribution of all trips based on Census and other sources)

| Mode ${ }^{2}$ and Purpose | $\begin{gathered} \text { All } \\ (100 \text { miles or more) } \end{gathered}$ | Distance (miles) ${ }^{2}$ |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | 100-199 | 200-499 | $500+$ |
| Air | 10.7 | 1.1 | 4.3 | 5.3 |
| Business ${ }^{3}$ | 6.8 | . 7 | 2.8 | 3.4 |
| Non-business | 3.9 | . 4 | 1.5 | 1.9 |
| Rail | 4.1 | 1.3 | 1.6 | 1.2 |
| Business ${ }^{4}$ | 1.1 | . 4 | . 4 | . 3 |
| Non-business | 3.0 | . 9 | 1.2 | . 9 |
| Bus | 4.5 | 2.3 | 1.6 | . 6 |
| Business ${ }^{5}$ | . 7 | . 5 | . 2 | . 0 |
| Non-business | 3.8 | 1.8 | 1.4 | . 6 |
| Auto | 80.7 | 50.4 | 23.5 | 6.8 |
| Business ${ }^{6}$ | 18.7 | 12.6 | 5.6 | . 5 |
| Non-business | 62.0 | 37.8 | 17.9 | 6.3 |
| Total | 100.0 | 55.1 | 31.0 | 13.9 |
| ${ }^{1}$ Estimates in this table have been revised slightly from those shown in the Preliminary Report. |  |  |  |  |
| 2 The distribution of trips by mode and distance was calculated from the 1963 Census of Transportation, Advance Report TC 63 (A)-P4, Table 7. The distribution for air agrees closely with data published by the C.A.B., Handbook of Airline Statistics, 1963, P. 409. For bus the distribution agrees closely with unpublished tabulations. |  |  |  |  |
| $3^{T h e}$ division between business and non-business for air was computed from the Port of New York Authority - Airlines Domeatic In-flight Survey 1963-1964, p. 13. A Inear extrapolation of the Port Authority's data was made to account for slight differences between the two sets of distance intervals. |  |  |  |  |
| ${ }^{4}$ From the 1961-1962 Travel Survey. About 25 per cent of rail trips in each distance category are assumed to be taken for business |  |  |  |  |

reasons.
${ }^{5}$ From the 1961-1962 Travel Survey. About 13 per cent of bus trips are estimated to be taken for business reasons. This estimate is based on tabulations of recent bus trips from that survey.
${ }^{6}$ The division between business and non-business for auto was obtained by subtracting estimates of business travel by air, rail, and bus from estimates of total business travel provided by the 1963 Census of Transportation, Table 13.

TABLE 15
Choice of Mode of Travel for Trips of Different Distances for Different Purposes
(Weighted percentage distribution of trips)

| Mode Choice |  | Purpose |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | All Trips | Business | Partly Business, Business for Some of Party | $\begin{aligned} & \text { Personal } \\ & \text { Affairs } \\ & \hline \end{aligned}$ | Vacation and Pleasure Travel |
| Auto | 92 | 88 | 99 | 94 | 92 |
| Air | 2 | 5 | * | * | 1 |
| Rail | 2 | 3 | 1 | 2 | 2 |
| Bus | 4 | 4 | * | 4 | 5 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 1133 | 296 | 30 | 147 | 660 |

200-499 Miles

| Auto | 75 | 55 | 86 | 74 | 82 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Air | 15 | 38 | 6 | 13 | 6 |
| Rail | 5 | 4 | 8 | 3 | 6 |
| Bus | 5 | 3 | * | 10 | 6 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 1021 | 224 | 56 | 144 | 627 |

500 Miles and Over

| Auto | 49 | 10 | 27 | 52 | 68 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Air | 38 | 82 | 71 | 29 | 17 |
| Rail | 9 | 8 | 2 | 10 | 9 |
| Bus | 4 | * | * | 9 | 6 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 881 | 188 | 43 | 123 | 527 |

[^4]
#### Abstract

personal affairs and only 17 per cent of the vacation trips. It is, perhaps, reasonable that most of these long trips, like most business trips, should be by air. The higher proportion of trips on personal affairs than vacation trips by air may require more explanation. Yet, many of these trips have an emergency character, ariaing out of an illness or death or a family crisis. The speed of air travel may be a critical consideration for such trips.


In the mileage bracket from 200 to 499 wiles the proportion of trips by air is lower for all purposes than for the long trips. It continues to be true that more of the trips on personal affairs than on vacation are by air ( 14 per cent versus 6 per cent). In this mileage bracket a very large fraction, 86 per cent, of the partly business trips are by auto. It may be that the reason is to be sought in the fact that two can travel by auto as cheaply as one since many of the partly business trips involve two or more people.

In the mileage bracket from 100 to 199 modes the automobile is dominant regardless of the purpose of the trip. A few trips are taken by other modes, but nine trips out of ten are by car.

## IV. The Speed of Common Carriex Service

One of the basic factors in people's choice of mode of transportation is speed. Other things equal, travelers usually prefer the fastest way to travel. Business travelers in particular are interested in saving time. Speed, on close examination, is not a simple attribute of the different means of transport. There is an important difference between the speed attained by a vehicle in full career and the average speed from terminal to terminal. Speed from where the traveler begins his journey to where he ends it, door-to-door speed, involves still other considerations. It is primarily to this last topic that attention has been directed in this investigation. This chapter reports results having to do with where people start and end their trips, how long it takes them to reach the teminals, how long they spend on board the common carrier, and the distances from their homes and places of business to the nearest terminals. This chapter also includes results of a question asked of automobile travelers about the importance of their auto for local travel after they reach their destination.

## A. The Sequence of Steps on Trips by Common Carrier

Where do people start their journeys? Typically, they leave from their homes. Of all common carrier trips about 85 per cent start from people's homes (Table 16). For air trips, if anything, the percentage is slightly lower, 83 per cent, and for rail trips slightly higher, 93 per cent. But the main finding is that better than four out of five trips start from people's places of residence.

Regardless of which common carrier they will be using, most people (74 per cent) get to the terminal in an automobile. This percentage is

TABLE 16
Sequence of Steps of Trips by Common Carrier
(Weighted percentage distribution of common carrier trips)

|  |  | Mode |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Where Started Trip | A11 Common Carrier Trips | Air | Rail | Bus |
| Work | 12 | 16 | 4 | 9 |
| Home | 85 | 83 | 93 | 85 |
| Other | 3 | 3 | 3 | 6 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of common carrier trips | 743 | 454 | 127 | 152 |

## Mode Used to Get to Terminal

| Walk | 2 | * | 1 | 8 |
| :---: | :---: | :---: | :---: | :---: |
| Taxi; limousine | 17 | 18 | 21 | 9 |
| Auto | 74 | 78 | 73 | 64 |
| Bus | 6 | 2 | 5 | 17 |
| Other | 1. | 2 | * | 2 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of common carrier trips | 731 | 454 | 126 | 152 |

Mode Used at End of Trip, Terminal
to Final Destination

| Walk | 4 | $*$ | 4 | 12 |
| :--- | ---: | ---: | ---: | ---: |
| Taxi; limousine | 32 | 42 | 23 | 19 |
| Auto | 52 | 53 | 53 | 47 |
| Bus | 9 | 3 | 20 | 14 |
| Other |  |  | 2 | $*$ |
| Total | $100 \%$ | -200 | $100 \%$ | $100 \%$ |
| Number of common carrier trips |  |  | 8 |  |

Sequence of Steps of Trips by Common Carrier - cont.

| Number of Miles from the Center of the Most Distant Place |  | Mode |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Reached on the Trip to the Area the Traveler Hanted to Visit ${ }^{-}$ | All Common Carrier Trips | Air | Rail | Bus |
| 0-2 | 42 | 42 | 45 | 40 |
| 3-4 | 17 | 17 | 16 | 16 |
| 5-9 | 15 | 11 | 20 | 20 |
| 10-14 | 12 | 12 | 11 | 12 |
| 15-24 | 7 | 8 | 6 | 6 |
| 25 and over | 7 | 10 | 2 | 6 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of common carrier trips | 721 | 436 | 153 | 132 |

[^5]slightly lower for bus travel: about one bus traveler in three gets to the terminal by walking, taking a taxi, or riding a local bus. The fact that most people drive to the terminal in itself is suggestive about why many choose to take their entire trips by car. Once in their cars, they may find it convenient simply to keep on going.

At the destination one would expect to find fewer people leaving the terminal by automobile, and this expectation is borne out by the data. About half of the trips, however, involve use of an auto at the destination. No question was asked about whose auto was involved, but presumably many people are met by local residents. Very few air travelers (only 3 per cent) leave the terminal by bus, 42 per cent using either a taxi or limousine. Rail and bus trips are somewhat more likely to involve a local bus to the point of final destination, but more often it is a taxi.

The choice of local transportation at the destination obviously depends upon where people want to go. Perhaps the most important point about the final destination is whether or not it is in the center of the city. People were asked, therefore, to estimate the number of miles from the center of the most distant place they reached on their trip to the area they wanted to visit. Their estimates of distance should not be regarded as precise, but should indicate the approximate location correctly.

About 42 per cent of trips by common carrier are to destination which is 0-2 miles from the center. Apparently it would be roughly correct to say that four out of ten trips are to the centrai business digtrict of the destination or a point close to it. Hence, nearly six out of ten trips are not to the center of the place of destination but to places farther out. Air travelers fan out most widely from the centers of the cities. Eighteen per cent of the air trips are to destinations 15
miles or more from the center of the destination. Note that this statement does not refer to distance from the terminal but to diatance from the center of the city. Estimates of the time air travelers spend on the ground getting to their final destination should not be based simply on the time to get from the airport to the central business district since a majority of them are not headed for the central business district.

## B. Time Spent En Route

People were asked directly how long they allowed from when they started out to the scheduled time of departure of the common carrier, and how long it took from the terminal to the final destination. Interviewers were instructed to obtain this information from someone who went on the trip. There may be some memory error in the replies, but there does not seem to be any reason to expect a large bias.

For air trips the median time to reach the terminal was 68 minutes, and to reach the final destination from the terminal at the other end of the trip, 50 minutes (Table 17). It is reasonable that the time from the terminal is the shorter since people reach the airport somewhat prior to scheduled departure but may leave the terminal as soon as they please (unless they must wait for their baggage). Typically, then, an air trip involves about two hours of time on the ground getting to and from terminals. In some instances the time is much longer, with one trip in ten involving two hours or more to get to the terminal. This amount of effort to reach a terminal suggests a long sir trip.

Rail travel typically involves less time to and from terminals than air, probably owing primarily to the central location of railroad stations. The typical rail trip seems to involve 19 or 20 minutes less time to reach

Time Allowed to Get to and from the Terminal on Trips by Common Carrier (Percentage distribution of common carriex trips by mode)

| Time Allowed to Get to and from the Terminal | Mode |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | Air |  | Rail |  | Bus |  |
|  | To | From | To | From | To | From |
| Less than half an hour | 4 | 16 | 31 | 42 | 34 | 49 |
| Half an hour up to 1 hour | 38 | 52 | 32 | 36 | 38 | 32 |
| 1 up to $11 / 2$ hours | 32 | 22 | 25 | 18 | 15 | 14 |
| $11 / 2$ up to 2 hours | 15 | 4 | 5 | 2 |  | 1 |
| 2 to 3 hours | 6 | 5 | 4 | 1 | 3 | 1 |
| 3 hours or more | 5 | 1 | 3 | 1 | 2 | 3 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |
| Median time (minutes) | 68 | 50 | 49 | 37 | 43 | 31 |
| Number of trips | 395 | 389 | 137 | 136 | 176 | 189 |

the station than the typical air trip, and about 13 minutes less to get from the terminal to final destination. Bus trips are roughly comparable to rail trips in time to and from terminals, as one would expect since both rail and bus terminals are usually centrally located. The median times are somewhat lower for bus than for rail, 43 minutes to the terminals, and 31 minutes from the terminals. It should be kept in mind that these estimates of time are for the trips people actually take by the modes in question. Some of the differences among the three modes are no doubt due to the fact that air travel is primarily to and from large centers while the bus is particularly important in rural areas. Reaching a final destination from a terminal in a town of 10,000 people is not the same as in a city of one million.

It is, of course, in the time spent on board the carrier that the greater speed of air travel is shown (Table 18). The median time en route for an air trip is 2.9 hours; a rail trip, 6.2 hours; and a bus trip, 6.8 hours. These times, however, are for trips of unequal distances. They are of interest simply in describing what trips are like by the different modes of travel. Very few air trips involve more than ten hours between teminals. Forty per cent of rail trips take over ten hours, and about 33 per cent of bus trips.

The distribution in Table 19 shows total elapsed time, door to door, for trips by the three types of common carriers. For air the median total time is 4.8 hours; for rail, 8.7 hours; and for bus, 8.3 hours. The greater speed of air travel is partly offset by the longer time to and from the airport. It is perhaps worth coment that virtually no air trips are completed in less than two hours, door-to-door. Four or five hours is

## TABLE 18

## Time on Board the Common Carrier

| Time Spent on Board the Common |  | Mode |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Carrier (Hours) | All Common Carrier Trips | Air | Rail | Bus |
| Under 1 | 5 | 7 | 1 | 2 |
| 1.0-1.9 | 17 | 26 | 4 | 6 |
| 2.0-2.9 | 16 | 19 | 15 | 9 |
| 3.0-3.9 | 15 | 13 | 20 | 16 |
| 4.0-4.9 | 9 | 12 | 7 | 7 |
| 5.0-9.9 | 19 | 17 | 13 | 28 |
| 10.0-14.9 | 8 | 5 | 13 | 12 |
| 15.0-19.9 | 4 | 1 | 8 | 7 |
| 20 or more | 7 | 1 | 19 | 14 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Median time (hours) | 3.8 | 2.9 | 6.2 | 6.8 |
| Number of common carrier trips | 704 | 396 | 133 | 175 |

## TABLE 19

Total Elapsed Time for Trips by Common Carrier

| Total Elapsed Time En Route (Hours) | All Common Carrier Trips | Mode |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Air | Rail | Bus |
| Under 1 | * | * | * | * |
| 1.0-1.9 | 1 | 1 | * | 1 |
| 2.0-2.9 | 9 | 16 | * | 2 |
| 3.0-3.9 | 16 | 20 | 15 | 10 |
| 4.0-4.9 | 17 | 16 | 21 | 14 |
| 5.0-9.9 | 33 | 35 | 19 | 35 |
| 10.0-14.9 | 9 | 7 | 12 | 14 |
| 15.0-19.9 | 5 | 2 | 10 | 9 |
| 20 or more | 10 | 3 | 23 | 15 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Medisn time (hours) | 6.1 | 4.8 | 8.7 | 8.3 |
| Number of common carrier trips | 704 | 396 | 135 | 173 |

* Less than one-half of one per cent.
much more common. Rail and bus trips seem to take a minimum of about three hours, and may take almost any length of time over three hours. No doubt there are many short rail and bus trips to destinations under 100 miles away, but such trips are not considered in this report.


## C. The Speed of Travel by Common Carrier

Since people were asked both the time they spent on their trips and the distance, it is possible to estimate the speed with which they traveled. The estimates of speed must be approximations since distance was asked only by mileage blocks. On the average, however, it should not be too much in error to assume that the actual distance is at the mid-point of the interval. This assumption becomes strained for distances over 1000 milea since the distance brackets used become very wide, 1000-1499 and 1500 and over. Accordingly, speeds have been estimated only for trips of up to 999 miles. Results are shown in Table 20 and Graph 7.

Table 20 requires a word of explanation. As already discussed, people were asked to break down the total time "from where you started to where you wanted to be" into the time on the carrier including any delays and the time to and from the terminals. The first colum of Table 20 shows the average (mean) number of hours on board the plane, train, or bus. The second column shows the average (mean) total elapsed time door-todoor. The second mean is necessarily larger than the first by the amount of time spent getting to and from the terminals. Two estimates of speed have been prepared based on time on board (including delays) and doortondoor time. The last column of the table shows the number of trips on which each row is based. It should be emphasized that the number of observations is very small for some rows.

## TABLE 20

## Distance, Tione, and Speed for Trips by Common Carriex

Estimated Speed

| Average Time <br> on the Carrier <br> (hours)$\quad$Average Elapsed Time <br> Door-to-Door (hours) |
| :--- |

Based on Time Based on Time
Number on Board Door-to-Door
of (m.p.h.) (m.p.h.) Trips

Distance (miles) 100-199 200-299 300-399 400-499 500-749 750-999

Rail
100-199 200-299 300-399 400-499 500-749 750-999

348
100-199
200-299 300-399 $400-499$ 500-749 150-999
1.3
1.5
2.2
2.1
3.4
3.9
3.9
2.9
5.0
6.7
10.1
12.3
15.4
2.7
3.0
3.8
3.8
5.2
6.1
$8-164$
114
160
215
120
144
56
14
85 40 45

184
224
62
3.8
6.8
7.3
7.3
12.6
18.9
4.9
8.5
8.8
11.2
13.5
20.7

52
50
$\begin{array}{rrrr}8.1 & 52 & 43 & 7\end{array}$
$\begin{array}{llll}12.8 & 44 & 35 & 7\end{array}$
51
57
17.5

36
42
41
$\begin{array}{rrrr}8.1 & 52 & 43 & 7\end{array}$
$\begin{array}{llll}12.8 & 44 & 35 & 7\end{array}$
17

50
15
13

40
37
48
62
50
46
31
45
30
19
10
24
17

## Graph 7

Overall Speed, Door-to-Door, for Trips by Common Carrier



#### Abstract

Perhaps the most striking result of these calculations is the slow speed of air travel on a door-to-door basis for short trips. Under 200 miles the estimate is 56 miles per hour, and from 200 to 299 miles, 85 miles per hour. The lower of these speeds is not very different from the speed of automobiles on main rural roads. Allowing for the fact that an auto can leave at exactly the most convenient time for its driver, even 85 to 90 miles per hour does not imply much saving in time by air.

Air speeds, on an elapsed time basis, increase with distance. Speeds for rail and bus also improve with distance, but not to anywhere near the same extent. For trains the estimates are in the neighborhood of 40 miles an hour an an elapsed time basis and 50 on a time on board basis. These estimates, of course, apply not to an unweighted average of all trains but to an average of all trips by rail. People presumably patronize the faster trains in larger numbers. For bus travel the estimates are mostly in the range 30 to 40 miles per hour on a door-to-door basis and 40 to 50 on a time on board basis. There is considerable variability or "wobble" in the estimated speeds, no doubt reflecting variation in how far people travel to the terminal, whether or not service is. non-stop, and the like.


D. The Effect of Distance to the Airport on Whether Peoply Fly

Since the time spent on the ground is an important part of the time taken by an air trip, for people who live many miles from an airport the advantage of air in saving time is reduced and these people, one might expect, should take fewer air trips than those closer to a terminal. This expectation is supported by the results shown in Table 21. In this table those with family incomes below and above $\$ 10,000$ are shown separately.

TABLE 21

## Family Use of Air by Distance from Home to Airport by Income

(Percentage distribution of families)

| Use of Air Last Year | All Families | Distance to Airport (miles) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Family Income Under $\$ 10,000$ |  | 0-2 | 3-4 | 5-9 | 10-24 | 25 or ove |
| At least one family member took an air trip | 10 | 3 | 13 | 15 | 13 | 5 |
| No family member took an air trip | $\underline{90}$ | 97 | 87 | 85 | 87 | 95 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of Femilies | 1223 | 32 | 69 | 207 | 409 | 506 |
| Fanily Income $\$ 10,000$ or Over |  |  |  |  |  |  |
| At least one family member took an air trip | 40 | $a$ | a | 45 | 46 | 31 |
| No family member took an air trip | 60 | a | a | 55 | 54 | 69 |
| Total | 100\% | a | a | 100\% | 100\% | 100\% |
| Number of Families | 283 | 7 | 17 | 67 | 117 | 75 |

[^6]For both groups there is a decline in air travel among those who live 25 miles or more from an airport. Below $\$ 10,000$, 20 per cent of families contain at least one member who took an air trip in a period of a year. Of the families 25 miles or more from an airport only 5 per cent had at least one member take a plane.

At the income level over $\$ 10,000$ where air travel is much more common 40 per cent of all families contain at least one person who flew last year. But if the family lives 25 miles or more from an airport, only 31 per cent have a member who flew. There does not seem to be much doubt that the time to reach the airport is an important factor in the decision whether to fly.

How far it is from where people are to the nearest teminal, therefore, is worth estimating. For business travelers it is relevant to ask the distance from the place where they work to the nearest terminals for each of the three common carriers. This information, based on interviewers' rather than respondents' calculations of distance, appears in Table 22. Those heads of families with incomes over $\$ 10,000$ who travel on business are the most important group. For them, the median distance from place of work to airport is 17.0 miles; from place of work to railroad station, 6.5 miles; and from place of work to bus station, 4.6 miles.

In view of the finding cited earlier that most trips begin from people's homes, distances from residences to terminals are of even greater importance. As shown in Table 23, for families with incomes over $\$ 10,000$ the median distance to the nearest comercial airport is 17 miles; to the nearest railroad station, 9 miles; and to the nearest bus terminal, 7 miles. Typically, then, it is about 8 to 10 miles farther for uper income people to get to the airport.

TABLE 22
Distance to Terminals from Place of Work for Business Travelars ${ }^{1}$
(Percentage distribution of families)
A. Alr: Respondents' Estimates of Kumber of Miles from Where Heads of Families Work to the Nearest: Airport with Scheduled Passenger

Service
$0-2$
3-4
All

5-9
10-24
25 or over

Total

Median
B. Rail: Respondents' Estimates of Number of Miles from Where Heads of Families Work to the Nearest Railroad Passenger Station

27
17
17
24
15
100\%
8.8
6.5

## Distance to Terminals from Place of Work for Business Travelers ${ }^{1}$ - cont.

C. Bus: Respondents' Estimates of Number of Miles from Where Heads of Families Work to the Nearest
Bus Station for Intercity Service All
$0-2 \quad 46 \quad 43$

| $3-4$ | 12 | 9 |
| :--- | ---: | ---: |
| $5-9$ | 18 | 22 |
| $10-24$ | 6 | 4 |


| Total | $100 \%$ | $100 \%$ |
| :--- | :---: | :---: |
| Median | 3.7 | 4.6 |
| Number of Families with <br> Business Travelers | 268 | 121 |

,
Includes only those families where the Head took a business trip
in last 12 months.

## Distance to Terminals from Place of Residence <br> (Percentage distribution of families)

A. Air: Interviewers' Estimates of Number of Miles to Nearest Airport Served by Scheduled Commercial Airline

0-2

3
Income $\$ 10,000$
or Over

## A11

5
18
35
39
100\%
20 miles

2
6
24
41
27
100\%

17 miles
B. Rail: Interviewers' Estimates of Number of Miles to Nearest Railroad Passenger Station

| $0-2$ | 15 | 14 |
| :--- | :---: | :---: |
| $3-4$ | 15 | 14 |
| $5-9$ | 22 | 24 |
| $10-24$ | 30 | 38 |
| 25 or over | 18 | 10 |
| Total | $100 \%$ | $100 \%$ |
| Median | 9 miles | 9 miles |

C. Bus: Interviewers' Estimates of Number of Miles to Nearest Bus Station for Intercity Service

| $0-2$ | 29 | 23 |
| :--- | :---: | :---: |
| $3-4$ | 17 | 15 |
| $5-9$ | 24 | 28 |
| $10-24$ | 24 | 31 |
| 25 or over | 6 | -3 |
| Total | $100 \%$ | $100 \%$ |
| Median | 5 miles | 7 miles |
| Number of families |  |  |

## E. The Fastest Mode for This Trip

One approach to the analysis of the speed of travel is to ask people for their own opinion as to which mode of travel is the fastest for the specific trips which they took. In a sense it is their perception of which is the fastest which is relevant for their behavior. Results appear in Table 24 , with trips classified according to the distance traveled.

It is exceptional for travelers to think of rail or bus as the fastest. The choice is almost exclusively between auto and air. Which of these is believed fastest depends, as one might expect, on the length of the trip. Under 199 miles people report the auto as fastest 75 per cent of the time and aix as fastest for only 20 per cent of the trips (see "per cent of all trips", the first section of Table 24). As the distance lengthens, the ratio between air and auto shifts toward air. At 200-299 miles one is as likely to be fastest as the other. Over 300 miles the preponderance of votes are strongly for air. There are only a few trips over 500 miles for which people say that auto would be the fastest.

How strongly is people's choice of mode influenced by their opinion as to which method of travel is fastest? As shown in the first section of Table 24, for trips of 100-199 tiles of those who think air fastest only 6 per cent went by air. But of those who think auto fastest, none went by air. This relationship is repeated at the other diatances. That is, people who think air is fastest often travel by other modes, but people who think auto is fastest for a given trip virtually never fly. It would appear that believing air is fastest is a necessary but not a sufficient condition for people to fly.

TABLE 24
Fastest Mode for This Trip in the Opinion of the Traveler
by the Mode Actually Used and the Distance

| Mode Used： 100－199 Miles | All Trips | Fasteat Mode for This Trip |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Air | Rail | Bus | Auto |
| Air | 1 | 6 | ＊ | ＊ | ＊ |
| Rail | 4 | 3 | 75 | ＊ | 1 |
| Bus | 5 | 5 | 3 | 73 | 3 |
| Auto | 90 | 86 | 22 | 27 | 96 |
| Total | 100\％ | 100\％ | 100\％ | 100\％ | 100\％ |
| Number of trips | 1108 | 225 | 40 | 15 | 828 |
| Per cent of all trips | 100 | 20 | 4 | 1 | 75 |
| Mode Used： 200-299 Miles |  |  | ． |  |  |
| Air | 10 | 21 | ＊ | － | ＊ |
| Rail | 3 | 4 | 100 | － | 2 |
| Bus | 6 | 7 | ＊ | － | 6 |
| Auto | 81 | 68 | ＊ | － | 92 |
| Total | 100\％ | 100\％ | 100\％ | － | 100\％ |
| Number of trips | 490 | 244 | 2 | 0 | 244 |
| Per cent of all trips | 100 | 50 | ＊ | ＊ | 50 |

Mode Used：
300－399 Miles

| Air | 20 | 28 | ＊ | 33 | 1 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Rail | 7 | 7 | 34 | 33 | 1 |
| Bus | 7 | 8 | 33 | 34 | 6 |
| Auto | 71 | 62 | 33 | ＊ | 92 |
| Tことい1 | 100\％ | 100\％ | 100\％ | 100\％ | 100\％ |
| Number of trips | 295 | 200 | 3 | 3 | 89 |
| Per cent of all trips | 100 | 68 | 1 | 1 | 30 |

Fastest Mode for This Trip in the Opinion of the Traveler by the Mode Actually Used and the Distance - cont.

| Mode Used: |  | Fast | Mod | or Th | Trip |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 400-499 Miles | All Trips | Air | Rail | Bus | Auto |
| Air | 18 | 26 | * | * | 2 |
| Rail | 4 | 6 | 33 | * | * |
| Bus | 6 | 6 | * | 50 | 3 |
| Auto | 72 | 62 | 67 | 50 | 95 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 186 | 125 | 3 | 2 | 56 |
| Per cent of all trips | 100 | 67 | 2 | 1 | 30 |
| Mode Used: 500 <br> Miles or Over |  |  |  |  |  |
| Air | 34 | 39 | * | 11 | * |
| Rail | 9 | 8 | 58 | * | 3 |
| Bus | 9 | 8 | 17 | 33 | 10 |
| Auto | 48 | 45 | 25 | 56 | 87 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 858 | 758 | 12 | 9 | 79 |
| Per cent of all trips | 100 | 88 | 2 | 1 | 9 |

[^7]
## F. Having a Car at the Destination

Although the choice of mode of transportation is certainly influenced by the length of time to reach the destination, other considerations enter. One of these has to do with people's local travel at their destination. One reason for driving one's car is to have it available at the destination. The problem posed in this study is, how important is it to people to have a car after they arrive?

The method used was simply to ask people who did drive to their destination the following question:

On this trip while you were at (your destination) how important was it to have your own car to get around?

The question was phrased in terms of "your own car", which permitted people to reply that they could have rented a car or borrowed a cax to solve their local transportation problem and had no need to drive their own vehicle.

Responses to this question are shown in Table 25 . On 70 per cent of the auto trips people said it was "very important" to have their own car! It makes some difference whether the destination is urban or rural. Of those visiting rural areas 75 per cent said "very important" compared to 64 per cent in cities over 50,000 . No doubt visitors to the very largest cities less often feel it important to have their own car - unless they are visiting the suburbs. The main finding, however, is that most people who now drive their cars on trips say that it is important to them to have those cars at the destination. They may be expected to be hard to convince that they will be better off using any competing method of transportation which does not provide them with a car on their arrival.

Importance of Having Own Car to Get Around at the Most Distant Place Reached for Auto Trips by Whether the Most Distant Place Reached is Rural or Urban
(Percentage distribution of auto trips)

| Importance of Having Own Car at Most Distant Place Reached | $\begin{gathered} \text { All } \\ \text { Auto Trips } \\ \hline \end{gathered}$ | Whether Most Distant Place Reached is Rural or Urban |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | Rural Area | $\begin{gathered} \text { Small Town } \\ (2,500-50,000) \end{gathered}$ | $\begin{gathered} \text { Large City } \\ \text { (Over } 50,000 \text { ) } \end{gathered}$ |
| Very important | 70 | 75 | 73 | 64 |
| Fairly important | 10 | 7 | 11 | 10 |
| Not Important | 20 | 18 | 16 | 26 |
| Total | 100\% | 100\% | 100\% | 100\% |
| Number of auto trips | 2107 | 344 | 892 | 871 |

## V. The Distribution of Trips by Origin and Destination

It is the purpose of this section of this report to describe the geographical pattern of all trips and of trips by each of the four modes of travel. With the sample of somewhat over 3000 trips available for this purpose, the amount of geographic detail which can be presented is necessarily limited. Yet much is revealed concerning broad patterns of geographical differences in travel. In the second part of this chapter the characteristics of trips involving Nev York and the Northeast Corridor are discussed.
A. Geographic Characteristics of Trips in 1964-1965

In the section the geographic breakdown concerns region of destination, whether the destination is in the Northeast Corridor, whether the destination is one of the 12 largest metropolitan areas, the distance to the destination, whether the traveler had in mind only a single destination, whether the destination is urban or rural, whether the origin is in the Northeast Corridor, and a combined classification of whether either origin or destination is in the Corridor. Each of these classifications shows differences among the modes of travel. $\Lambda s$ discussed in The Changing Travel Market the key to many of these results is to be found in the unique quality of New York, a city which depends much on travel by common carrier and little on travel by auto.

As shown in Table 26 about 19 per cent of all auto trips have a destination in the Northeast compared to 23 to 29 per cent of the trips by common carrier. The second section of the table shows specifically

## TABLE 26

## Geographic Distribution of Trips by Mode

(Weighted percentage distribution of all trips)
A. Region of. Most Distant Place Reached

All Trip̀s

| Mode |  |  |  |
| :---: | :---: | :---: | :---: |
| Luto | Air | Räil | Bus |
| 19 | $\ddots$ | 29 | 23 |
| 29 | 22 | 34 | 29 |
| 28 | 25 | 21 | 22 |
| 22 | 17 | 20 | 21 |


| Northeast | 21 | 19 | 29 | 23 | 29 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| North Central | 28 | 29 | 22 | 34. | 26 |
| South | 27 | 28 | 25 | 21 | 22. |
| West | 21 | 22 | 17 | 20 | 21 |
| Outside coterminous U.S. | 3 | 2 | 7 | 2 | 2 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 3066 | 2241 | 471 | 151 | 202 |

B. Whether Destinations Are
in the Northeastern Corridor

| New York Consolidated Area | 5 | 3 | 14 | 13 | 16 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Remainder of Northeastern Corridor | 11 | 11 | 11 | 18 | 6 |
| Other destinations: | $84^{*}$ | 86 | 75 | 69 | 78 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 3049 | 2230 | 470 | 151 | 198 |

C. Whether Destinations of Trips

Are One of 12 Largest
Metropolitan Areas

| Destination one of 12 largest metro areas | 20 | 15 | $43^{\prime}$ | 50 | $33^{\circ}$ |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Destination not one of 12 largest metro areas | 80 | 85 | 57 | 50 | 67 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 3048 | 2230 | 469 | 149 | 200 |

## Geographic Distribution of Trips by Mode - cont.

D. Distance to Most.

Distant Place Reached
(Respondents' estimates)

| All Trips | Mode |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | Auto | Air | Rail | Bus |
| 55 | 62 | 10 | 32 | 51 |
| 16 | 16. | 16 | 22 | 17 |
| 9 | 8 | 16 | 9 | 13 |
| 6 | 5 | 10 | 8 | 6 |
| 5 | 3 | 12 | 8 | 5 |
| 2 | 2 | 7 | 7 | 3 |
| 3 | 2 | 12 | 7 | 2 |
| 4 | 2 | 17 | $\ldots$ | 2 |
| 100\% | 100\% | 100\% | 100\% | 100\% |
| 3094 | 2263 | 476 | 153 | 202 |

E. Whether Wanted One

Destination

| Wanted only one destination | 79 | 78 | 83 | 86 | 91 |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Wanted to see the country | 3 | 4 | 1 | 3 | 2 |
| Wanted to visit several | $\ddots$ |  |  |  |  |
| places | 10 | 10 | 11 | 7 | 4 |

Wanted both to see the country and visit several places

$$
8
$$

$$
100 \%
$$

| 8 | 4 | 4 | 3 |
| :---: | :---: | :---: | :---: |
| $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| 2195 | 460 | 151 | 201 |

F. Whether Wanted One Destination

Destination

300 Miles or More

| . Wanted only one'tdestination | 70. | -63 | 78 | 81 | 83 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Wanted to see the country | 4 | 6 | 1 | 3 | 3 |
| Wanted to visit several places | 13. | 13 | 14 | 9 | 6 |
| Wanted both to see the country and visit several places | 13 | 17 | 7 | 7 | - 8 |
| -. . |  | - |  |  |  |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 1351 | 771 | - $383{ }^{4}$ | $85^{\prime}$ | 112 |

G. Whether Destination
Is Rural or Urban
Rural area
Small town $(2,500-50,000)$
Large city (over 50,000$)$

\left.|  | Mode |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| All Trips | Auto | Air | Rail | Bus |  |
| 15 |  | 17 |  | 2 | 4 |$\right)$

H. Whether Origin in

Northeastern Corridor

| New York consolidated area | 5 | 5 | 5 | 11 | 9 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Northeastern Corridor excluding the New York consolidated area | 5 | 4 | 7 | 11 | 11 |
| Remainder of coterminous United States | 90 | 91 | 88 | 78 | 80 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 2877 | 2107 | 433 | 146 | 191 |

I. Summary of Origins and

Destinations of Trips

| Origin or destination <br> in the Corridor | $\underline{20}$ | $\underline{17}$ | $\underline{36}$ | $\underline{34}$ | $\underline{27}$ |
| :--- | ---: | ---: | ---: | ---: | ---: |
| New York to Corridor | 3 | 3 | 2 | 9 | 5 |
| New York to rest of U.S. | 2 | 2 | 4 | 3 | 5 |
| Corridor to New York | 2 | 1 | 1 | 6 | 11 |
| Rest of U.S. to New York | 3 | 2 | 14 | 6 | 5 |
| Corridor to Corridor | 2 | 2 | $\star$ | 3 | $\star$ |
| Corridor to rest of U.S. | 1 | 1 | 5 | 1 | $\star$ |
| Rest of U.S. to Corridor | 7 | 6 | 10 | 6 | 1 |
| Rest of U.S. to rest of U.S. | 80 | $\underline{83}$ | $\underline{64}$ | 66 | 73 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of trips | 2877 | 2107 | 433 | 146 | 1.91 |

* Less than one-half of one per cent.
whether the destination of a trip is New York or elsewhere in the Corridor. Only 3 per cent of all auto trips have New York as destination compared to 13 to 16 per cent of the trips by the common carriers. The rest of the Corridor is not so distinctive. It accounts for the destination of 11 per cent of all trips, 11 per cent of auto trips, and 11 per cent of air trips. The per cent of all rail trips with destinations in the Corridor is a bit higher, offsetting a lower percentage of all bus trips. If all of the twelve largest metropolitan areas in the country are grouped together, they are the destination of 20 per cent of all trips. Only 15 per cent of the auto trips are to one of these centers, but nearly half of the air and rail trips ( 43 and 50 per cent, respectively). About four out of five trips are to a single destination. Only one out of five travelers wants to visit several places or to see the country. This consideration, it would appear, is not a major factor in people's choice of method of transportation in the market as a whole. It plays some part, but it does not appear to be as crucial as it is for people to have cars for local transportation at their destination. The desire to visit several places does become a factor, however, when attention is restricted to trips to destinations 300 miles or more away. Some 37 per cent of auto travelers say they wanted to do more than visit a single destination compared to about 20 per cent of travelers by the comon carriers.

If the big cities are served by the common carriers, highway transportation serves the rural areas. Some 15 per cent of all trips have a rural area as destination. Of all auto trips 17 per cent are to rural. areas. But only 2 per cent of air trips are bringing people to a rural destination and 4 per cent of rail trips. If people do not drive they


#### Abstract

take the bus, and 10 per cent of all bus trips are to rural points. The New York area is the origin of about 5 per cent of all trips. New York is either the origin or the destination of about 10 per cent of all trips. If the rest of the Corridor is considered, about 20 per cent of all trips must be included. Of all auto trips 17 per cent have either origin or destination in the Corridor compared to about one-third of air and rail țips and 27 per cent of bus trips. The Corridor is a highly urbanized area and as such relies more heavily on air and rail than do the less urben portions of the country.


## B. Trips Involving New York or the Northeast Corridor

From the preceding discussion one would expect a tabulation of all trips for which New York is the origin or the destination to contain a larger proportion of common carrier trips and a smaller proportion of auto trips than trips not involving New York. This expectation is borne out by the data in Table 27. The first section of that table shows that 57 per cent of trips to or from the New York area are by auto compared to 84 per cent of trips entirely outside the Corridor. Trips involving either an origin or a destination in the Northeast Corridor outside of New York are more like trips entirely outside the Corridor than like trips which involve New York. About- 78 per cent of these trips are by auto.

Are there other differences between travel in the Corridor and travel elsewhere? As far as the purpose of travel is concerned, there are no major differences. About the same percentage of trips are on business whether or not travel to the Corridor or New York is isolated.

The number of people in the party does vary as between these types of travel. Given the importance of common carrier trips to New York, one

TABLE 27
Selected Characteristics of Trips Involving New York or the Corridor
(Weighted percentage distribution of trips taken in 1965-66)

| hiracteristics | Sumary of Origin and Destination |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { All } \\ \text { Trips } \\ \hline \end{gathered}$ | New York is Origin or Destination | Some Other Place in the Corridor is Origin or Destination but Not New York | Both Origin and Destination Outside the Corridor |

- Made Used

| Auto | 80 | 57 | 78 | 84 |
| :--- | ---: | ---: | ---: | ---: |
| Air | 11 | 22 | 17 | 9 |
| Rail | 4 | 10 | 4 | 3 |
| Bus | -5 | -11 | 1 | 4 |
| Total | 100 | 100 | 100 | 100 |
| Number of trips | 3023 | 307 | 274 | 2257 |

Purpose

| Business; partly |  |  |  |  |
| :--- | ---: | ---: | ---: | ---: |
| business | 28 | 29 | 26 | 28 |
| Non-business | 72 | -71 | 74 | 72 |
| Total | 100 | 100 | 100 | 100 |

Total Number of
People Who Went

| One | 35 | 40 | 30 | 34 |
| :--- | ---: | ---: | ---: | ---: |
| Two | 29 | 31 | 30 | 29 |
| Three | 12 | 10 | 12 | 13 |
| Four | 12 | 1 | 16 | 12 |
| Five | 5 | 3 | 7 | 5 |
| Six or more | 4 | 2 | 2 | 4 |
| Not ascertained | 3 | 5 | 3 | 3 |
|  |  |  | 100 | 100 |


| Characteristics | Summary of Origin and Destination |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  | $\begin{gathered} \text { All } \\ \text { Trips } \\ \hline \end{gathered}$ |  | Some Other Place in the Corridor is Origin or Destination but Not New York | Both Origin and Destination Outsid the Corridor |
| D. Total Number of Children 2-12 Who Went $\qquad$ |  |  |  |  |
| None | 78 | 84 | 72 | 78 |
| One | 9 | 6 | 10 | 9 |
| Two | 8 | 5 | 14 | 7 |
| Three | 3 | 2 | 3 | 3 |
| Four or more | 1 | 2 | * | 2 |
| Not ascertained | 1 | 1 | 1 | 1 |
| Total | 100 | 100 | 100 | 100 |
| E. Distance (Miles) to Most Distant Plsce Reached |  |  |  |  |
| 100-199 | 55 | 46 | 57 | 57 |
| 200-299 | 15 | 20 | 11 | 16 |
| 300-399 | 9 | 13 | 11 | 8 |
| 400-499 | 6 | 6 | 4 | 6 |
| 500-749 | 4 | 3 | 5 | 5 |
| 750-999 | 2 | 4 | 4 | 2 |
| 1000-1499 | 3 | 4 | 5 | 3 |
| 1500 or more | 4 | 4 | 3 | 3 |
| Total | 100 | 100 | 100 | 100 |
| F. Whether Wanted One Destination |  |  |  |  |
| Wanted only one destination | 79 | 85 | 84 | 79 |
| Wanted to see the country or visit several places | $\underline{21}$ | 15 | 16 | 21 |
| Total | 100 | 100 | 100 | 100 |
| Number of trips | 3023 | 307 | 274 | 2257 |

[^8]```
would expect smaller sizes of party. People travel alone or in amaller
groups by common carrier than by auto. Hence, trips to or from New York
are more likely to be made by people traveling alone and less likely to
involve children.
    As far as the distance traveled is concerned, there do not appear
to be large differences among the types of trips being considered. If
anything, trips which involve New York include a disproportionately large
    number of trips to destinations 200 miles or more away.
    There do not appear to be important differences among these types of
trips according to whether the traveler wanted only one destination or
wanted to see the country or visit several places. Roughly four out of
five want only the one destination,
    These results, then, considered as a whole, do show some differences
between trips in the Corridor and elsewhere and the differences which
appear are traceable primarily to the comparatively low level of travel
by automobile to and from New York.
```


## VI. Who Went on the Trip

One of the more troublesome technicalities in studies of passengex travel is the question of what, exactly, is meant by a trip. If two people from the same family travel together, is it one trip or two? In the tabulations in this report such an excursion is considered a single trip. A trip, thus, is not a "man-trip" but a "family-party trip" or a "businessparty trip".

What is the composition of the groups of people who travel together by the different modes? It is the purpose of this discussion to report on the total number of people in the party, the number of children aged 2-12, and the number of adults plus teen-agers 13-17. A distribution of parties by family income is also shown.

Of all trips 36 per cent involve a single person (Table 28). Trips by common carrier are much more likely than trips by auto to be undertaken. by one person. Of the auto trips only 26 per cent are by people traveling alone compared to 76 per cent of aix trips, 57 per cent of rail trips, and 70 per cent of bus trips.

Ninety-seven per cent of air trips involve no children 2-12 and 95 per cent of bus trips. If families traveled by comon carrier in the period covered by this survey they seem to have been most likely to travel by rail since 11 per cent of rail trips did include children 2-12. The bulk of family travel, however, is by car. One auto trip in four includes children. And, of course, there are very large numbers of auto trips.

The third section of Table 28 groups together adults and young people 13-17. On this basis about one party in ten involves four or more people.

Earlier in this report it was noted that air travel is much more common among the high income than the low income groups. This fact is

TABLE 28

## Who Hent on the Trips by Mode

(Weighted percentage distribution of trips)

| Total Number of People | Mode |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Who Went on the Trips | All Trips | Auto | Air | Ra11 | Bus |
| One | 36 | 26 | 76 | 57 | 70 |
| Two | 30 | 33 | 17 | 26 | 21 |
| Three | 13 | 15 | 3 | 10 | 3 |
| Four | 12 | 14 | 3 | 3 | 2 |
| Five | 5 | 7 | * | 1 | * |
| Six or more | 4 | 5 | 1 | 3 | 4 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 2928 | 2129 | 457 | 147 | 195 |

Number of Children (2-12)
Who Went on the Trips

| None | 79 | 75 | 97 | 89 | 95 |
| :--- | ---: | ---: | ---: | ---: | ---: |
| One | 9 | 10 | 1 | 5 | 2 |
| Two | 8 | 9 | 1 | 4 | 1 |
| Three | 3 | 4 | 1 | 2 | 1 |
| Four or more | -1 | 2 | $*$ | $\star$ | 1 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of trips |  |  |  |  |  |
|  | 2989 | 2172 | 468 | 148 | 201 |

Number of Adults and
Teenagers (13-17) Who
Went on the Trips

| One | 37 | 28 | 77 | 64 | 73 |
| :--- | ---: | ---: | ---: | ---: | ---: |
| Two | 42 | 47 | 18 | 28 | 19 |
| Three | 12 | 14 | 3 | 5 | 2 |
| Four | 6 | 8 | 2 | $\star$ | 2 |
| Five | 1 | 2 | $\star$ | $\star$ | $\star$ |
| Six or more | -2 | 1 | $\star$ | 3 | 4 |
| Total | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ | $100 \%$ |
| Number of trips |  |  |  |  |  |
|  | 2954 | 2155 | 457 | 149 | 193 |

Who Went on the Trips by Mode - cont.

| Family Income | Mode |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| of Travelers | All Trips | Auto | Air | Rail | Bus |
| Under \$2000 | 6 | 6 | 1 | 4 | 12 |
| \$2000-2999. | 6 | 6 | 3 | 7 | 13 |
| \$3000-3999 | 8 | 8 | 3 | 13 | 11 |
| \$4000-4999 | 8 | 9 | 4 | 1 | 10 |
| \$5000-5999 | 11 | 12 | 4 | 8 | 10 |
| \$6000-7499 | 16 | 17 | 12 | 14 | 10 |
| \$7500-9999 | 16 | 16 | 17 | 17 | 17 |
| \$10,000-14,999 | 18 | 17 | 32 | 15 | 13 |
| \$15,000 and over | 11 | 9 | 25 | 21 | 4 |
| Total | 100\% | 100\% | 100\% | 100\% | 100\% |
| Number of trips | 1439 | 978 | 221 | 98 | 142 |

reflected in the distribution of trips by family income of the travelers. . Over half of air trips are by people in the income bracket over $\$ 10,000$. Low income people make up about the same proportion of bus passengers as high income people. Thus, one bus trip out of four is taken by people with family incomes below $\$ 3000$ while 17 per cent are by people from families with incomes over $\$ 10,000$. The low incone bus passengers include retired people as well as those with low rates of pay, as discussed in The Changing Travel Market, pp. 146-153.

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## APPENDIX II

Some Tentative Estimates of the Effect of Speed on Choice of Mode of Travel
One of the basic determinants of choice of mode of travel ia the relative speed of the different modes. In considering the demand for any proposed new or improved system of transportation with a gain in speed it becomes important to estimate the probable quantitative effect of speed on share of the market. It is not easy, however, to develop a method of isolating the effect of speed on mode choice from that of price, comfort, and other considerations. It is the purpose of this discussion to describe one tentative approach to the problem which uses the data collected in this survey to develop an estimate of the effect of speed on share of the market on certain assumptions.

The method rests on the reasoning that ordinarily either air or auto is the fastest method of travel and the relative speed of the two varies with distance. For short trips auto is faster, door-to-door, but not for long trips. Although the two methods of travel differ in other ways, most of these differences are not a function of distance. Coat differs, but the cost per mile is roughly constant both for air and auto for different distances. Plane fares are so many cents per mile. Gasoline consumption, depreciation, and so forth, also cost so many cents per mile. The cost comparison, hence, is not a function of distance, at least as a first approximation. Standards of confort differ, but the difference, again, is about the same for different distances. People drive the same cars for trips of different distances. Medium and long haul aircraft are very similar from the point of view of passengers' comfort.

What really does vary with distance is relative speed. Travel by auto has a great initial advantage - it avoids about two hours of time
getting to and from airports. There is further time required getting a plane to cruising speed. Once airborne planes have a great advantage In speed. Airborne speeds had reached an average of 274 m.p.h. by 1962 compared to $55 \mathrm{~m} . \mathrm{P} . \mathrm{h}$. for passenger cars on main rural roads. (C.A.B., Handbook of Airline Statistics, 1963 edition, p. 84 and Bureau of Public Roads, Highway Statistica, 1962, p. 53.) Cruising speeds, once the plane has reached the desired altitude, are even higher, so that airborne speeds tend to increase with distance.

Suppose, then, that we attribute to differences in door-to-door speed the differences in the share of the market of air and auto. What on the sverage is the effect of an hour of time saved on air's share of the market counting the market as air plus auto? (Results would not be very different if we included rail and bus in the denominator of the fraction and estimated air's share of the total market.) This question is answered in Appendix Tables 1 and 2. The first column of Appendix Table 1 shows distance brackets. In further calculations the mid-point of these brackets is used (Column 2). Estimates of door-to-door time for air (Column 3) are based on the interviews reported here. Elapsed time by auto is estimated on the asaumption that, on the average, travel by auto on rural roads is at $55 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. while in motion and $45 \mathrm{~m} . \mathrm{p} . \mathrm{h}$. including stops. The basis of this estimate is explained in the footnote to the table. It becomes shaky at distances greater than one day's drive. For distances of 625 miles and 875 miles twelve hours for an overnight stop have been added to the estimated time en route by auto (see the numbers in parentheses). Time saved by air over auto is estimated in Column 5. The saving is very small at 150 miles ( 0.6 hours), but rises with distance.

## APPENDIX TABLE 1

## Approximate Time Saved by Air Over Auto

| (1) | (2) | (3) | (4) | (5) |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\begin{aligned} & \text { Distance } \\ & \text { (miles) } \end{aligned}$ | $\begin{aligned} & \text { Mid-point } \\ & \text { (miles) } \end{aligned}$ | Elapsed Time, <br> Door-to-Door <br> by Air (hrs.) <br> (Based on <br> (Interviews) | ```Elapsed Time, Door-to-Door by Auto (miles per hour)}\mp@subsup{}{}{a``` |  | Saved Air <br> urs) |
| 100-199 | 150 | 2.7 | 3.3 | 0.6 |  |
| 200-299 | 250 | 3.0 | 5.6 | 2.6 |  |
| 300-399 | 350 | 3.8 | 7.8 | 4.0 |  |
| 400-499 | 450 | 3.8 | 10.0 | 6.2 |  |
| 500-749 | 625 | 5.2 | 13.9 (25.9) | 8.7 | (20.7) |
| 750-999 | 875 | 6.1 | 19.4 (31.4) | 13.3 | (25.3) |

[^9]The relation between time saved by air over auto and air's share of the market is shown in Appendix Table 2. The calculation is made separately for the business and non-business markets. Consider, first, business travel. Air's share is only 5 per cent for the mileage bracket in which the time saved by air is under one hour. Air's share of the business market rises rapidly to about half when the saving is 6 hours. When the saving reaches 20 hours air has 82 per cent of the market. For non-business travel the effect of time saved is much smaller. Even for savings in time of about one day the share is only roughly 11 per cent. For savings in time of about three to five days air's share reaches about 39 per cent.

A more abstract treatment of the same basic data appears in Appendix Table 3. Here the gain in market share by air with increasing speed is shown on a marginal basis. That is, the gain in pexcentage points in market share from one row to the next of Appendix Table 2 is divided by the number of hours baved. The gain in sbare of the market per hour saved is highest for the short business trips. From 150 to 250 miles the time saved by air increases from 0.6 to 2.6 hours and air's share goes from $5 \%$ to $27 \%$ of the business market. The marginal gain in time is 2.0 hours and the marginal gain in market share is 21 per cent. In this range each extra hour saved leads to an added 10.6 per cent of the market. This rate of gain declines as the average time saved by air increases. Thus, the difference between a saving of 20.7 hours and 25.3 hours is not large. Air's share increases only about 6 points, or about 1.4 points per hour saved.

In the non-business market the gain in market share per hour saved is smaller but still there is a gain up to the point where air saves 4.0 hours. There is no marginal gain in air's share in the range between a

## APPENDIX TABLE 2

## Relation Between Estimated Time Saved and Share of the Market by Air

| Mileage Bracket |  | Estimated Time Saved by Air (hours) | Share of the Air and Auto Market by Air (per cent) |  | Number of Observations |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Range | Mid-point |  | Business | Non-Business | Business | Non-Business |
| 100-199 | 150 | 0.6 | 5.4 | 1.1 | 278 | 732 |
| 200-299 | 250 | 2.6 | 26.6 | 5.7 | 127 | 325 |
| 300-399 | 350 | 4.0 | 39.1 | 13.5 | 83 | 189 |
| 400-499 | 450 | 6.2 | 47.9 | 9.8 | 46 | 122 |
| 500-749 | 625 | 20.7 | 82.4 | 13.1 | 60 | 176 |
| 750-999 | 875 | 25.3 | 88.7 | 11.1 | 38 | 74 |
| 1000-1499 | 1250 | 2-3 days | 85.8 | 32.1 | 49 | 124 |
| $1500+$ | 2000 | 3-5 days | 90.6 | 39.3 | 62 | 135 |
| Average or | total |  | 27.4 | 6.2 | 752 | 1899 |

## APPENDIX TABLE 3 <br> Marginal Gain in Share of Market by Air per Marginal Hour Saved Over Auto

| Estimated Time <br> Saved by Air <br> (hours) | Marginal Gain in <br> Hours Saved |
| :--- | :---: |
| 0.6 | - |
| 2.6 | 2.0 |
| 4.0 | 1.4 |
| 6.2 | 2.2 |
| 20.7 | 14.5 |
| 25.3 | 4.6 |

Gain in Share of Market for Air Plus Auto Expressed in Percentage Points Gained Per Marginal Hour Saved
Business Non-Business
saving of 4.0 hours and one of 25.3 hours. (The indicated marginal gains are small and some have a negative sign.) The calculation of gain in market share per marginal hour saved has not been carried over 25.3 hours. Beyond that level the width of the mileage bracket iacreases and there 16 an increasing uncertainty as to just how many hours of time are saved by air travel on the average.

It hardly needs emphasis that these results should be considered only as rough approximations. The method, however, does represent one way of making approximate quantitative estimates of the effect of speed on market shaxe. For example, it provides a way of looking at the question of the probable consequences of increased door-to-door speed for air travel.

From a theoretical point of view perhaps the most serious limitation of this approach is that there is no explicit treatment of the implied trade-off between time and something else. The "something else" consists in the other advantages of the automobile: its lower cost in many situations, the usefulness of a car at the destination, the flexibility of route which the auto provides, and any other advantages of the auto which may be found to be important. The estimated gain by air per hour saved is a gain by a common carrier over auto given the characteristics of travel by auto and assuming given costs of the two. Any extrapolations or projections based on these calculations should be made with these facts in mind.

APPENDIX III
The Questionnaire

The questionnaire which follows indicates the questions on travel which were asked in the national cross-section survey in NovemberDecember 1964.

T1. TNT.: CHECK ONE: $\square$ THIS INIERVIEW IS PART OF THB SPECIAL SUPPLEMENT (GREEN COVER SHEET) - NO FURTHER INFORMATION IS NEEDED.THIS INTERVIEW IS PART OR THE CROSS-SECTION SAMPLE (BLUE COVER SHEET) - CONTINUE WITH T14.
ENTER TIME: $\qquad$


T6. During the last 12 months has (HBAD) taken any business trips in connection with his work to places 100 miles or more away?
$\square$ NO - GO TO T8

T7. About how many miles is it from where (he) works -
a).. to the nearest airport with scheduled 00 [0-2 $[3-4]$ passenger service?
[10-24 25+
b) ... to the nearest railroad passenger station?


T8. Do you or anyone else in the family own a car?NO - GO TO TS


| T9. INTERVIEGER: ENTER EACH ADULT by relation to head and Listing BOX NUMBER. ASK T9-12b FOR BACH ADULT. <br> T10. Do (you) have a driver's license? |  | HRAD |  |  |
| :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{aligned} & \square \text { YEs } \\ & \square \text { No } \end{aligned}$ | $\begin{aligned} & \square \text { xES } \\ & \square \text { мо } \end{aligned}$ | $\begin{aligned} & \square \text { YBS } \\ & \square \text { но } \end{aligned}$ |
| Tll. | Have (you) ever taken a trip to a place 100 miles or more away by air? | no - Go to T13 <br> YES | ※O - GO TO T13 YES | *о - GO TO T13 <br> YBS |
| T11. | In about what jear did (you) first take an air trip? |  |  |  |
| T11b. | During the last two yeara have (you) taken any trips by comercial airline to places 100 miles away? | NO - GO TO T13 <br> YES |  <br> NO - GO TO T13 <br> YES | NO - GO TO T13 <br> YES |
| $(\mathrm{IF}$ | T12. Thinking of (your) niost recent air trip by commercial airline, what month and year was that? |  |  |  |
|  | T12a. How many air trips did (you) take in the last 12 months, counting a round tríp as one trip? | HONE- ${ }_{\text {T13 }}$ | $\text { NONB - }{ }_{T 13}^{60} \mathrm{TO}$ | WONE- ${ }_{\text {TO }}$ T13 |
|  | Tl2b. Of these trips, how many were on business - that is, trips in connection with (your) work? | NONE | NONE | NONE |

T13. Has any member of the family taken a trip by auto to a place 100 miles or more away during the last 12 months?no auto trip by any adric in last 12 MONTES - SKIP TO T14.ONE OR MORE AUTO TRIPS IH LAST 12 MONTES - ASK Tl3a.

| т13a. | I'd like to ask you about the most recent auto trip by a member of this family. What month was that? |
| :---: | :---: |
| t13b. | Was any part of the trip by air, rail, or bus? |
| T13c. | What was the purpose of the trip? |
| T13d. | Who went? (check as HEAD WIFB [OTABR ADULTS] - Who? $\qquad$ MANY BOXES CHILDRER $\square$ $\qquad$ AS APPLY) 2-12 How many? $\qquad$ $\underset{13-17}{C H \text { How many? }}$ $\qquad$ |
|  | What was the most distant place (you) reached? (ENTER TOWN \& STATB) |
| T13F. | How far is (host distant Place) from here? (KILES) |
| T13g. |  |
| T13h. |  |
| $\mathrm{T} 13 \mathrm{i} \text {. }$ | About how many miles is it from the center of (MOST DISTANT PLACE) $0-2$ $3-4$ 5-9 <br> 10-14 15-24 to the area (you) wanted to vigit? (MLLEE) $\square$ |
| T13j. | For this trip would air, rail, bus, or auto have been the <br> RAFL <br> Bus <br> AUTO fastest, door to door? |
| $-\mathrm{T} 13 \mathrm{k} .$ | On this trip while (you) ware at (MOST DISTANT PLACE) how important was it to have (your) own car to $\square$ <br> VERY $\square$ <br> FAIRLYimportantNOT <br> IMPORTANT get around?$\square$ |


| T14. |  |
| :---: | :---: |
| T148. | I'd like to ask you about the most <br> Nov. 63 $\square$ Jan. 64 $\square$ recent air trip by a member of this family. What month was that? |
| T14b. | What kinds of transportation did (you) use besides air? <br> RALI <br> BUS <br> AuTO |
| T14c. | What was the purpose of the trip? |
| T14d. |  |
| T14e. |  |
| T14f. | What was the most distant place you reached? <br> (ENTER TOWN \& STATE) |
| T148. |  |
| T14h. | Did you want to visit just (MOST DISTANT PLACE) or did you want to see the country or visit other places? |
| T14i. | INT.: CHRCK ONE: ASK IF NBCESSARY: Is (MOST DISTANT PLACE) a large city with over 50,000 population, a small town, or a rural area? |
| T14j. | About how many miles is it from the center of (HOST DISTANT PLACE) |
| T14k. | When you started out, did you leave from your home or from where you work? |



| T15f. | What was the most distant place you reached? (ENTER TOWN \& STATE) |
| :---: | :---: |
| T15g. | How far is (most DISTANT PLACB) from here? (MLLBS) |
| T15h. | Did you want to visit just <br> (MOST DISTANT PLACE) or did <br> you want to see the country <br> or visit other places? |
| T151. | INT.: CHECK ONE: ASK TP NECESSARY: Is (HOST DISTANT PLACE) a large city with over 50,000 population, a swall town, or a rural area? |
| T15j. | About how many miles is it from the center of (HOST DISTANT PLACE) to the area you wanted to visit? |
| T15k. | When you started out, did you leave from your home or frọn where you work? |
| T151. |  |
| T15m. | Then at the end of the trip how did you get from the <br> AUTD railroad station to where you wanted to be? <br> BUS <br> OTHER <br> (HOW?) $\qquad$ |
| T15n. <br> T150. | How long did the trip take you, door to door, from where you started to where you wanted to be? $\qquad$ TOTAL ELAPSED <br> Of that time- <br> (a) how much did you allow fron when you started to when the train was scheduled to leave? $\qquad$ A <br> (b) how long did it take on the train, including any delays? $\qquad$ <br> (c) how long did it take from when you got off the train to when you got to where you ended your trip? $\qquad$ C <br> (INTERVIEWER: A + b + C SHOULD agReb WITH TOTAL IF JUST ONE DESTINATION) |
| T15p. | For this trip would air, rail, bus or auto have been the fastest, door to door? |

T16. Has any member of the family taken
2 trip by bus to a place 100 miles or more away during the last 12 months?NO BUS TRIP BY ARY ADULI IN LAST 12 MOATHS - SKIP TO 517.
$\square$ ONR OR MORE BUS TRIPS IN LAST 12 MONTHS - ASK T16a.


T16 (bus cont.)

| Tl6k. When you started out, did |
| :--- | :--- |
| you leave from your home |
| or from where you work? |

T17. At the conclusion of this survey we would like to send you some of our results. Would you please give us your mailing address?
(ENTER ON FOLLOW-UP SHEET)
T18. As you can tell fron the questions in this survey, we are interested in the trips people take. We probably will want to get in touch with you several months from now, probably over the telephone, to ask about any trips you have taken.

T18a. First of all, would you give me your name?
(ENTERR ON FOLLON-UP SHEET)
T18b. Do you have a phone?YBSNO

T18c. Will you give me the number?
(ENTER ON FOLINOW-UP SHEET)
T19. Would you please give me the name, address, and phone number of a friend or relative who would know how to reach you even if you should wove?
NAMB REMATIONSHIP PHONE
(ENTER ON FOLLON-UP SHEET)

EHTER TIME $\qquad$

## (BY OBSERVATION)

1. Type of structure in which Respondent lives:detached single pamily houszAPARTMENT IN A PARTLY CORNERCTAL STRDCTUREAPARTMENT HOUSS ( 5 or more units)dETACHED 2-4 FAMLLY hOUSE, OR RON HOUSB
OTHER - SPECIFY: $\qquad$
2. Neighborhood: Look at 3 strictures on each side of DU but not more than 100 yards or so in both directions and check as many boxes as apply, below:VACANT LAND OMLYDETACHED SIAGLE FAMTIY HOUSEDETACHED 2-4 FAMILY BOUSE, OR ROW HOUSBAPARTMENT BOUSE ( 5 or more units)MIXED COMAERCIAL AND RESIDENTLAL STRDCGTUREWHOLLY COMARRCLAL OR INDUSTRIAL STRUCTURE OTHER - SPECIFY: $\qquad$
3. Approximate distance from $R$ 's home to nearest airport aerved by acheduled comercial airline (miles)0-23-45-9$10-24$25 or over
name of airport $\qquad$
4. Approximate distance from $\mathrm{R}^{\prime}$ s home to nearest railroad passenger station (miles)0-23-45-9$10-24$25 or over
name of station and railroad
5. Approximate distance from $R^{\prime} s$ home to nearest bus station for intercity bus service. (miles)0-2$3-4$ $\square$ 5-9$10-24$25 or over

## Appendix II. Sampling Errors

Properly conducted sample interview surveys yield useful estimates but they do not yield exact values. Errors arise from several sources: sampling, non-response, reporting and processing. Each source of error may be important in evaluating the accuracy of information. The present discussion is limited to sampling errors.

Sample statistics reflect the random variations arising from interviewing only a fraction of the population. The distribution of individuals selected for a sample will usually differ by an unknown amount from that of the population from which the sample is drawn. The value which would have been obtained if the entire population had been designated to be interviewed by the same survey procedures will be referred to as the population value. If different samples were used under the same survey conditions, some of the estimates would be larger than the population value and some would be smaller. The sampling error is a measure of the chance deviation of a sample statistic from the corresponding population value. The sampling error does not measure the actual error of a particular sample estimate; rather it leads to statements in terms of confidence intervals that are correct in a specified proportion of cases in the long run.
"Sampling error" as used here is to be interpreted as two standard errors; it is the range, on either side of the sample estimate, chosen frequently in social research in order to obtain the 95 per cent "level of confidence". If one requires a greater degree of confidence than this, a wider range than two standard errors should be used. On the other hand, most of the time the actual error of sampling will be less than the sampling error defined above; in about 68 cases of every 100 the population value can be expected to lie within a range of one-half the sampling error (one standard error) of the sample estimates.

Sampling errors themselves are products of the sampling processes and are subject to the effects of random fluctuations. Therefore, a range, rather than
a single value, has been used in the tables which follow. The upper limits are based on computations of data from earlier travel surveys. They are not averages but values on the high or conservative side. The smaller values were computed by use of the formala for aimple random gamples which can be viewed as the lower bound to the Survey's sampling errors.

Appendix Table $I$ shows approximate sampling errors of percentages on a per adult basis when individual percentages are considered separately. Appendix Table II shows approximate sampling errors of differences between two percentages. The sampling errors of differences indicate the range in which the "true" differences between the population values of the two compared classes can be expected to fall 95 ont of 100 times. Appendix Tables III and TV show approximate sampling errors on a per interview basis.

Appandix Table I: Approximate Sampling Errors of Percentages for "Per Adult" Responses

| Reported Percentage | Number of Adults |  |  |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | . 8500 | 5500 | 4200 | 3000 | 2500 | 2000 | 1500 | 1000 | 700 | 500 | 400 | 300 | 200 | 100 |
| 50 | 1.1 | 1.3 | 1.5 | 1.8. | 2.0 | 2.2 | 2.6 | 3.2 | 3.8 | 4.5 | 5.0 | 5.8 | 7.1 | 10.0 |
|  | 2.9 | 3.2 | 3.5 | 4.0 | 4.2 | 4.7 | 5.3 | 6.2 | 7.3 | 8.6 | 9.6 | 11.0 | 13.4 | 18.8 |
| 30 or 70 | 1.0 | 1.2 | 1.4 | 1.7 | 1.8 | 2.0 | 2.4 | 2.9 | 3.5 | 4.1 | 4.6 | 5.3 | 6.5 | 9.2 |
|  | 2.6 | 3.0 | 3.2 | 3.6 | 3.9 | 4.3 | 4.8 | 5.7 | 6.7 | 7.9 | 8.8 | 10.1 | 12.3 | 17.2 |
| 20 or 80 | 0.9 | 1.1 | 1.2 | 1.5 | 1.6 | 1.8 | 2.1 | 2.5 | 3.0 | 3.6 | 4.0 | 4.6 | 5.7 | 8.0 |
|  | 2.3 | 2.6 | 2.8 | 3.2 | 3.4 | 3.7 | 4.2 | 5.0 | 5.9 | 6.9 | 7.6 | 8.8 | 10.7 | 15.0 |
| 10 or 90 | 0.7 | 0.8 | 0.9 | 1.1 | 1.2 | 1.3 | 1.5 | 1.9 | 2.3 | 2.7 | 3.0 | 3.5 | 4.2 | 6.0 |
|  | 1.7 | 1.9 | 2.1 | 2.4 | 2.5 | 2.8 | 3.2 | 3.7 | 4.4 | 5.2 | 5.7 | 6.6 | 8.1 | 11.3 |
| 5 or 95 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1.0 | 1.1 | 1.4 | 1.6 | 1.9 | 2.2 | 2.5 | 3.1 | 4.4 |
|  | 1.3 | 1.4 | 1.5 | 1.7 | 1.8 | 2.0 | 2.3 | 2.7 | 3.2 | 3.7 | 4.2 | 4.8 | 5.9 | 8.2 |
| 1 or 99 | 0.2 | 0.3 | 0.3 | 0.4 | 0.4 | 0.4 | 0.5 | 0.6 | 0.8 | 0.9 | 1.0 | 1.2 | 1.4 | 2.0 |
|  | 0.6 | 0.6 | 0.7 | 0.8 | 0.8 | 0.9 | 1.0 | 1.2 | 1.4 | 1.7 | 1.9 | 2.1 | 2.7 | 3.7 |


| Size of Subgroup | Size of Subgroup |  |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 8000 | 5000 | 4000 | 2000 | 1500 | 1250 | 1000 | 700 | 500 | 300 | 200 | 100 |
|  | For percentages around 35\% and 65\% |  |  |  |  |  |  |  |  |  |  |  |
| 8000 | 1.6-4.1 | 1.8-4.4 | 1.9-4.6 | 2.5-5.5 | 2.8-6.0 | 3.0-6.4 | 3.4-6.9 | 3.9-7.9 | 4.6-9.1 | 5.9-11.4 | 7.2-13.7 | 10.1-19.0 |
| 5000 |  | 2.0-4.7 | 2.1-4.9 | 2.6-5.7 | 2.9-6.2 | 3.2-6.6 | 3.5-7.1 | 4.0-8.1 | 4.7-9.2 | 5.9-11.5 | 7.2-13.8 | 10.1-19.1 |
| 4000 |  |  | 2.2-5.1 | 2.7-5.9 | 3.0-6.4 | 3.2-6.7 | 3.5-7.2 | 4.1-8.2 | 4.7-9.3 | 6.0-11.6 | 7.2-13.9 | 10.1-19,2 |
| 2000 |  |  |  | 3. 2-6.6 | 3.4-7.0 | 3.6-7.4 | 3.9-7.8 | 4.4-8.7 | 5.0-9.8 | 6.2-11.9 | 7.4-14.2 | 10.2-19.4 |
| 1500 |  |  |  |  | 3.6-7.4 | 3.8-7.7 | 4.1-8.2 | 4.6-9.1 | 5.2-10.1 | 6.3-12.2 | 7.5-14.4 | 10.3-19.6 |
| 1250 |  |  |  |  |  | 4.0-8.0 | 4.2-8.5 | 4.7-9.3 | 5.3-10.3 | 6.4-12.4 | 7.6-14.6 | 10.4-19.7 |
| 1000 |  |  |  |  |  |  | 4.5-8.9 | 4.9-9.7 | 5.5-10.6 | 6.6-12.7 | 7.8-14.8 | 10.5-19.9 |
| 700 |  |  |  |  |  |  |  | 5.4-10.4 | 5.9-11.3 | 6.9-13.2 | 8.0-15.3 | 10.7-20.2 |
| 500 |  |  |  |  |  |  |  |  | 6.3-12.2 | 7.2-14.0 | 8.4-15.9 | 11.0-20.7 |
| 300 |  |  |  |  |  |  |  |  |  | 8.2-15.6 | 9.1-17.3 | 11.5-21.8 |
| 200 |  |  |  |  |  |  |  |  |  |  | 10.0-18.9 | 12.2-23.1 |
| 100 |  |  |  |  |  |  |  |  |  |  |  | 14.1-26.6 |
| For percentages around 20\% and $80 \%$ |  |  |  |  |  |  |  |  |  |  |  |  |
| 8000 | 1.3-3.3 | 1.4-3.5 | 1.5-3.7 | 2.0-4.4 | 2.3-4.8 | 2.4-5.1 | 2.7-5.5 | 3.2-6.3 | 3.7-7.3 | 4.7-9.1 | 5.7-11.0 | 8.0-15.2 |
| 5000 |  | 1.6-3.8 | 1.7-3.9 | 2.1-4.6 | 2.4-5.0 | 2.5-5.3 | 2.8-5.7 | 3.2-6.4 | 3.8-7.4 | 4.8-9.2 | $5.8-11.1$ | 8.1-15.3 |
| 4000 |  |  | 1.8-4.1 | 2.2-4.7 | 2.4-5.1 | 2.6-5.4 | 2.8-5.8 | 3.3-6.6 | 3.8-7.5 | 4.8-9.3 | 5.8-11.1 | 8.1-15.4 |
| 2000 |  |  |  | 2.5-5.3 | 2.7-5.6 | 2.9-5.9 | 3.1-6.2 | 3.5-7.0 | 4.0-7.8 | 5.0-9.5 | 5.9-11.4 | 8.2-15.5 |
| 1500 |  |  |  |  | 2.9-5.9 | 3.1-6.2 | 3.3-6.5 | 3.7-7.2 | 4.1-8.1 | 5.1-9.8 | 6.0-11.5 | 8.2-15.7 |
| 1250 |  |  |  |  |  | 3.2-6.4 | 3.4-6.8 | 3.8-7.4 | 4.2-8.2 | 5.1-9.9 | 6.1-11.7 | 8.3-15.8 |
| 1000 |  |  |  |  |  |  | 3.6-7.1 | 3.9-7.7 | 4.4-8.5 | 5.3-10.2 | 6.2-11.8 | 8.4-15.9 |
| 700 |  |  |  |  |  |  |  | 4.3-8.3 | 4.7-9.0 | 5.5-10.6 | 6.4-12.2 | 8.6-16.2 |
| 500 |  |  |  |  |  |  |  |  | 5.1-9.8 | 5.8-11.2 | 6.7-12.7 | 8.8-16.6 |
| 300 |  |  |  |  |  |  |  |  |  | 6.5-12.5 | 7.3-13.8 | 9.2-17.4 |
| 200 |  |  |  |  |  |  |  |  |  |  | 8.0-15.1 | 9.8-18.5 |
| 100 |  |  |  |  |  |  |  |  |  |  |  | 11.3-21.3 |

For percentages around $10 \%$ and $90 \%$


| Reported | Number of Interviews |  |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Percentage | 4200 | 3000 | 2000 | 1500 | 1000 | 700 | 500 | 400 | 300 | 200 | 100 |
| 50 | 1.5 | 1.8 | 2.2 | 2.6 | 3.2 | 3.8 | 4.5 | 5.0 | 5.8 | 7.1 | 10.0 |
|  | 2.6 | 2.9 | 3.4 | 3.9 | 4.6 | 5.3 | 6.1 | 6.7 | 7.6 | 9.1 | 12.7 |
| 30 or 70 | 1.4 | 1.7 | 2.0 | 2.4 | 2.9 | 3.5 | 4.1 | 4.6 | 5.3 | 6.5 | 9.2 |
|  | 2.3 | 2.7 | 3.2 | 3.5 | 4.2 | 4.8 | 5.6 | 6.1 | 6.9 | 8.4 | 11.6 |
| 20 or 80 | 1.2 | 1.5 | 1.8 | 2.1 | 2.5 | 3.0 | 3.6 | 4.0 | 4.6 | 5.7 | 8.0 |
|  | 2.0 | 2.3 | 2.8 | 3.1 | 3.7 | 4.2 | 4.9 | 5.3 | 6.0 | 7.3 | 10.2 |
| 10 or 90 | 0.9 | 1.1 | 1.3 | 1.5 | 1.9 | 2.3 | 2.7 | 3.0 | 3.5 | 4.2 | 6.0 |
|  | 1.5 | 1.8 | 2.1 | 2.3 | 2.8 | 3.2 | 3.6 | 4.0 | 4.5 | 5.5 | 7.6 |
| 5 or 95 | 0.7 | 0.8 | 1.0 | 1.1 | 1.4 | 1.6 | 1.9 | 2.2 | 2.5 | 3.1 | 4.4 |
|  | 1.1 | 1.3 | 1.5 | 1.7 | 2.0 | 2.3 | 2.7 | 2.9 | 3.3 | 4.0 | 5.5 |


| Size of | Size of Subgroup |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Subgroup | 2000 | 1500 | 1000 | 700 | 500 | 300 | 200 | 100 |
| For percentages from about 35\% to 65\% |  |  |  |  |  |  |  |  |
| 2000 | 3.2-4.9 | 3.4-5.2 | 3.9-5.7 | 4.4-6.3 | 5.0-7.0 | 6.2-8.3 | 7.4-9.8 | 10.2-13.2 |
| 1500 |  | 3.7-5.5 | 4.1-6.0 | 4.6-6.5 | 5.2-7.2 | 6.3-8.4 | 7.5-9.9 | 10.3-13.3 |
| 1000 |  |  | 4.5-6.5 | 4.9-7.0 | 5.5-7.6 | 6.6-8.9 | 7.8-10.2 | 10.5-13.5 |
| 700 |  |  |  | 5.4-7.4 | 5.9-8.0 | 6.9-9.2 | 8.0-10.5 | 10.7-13.8 |
| 500 |  |  |  |  | 6.3-8.6 | 7.2-9.7 | 8.4-11.0 | 11.0-14.1 |
| 300 |  |  |  |  |  | 8.2-10.7 | 9.1-11.9 | 11.5-14.8 |
| 200 |  |  |  |  |  |  | 10.0-12.9 | 12.2-15.7 |
| 100 |  |  |  |  |  |  |  | 14.1-18.0 |
| For percentages around $20 \%$ and 80\% |  |  |  |  |  |  |  |  |
| 2000 | 2.5-3.9 | $\begin{aligned} & 2.7-4.1 \\ & 2.9-4.4 \end{aligned}$ | $\begin{aligned} & 3.1-4.6 \\ & 3.3-4.8 \\ & 3.6-5.2 \end{aligned}$ | $\begin{aligned} & 3.5-5.0 \\ & 3.7-5.2 \\ & 3.9-5.6 \\ & 4.3-6.0 \end{aligned}$ | 4.0-5.6 | $\begin{aligned} & 5.0-6.6 \\ & 5.1-6.7 \\ & 5.3-7.1 \\ & 5.5-7.4 \\ & 5.8-7.8 \\ & 6.5-8.6 \end{aligned}$ | $\begin{aligned} & 5.9-7.8 \\ & 6.0-7.9 \\ & 6.2-8.2 \\ & 6.4-8.4 \\ & 6.7-8.8 \\ & 7.3-9.5 \\ & 8.0-10.3 \end{aligned}$ | $\begin{array}{r} 8.2-10.6 \\ 8.2-10.6 \\ 8.4-10.8 \\ 8.6-11.0 \\ 8.8-11.3 \\ 9.2-11.8 \\ 9.8-12.6 \\ 11.3-14.4 \end{array}$ |
| 1500 |  |  |  |  | 4.1-5.8 |  |  |  |
| 1000 |  |  |  |  | 4.4-6.1 |  |  |  |
| 700 |  |  |  |  | 4.7-6.4 |  |  |  |
| 500 |  |  |  |  | 5.1-6.8 |  |  |  |
| 300 |  |  |  |  |  |  |  |  |
| 200 |  |  |  |  |  |  |  |  |
| 100 |  |  |  |  |  |  |  |  |

For percentages around $10 \%$ and $90 \%$

| 2000 | 1.9-2.9 | 2.1-3.1 | 2.3-3.4 | 2.6-3.8 | 3.0-4.2 | 3.7-5.0 | 4.5-5.9 | 6.1-7.9 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 1500 |  | 2.2-3.3 | 2.4-3.6 | 2.7-3.9 | 3.1-4.3 | 3.8-5.0 | 4.5-6.0 | 6.2-8.0 |
| 1000 |  |  | 2.7-3.9 | 3.0-4.2 | 3.3-4.6 | 3.9-5.3 | 4.7-6.1 | 6.3-8.1 |
| 700 |  |  |  | 3.2-4.5 | 3.5-4.8 | 4.1-5.5 | 4.8-6.3 | 6.4-8.3 |
| 500 |  |  |  |  | 3.8-5.1 | 4.3-5.8 | 5.0-6.6 | 6.6-8.5 |
| 300 |  |  |  |  |  | 4.9-6.4 | 5.5-7.1 | 6.9-8.9 |
| 200 |  |  |  |  |  |  | 6.0-7.7 | 7.3-9.4 |
| 100 |  |  |  |  |  |  |  | 8.5-10.8 |
|  | For percentages around 5\% and 95\% |  |  |  |  |  |  |  |
| 2000 | 1.4-2.1 | 1.5-2.3 | 1.7-2.5 | 1.9-2.7 | 2.2-3.0 | 2.7-3.6 | 3.2-4.3 |  |
| 1500 |  | 1.6-2.4 | 1.8-2.6 | 2.0-2.9 | 2.2-3.1 | 2.8-3.7 | 3.3-4.3 |  |
| 1000 |  |  | 1.9-2.8 | 2.1-3.0 | 2.4-3.3 | 2.9-3.9 | 3.4-4.4 |  |
| 700 |  |  |  | 2.3-3.2 | 2.6-3.5 | 3.0-4.0 | 3.5-4.6 |  |
| 500 |  |  |  |  | 2.8-3.7 | 3.1-4.2 | 3.6-4.8 |  |
| 300 |  |  |  |  |  | 3.6-4.7 | 4.0-5.2 |  |
| 200 |  |  |  |  |  |  | 4.4-5.6 |  |


[^0]:    ${ }^{\text {a }}$ Sources: Adapted from "A Cross-Section Analysis of the Domestic Intercity Travel Market", an unpublished Ph.D. dissertation by D.M. Blood, P. 9 and the 1964-1965 Travel Survey.

[^1]:    ${ }^{\text {a }}$ Excludes 52 adults whose air travel experience was not ascertained.

[^2]:    ${ }^{\text {a }}$ The proportion of respondents who took an air trip is slightly lower than the proportion is of all adults who took an air trip.

[^3]:    * Less than one-half of one per cent.

[^4]:    *Less than one-half of one per cent.

[^5]:    $1_{\text {Based }}$ on respondents' estimates of distance.
    *Less than one-half of one per cent.

[^6]:    ${ }^{\text {a }}$ Too few observations to percentagize.

[^7]:    *Less than one-half of one per cent.

[^8]:    *Less than one-half of one per cent.

[^9]:    ${ }^{\text {a }}$ Auto speed is assumed to be about 45 miles per hour for the following reasons: (1) the reported average time on board the bus for bus travel implies a speed of 44 miles per hour between terminals. It seems reasonable to assume that auto travel is fairly similar. Average speeds are slightly higher for buses than autos on the open road, but buses probably stop more cften than private automobiles. If these considerations cancel, average speed between terminals for the bus should be the same as door-to-door speed by auto. (2) Average apeed of passenger automobiles on main rural roads is reported by the Bureau of Public Roads at about 55 miles per hour. (Highway Statistics, 1962, p. 53.) People do not drive indefinitely without a pause. An eight hour day of driving at 55 miles per hour with one hour for 1 unch and forty minutes of additional rest stops seems reasonable. That pattern implies about 46 miles per hour average over the eight hours with total time en route $92 / 3$ hours for 440 miles.

