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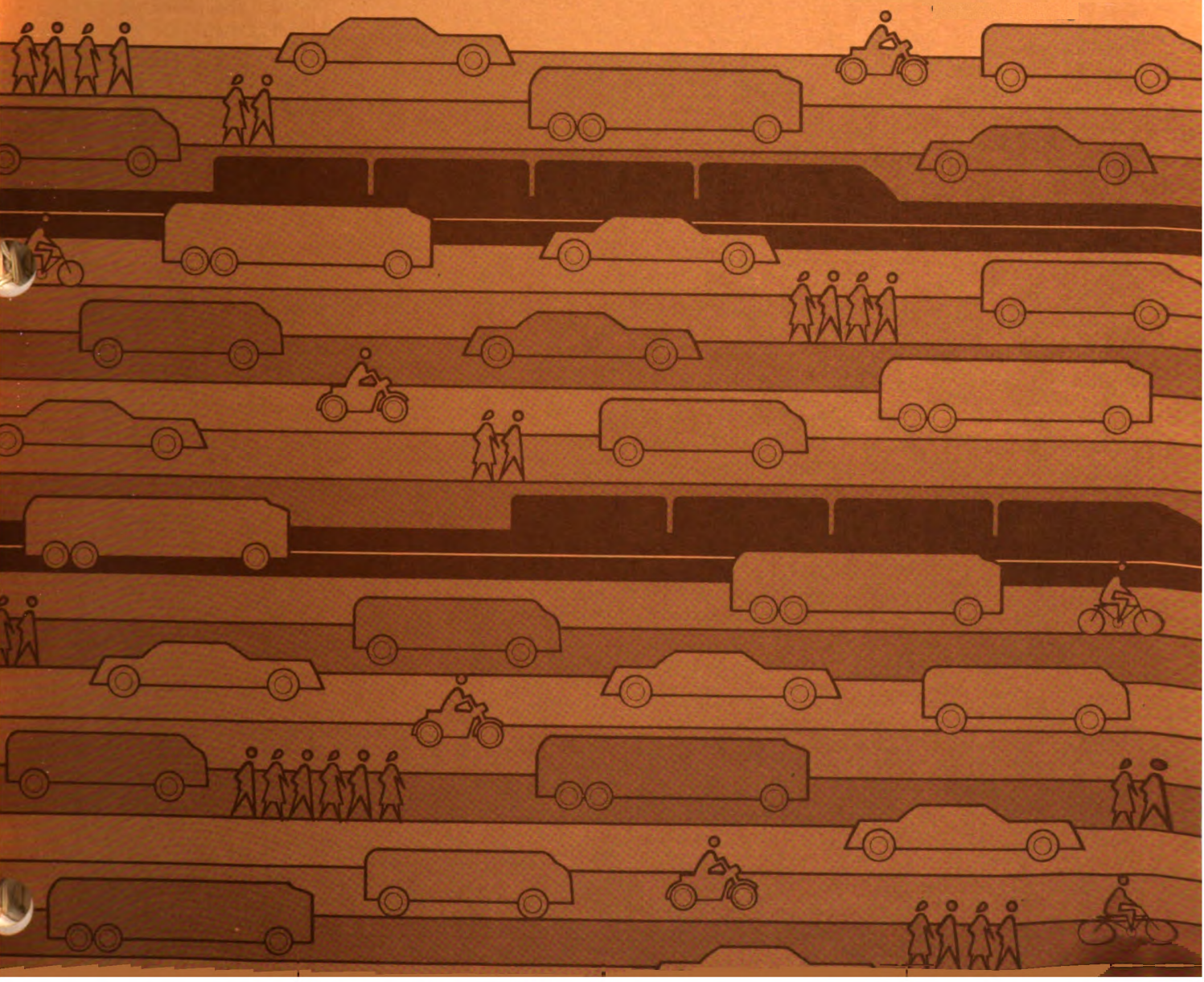
Selected Characteristics of Travel to Work in 20 Metropolitan Areas: 1977



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Selected Characteristics of Travel to Work in 20 Metropolitan Areas: 1977

Issued January 1981

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SYMBOLS USED IN TABLES

– Represents zero.
B Base less than 1,000.
X Not applicable.

Selected Characteristics of Travel to Work in 20 Metropolitan Areas: 1977

(Data from the Travel-to-Work Supplement to the 1977-78 Annual Housing Survey)

INTRODUCTION

This report is one in a series of publications containing information from the Travel-to-Work Supplement to the Annual Housing Survey (AHS). The AHS is conducted for the U.S. Department of Housing and Urban Development, and the supplement was initiated in 1975 under the sponsorship of the U.S. Department of Transportation (DOT).

Travel-to-work data for the following standard metropolitan statistical areas (SMSA's) are included in this report:

Albany-Schenectady-Troy, N.Y.
Anaheim-Santa Ana-Garden Grove, Calif.
Boston, Mass.
Dallas, Tex.
Detroit, Mich.
Fort Worth, Tex.
Los Angeles-Long Beach, Calif.
Madison, Wis.
Memphis, Tenn.-Ark.
Minneapolis-St. Paul, Minn.
Newark, N.J.
Orlando, Fla.
Phoenix, Ariz.
Pittsburgh, Pa.
Saginaw, Mich.
Salt Lake City, Utah
Spokane, Wash.
Tacoma, Wash.
Washington, D.C.-Md.-Va.
Wichita, Kans.

The data presented in this report are preliminary and are based on the first 4 months of interviews from the 11-month sample in Survey Group I. (See page 10 for a listing of the SMSA's contained in each of the three survey groups.) Two earlier reports have been published showing results from the DOT supplement for the 40 SMSA's contained in Survey Groups II and III[1]. Interviews for the present study were conducted from April through July 1977, and represent about one-third of the total number of interviews that will be contained in the final Group I sample. Findings based on preliminary data are more susceptible to sampling error than complete 11-month data, and any analysis or interpretation of the data should be made with this limitation in mind.

[1] U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 68, *Selected Characteristics of Travel to Work in 21 Metropolitan Areas: 1976*, and Series P-23, No. 72, *Selected Characteristics of Travel to Work in 20 Metropolitan Areas: 1976*, U.S. Government Printing Office, Washington, D.C., 1978.

MAJOR MODE OF TRANSPORTATION TO WORK

Of the approximately 13.6 million workers residing in the SMSA's surveyed in 1977, about 12.5 million used a car, truck, bus, bicycle, or some other vehicle as their major mode[2] of transportation to work (table A). People who

[2] The classification of workers by major mode is based on the mode used for the greatest distance in the work trip.

Table A. Major Mode of Transportation to Work, for 20 SMSA's: 1977

(Numbers in thousands. For meaning of symbols, see appendix A)

Mode	Number	Percent[1]
All workers	13,658	(X)
Workers using vehicles	12,544	100
Auto or truck[2]	11,415	91
Drives alone	9,062	72
Carpool	2,266	18
Shares driving	875	7
Drives others	520	4
Rides with someone	872	7
Public transportation[3]	921	7
Bus or streetcar	790	6
Subway or elevated	83	1
Railroad	32	-
Other means[4]	207	2
Bicycle	98	1
Walks only	518	[4]
Works at home	227	[2]
Not reported	370	[3]

[1] Percent of workers using vehicles, except percents in brackets [ ], which are of all workers.
[2] Includes workers using an auto or truck but not specifying type of riding arrangement.
[3] Includes workers using taxicabs.
[4] Includes workers using motorcycles and all other means not listed.

walked the entire distance from home to work numbered about 500,000 (about 4 percent of the total), while around 200,000 workers (2 percent) worked at home. Approximately 370,000 workers (3 percent) did not report their means of transportation to work.

Among the workers who used vehicles to get to work, a very large majority (72 percent) drove alone in an auto or truck (table A). The next largest group of commuters, people who rode to work in carpools, accounted for an additional 18 percent. Taken together, these two groups of auto or truck users represent an estimated 11.4 million workers in the 20 metropolitan areas, or 91 percent of the vehicle users.

The rate of use of public transportation in the 20 SMSA's was much less than that of driving alone or carpooling, and amounted to about 7 percent of the workers using vehicles (table A). Reflecting the types of public transportation available, the majority of the transit riders rode buses to work (about 790,000 workers), followed in numbers by people using subways (83,000) and commuter railroads (32,000).

Use of automobiles and trucks. Among persons using vehicles to get to work in the 20 SMSA's in 1977, 82 percent rode to work in autos (table B), while 9 percent commuted in trucks of 1-ton capacity or less. The SMSA with the highest rate of auto use among the 20 metropolitan areas was Detroit, where 88 percent of the vehicle users commuted by car. The Salt Lake City SMSA, however, exhibited one of the lowest rates of auto use, but even there, 3 out of 4 commuters traveled to work in a car. (The rate of auto use in the Salt Lake City area was not significantly different than that found in the Boston, Madison, Phoenix, Pittsburgh, or Spokane SMSA's.)

The rate of truck use in the journey to work varied among the 20 SMSA's from lows of 3 percent in Boston and 4 percent in Newark and Washington, D.C. to a high of 20 percent in Phoenix (table B). In general, the use of trucks was higher in the Western and Southwestern SMSA's than in the other metropolitan areas. In addition to Phoenix, relatively high rates were found in Spokane (18 percent), Tacoma (17 percent), Salt Lake City (17 percent). Wichita (17 percent), Dallas (16 percent), and Fort Worth (16 percent). Exceptions to this general pattern were found in Anaheim-Santa Ana-Garden Grove (11 percent) and Los Angeles-Long Beach (10 percent), each with a relatively low rate of truck use compared with other Western areas, and in Memphis, Saginaw, and Orlando with relatively high rates (15, 14, and 12 percent, respectively) compared with the remaining SMSA's outside the West. The general pattern of higher truck use in Western and Southwestern SMSA's is consistent with the findings shown in the earlier reports from the Travel-to-Work Supplement.

Table B. Workers Commuting by Automobile or Truck, for 20 SMSA's and SMSA Transportation Groups: 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups, see appendix A)

SMSA's and SMSA groups	Workers using vehicles					
	Number			Percent		
	Total[1]	Auto	Truck	Total[1]	Auto	Truck
Total, 20 SMSA's	12,544	10,247	1,168	100	82	9
Group A	1,531	1,204	53	100	79	4
Boston	930	704	31	100	76	3
Newark	601	500	23	100	83	4
Group B	6,982	5,810	564	100	83	8
Anaheim-Santa Ana-Garden Grove	806	684	86	100	85	11
Detroit	1,500	1,320	101	100	88	7
Los Angeles-Long Beach	2,753	2,286	268	100	83	10
Pittsburgh	716	561	56	100	78	8
Washington, D.C	1,206	960	53	100	80	4
Group C-North	1,059	875	77	100	83	7
Albany-Schenectady-Troy	270	232	21	100	86	8
Minneapolis-St. Paul	789	643	56	100	82	7
Group C-South and West	1,523	1,221	241	100	80	16
Dallas	730	582	119	100	80	16
Fort Worth	359	292	57	100	81	16
Memphis	303	244	44	100	81	15
Tacoma	132	104	22	100	79	17
Group D	1,449	1,137	233	100	79	16
Madison	133	103	10	100	77	8
Orlando	211	176	26	100	83	12
Phoenix	478	367	94	100	77	20
Saginaw	79	67	11	100	85	14
Salt Lake City	259	195	43	100	75	17
Spokane	114	88	20	100	77	18
Wichita	175	141	29	100	81	17

[1]Includes workers using public transportation or other means, not shown separately.

Driving alone, carpooling, and public transportation use. Among the 20 metropolitan areas surveyed, the rate of driving to work alone was highest in the Saginaw metropolitan area (82 percent) (table C). The lowest rates of driving alone were found in the Washington, D.C. (58 percent) and Boston (59 percent) SMSA's.

In conjunction with the low rates of driving alone, workers in the Washington, D.C. SMSA exhibited one of the highest rates of carpooling (25 percent) (table C). Although not significantly different than Washington, the use of carpools was also relatively high in the Albany-Schenectady-Troy SMSA (23 percent), compared with most of the other areas. One of the lowest rates of carpool use, however, was found in the Saginaw SMSA (15 percent), although not significantly different from carpool rates in Anaheim, Detroit, Los Angeles, Newark, Phoenix, and Pittsburgh.

The use of public transportation to get to work is determined, to a large degree, by the availability and extent of the system. In the 20 surveyed areas, transit use was greatest among workers in the Boston SMSA (19 percent), followed by the Washington, D.C. (15 percent), Pittsburgh (13 percent), and Newark (13 percent) metropolitan areas (table C). (The differences between Pittsburgh and Washington and between Pittsburgh and Newark were not statistically significant.) Very low rates of public transit use (less than 3 percent of the vehicle users) were found in a number of metropolitan areas, with the lowest rates occurring in Saginaw and Phoenix.

CHANGES IN MAJOR MODE OF TRANSPORTATION TO WORK

Changes in the use of public transportation: 1970-77. Comparison of the survey data with data from the 1970 census indicates that the use of public transportation decreased by 3 percentage points, from 10.3 to 7.3 percent, among the 20 SMSA's during the period (table D). This result is consistent with the findings of the two earlier reports from the Travel-to-Work Supplement, which showed a 3.4-percentage-point decline among 21 SMSA's during the 1970-75 period[3], and a 5.6-percentage-point decline among 20 SMSA's from 1970 to 1976[4].

[3] U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 68, *Selected Characteristics of Travel to Work in 21 Metropolitan Areas: 1975*, U.S. Government Printing Office, Washington, D.C., 1978, p. 4.

[4] U.S. Bureau of the Census, Current Population Reports, Series P-23, No. 72, *Selected Characteristics of Travel to Work in 20 Metropolitan Areas: 1976*, U.S. Government Printing Office, Washington, D.C., 1978, pp. 3-4.

Table C. Workers Driving Alone, Workers Riding in Carpools, and Workers Using Public Transportation, for 20 SMSA's and SMSA Transportation Groups: 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

SMSA's and SMSA groups	Workers using vehicles							
	Number				Percent			
	Total[1]	Drives alone	Carpool	Public transportation	Total[1]	Drives alone	Carpool	Public transportation
Total, 20 SMSA's	12,544	9,062	2,266	921	100	72	18	7
Group A	1,531	968	271	253	100	63	18	17
Boston	930	551	176	178	100	59	19	19
Newark	601	417	95	75	100	69	16	13
Group B	6,982	5,088	1,241	496	100	73	18	7
Anaheim-Santa Ana-Garden Grove	806	640	128	15	100	79	16	2
Detroit	1,500	1,172	235	63	100	78	16	4
Los Angeles-Long Beach	2,753	2,090	452	145	100	76	16	5
Pittsburgh	716	486	124	94	100	68	17	13
Washington, D.C	1,206	702	302	178	100	58	25	15
Group C-North	1,059	743	205	85	100	70	19	8
Albany-Schenectady-Troy	270	188	62	15	100	70	23	6
Minneapolis-St. Paul	789	555	143	70	100	70	18	9
Group C-South and West	1,523	1,166	285	45	100	77	19	3
Dallas	730	565	128	22	100	77	18	3
Fort Worth	359	275	70	6	100	77	20	2
Memphis	303	224	62	14	100	74	21	5
Tacoma	132	101	24	3	100	77	18	2
Group D	1,449	1,097	265	42	100	76	18	3
Madison	133	89	24	12	100	67	18	9
Orlando	211	162	39	4	100	77	19	2
Phoenix	478	376	82	4	100	79	17	1
Saginaw	79	65	12	-	100	82	15	-
Salt Lake City	259	183	54	16	100	71	21	6
Spokane	114	87	20	4	100	76	18	4
Wichita	175	136	34	3	100	78	19	2

[1] Includes workers using other means, not separately identified.

Among the 20 SMSA's surveyed in 1977, significant declines in the use of public transportation to get to work occurred in 15 areas (table D). (There is some evidence that the rate of transit use also declined in the Spokane SMSA.) Significant increases in the use of public transportation occurred in the Salt Lake City and Anaheim-Santa Ana-Garden Grove SMSA's, while the changes in the Madison and Minneapolis-St. Paul areas were not statistically significant. The largest declines in public transit use occurred in the Newark and Memphis SMSA's. In Newark, transit use went from 20.3 percent of the vehicle users in 1970 to 12.5 percent in 1977 (a drop of 7.8 percentage points), while in Memphis the rate of public transportation use declined 6.3 percentage points, from 10.9 percent in 1970 to 4.5 percent in 1977. (The difference between the declines in Newark and Memphis was not statistically significant.)

The largest increase in the use of public transportation, 3.6 percentage points, occurred in the Salt Lake City SMSA, where the proportion of vehicle users riding transit went from 2.4 percent in 1970 to 6.1 percent in 1977 (table D). The Anaheim-Santa Ana-Garden Grove SMSA also experienced a gain in public transportation use, from a miniscule 0.5 percent in 1970 to 1.9 percent in 1977.

Recent changes in major mode of transportation to work. A very large majority of the workers who were interviewed in the 1977 survey had not changed their principal means of commuting to work in the 12 months prior to the enumeration. In addition, the magnitude of any changes between modes was quite small. However, among workers who did change modes during the period, the survey results are at least indicative of some general patterns of choice.

Across the 20 SMSA's surveyed in 1977, 98 percent of the workers who drove alone to work in 1976 were still driving alone in 1977 (table E), while 1 percent had joined carpools, and 1 percent were riding public transportation.

Table D. Change in Commuter Use of Public Transportation for 20 SMSA's and SMSA Transportation Groups: 1970 to 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

SMSA's and SMSA groups	1977			1970			1970 to 1977	
	Vehicle users			Vehicle users			Change in use of public transportation	
		Using public transportation			Using public transportation			
	Total	Total	Percent of total vehicle users	Total	Total	Percent of total vehicle users[1]	Percentage-point difference[2]	Standard error of difference
Total, 20 SMSA's	12,544	921	7.3	11,429	1,177	10.3	-3.0	0.2
Group A	1,531	253	16.5	1,670	363	21.7	-5.2	0.6
Boston	930	178	19.2	991	225	22.7	-3.5	0.7
Newark	601	75	12.5	679	138	20.3	-7.8	1.0
Group B	6,982	496	7.1	6,435	611	9.5	-2.4	0.2
Anaheim-Santa Ana-Garden Grove	806	15	1.9	516	2	0.5	1.5	0.3
Detroit	1,500	63	4.2	1,442	126	8.7	-4.5	0.4
Los Angeles-Long Beach	2,753	145	5.3	2,578	155	6.0	-0.7	0.3
Pittsburgh	716	94	13.1	762	124	16.3	-3.1	1.1
Washington, D.C	1,206	178	14.8	1,137	204	18.0	-3.2	0.5
Group C-North	1,059	85	8.0	923	89	9.6	-1.6	0.5
Albany-Schenectady-Troy	270	15	5.5	248	21	8.6	-3.1	0.6
Minneapolis-St. Paul	789	70	8.9	675	67	10.0	-1.1	0.7
Group C-South and West	1,523	45	2.9	1,314	83	6.3	-3.4	0.2
Dallas	730	22	3.1	622	41	6.7	-3.6	0.4
Fort Worth	359	6	1.7	296	8	2.8	-1.1	0.3
Memphis	303	14	4.5	263	28	10.9	-6.3	0.6
Tacoma	132	3	2.0	134	5	3.4	-1.5	0.4
Group D	1,449	42	2.9	1,087	32	2.9	-	0.2
Madison	133	12	8.9	99	8	8.1	0.7	0.7
Orlando	211	4	1.8	153	6	3.7	-1.9	0.3
Phoenix	478	4	0.7	343	5	1.3	-0.6	0.3
Saginaw	79	-	0.3	69	1	1.5	-1.2	0.1
Salt Lake City	259	16	6.1	191	5	2.4	3.6	0.5
Spokane	114	4	3.6	91	4	4.6	-1.0	0.5
Wichita	175	3	1.8	141	4	2.5	-0.8	0.3

[1]Standard error of percents is less than 0.05 in each case.

[2]The percentage-point differences in the use of public transportation noted in this table may be affected by the fact that workers who lived in group quarters are included in the 1970 census data, but not in the AHS sample; see the discussion on page 11. A percentage-point difference is significant if it is twice as large as its standard error.

Among workers who used carpools to get to work in 1976, 95 percent were still pooling in 1977, 3 percent had switched to driving alone, and 1 percent were using public transportation a year later.

For workers who were using public transportation to get to work in 1976, however, the proportion still using transit in 1977 (83 percent) was much smaller than the corresponding figures for driving alone and carpooling (table E). Nine percent of the 1976 transit users had switched to driving alone in the succeeding year, another 5 percent were riding to work in carpools, and 2 percent were using other means of transportation to get to work in 1977.

SATISFACTION WITH MAJOR MODE OF TRANSPORTATION TO WORK

Workers enumerated in the survey were asked to specify their satisfaction with their principal means of transportation to work, in conjunction with whether or not they had recently changed modes. Workers who had changed modes in the past year were to report how satisfied they were with their new mode compared with their former mode. Workers who had not changed modes in the past year were to report their current degree of satisfaction, compared with the same time last year.

Satisfaction for workers who did not change modes. As expected, the great majority of workers (83 percent) whose means of transportation had not changed during the previous year reported that their satisfaction with that mode had not changed either (table F). However, 7 percent of the workers who had not changed modes reported that they were more satisfied than last year, while 6 percent were less satisfied with their mode in 1977 than they had been in 1976.

The last column of table F presents the ratio of workers who were more satisfied with their mode to those who were less satisfied than a year earlier. Workers who reported "about the same satisfaction," and workers in the "Don't know, did not work last year, or no response" category are excluded from the ratios. Therefore, the ratios do not reflect the overall degree of satisfaction felt by users of the various modes of transportation.

What the ratios in table F provide is a summary measure for each mode of the net balance of workers on the satisfaction item. Ratios of less than 1.00 occur, for example, when the number of workers who were less satisfied with a particular mode was greater than the number who were more satisfied.

The survey results show that among the relatively small number of workers whose mode of transportation to work did not change, but whose satisfaction did change, the satisfaction ratio is 1.17 (table F). This ratio indicates that among the approximately 1.7 million workers who experienced a change in satisfaction without a corresponding change in mode, the number who were more satisfied was about 17 percent larger than the number who were less satisfied.

As might be expected, the ratios in table F vary from one means of transportation to another. In general, the lowest ratios are found among the public transportation modes, with the ratio for each type of public transportation well below 1.00 and the total for all types being 0.46. Thus, among the public transit riders in the sample, the number whose satisfaction increased over the period was offset by a larger number whose satisfaction with public transit decreased between 1976 and 1977. In contrast, the ratios for auto or truck users are greater than 1.00, indicating that a greater number of these workers were more satisfied than less satisfied in 1977.

Satisfaction with change of major mode. As expected, workers who changed their means of transportation in the preceding year were much more likely to report an increase in satisfaction than workers who had not changed modes. Among workers who changed, 55 percent reported that they were more satisfied with their new mode of transportation to work (table G), while the difference between workers who reported "about the same satisfaction" (22 percent), and

Table E. Mode of Transportation to Work Last Year, by Percent Using Current Modes, for 20 SMSA's: 1977

Mode last year (1976)	Current mode (1977)						
	Workers reporting current mode (thousands)	Total (percent)	Auto or truck			Public transportation[2]	Other means[3]
			Total[1]	Drives alone	Carpool		
Workers reporting mode used last year	13,069	100	86	68	17	7	7
Auto or truck[1]	11,163	100	98	79	19	1	1
Drove alone	8,876	100	99	98	1	1	1
Carpool	2,152	100	98	3	95	1	1
Public transportation[2]	975	100	15	9	5	83	2
Other means[3]	931	100	12	9	3	1	86

[1]Includes workers using an auto or truck but not specifying type of riding arrangement.
[2]Bus or streetcar, subway or elevated, railroad, and taxicab.
[3]Bicycle, motorcycle, walks to work, works at home, and all other means not listed.

Table F. Satisfaction With Major Mode of Transportation for Workers Who Did Not Change Modes in the Last Year, for 20 SMSA's: 1977

(For meaning of symbols, see appendix A)

Mode	Satisfaction with mode						
	Total (thousands)	Percent distribution					Ratio of more satisfied to less satisfied
		Total	More satisfied	About the same satisfaction	Less satisfied	Don't know, did not work last year, or no response	
Workers who did not change modes in the last year.....	12,683	100	7	83	6	3	1.17
Auto or truck[1].....	10,781	100	8	84	6	2	1.27
Drives alone.....	8,665	100	8	84	6	2	1.29
Carpool.....	2,040	100	8	82	6	4	1.25
Public transportation[2].....	800	100	6	77	13	4	0.46
Bus or streetcar.....	687	100	6	77	13	4	0.50
Subway or elevated.....	72	100	4	74	17	5	0.21
Railroad.....	28	100	5	77	18	-	0.27
Other means[3].....	142	100	8	76	6	10	1.43
Walks only.....	445	100	5	85	4	6	1.33
Works at home.....	205	100	5	84	1	10	6.64
Not reported.....	310	100	4	86	4	5	0.91

[1]Includes workers using an auto or truck but not specifying type of riding arrangement.
[2]Includes workers using taxicabs.
[3]Bicycle, motorcycle, and all other means not listed.

Table G. Satisfaction With Change for Workers Who Changed Their Major Mode of Transportation in the Last Year, for 20 SMSA's: 1977

(For meaning of symbols, see appendix A)

Nature of mode change	Satisfaction with mode change						
	Total (thousands)	Percent distribution					Ratio of more satisfied to less satisfied
		Total	More satisfied	About the same satisfaction	Less satisfied	Don't know, did not work last year, or no response	
Workers who changed modes and reported former and current mode.	652	100	55	22	20	3	2.68
Auto or truck to auto or truck.....	162	100	51	27	21	1	2.42
Drives alone to carpool.....	89	100	49	25	25	1	2.00
Carpool to drives alone.....	73	100	52	30	16	1	3.20
Auto or truck[1] to public transportation[2]	81	100	31	22	45	1	0.68
Drives alone to public transportation.	53	100	37	18	43	2	0.87
Carpool to public transportation.....	22	100	24	33	43	-	0.55
Public transportation to auto or truck[1].	144	100	72	16	11	1	6.47
Public transportation to drives alone.	92	100	69	16	15	1	4.72
Public transportation to carpool.....	50	100	77	15	5	2	15.00
Other changes[3].....	266	100	56	22	18	5	3.13

[1]Includes workers using an auto or truck but not specifying type of riding arrangement.
[2]Bus or streetcar, subway or elevated, railroad, and taxicab.
[3]Changes from all other means to auto or truck; from all other means to public transportation; from auto or truck to all other means; from public transportation to all other means; from one means of public transportation to another; and changes among all other means not listed.

those who were less satisfied with their current mode than they had been with their former mode (20 percent), was not statistically significant.

The satisfaction ratio for the approximately 650,000 workers whose means of transportation changed in the last year was 2.68, indicating that the number who were more satisfied was about 2½ times larger than the number who were less satisfied as a result of the change.

Among the specific types of mode changes presented in table G, the highest satisfaction ratio (15.00) was found among workers who changed from public transportation in 1976 to a carpool in 1977. Persons who changed to driving alone from public transportation were also very likely to experience an increase rather than a decrease in their satisfaction, as evidenced by a satisfaction ratio of 4.72. (Although not statistically significant, there is some evidence of a difference between these two ratios.) Ratios of this magnitude indicate that a very large majority of these workers were more satisfied with carpooling or driving alone than they had been with using public transportation.

The satisfaction ratios for workers who changed to public transportation, however, are much lower than those noted above. For workers who drove alone in 1976 and changed to public transportation in 1977, the number of persons more satisfied with the change was only about 87 percent as large as the number less satisfied (table G). The ratio for workers who changed to public transportation from carpooling, although not significantly different than that for the drive-alone-to-public-transit changers, indicates that the number of workers who were more satisfied with public transportation than they had been with carpooling was only about half as large as the number who were less satisfied.

TRIP LENGTH AND TRIP DURATION

Trip length. The median distance from home to work for all workers in the 20 SMSA's surveyed in 1977 was 7.7 miles (table H). The difference between workers who traveled to work in trucks (9.3 miles) and workers who traveled to work in autos (8.3 miles) was not statistically significant, nor was there a significant difference in distance traveled between workers in carpools (9.4 miles) and those who drove alone (8.2 miles). Among workers who carpooled to work, those who shared the driving with other members of the carpool traveled farthest (12.6 miles), ostensibly because the motivation to spread commuting costs among several persons is greatest where the costs are highest, i.e., where the distance is longest. Workers who always drove other passengers had the next longest commutes, on the average (9.3 miles), while the shortest trips were made by workers who rode with someone else without doing any of the driving themselves (6.5 miles). The difference between the latter two medians may be due to the fact that workers who always drive others have at least one other person whom they must either pick up on the way to work or drop off before continuing on to their own workplace. Thus the driver would tend to travel farther than the passenger. For the same reason, workers who were always passengers in the carpool generally had shorter worktrips because whenever their place of residence or place of work was different than that of the driver, the passengers would either have been picked up after the driver had traveled some distance or dropped off before the driver's commute had been completed.

The median distance to work for people riding public transportation in the 20 SMSA's was 6.9 miles (table H). People riding a bus or subway traveled about the same distance as the median for all public transit users (6.7 and 7.1 miles, respectively), while workers who rode a commuter railroad traveled much farther, on the average, to get to work (20.9 miles). The median trip length for workers using other means of transportation to work, such as bicycles and motorcycles, was 3.5 miles, while people who walked the entire distance to work generally lived less than a mile from their workplace.

Table I presents the median distance from home to work in 1977 for each of the 20 metropolitan areas surveyed. One of the longest median trip lengths occurred in the Anaheim-Santa Ana-Garden Grove SMSA (10 miles), although commuters in Dallas (9.2 miles), Detroit (8.6 miles), Fort Worth (8.6 miles), Tacoma (8.4 miles), and Washington, D.C. (8.4 miles) traveled comparable distances, on the average, to get to work. However, relatively short median trip lengths occurred in Madison (4.8 miles), Pittsburgh (5.6 miles), Saginaw (5.8 miles), Spokane (5.8 miles), Albany-Schenectady-Troy (6.1 miles), and Boston (6.1 miles).

Table J, covering four of the largest SMSA's surveyed, presents additional data on trip length from the point of view

Table H. Median Distance From Home to Work, by Major Mode of Transportation, for 20 SMSA's: 1977

Mode	Distance (miles)	
	Median	Standard error
Total[1]	7.7	0.1
Workers using vehicles	8.2	0.1
Auto	8.3	0.1
Truck	9.3	0.2
Auto or truck[2]	8.4	0.1
Drives alone	8.2	0.1
Carpool	9.4	0.2
Shares driving	12.6	0.3
Drives others	9.3	0.3
Rides with someone	6.5	0.2
Public transportation[3]	6.9	0.2
Bus or streetcar	6.7	0.2
Subway or elevated	7.1	0.5
Railroad	20.9	1.4
Other means[4]	3.5	0.2
Walks only	0.6	0.1
Not reported	6.6	0.4

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report distance to work.

[2]Includes workers using an auto or truck but not specifying type of riding arrangement.

[3]Includes workers using taxicabs.

[4]Bicycle, motorcycle, and all other means not listed.

Table I. Median Distance From Home to Work, for 20 SMSA's and SMSA Transportation Groups: 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups, see appendix A)

SMSA's and SMSA groups	Total[1]	Distance (miles)	
		Median	Standard error
Total, 20 SMSA's....	11,917	7.7	0.1
Group A.....	1,524	6.3	0.2
Boston.....	946	6.1	0.2
Newark.....	578	6.6	0.3
Group B.....	6,620	8.1	0.1
Anaheim-Santa Ana-Garden Grove.....	717	10.0	0.3
Detroit.....	1,438	8.6	0.2
Los Angeles-Long Beach..	2,553	8.0	0.2
Pittsburgh.....	753	5.6	0.3
Washington, D.C.....	1,159	8.4	0.1
Group C-North.....	1,016	7.1	0.2
Albany-Schenectady-Troy.	265	6.1	0.3
Minneapolis-St. Paul....	750	7.4	0.3
Group C-South and West....	1,415	8.7	0.1
Dallas.....	682	9.2	0.3
Fort Worth.....	329	8.6	0.3
Memphis.....	280	7.8	0.3
Tacoma.....	124	8.4	0.3
Group D.....	1,342	6.9	0.1
Madison.....	129	4.8	0.1
Orlando.....	191	7.6	0.3
Phoenix.....	440	7.7	0.3
Saginaw.....	76	5.8	0.3
Salt Lake City.....	238	7.4	0.2
Spokane.....	107	5.8	0.3
Wichita.....	163	6.4	0.2

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report distance to work.

of total commuter miles traveled to work on an average commuting day. Workers living in the Los Angeles-Long Beach SMSA traveled the greatest aggregate distance to work (a function primarily of the population size of Los Angeles relative to the other SMSA's): just over 27 million miles. Total commuter miles in the Detroit and Washington, D.C. SMSA's were about 15.5 million miles and about 12.5 million miles, respectively. Workers in the Boston metropolitan area, in comparison, traveled fewer total miles to work on a typical commuting day than workers in the other three large SMSA's (about 8.5 million miles).

The proportion of total commuter miles accounted for by workers using an auto or truck was very high in the Detroit and Los Angeles-Long Beach metropolitan areas (about 93 percent), while in the Washington, D.C. and Boston SMSA's the corresponding figures were 86 percent and 77 percent, respectively (table J). In the Detroit and Los Angeles-Long Beach areas about 75 percent of the total mileage traveled to work was attributable to people driving alone, whereas 55 percent of the total mileage in Boston and Washington, D.C. was attributable to this means of transportation.

The high proportion of total commuter miles attributable to workers driving alone in the Detroit and Los Angeles-Long Beach SMSA's would be expected to mean fewer miles by carpools and public transportation in these SMSA's, compared with the Boston and Washington metropolitan areas. In general, this is the case as carpools accounted for the smallest proportion of total commuter mileage (table J) in the Detroit SMSA (17 percent), and there is some evidence that the proportion in Los Angeles-Long Beach due to carpools (20 percent) is less than the comparable figure for Boston (21 percent). Carpools accounted for the largest proportion of the aggregate distance to work in the Wash-

Table J. Total Commuter Miles Traveled From Home to Work, by Major Mode of Transportation, for Four SMSA's: 1977

(Number of miles in thousands. For meaning of symbols, see appendix A)

Mode	Total commuter miles							
	Boston		Detroit		Los Angeles-Long Beach		Washington, D.C.	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total[1].....	8,441	100	15,551	100	27,005	100	12,468	100
Automobile or truck[2].....	6,524	77	14,471	93	25,196	93	10,673	86
Drives alone.....	4,669	55	11,737	75	19,853	74	6,860	55
Carpool.....	1,799	21	2,609	17	5,274	20	3,734	30
Public transportation[3].....	1,379	16	496	3	1,233	5	1,548	12
Bus or streetcar.....	619	7	466	3	1,230	5	1,474	12
Subway or elevated.....	585	7	-	-	-	-	24	-
Railroad.....	166	2	23	-	-	-	47	-
Other means[4].....	136	2	103	1	319	1	115	1
Not reported.....	404	5	483	3	261	1	127	1

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report distance to work.

[2]Includes workers using an auto or truck but not specifying type of riding arrangement.

[3]Includes workers using taxicabs.

[4]Bicycle, motorcycle, walks onl· all other other means not listed.

ington, D.C. SMSA where 30 percent of all commuter miles were due to carpools.

The differences in the proportion of the total distance traveled due to public transit are, of course, related to the availability of such transportation. These differences are similar to those noted above for carpooling. Public transportation accounted for the smallest proportion of total commuter mileage in the Detroit SMSA (3 percent), followed by the Los Angeles-Long Beach SMSA where only 5 percent of the total distance traveled to work was due to workers who used transit. However, unlike the figures for carpools, where Washington, D.C. led the way, the area with the highest proportion of total commuter miles by mass transit was Boston, with 16 percent, while in Washington, D.C., the comparable figure was 12 percent.

Trip duration. The median travel time to work among the 20 surveyed SMSA's was 20.3 minutes in 1977 (table K). Not surprisingly, work trips made by carpool typically took more time to complete than trips of workers who drove alone, although the difference was not large (22.3 minutes versus 19.7 minutes). Comparing types of carpooling arrangements, workers who shared driving typically had trips of the longest duration (about 26.2 minutes), followed by workers who drove others (23 minutes), with the shortest trips being made by workers who always rode as passengers with someone else (approximately 18.5 minutes). These differences in median travel time among workers in carpools reflect the differences in median distance to work noted in table H and discussed previously.

Workers whose major mode of transportation was public transit typically spent much longer getting to work than workers who traveled in an auto or truck. The median travel time to work by public transportation was 32.8 minutes, compared with 20.2 minutes for people in the surveyed SMSA's whose major mode was auto or truck (table K).

Among the different types of public transportation, median travel time for workers riding a bus or streetcar was about the same as that for persons using the subway or elevated (roughly 33 minutes). However, these two medians were significantly longer in duration than the median auto or truck trip (20.3 minutes), in spite of the fact that the auto or truck trips covered a slightly greater distance than those made by public transit. (See table H.)

Trips of the longest duration, much longer than any other means of transportation, were experienced by workers who rode a commuter railroad to work (55.8 minutes). At the other end of the distribution, the shortest duration trips were taken by people who walked the entire way to work (9.3 minutes), while people using other means (e.g., bicycles

Table K. Median Time Taken to Get to Work, by Major Mode of Transportation, for 20 SMSA's: 1977

Mode	Time taken (minutes)	
	Median	Standard error
Total[1]	20.3	0.1
Workers using vehicles	20.8	0.1
Auto	20.2	0.1
Truck	20.3	0.3
Auto or truck[2]	20.2	0.1
Drives alone	19.7	0.1
Carpool	22.3	0.2
Shares driving	26.2	0.4
Drives others	23.0	0.4
Rides with someone	18.5	0.3
Public transportation[3]	32.8	0.4
Bus or streetcar	32.5	0.5
Subway or elevated	33.2	0.9
Railroad	55.8	3.9
Other means[4]	14.9	0.5
Walks only	9.3	0.3
Not reported	19.2	0.5

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report travel time to work.
[2]Includes workers using an auto or truck but not specifying type of riding arrangement.
[3]Includes workers using taxicabs.
[4]Bicycle, motorcycle, and all other means not listed.

Table L. Median Time Taken to Get to Work, for 20 SMSA's and SMSA Transportation Groups: 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups, see appendix A)

SMSA's and SMSA groups	Total[1]	Time taken (minutes)	
		Median	Standard error
Total, 20 SMSA's	12,032	20.3	0.1
Group A	1,564	20.6	0.3
Boston	958	20.5	0.3
Newark	606	20.7	0.5
Group B	6,678	21.1	0.1
Anaheim-Santa Ana-Garden Grove	719	20.4	0.4
Detroit	1,459	21.2	0.2
Los Angeles-Long Beach	2,574	20.2	0.3
Pittsburgh	757	19.4	0.5
Washington, D.C	1,168	24.9	0.3
Group C-North	1,021	18.8	0.3
Albany-Schenectady-Troy	267	18.2	0.4
Minneapolis-St. Paul	754	19.0	0.4
Group C-South and West	1,424	19.9	0.2
Dallas	684	20.7	0.4
Fort Worth	331	18.7	0.4
Memphis	284	19.6	0.4
Tacoma	125	19.4	0.4
Group D	1,346	18.3	0.1
Madison	129	16.6	0.3
Orlando	191	18.8	0.4
Phoenix	440	19.2	0.4
Saginaw	76	15.8	0.4
Salt Lake City	239	18.7	0.3
Spokane	107	16.8	0.4
Wichita	164	17.8	0.3

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report travel time to work.

or motorcycles) typically spent about 15 minutes getting to work (table K).

Table L presents the median time taken to get to work in 1977 for each of the 20 metropolitan areas surveyed. Median travel time was greatest in the Washington, D.C. SMSA, with the typical commute lasting about 25 minutes. Workers in the Saginaw SMSA, however, had one of the shortest commuting times (15.8 minutes), although their median trip was not significantly shorter than that of workers in the Madison (16.6 minutes) or Spokane (16.8 minutes) SMSA's.

BACKGROUND AND STRUCTURE OF THE SURVEY

The Annual Housing Survey. The Annual Housing Survey consists of a national sample of approximately 75,000 households, and a metropolitan area sample of about 140,000 households spread over 20 SMSA's (for operational reasons, the 1975-76 enumeration covered 21 areas). These SMSA's comprise one-third of a list of 60 SMSA's arranged in a 3-year cycle, so that, in all, about 420,000 metropolitan housing units are surveyed in a 3-year period. (See List of SMSA's by Survey Group.) Each of the three survey groups of SMSA's contains four very large SMSA's, with approximately 15,000 sample housing units equally divided between the central city and the SMSA balance. The remaining SMSA's each contain about 5,000 sample housing units distributed in proportion to the actual distribution of housing units between the central city and the SMSA balance. The survey coverage relates to each SMSA as defined for the 1970 census.

The Travel-to-Work Supplement was first included for the Group II SMSA sample, the field enumeration of which ran from April 1975 through March 1976. It was also used in the 1975 Annual Housing Survey national sample which was completed in the late fall of that year. The Madison SMSA was included in Group II for the first enumeration, rather than in Group I, resulting in coverage of 21 metropolitan areas. Coverage of another 20 SMSA's (Group III) was undertaken from April 1976 through March 1977, and interviewing in the final 20 SMSA's (Group I repeated), including Madison again, was completed during the period of April 1977 through March 1978. A facsimile of the Travel-to-Work Supplement can be found in appendix C.

Related travel-to-work data. In addition to this report, several other data products are or will be available from each of the three SMSA survey groups covered by the Travel-to-Work Supplement. These products include other published reports, unpublished tables, microdata tapes, and summary tapes of census tract-to-census tract commuter flows for each SMSA. Data for the SMSA's in Survey Group II are currently available in all forms. Data for the SMSA's in Survey Group III are presently available in Current Population Reports, Series P-23, No. 72, *Selected Characteristics of Travel to*

List of SMSA's by Survey Group

SURVEY GROUP I (1977 to 1978)	SURVEY GROUP II (1975 to 1976)	SURVEY GROUP III (1976 to 1977)
Albany-Schenectady-Troy, N.Y.	Atlanta, Ga.*	Allentown-Bethlehem-Easton, Pa.-N.J.
Anaheim-Santa Ana-Garden Grove, Calif.	Chicago, Ill.*	Baltimore, Md.
Boston, Mass*	Cincinnati, Ohio-Ky.-Ind.	Birmingham, Ala.
Dallas, Tex.	Colorado Springs, Colo.	Buffalo, N.Y.
Detroit, Mich.*	Columbus, Ohio	Cleveland, Ohio
Fort Worth, Tex.	Hartford, Conn.	Denver, Colo.
Los Angeles-Long Beach, Calif.*	Kansas City, Mo.-Kans.	Grand Rapids, Mich.
Madison, Wis.†	Miami, Fla.	Honolulu, Hawaii
Memphis, Tenn.-Ark.	Milwaukee, Wis.	Houston, Tex.*
Minneapolis-St. Paul, Minn.	New Orleans, La.	Indianapolis, Ind.
Newark, N.J.	Newport News-Hampton, Va.	Las Vegas, Nev.
Orlando, Fla.	Paterson-Clifton-Passaic, N.J.	Louisville, Ky.-Ind.
Phoenix, Ariz.	Philadelphia, Pa.-N.J.*	New York, N.Y.*
Pittsburgh, Pa.	Portland, Oreg.-Wash.	Oklahoma City, Okla.
Saginaw, Mich.	Rochester, N.Y.	Omaha, Nebr.-Iowa
Salt Lake City, Utah	San Antonio, Tex.	Providence-Pawtucket-Warwick, R.I.-Mass.
Spokane, Wash.	San Bernardino-Riverside-Ontario, Calif.	Raleigh, N.C.
Tacoma, Wash.	San Diego, Calif.	Sacramento, Calif.
Washington, D.C.-Md.-Va.*	San Francisco-Oakland, Calif.*	St. Louis, Mo.-Ill.*
Wichita, Kans.	Springfield-Chicopee-Holyoke, Mass.-Conn.	Seattle-Everett, Wash.*

*Sample size of 15,000 housing units; all others are 5,000 housing units.
†Included with Group II for the first (1975-76) enumeration.

Work in 20 Metropolitan Areas: 1976, and on computer tape as summaries of census tract-to-census tract commuter flows.

Data from the 1975 National Travel-to-Work Supplement are currently available in Current Population Reports, Series P-23, No. 99, *The Journey to Work in the United States: 1975,* in microdata form on computer tapes, and in the form of unpublished tables. As in the SMSA samples, the unpublished National tables cross-classify commuters and characteristics of the commuting trip by the socioeconomic characteristics obtainable from the Annual Housing Survey, which include age, sex, race, household relationship, and earnings. Information concerning these unpublished data may be obtained by writing to the Chief, Population Division, U.S. Bureau of the Census, Washington, D.C. 20233.

Comparability with 1970 census data. Care must be taken in comparing data on major mode of transportation from the Travel-to-Work Supplement with 1970 census data on the same topic. Whereas the census asked workers to specify the principal means of transportation they used to get to work on the last day of the reference week prior to the Census date (April 1, 1970), the Travel-to-Work Supplement asks respondents to specify their usual mode of transportation to work, regardless of any possible deviation from that pattern which may have occurred during the week prior to interview.

The Travel-to-Work Supplement and the 1970 census are also based on different universes. While the 1970 census refers to the entire population, the Travel-to-Work Supplement is based on the population in households (including the military population in households) and excludes persons living in group quarters such as college dormitories and military barracks. Since it is believed that workers who live in group quarters typically exhibit a high rate of walking to work, comparisons of percentage distributions of mode use in 1970 and 1977 in this report are made on the basis of workers using vehicles, rather than on a worker total. To the extent that workers living in group quarters have a higher rate of use of certain types of vehicles than workers living in households, their exclusion from the survey universe may result in an underestimate of the use of those modes in the total sample. This may be particularly true for public transportation, thereby affecting the percentage point differences in the use of public transportation between 1970 and 1977 reported in table E.

Because only persons who were actually working are included in the survey, 1970-77 comparisons of worker totals are affected not only by the inclusion of group quarters residents in 1970, but also by the increase in unemployment in nearly all SMSA's between 1970 and 1977. For these reasons, it is probably more valid to compare the proportion of workers using a particular mode in 1977 with the corresponding proportion in 1970, rather than the 1970-77 numeric change. There are also basic differences between the Travel-to-Work Supplement and the 1970 census in terms of interviewing procedures which can affect comparability.

Table 1. Major Mode of Transportation to Work, for 20 SMSA's and SMSA Transportation Groups: 1977

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Mode	Total, 20 SMSA's		Total, Group A		Boston		Newark		Total, Group B	
	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]
All workers	13,658	(X)	1,774	(X)	1,080	(X)	694	(X)	7,558	(X)
Workers using vehicles	12,544	100	1,531	100	930	100	601	100	6,982	100
Auto	10,247	82	1,204	79	704	76	500	83	5,810	83
Truck	1,168	9	53	3	31	3	23	4	564	8
Auto or truck[2]	11,415	91	1,257	82	735	79	522	87	6,374	91
Drives alone	9,062	72	968	63	551	59	417	69	5,088	73
Carpool	2,266	18	271	18	176	19	95	16	1,241	18
Shares driving	875	7	81	5	47	5	34	6	510	7
Drives others	520	4	74	5	52	6	22	4	270	4
Rides with someone	872	7	115	8	76	8	39	6	460	7
Public transportation[3]	921	7	253	17	178	19	75	13	496	7
Bus or streetcar	790	6	141	9	89	10	52	9	480	7
Subway or elevated	83	1	78	5	75	8	3	-	5	-
Railroad	32	-	30	2	11	1	19	3	3	-
Other means[4]	207	2	21	1	17	2	3	1	112	2
Bicycle	98	1	12	1	10	1	2	-	50	1
Walks only	518	[4]	113	[6]	76	[7]	38	[5]	266	[4]
Works at home	227	[2]	26	[1]	18	[2]	9	[1]	115	[2]
Not reported	370	[3]	104	[6]	57	[5]	47	[7]	196	[3]

Mode	Anaheim-Santa Ana-Garden Grove		Detroit		Los Angeles-Long Beach		Pittsburgh		Washington, D.C.	
	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]
All workers	843	(X)	1,617	(X)	2,934	(X)	856	(X)	1,308	(X)
Workers using vehicles	806	100	1,500	100	2,753	100	716	100	1,206	100
Auto	684	85	1,320	88	2,286	83	561	78	960	80
Truck	86	11	101	7	268	10	56	8	53	4
Auto or truck[2]	770	95	1,421	95	2,554	93	617	86	1,013	84
Drives alone	640	79	1,172	78	2,090	76	486	68	702	58
Carpool	128	16	235	16	452	16	124	17	302	25
Shares driving	65	8	100	7	153	6	54	8	138	11
Drives others	26	3	54	4	99	4	26	4	66	5
Rides with someone	37	5	82	5	201	7	44	6	97	8
Public transportation[3]	15	2	63	4	145	5	94	13	178	15
Bus or streetcar	15	2	60	4	144	5	92	13	169	14
Subway or elevated	-	-	-	-	-	-	-	-	5	-
Railroad	-	-	1	-	-	-	1	-	2	-
Other means[4]	21	3	16	1	53	2	5	1	15	1
Bicycle	11	1	7	-	24	1	1	-	7	1
Walks only	16	[2]	45	[3]	89	[3]	57	[7]	59	[4]
Works at home	15	[2]	10	[1]	54	[2]	11	[1]	26	[2]
Not reported	6	[1]	63	[4]	39	[1]	71	[8]	17	[1]

Mode	Total, Group C-North		Albany-Schenectady-Troy		Minneapolis-St. Paul		Total, Group C-South and West		Dallas	
	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]
All workers	1,163	(X)	300	(X)	862	(X)	1,621	(X)	788	(X)
Workers using vehicles	1,059	100	270	100	789	100	1,523	100	730	100
Auto	875	83	232	86	643	82	1,221	80	582	80
Truck	77	7	21	8	56	7	241	16	119	16
Auto or truck[2]	952	90	253	93	700	89	1,462	96	700	96
Drives alone	743	70	188	70	555	70	1,166	77	565	77
Carpool	205	19	62	23	143	18	285	19	128	18
Shares driving	74	7	23	8	51	6	110	7	52	7
Drives others	47	4	12	5	35	4	69	5	32	4
Rides with someone	84	8	27	10	57	7	106	7	44	6
Public transportation[3]	85	8	15	6	70	9	45	3	22	3
Bus or streetcar	84	8	14	5	70	9	44	3	22	3
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	22	2	3	1	19	2	16	1	7	1
Bicycle	14	1	1	-	13	2	5	-	3	-
Walks only	56	[5]	20	[7]	36	[4]	35	[2]	17	[2]
Works at home	31	[3]	6	[2]	25	[3]	20	[1]	9	[1]
Not reported	17	[1]	4	[1]	12	[1]	43	[3]	32	[4]

See footnotes at end of table.

Table 1. Major Mode of Transportation to Work, for 20 SMSA's and SMSA Transportation Groups: 1977—Continued

(Numbers in thousands. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Mode	Fort Worth		Memphis		Tacoma		Total, Group D		Madison	
	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]
All workers	374	(X)	320	(X)	139	(X)	1,543	(X)	150	(X)
Workers using vehicles	359	100	303	100	132	100	1,449	100	133	100
Auto	292	81	244	81	104	79	1,137	78	103	77
Truck	57	16	44	14	22	17	233	16	10	8
Auto or truck[2]	348	97	288	95	126	96	1,369	94	113	85
Drives alone	275	77	224	74	101	77	1,097	76	89	66
Carpool	70	20	62	21	24	18	265	18	24	18
Shares driving	27	8	21	7	10	7	99	7	8	6
Drives others	16	4	15	5	6	4	59	4	6	5
Rides with someone	27	7	26	9	9	7	107	7	10	7
Public transportation[3]	6	2	14	5	3	2	42	3	12	9
Bus or streetcar	6	2	13	4	3	2	42	3	11	9
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	4	1	2	-	3	2	38	3	8	6
Bicycle	1	-	-	-	1	1	18	1	6	5
Walks only	7	[2]	7	[2]	4	[3]	48	[3]	10	[7]
Works at home	5	[1]	4	[1]	2	[1]	34	[2]	5	[3]
Not reported	3	[1]	7	[2]	2	[1]	11	[1]	2	[1]

Mode	Orlando		Phoenix		Saginaw		Salt Lake City		Spokane		Wichita	
	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]	Number	Percent[1]
All workers	222	(X)	504	(X)	84	(X)	277	(X)	122	(X)	183	(X)
Workers using vehicles	211	100	478	100	79	100	259	100	114	100	175	100
Auto	176	83	367	77	67	85	195	75	88	77	141	80
Truck	26	12	94	20	11	14	43	17	20	17	29	17
Auto or truck[2]	202	96	461	96	78	99	238	92	108	94	170	97
Drives alone	162	76	376	79	65	82	183	71	87	76	136	78
Carpool	39	19	82	17	12	16	54	21	20	18	34	19
Shares driving	12	5	27	6	6	8	26	10	9	8	12	7
Drives others	10	5	18	4	2	3	11	4	4	4	8	5
Rides with someone	18	8	37	8	4	5	18	7	7	6	13	8
Public transportation[3]	4	2	4	1	-	-	16	6	4	4	3	2
Bus or streetcar	4	2	4	1	-	-	16	6	4	4	3	2
Subway or elevated	-	-	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-	-	-
Other means[4]	5	3	14	3	1	1	5	2	2	2	2	1
Bicycle	2	1	6	1	-	1	1	1	1	1	1	-
Walks only	6	[3]	12	[2]	2	[2]	10	[3]	4	[3]	4	[2]
Works at home	3	[1]	11	[2]	2	[2]	7	[3]	3	[2]	4	[2]
Not reported	2	[1]	3	[1]	1	[1]	2	[1]	1	[1]	1	[1]

[1]Percents are of workers using vehicles, except percents in brackets [ ], which are of all workers.
[2]Includes workers using an auto or truck but not specifying type of riding arrangement.
[3]Includes workers using taxicabs.
[4]Includes workers using motorcycles and all other means not listed.

Table 2. Median Distance From Home to Work, by Major Mode of Transportation, for 20 SMSA's and SMSA Transportation Groups: 1977

(Medians and standard errors in miles. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Median distance by mode	Total, 20 SMSA'S		Total, Group A		Boston		Newark		Total, Group B	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	7.7	0.1	6.3	0.2	6.1	0.2	6.6	0.3	8.1	0.1
Workers using vehicles	8.2	0.1	7.2	0.2	7.0	0.2	7.4	0.3	8.6	0.1
Auto	8.3	0.1	7.3	0.2	7.3	0.2	7.2	0.3	8.8	0.1
Truck	9.3	0.2	8.0	1.1	8.4	1.3	7.5	1.8	9.3	0.4
Auto or truck[2]	8.4	0.1	7.3	0.2	7.3	0.2	7.2	0.3	8.8	0.1
Drives alone	8.2	0.1	7.1	0.2	7.1	0.3	7.1	0.4	8.5	0.1
Carpool	9.4	0.2	8.1	0.4	8.2	0.4	7.8	0.7	10.1	0.3
Shares driving	12.6	0.3	11.9	1.1	13.3	1.6	10.8	1.4	13.2	0.4
Drives others	9.3	0.3	8.0	0.6	9.1	0.7	5.9	1.1	9.8	0.5
Rides with someone	6.5	0.2	5.5	0.6	5.0	0.5	6.5	1.5	6.9	0.4
Public transportation[3]	6.9	0.2	7.1	0.4	6.6	0.3	9.6	1.7	7.0	0.3
Bus or streetcar	6.7	0.2	5.4	0.5	5.0	0.3	6.5	1.5	7.0	0.3
Subway or elevated	7.1	0.5	7.3	0.5	7.5	0.4	4.0	0.6	4.5	0.8
Railroad	20.9	1.4	20.5	1.4	16.5	1.5	24.5	3.7	24.1	7.6
Other means[4]	3.5	0.2	2.9	0.4	3.0	0.4	2.0	17.1	3.6	0.3
Walks only	0.6	0.1	0.7	0.1	0.7	0.1	0.7	0.1	0.6	0.1
Not reported	6.6	0.4	6.0	0.6	6.0	0.6	6.0	1.0	6.9	0.6

Median distance by mode	Anaheim-Santa Ana-Garden Grove		Detroit		Los Angeles-Long Beach		Pittsburgh		Washington, D.C.	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	10.0	0.3	8.6	0.2	8.0	0.2	5.6	0.3	8.4	0.1
Workers using vehicles	10.3	0.3	9.0	0.2	8.3	0.2	6.3	0.3	8.9	0.1
Auto	10.4	0.4	8.9	0.2	8.6	0.2	6.3	0.3	9.2	0.2
Truck	11.3	0.8	11.2	0.8	8.0	0.6	8.6	1.4	11.2	1.0
Auto or truck[2]	10.5	0.3	9.1	0.2	8.5	0.2	6.5	0.3	9.3	0.2
Drives alone	10.2	0.4	8.9	0.2	8.4	0.2	6.2	0.4	8.7	0.2
Carpool	12.1	0.8	9.7	0.4	9.7	0.6	7.7	0.8	11.1	0.4
Shares driving	15.4	1.5	12.5	0.8	13.6	1.0	10.6	1.5	13.2	0.5
Drives others	10.0	1.4	9.6	0.9	10.8	1.2	7.9	1.4	9.7	0.7
Rides with someone	8.6	1.4	6.9	0.7	6.3	0.9	4.3	0.5	8.6	0.5
Public transportation[3]	10.1	2.2	7.5	0.8	7.1	0.7	5.9	0.7	7.1	0.3
Bus or streetcar	10.1	2.2	7.5	0.8	7.2	0.7	5.7	0.7	7.3	0.3
Subway or elevated	-	-	-	-	-	-	-	-	4.5	0.5
Railroad	-	-	(B)	(X)	-	-	(B)	(X)	29.0	9.0
Other means[4]	3.3	0.9	3.3	1.2	3.6	0.4	1.1	0.6	4.3	0.5
Walks only	0.6	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.7	0.1
Not reported	4.9	4.3	6.9	1.0	7.8	1.4	6.5	0.9	7.0	1.9

Median distance by mode	Total, Group C-North		Albany-Schenectady-Troy		Minneapolis-St. Paul		Total, Group C-South and West		Dallas	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	7.1	0.2	6.1	0.3	7.4	0.3	8.7	0.1	9.2	0.3
Workers using vehicles	7.7	0.2	6.9	0.3	8.0	0.3	9.0	0.1	9.6	0.3
Auto	8.0	0.2	7.3	0.3	8.3	0.3	8.8	0.2	9.4	0.3
Truck	9.4	1.1	7.3	1.5	10.3	1.4	10.3	0.4	10.8	0.8
Auto or truck[2]	8.1	0.2	7.3	0.3	8.4	0.3	9.0	0.2	9.6	0.3
Drives alone	8.0	0.2	7.3	0.3	8.3	0.3	8.8	0.2	9.4	0.3
Carpool	8.2	0.4	7.3	0.6	8.6	0.6	9.9	0.4	10.8	0.9
Shares driving	11.1	0.8	10.7	0.9	11.3	1.3	12.4	0.6	12.5	1.3
Drives others	8.2	1.0	6.9	1.1	8.9	1.4	10.3	0.8	11.1	1.9
Rides with someone	6.2	0.6	5.0	0.6	6.7	0.8	7.3	0.5	8.7	1.1
Public transportation[3]	5.7	0.5	4.1	0.2	6.5	0.6	8.3	0.8	9.4	1.4
Bus or streetcar	5.9	0.5	4.1	0.2	6.6	0.6	8.4	0.8	9.4	1.4
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	3.0	0.5	1.6	1.3	3.2	0.6	3.6	0.7	2.3	0.6
Walks only	0.6	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.6	0.1
Not reported	4.8	1.0	4.7	1.8	4.9	1.3	7.2	0.9	7.6	1.3

See footnotes at end of table.

Table 2. Median Distance From Home to Work, by Major Mode of Transportation, for 20 SMSA's and SMSA Transportation Groups: 1977—Continued

(Medians and standard errors in miles. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Median distance by mode	Fort Worth		Memphis		Tacoma		Total, Group D		Madison	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	8.6	0.3	7.8	0.3	8.4	0.3	6.9	0.1	4.8	0.1
Workers using vehicles	8.9	0.3	8.1	0.3	8.6	0.3	7.2	0.1	5.3	0.2
Auto	8.6	0.3	8.0	0.3	8.5	0.3	7.1	0.1	5.8	0.2
Truck	10.5	1.0	9.3	0.9	9.6	0.8	8.7	0.2	7.5	1.2
Auto or truck[2]	8.9	0.3	8.2	0.3	8.7	0.3	7.4	0.1	5.9	0.2
Drives alone	8.7	0.3	8.1	0.3	8.3	0.3	7.1	0.1	5.7	0.3
Carpool	9.7	0.7	8.2	0.7	11.7	1.3	8.6	0.2	6.7	0.7
Shares driving	13.2	1.1	9.9	1.1	18.5	2.1	11.8	0.4	9.6	1.0
Drives others	9.7	1.4	10.4	1.0	8.6	1.6	9.0	0.5	6.8	1.2
Rides with someone	6.7	0.9	5.3	0.9	7.8	1.0	5.6	0.4	4.6	0.3
Public transportation[3]	9.5	1.7	6.2	1.2	5.3	1.6	5.6	0.6	4.5	0.2
Bus or streetcar	9.7	1.8	6.5	1.3	5.3	1.6	5.7	0.6	4.5	0.2
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	3.8	1.2	(B)	(X)	7.0	2.7	3.9	0.3	3.2	0.3
Walks only	0.5	0.1	0.7	0.1	0.6	0.1	0.6	0.1	0.6	0.1
Not reported	8.4	5.5	4.3	1.5	10.4	2.6	7.9	1.1	6.2	2.2

Median distance by mode	Orlando		Phoenix		Saginaw		Salt Lake City		Spokane		Wichita	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	7.6	0.3	7.7	0.3	5.8	0.3	7.4	0.2	5.8	0.3	6.4	0.2
Workers using vehicles	7.9	0.3	8.0	0.3	6.1	0.3	7.8	0.2	6.1	0.3	6.5	0.2
Auto	7.9	0.3	7.9	0.3	5.7	0.3	7.5	0.3	6.0	0.3	6.4	0.2
Truck	9.0	0.9	9.0	0.5	9.0	0.8	9.0	0.6	7.5	0.7	8.0	0.6
Auto or truck[2]	8.0	0.3	8.1	0.3	6.1	0.3	7.8	0.3	6.3	0.3	6.6	0.2
Drives alone	7.8	0.3	7.9	0.3	6.0	0.3	7.4	0.3	6.1	0.3	6.1	0.2
Carpool	9.0	0.6	9.2	0.7	6.8	1.0	9.3	0.7	7.1	0.6	8.7	0.4
Shares driving	13.7	2.2	12.6	1.1	12.6	1.5	12.4	0.7	8.7	1.0	10.6	0.8
Drives others	9.6	1.2	10.4	1.7	7.2	1.6	8.0	1.3	9.0	1.5	9.0	0.9
Rides with someone	6.9	0.9	5.8	1.0	3.5	0.4	4.8	0.6	4.9	0.6	7.1	0.6
Public transportation[3]	4.8	1.3	8.4	3.0	(B)	(X)	8.9	1.1	4.1	0.4	4.4	0.5
Bus or streetcar	4.9	1.4	8.4	3.0	(B)	(X)	8.9	1.1	4.1	0.4	4.5	0.5
Subway or elevated	-	-	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-	-	-
Other means[4]	4.8	1.5	4.2	1.1	(B)	(X)	4.6	1.3	4.4	0.9	2.3	0.6
Walks only	0.7	0.1	0.6	0.1	0.6	0.1	0.6	0.1	0.7	0.1	0.6	0.1
Not reported	(B)	(X)	11.3	3.7	(B)	(X)	(B)	(X)	9.9	2.1	(B)	(X)

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report distance to work.
[2]Includes workers using an auto or truck but not specifying type of riding arrangement.
[3]Includes workers using taxicabs.
[4]Bicycle, motorcycle, and all other means not listed.

Table 3. Median Time Taken to Get to Work, by Major Mode of Transportation, for 20 SMSA's and SMSA Transportation Groups: 1977

(Medians and standard errors in minutes. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Median time by mode	Total, 20 SMSA's		Total, Group A		Boston		Newark		Total, Group B	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	20.3	0.1	20.6	0.3	20.5	0.3	20.7	0.5	21.1	0.1
Workers using vehicles	20.8	0.1	21.6	0.3	21.8	0.3	21.4	0.5	21.6	0.1
Auto	20.2	0.1	19.8	0.3	19.6	0.3	20.2	0.5	21.0	0.1
Truck	20.3	0.3	20.0	1.4	19.9	1.6	20.1	2.7	20.7	0.5
Auto or truck[2]	20.2	0.1	19.9	0.3	19.6	0.3	20.2	0.5	21.0	0.1
Drives alone	19.7	0.1	19.4	0.3	19.0	0.4	19.9	0.6	20.4	0.2
Carpool	22.3	0.2	21.7	0.6	21.7	0.7	21.6	1.1	23.6	0.3
Shares driving	26.2	0.4	27.4	1.3	28.8	1.5	25.5	2.2	27.9	0.7
Drives others	23.0	0.4	23.1	1.0	24.0	1.2	21.6	1.7	23.7	0.7
Rides with someone	18.5	0.3	16.8	1.0	16.4	1.0	17.8	2.1	19.7	0.5
Public transportation[3]	32.8	0.4	32.7	0.7	31.9	0.6	36.6	3.4	34.9	0.8
Bus or streetcar	32.5	0.5	30.4	1.0	29.8	1.0	31.7	2.4	35.1	0.8
Subway or elevated	33.2	0.9	33.4	0.9	33.5	0.8	31.7	6.1	31.1	3.4
Railroad	55.8	3.9	54.9	3.9	43.9	3.8	64.8	6.4	61.6	9.4
Other means[4]	14.9	0.5	16.4	2.0	16.4	1.7	35.1	16.4	14.3	0.6
Walks only	9.3	0.3	10.5	0.5	10.2	0.5	11.4	1.5	9.7	0.4
Not reported	19.2	0.5	18.4	0.9	17.1	1.2	19.7	1.5	20.0	0.9

Median time by mode	Anaheim-Santa Ana-Garden Grove		Detroit		Los Angeles-Long Beach		Pittsburgh		Washington, D.C.	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	20.4	0.4	21.2	0.2	20.2	0.3	19.4	0.5	24.9	0.3
Workers using vehicles	20.6	0.4	21.6	0.3	20.5	0.3	20.3	0.5	25.8	0.3
Auto	20.5	0.4	21.2	0.3	20.3	0.3	18.8	0.5	24.2	0.3
Truck	21.3	1.1	23.3	1.0	19.0	1.0	20.4	2.3	22.9	1.2
Auto or truck[2]	20.5	0.4	21.3	0.3	20.2	0.3	18.9	0.5	24.2	0.3
Drives alone	20.2	0.4	21.0	0.3	19.9	0.3	18.1	0.6	22.6	0.3
Carpool	22.3	0.9	22.7	0.7	21.9	0.7	21.8	1.1	28.4	0.6
Shares driving	25.3	1.6	26.6	1.3	27.2	1.6	24.7	2.5	31.3	0.9
Drives others	21.1	1.7	22.9	1.2	23.2	1.6	21.4	2.0	27.6	1.0
Rides with someone	19.1	1.6	18.5	1.1	18.2	1.0	17.6	2.2	24.5	1.0
Public transportation[3]	44.1	5.0	35.8	2.2	32.6	1.8	33.7	1.9	36.4	1.1
Bus or streetcar	44.1	5.0	36.3	2.2	32.8	1.8	33.5	1.9	36.9	1.1
Subway or elevated	-	-	-	-	-	-	-	-	31.1	2.6
Railroad	-	-	(B)	(X)	-	-	(B)	(X)	57.3	5.2
Other means[4]	13.9	2.2	15.4	2.1	13.8	0.9	12.5	1.1	18.9	2.2
Walks only	7.6	1.3	8.2	0.8	9.8	0.9	9.5	1.0	12.1	0.7
Not reported	24.3	9.9	20.3	1.3	18.4	2.3	20.0	1.6	22.0	2.0

Median time by mode	Total, Group C-North		Albany-Schenectady-Troy		Minneapolis-St. Paul		Total, Group C-South and West		Dallas	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	18.8	0.3	18.2	0.4	19.0	0.4	19.9	0.2	20.7	0.4
Workers using vehicles	19.3	0.3	18.9	0.4	19.5	0.4	20.2	0.2	21.1	0.4
Auto	18.7	0.3	18.6	0.4	18.7	0.4	19.8	0.2	20.8	0.4
Truck	19.0	1.1	17.9	1.7	19.4	1.5	20.8	0.5	21.2	1.0
Auto or truck[2]	18.7	0.3	18.6	0.4	18.8	0.4	20.0	0.2	20.8	0.4
Drives alone	18.4	0.3	18.3	0.4	18.4	0.4	19.6	0.2	20.3	0.4
Carpool	20.1	0.6	19.0	0.8	20.5	0.9	21.7	0.5	23.6	1.1
Shares driving	23.0	1.0	22.1	1.1	23.6	1.6	23.6	0.8	25.3	1.8
Drives others	21.2	1.2	19.4	1.8	21.9	1.6	23.9	1.1	26.7	1.8
Rides with someone	16.4	1.1	15.3	1.1	16.9	1.5	18.5	0.8	20.5	1.5
Public transportation[3]	27.4	1.1	23.8	1.5	28.1	1.3	31.2	1.3	32.1	2.3
Bus or streetcar	27.5	1.1	24.6	1.7	28.1	1.3	31.5	1.3	32.1	2.3
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	17.0	1.6	9.5	4.9	17.4	1.8	14.5	1.6	14.5	3.5
Walks only	8.0	0.7	7.7	0.8	8.1	1.0	8.6	0.8	8.7	1.5
Not reported	16.0	2.1	17.5	3.2	15.5	2.8	19.2	1.2	19.6	1.8

See footnotes at end of table.

Table 3. Median Time Taken to Get to Work, by Major Mode of Transportation, for 20 SMSA's and SMSA Transportation Groups: 1977—Continued

(Medians and standard errors in minutes. SMSA's as of the 1970 census. For explanation of transportation groups and meaning of symbols, see appendix A)

Median time by mode	Fort Worth		Memphis		Tacoma		Total, Group D		Madison	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	18.7	0.4	19.6	0.4	19.4	0.4	18.3	0.1	16.6	0.3
Workers using vehicles	18.9	0.4	19.8	0.4	19.7	0.4	18.6	0.1	17.3	0.3
Auto	18.6	0.4	19.4	0.4	19.3	0.4	18.2	0.2	16.4	0.4
Truck	20.4	1.0	20.1	1.0	21.0	1.1	19.6	0.3	17.7	1.2
Auto or truck[2]	18.9	0.4	19.5	0.4	19.6	0.4	18.4	0.1	16.5	0.4
Drives alone	18.5	0.4	19.3	0.4	19.0	0.4	18.0	0.2	16.1	0.4
Carpool	20.0	0.9	20.1	0.8	22.0	1.0	20.3	0.3	18.1	0.8
Shares driving	22.4	1.3	21.2	1.2	29.0	2.3	23.8	0.6	20.9	1.3
Drives others	21.6	1.9	23.0	1.7	20.0	1.9	20.9	0.6	19.2	1.4
Rides with someone	16.3	1.4	16.9	1.6	18.2	1.5	16.7	0.5	14.8	0.9
Public transportation[3]	33.1	4.3	29.7	2.6	24.9	3.6	27.6	1.2	25.3	1.2
Bus or streetcar	33.8	4.5	30.7	2.5	24.9	3.6	27.9	1.2	25.6	1.2
Subway or elevated	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-
Other means[4]	12.2	1.3	(B)	(X)	20.0	2.8	15.6	0.8	15.7	1.2
Walks only	7.7	1.4	9.3	2.4	8.3	1.5	7.6	0.4	8.9	0.8
Not reported	18.5	6.1	16.9	2.9	18.9	2.4	18.4	1.5	14.2	2.9

Median time by mode	Orlando		Phoenix		Saginaw		Salt Lake City		Spokane		Wichita	
	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error	Median	Standard error
All workers[1]	18.8	0.4	19.2	0.4	15.8	0.4	18.7	0.3	16.8	0.4	17.8	0.3
Workers using vehicles	19.1	0.4	19.5	0.4	16.1	0.4	19.0	0.3	17.0	0.4	18.0	0.3
Auto	18.9	0.4	19.3	0.4	15.6	0.4	18.5	0.4	16.6	0.4	17.8	0.3
Truck	19.4	1.1	20.6	0.9	20.3	1.2	19.2	0.7	17.9	0.9	18.9	0.8
Auto or truck[2]	19.0	0.4	19.6	0.4	16.2	0.4	18.6	0.3	16.8	0.4	18.0	0.3
Drives alone	18.4	0.4	19.3	0.4	15.7	0.4	18.0	0.4	16.5	0.4	17.3	0.3
Carpool	21.4	1.0	21.0	0.9	18.6	1.1	20.7	0.7	18.0	0.8	20.4	0.7
Shares driving	26.5	2.1	26.8	1.8	22.6	1.7	23.8	1.0	19.4	1.4	22.2	1.1
Drives others	22.4	2.0	21.5	1.8	19.0	2.2	20.3	1.5	19.4	1.5	21.6	1.4
Rides with someone	18.4	1.3	17.2	1.4	13.3	0.9	15.0	1.1	15.3	1.3	18.2	1.1
Public transportation[3]	30.2	5.1	33.3	8.3	(B)	(X)	30.9	2.4	22.4	2.1	24.4	3.5
Bus or streetcar	31.2	5.0	33.3	8.3	(B)	(X)	30.9	2.4	22.4	2.1	24.9	3.9
Subway or elevated	-	-	-	-	-	-	-	-	-	-	-	-
Railroad	-	-	-	-	-	-	-	-	-	-	-	-
Other means[4]	18.6	1.5	14.5	1.8	(B)	(X)	16.6	2.3	15.2	2.1	11.3	2.3
Walks only	7.1	1.1	7.1	1.2	6.4	1.1	7.5	1.0	9.4	1.6	6.9	1.2
Not reported	(B)	(X)	18.8	2.9	(B)	(X)	(B)	(X)	(B)	(X)	(B)	(X)

[1]Excludes workers with no fixed place of work, workers who worked at home, and workers who did not report travel time to work.
[2]Includes workers using an auto or truck but not specifying type of riding arrangement.
[3]Includes workers using taxicabs.
[4]Bicycle, motorcycle, and all other means not listed.

Appendix A. Definitions and Explanations

Most of the terms used in this report are self-explanatory or can best be understood by reference to the appropriate questionnaire items. (See appendix C.) An explanation of other subjects is provided below.

Automobile. The category "automobile" includes workers using cars, station wagons, company cars, and passenger vans.

Household. A household consists of all the persons who occupy a housing unit. A house, an apartment or other group of rooms, or a single room is regarded as a housing unit when it is occupied or intended for occupancy as separate living quarters; that is, when the occupants do not live and eat with any other persons in the structure and there is either (1) direct access from the outside or through a common hall or (2) a kitchen or cooking equipment for the exclusive use of the occupants.

A household includes the related family members and all the unrelated persons, such as lodgers, foster children, wards, or employees, who share the housing unit. A person living alone in a housing unit or a group of unrelated persons sharing a housing unit as partners is also counted as a household.

Means of transportation to work. Means of transportation refers to the principal mode used to get from home to work. Workers who used different means of transportation on different days of the week were asked to specify the one used most often. Workers who used more than one means of transportation to get to work each day were asked to specify the one used for the longest distance during the work trip.

No fixed place of work. Workers with no fixed place of work were those who did not usually work at the same location each day and did not usually report to a central location to begin work each day.

Standard metropolitan statistical area (SMSA). The term SMSA as used in this report refers to the 243 standard metropolitan statistical areas used in the 1970 census. Changes in SMSA definition criteria, boundaries, and titles made after February 1971 are not reflected in the report.

Except in the New England States, a standard metropolitan statistical area was essentially defined in 1970 as a county or group of contiguous counties containing at least one city of 50,000 inhabitants or more (or "twin cities" with a combined population of at least 50,000). Contiguous counties were included in the SMSA definition if, according to certain criteria, they were socially and economically integrated with the central county. In the New England States, SMSA's consisted of towns and cities instead of counties. Each 1970 census SMSA included at least one central city; the complete title of an SMSA identified the central city or cities.

SMSA transportation groupings. The groupings of SMSA's shown in the tables in this report conform to a Department of Transportation categorization of major SMSA's by transportation characteristics. Transportation Group A, representing the largest metropolitan areas having major public transportation networks, includes the Boston and Newark SMSA's. Transportation Group B, representing very large metropolitan areas with less developed public transportation systems, includes the Anaheim-Santa Ana-Garden Grove, Detroit, Los Angeles-Long Beach, Pittsburgh, and Washington, D.C. SMSA's. Transportation Group C, representing other large and medium-sized metropolitan areas with well-established public transportation systems, has been subdivided into two regional groups. Group C-North includes the Albany-Schenectady-Troy, and Minneapolis-St. Paul areas; Group C-South and West includes the Dallas, Ft. Worth, Memphis, and Tacoma metropolitan areas. The final group, Transportation Group D, represents medium-sized and smaller SMSA's primarily oriented to automobile transportation. The seven SMSA's in Survey Group I which fall in this category are Madison, Orlando, Phoenix, Salt Lake City, Saginaw, Spokane, and Wichita.

Symbols used in this report. A dash (-) means rounds to or represents zero. An "X" means not applicable. The symbol (B) signifies that the base for the median is less than 1,000.

Travel distance to work. The one-way, "door-to-door" distance in miles that the person reported usually traveling from home to work during the week prior to interview was counted as the travel distance to work. Respondents were instructed to report travel distance rounded to the nearest mile. However, some heaping of the responses did occur; i.e., persons were more likely to report distances of 5, 10, 15, 20, etc., miles than values between these figures.

Travel time to work. The total elapsed time in minutes that the person reported it usually took to get from home to work during the week prior to interview was counted as the travel time to work. The elapsed time included time spent waiting for public transportation and picking up members of

carpools. Respondents were instructed to report travel time to the nearest minute. However, substantial heaping of the responses did occur; i.e., persons were much more likely to report travel times of 5, 10, 15, 20, 30, and 45 minutes than values between these figures. Some heaping also occurred at 25, 35, and 40 minutes, although not to the same extent. A large proportion of the heaping was presumably due to the daily variation in travel time to work experienced by most workers, plus the manner in which the question was asked ("How long does it *usually* take to get from home to work?").

Truck. The category "truck" includes workers using pick-up trucks, panel trucks, and other trucks of 1-ton capacity or less. Workers who used larger trucks to get to work are classified as using "other means."

Worker. For purposes of the Travel-to-Work Supplement, a worker is any member of a sample household 14 years old or over who had a regular part-time or full-time job the week prior to interview. A job is defined as a definite arrangement for regular work for pay every week or every month. This included persons who operated their own business, professional practice, or farm. A household member was also considered to be a worker if the person had a regular job, but was temporarily absent from work due to illness, vacation, layoff, etc.

Appendix B. Reliability of the Estimates

There are two types of possible errors associated with data from sample surveys: sampling and nonsampling errors. The following is a description of the sampling and nonsampling errors associated with the DOT Travel-to-Work Supplement.

NONSAMPLING ERRORS

In general, nonsampling errors can be attributed to many sources: inability to obtain information about all cases, definitional difficulties, differences in the interpretation of questions, inability or unwillingness to provide correct information on the part of respondents, mistakes in recording or coding the data, and other errors of collection, response, processing, coverage, and estimation for missing data.

Proxy interviewing. One possible source of bias in the DOT Travel-to-Work Supplement data is proxy interviewing. That is, responses for a particular worker may have been given by someone else who is not as knowledgeable as the worker himself. For example, the person available for the interview may not know how long it takes the reference person (worker) to travel to work or whether or not the principal means of transportation to work is satisfactory to the worker. Although it is known that biases due to proxy interviewing, as well as other nonsampling errors, could exist in the DOT Travel-to-Work Supplement, their magnitude is unknown.

Preliminary estimates. In addition to proxy interviewing, the preliminary data presented in this report may vary somewhat from the final results for several reasons. First, the use of four reference months may introduce a seasonal bias into transportation use characteristics or a bias due to possible temporary disruptions in one or more modes. Second, the weighting procedure used for the data is not as complex as that which will be reflected in the final data, thus introducing the possibility of additional variation between the two tabulations. Third, these tabulations were prepared before the data had received a final edit. They may, therefore, be somewhat more affected by such factors as response inconsistency and other errors of collection than the final results.

Response accuracy. Reliability of the data on length and duration of the commuting trip may also have been affected by response accuracy. While most respondents could be expected to know approximately how many minutes it usually takes to get to work, many workers, especially those using public transportation, may not know the exact number of miles their commuting trip covers.

Reinterview program. No reinterview program was undertaken for the DOT Travel-to-Work Supplement. However, for the 1975 AHS-SMSA sample a study was conducted to obtain a measurement of some of the components of the nonsampling error associated with the AHS estimates. Results of this study may be a useful indicator of the accuracy to be expected in the travel-to-work data which was collected as a supplement to the AHS-SMSA data. A detailed description can be found in the AHS Series H-170 reports for 1975.

SAMPLING ERRORS

The particular sample used for this survey is one of a large number of possible samples of the same size that could have been selected using the same sample design. Even if the same schedules, instructions, and enumerators were used, estimates from each of the different samples would differ from each other. The deviation of a sample estimate from the average of all possible samples is defined as the sampling error. The standard error of a survey estimate attempts to provide a measure of this variation among the estimates from the possible samples and, thus, is a measure of the precision with which an estimate from a sample approximates the average result of all possible samples. Because estimates from the preliminary tabulation are based on roughly one-third the number of cases in the entire sample, the data presented in this report are more susceptible to sampling error than the final data will be.

As calculated for this survey, the standard error also partially measures the variation in the estimates due to response and enumerator errors (nonsampling errors), but it does not measure, as such, any systematic biases in the data. Therefore, the accuracy of the estimates depends on both the sampling and nonsampling error measured by the standard error, biases, and some additional nonsampling errors not measured by the standard error.

The sample estimate and its estimated standard error enable the user to construct interval estimates in which the interval includes the average result of all possible samples with a known probability. For example, if all possible samples were selected, each of these surveyed under essentially the same general conditions, and an estimate and its

estimated standard error were calculated from each sample, then:

1. Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate would include the average result of all possible samples.
2. Approximately 90 percent of the intervals from 1.6 standard errors below the estimate to 1.6 standard errors above the estimate would include the average result of all possible samples.
3. Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate would include the average result of all possible samples.

The average result of all possible samples either is or is not contained in any particular computed interval. However, for a particular sample, one can say with specified confidence that the average result of all possible samples is included in the constructed interval. All comparisons made in the text of the current report are significant within two standard errors.

The figures presented in the tables below are approximations to the standard errors of various estimates for SMSA's in Survey Group I. In order to derive standard errors that would be applicable to a wide variety of items and also could be prepared at a moderate cost, a number of approximations were required. As a result, the tables of standard errors provide an indication of the order of magnitude of the standard errors rather than precise standard errors for any specific item.

Tables B-1 through B-12 present the standard errors applicable to estimates of travel-to-work characteristics of persons 14 years and older who were employed at the time of the 1977-78 AHS-SMSA survey. Included in these tables are estimates of standard errors for estimates of zero and zero percent. These estimates of standard errors are considered as overestimates of the true standard errors and should be used primarily for construction of confidence intervals for characteristics when an estimate of zero is obtained. Standard errors for estimates of medians shown in the text of the current report are displayed with the median.

For ratios, 100 x/y, where x is not a subclass of y, tables B-3 through B-12 underestimate the standard error of the ratio when there is little or no correlation between x and y. For this type of ratio, a better approximation of the standard error may be obtained by letting the standard error of the ratio be approximately equal to:

$$(100)\left(\frac{x}{y}\right)\sqrt{\left(\frac{\sigma_x}{x}\right)^2 + \left(\frac{\sigma_y}{y}\right)^2}$$

where: x = the numerator of the ratio
y = the denominator of the ratio
σ_x = the standard error of the numerator
σ_y = the standard error of the denominator

Illustration of the use of the standard error tables. The results of the DOT Supplement indicate that in 1977 in the 20 SMSA's surveyed, 12,544,000 workers used vehicles to travel to work. Interpolation in table B-2 shows that the standard error of an estimate of this size is approximately 49,665. Consequently, the 68-percent confidence interval, as shown by these data, is from 12,494,335 to 12,593,665 workers. Therefore, a conclusion that the average estimate, derived from all possible samples, of 1977 workers who used vehicles to travel to work lies within a range computed in this way would be correct for roughly 68-percent of all possible samples. Similarly, we could conclude that the average estimate, derived from all possible samples, lies within the interval from 12,464,536 to 12,623,464 workers with 90-percent confidence and within the interval from 12,444,670 to 12,643,330 workers with 95-percent confidence.

Also, of the 12,544,000 workers who used vehicles to travel to work, 9,062,000 or 72.2 percent, drove alone. Interpolation in table B-10 shows that the standard error of the percent is approximately 0.3 percentage points.

Consequently, the 68-percent confidence interval, as shown by these data, is from 71.9 to 72.5 percent; the 90-percent confidence interval is from 71.7 to 72.7 percent; and the 95-percent confidence interval is from 71.6 to 72.8 percent.

Differences. The standard errors shown are not directly applicable to differences between two sample estimates. The standard error of a difference between estimates is approximately equal to the square root of the sum of the squares of the standard error of each estimate considered separately. This formula is quite accurate for the difference between estimates of the same characteristic in two different SMSA's or the difference between separate and uncorrelated characteristics in the same SMSA. However, if there is a high positive correlation between the two characteristics the formula will overestimate the true standard error; whereas, if there is a high negative correlation, the formula will underestimate the true standard error. This is likely to occur when comparing percentages calculated on the same base.

Illustration of the computation of the standard error of a difference. The results of the DOT Supplement show that in 1977 there were 2,266,000 workers who commuted by carpool in the 20 SMSA's. Thus, the apparent difference, as shown by these data, between commuters who carpooled and commuters who drove alone in 1977 is 6,796,000. Interpolation in table B-2 shows the standard error of 9,062,000 is approximately 47,738, and the standard error of 2,266,000 is approximately 28,546. Therefore, the standard error of the estimated difference of 6,796,000 is about 55,622.

$$55{,}622 = \sqrt{(47{,}738)^2 + (28{,}546)^2}$$

Consequently, the 68-percent confidence interval for the 6,796,000 difference is from 6,740,378 to 6,851,622 workers. Therefore, a conclusion that the average estimate of this difference, derived from all possible samples, lies within a range computed in this way would be correct for roughly

68 percent of all possible samples. Similarly, the 90-percent interval is from 6,707,005 to 6,884,995 workers, and the 95-percent confidence interval is from 6,684,756 to 6,907,244. Thus, we can conclude with 95-percent confidence that the number of commuters who drove alone in 1977 is greater than the number of commuters who carpooled in 1977, since the 95-percent confidence interval does not include zero or negative values.

Table B-1. Standard Errors of Estimated Number of Workers in the 20 SMSA's: 1977

(68 chances out of 100. For meaning of symbols, see appendix A)

Size of estimate	Albany-Schenectady-Troy, N.Y.	Anaheim-Santa Ana-Garden Grove, Calif.	Boston, Mass.	Dallas, Tex.	Detroit, Mich.	Fort Worth, Tex.	Los Angeles-Long Beach, Calif.	Madison, Wis.	Memphis, Tenn.-Ark.	Minneapolis-St. Paul, Minn.
0	200	430	250	470	380	220	710	70	210	490
25	200	430	250	470	380	220	710	70	210	490
50	200	430	250	470	380	220	710	70	210	490
100	200	430	250	470	380	220	710	90	210	490
200	200	430	250	470	380	220	710	120	210	490
500	310	460	360	490	440	330	710	190	330	490
700	370	550	420	570	520	390	710	230	390	580
1,000	440	650	500	690	620	460	840	270	460	700
2,500	700	1,030	800	1,090	980	730	1,330	430	730	1,100
5,000	990	1,460	1,130	1,530	1,380	1,030	1,880	600	1,030	1,560
10,000	1,400	2,060	1,590	2,170	1,950	1,460	2,660	850	1,450	2,200
25,000	2,190	3,240	2,500	3,400	3,070	2,280	4,200	1,290	2,260	3,460
50,000	3,060	4,540	3,520	4,770	4,330	3,150	5,930	1,710	3,120	4,850
75,000	3,700	5,510	4,280	5,780	5,280	3,780	7,250	1,950	3,740	5,880
100,000	4,220	6,300	4,920	6,600	6,070	4,260	8,350	2,070	4,210	6,730
150,000	5,040	7,570	5,940	7,920	7,380	4,970	10,180	2,010	4,900	8,080
200,000	5,660	8,570	6,770	8,940	8,450	5,440	11,690	1,480	5,330	9,150
250,000	6,140	9,380	7,470	9,770	9,360	5,720	13,010	-	5,580	10,010
300,000	6,520	10,050	8,070	10,440	10,170	5,850	14,180	-	5,660	10,720
400,000	7,030	11,070	9,050	11,440	11,540	5,660	16,210	-	5,340	11,810
500,000	7,260	11,740	9,810	12,060	12,660	4,800	17,950	-	4,230	12,530
600,000	7,230	12,130	10,400	12,360	13,610	2,700	19,460	-	510	12,940
700,000	6,950	12,270	10,840	12,360	14,410	-	20,800	-	-	13,080
800,000	6,370	12,150	11,160	12,060	15,090	-	21,990	-	-	12,950
900,000	5,410	11,780	11,360	11,440	15,660	-	23,070	-	-	12,550
1,000,000	3,780	11,130	11,450	10,450	16,140	-	24,050	-	-	11,840
1,500,000	-	-	10,220	-	17,330	-	27,720	-	-	-
2,000,000	-	-	4,030	-	16,730	-	29,880	-	-	-
3,000,000	-	-	-	-	7,670	-	30,720	-	-	-
4,000,000	-	-	-	-	-	-	27,040	-	-	-
5,000,000	-	-	-	-	-	-	15,970	-	-	-
8,000,000	-	-	-	-	-	-	-	-	-	-

Size of estimate	Newark, N.J.	Orlando, Fla.	Phoenix, Ariz.	Pittsburgh, Pa.	Salt Lake City, Utah	Saginaw, Mich.	Spokane, Wash.	Tacoma, Wash.	Washington, D.C.-Md.-Va.	Wichita, Kans.
0	460	150	320	610	150	50	80	110	290	100
25	460	150	320	610	150	50	80	110	290	100
50	460	150	320	610	150	50	80	110	290	100
100	460	150	320	610	150	70	90	110	290	100
200	460	180	320	610	170	100	130	150	290	140
500	480	280	400	610	270	160	200	230	380	230
700	570	330	480	650	320	190	240	280	450	270
1,000	680	390	570	780	380	230	290	330	540	320
2,500	1,070	620	900	1,230	600	370	460	520	850	510
5,000	1,510	870	1,270	1,740	850	510	640	730	1,200	710
10,000	2,140	1,230	1,790	2,460	1,190	710	900	1,030	1,690	1,000
25,000	3,360	1,910	2,810	3,870	1,850	1,070	1,370	1,580	2,660	1,540
50,000	4,710	2,610	3,920	5,440	2,550	1,380	1,820	2,120	3,740	2,080
75,000	5,710	3,090	4,740	6,610	3,030	1,500	2,070	2,460	4,560	2,420
100,000	6,530	3,440	5,390	7,580	3,380	1,480	2,190	2,670	5,230	2,640
150,000	7,830	3,880	6,410	9,150	3,860	920	2,130	2,810	6,330	2,810
200,000	8,860	4,060	7,170	10,400	4,090	-	1,580	2,600	7,210	2,670
250,000	9,690	4,010	7,750	11,450	4,140	-	-	1,930	7,960	2,150
300,000	10,370	3,730	8,190	12,340	3,990	-	-	-	8,610	650
400,000	11,400	2,050	8,710	13,770	2,990	-	-	-	9,670	-
500,000	12,060	-	8,840	14,850	-	-	-	-	10,510	-
600,000	12,420	-	8,580	15,640	-	-	-	-	11,160	-
700,000	12,500	-	7,900	16,190	-	-	-	-	11,670	-
800,000	12,310	-	6,660	16,520	-	-	-	-	12,040	-
900,000	11,830	-	4,440	16,650	-	-	-	-	12,300	-
1,000,000	11,030	-	-	16,570	-	-	-	-	12,450	-
1,500,000	-	-	-	12,730	-	-	-	-	11,560	-
2,000,000	-	-	-	-	-	-	-	-	6,810	-
3,000,000	-	-	-	-	-	-	-	-	-	-
4,000,000	-	-	-	-	-	-	-	-	-	-
5,000,000	-	-	-	-	-	-	-	-	-	-
8,000,000	-	-	-	-	-	-	-	-	-	-

Table B-2. Standard Errors of Estimated Number of Workers in the Total 20 SMSA's and in the Transportation Groups: 1977

(68 chances out of 100. For meaning of symbols, see appendix A)

Size of estimate	Standard error					
	Total, 20 SMSA's	Group A	Group B	Group C-North	Group C-South and West	Group D
0	400	330	500	360	270	140
25	400	330	500	360	270	140
50	400	330	500	360	270	140
100	400	330	500	360	270	140
200	400	330	500	360	270	170
500	450	410	500	420	360	270
700	530	480	590	500	430	320
1,000	630	570	710	600	520	380
2,500	1,000	910	1,120	950	810	600
5,000	1,420	1,280	1,580	1,340	1,150	840
10,000	2,000	1,610	2,240	1,890	1,630	1,190
25,000	3,160	2,860	3,530	2,980	2,570	1,880
50,000	4,470	4,030	4,990	4,190	3,610	2,650
75,000	5,470	4,920	6,110	5,100	4,410	3,220
100,000	6,320	5,660	7,050	5,850	5,060	3,710
150,000	7,730	6,880	8,610	7,070	6,150	4,500
200,000	8,910	7,880	9,930	8,050	7,030	5,140
250,000	9,960	8,740	11,080	8,870	7,780	5,700
300,000	10,900	9,500	12,120	9,570	8,440	6,180
400,000	12,560	10,790	13,940	10,720	9,560	6,990
500,000	14,010	11,870	15,530	11,600	10,460	7,650
600,000	15,320	12,770	16,940	12,270	11,210	8,200
700,000	16,510	13,550	18,230	12,760	11,830	8,650
800,000	17,610	14,220	19,420	13,090	12,350	9,030
900,000	18,640	14,790	20,520	13,290	12,770	9,330
1,000,000	19,610	15,280	21,550	13,340	13,110	9,580
1,500,000	23,770	16,680	25,870	11,410	13,680	9,980
2,000,000	27,150	16,570	29,270	-	12,470	9,060
3,000,000	32,520	11,100	34,320	-	-	-
4,000,000	36,690	-	37,770	-	-	-
5,000,000	40,030	-	40,060	-	-	-
8,000,000	46,680	-	41,320	-	-	-
11,000,000	49,670	-	34,130	-	-	-
14,000,000	49,660	-	-	-	-	-
17,000,000	46,660	-	-	-	-	-
20,000,000	40,000	-	-	-	-	-
24,000,000	19,520	-	-	-	-	-

Standard Errors for Estimated Percentage of Workers

Table B-3. Saginaw, Mich.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	68.4	68.4	68.4	68.4	68.4	73.6
50	52.0	52.0	52.0	52.0	52.0	52.0
100	35.1	35.1	35.1	35.1	35.1	36.8
200	21.3	21.3	21.3	21.3	22.5	26.0
500	9.8	9.8	9.8	9.9	14.3	16.5
700	7.2	7.2	7.2	8.3	12.0	13.9
1,000	5.1	5.1	5.1	7.0	10.1	11.6
2,500	2.1	2.1	3.2	4.4	6.4	7.4
5,000	1.1	1.1	2.3	3.1	4.5	5.2
10,000	0.5	0.7	1.6	2.2	3.2	3.7
25,000	0.2	0.5	1.0	1.4	2.0	2.3
50,000	0.11	0.3	0.7	1.0	1.4	1.6
75,000	0.07	0.3	0.6	0.8	1.2	1.3
100,000	0.05	0.2	0.5	0.7	1.0	1.2
150,000	0.04	0.2	0.4	0.6	0.8	1.0
200,000	0.03	0.2	0.4	0.5	0.7	0.8

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Table B-4. Madison, Wis.; and Spokane, Wash.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	77.0	77.0	77.0	77.0	79.2	91.5
50	62.6	62.6	62.6	62.6	62.6	64.7
100	45.6	45.6	45.6	45.6	45.6	45.7
200	29.5	29.5	29.5	29.5	29.5	32.3
500	14.3	14.3	14.3	14.3	17.7	20.5
700	10.7	10.7	10.7	10.7	15.0	17.3
1,000	7.7	7.7	7.7	8.7	12.5	14.5
2,500	3.2	3.2	4.0	5.5	7.9	9.1
5,000	1.6	1.6	2.8	3.9	5.6	6.5
10,000	0.8	0.9	2.0	2.7	4.0	4.6
25,000	0.3	0.6	1.3	1.7	2.5	2.9
50,000	0.2	0.4	0.9	1.2	1.8	2.0
75,000	0.11	0.3	0.7	1.0	1.4	1.7
100,000	0.08	0.3	0.6	0.9	1.3	1.4
150,000	0.06	0.2	0.5	0.7	1.0	1.2
200,000	0.04	0.2	0.4	0.6	0.9	1.0
250,000	0.03	0.2	0.4	0.5	0.8	0.9

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-5. Tacoma, Wash.; and Wichita, Kans.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	81.4	81.4	81.4	81.4	90.5	104.5
50	68.6	68.6	68.6	68.6	68.6	73.9
100	52.2	52.2	52.2	52.2	52.2	52.2
200	35.3	35.3	35.3	35.3	35.3	36.9
500	17.9	17.9	17.9	17.9	20.2	23.4
700	13.5	13.5	13.5	13.5	17.1	19.7
1,000	9.8	9.8	9.8	9.9	14.3	16.5
2,500	4.2	4.2	4.6	6.3	9.0	10.4
5,000	2.1	2.1	3.2	4.4	6.4	7.4
10,000	1.1	1.1	2.3	3.1	4.5	5.2
25,000	0.4	0.7	1.4	2.0	2.9	3.3
50,000	0.2	0.5	1.0	1.4	2.0	2.3
75,000	0.15	0.4	0.8	1.1	1.7	1.9
100,000	0.11	0.3	0.7	1.0	1.4	1.7
150,000	0.07	0.3	0.6	0.8	1.2	1.3
200,000	0.05	0.2	0.5	0.7	1.0	1.2
250,000	0.04	0.2	0.5	0.6	0.9	1.0
300,000	0.04	0.2	0.4	0.6	0.8	1.0
400,000	0.03	0.2	0.4	0.5	0.7	0.8

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Table B-6. Group D; Orlando, Fla.; and Salt Lake City, Utah: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	86.1	86.1	86.1	86.1	107.6	124.2
50	75.5	75.5	75.5	75.5	76.1	87.8
100	60.7	60.7	60.7	60.7	60.7	62.1
200	43.5	43.5	43.5	43.5	43.5	43.9
500	23.6	23.6	23.6	23.6	24.0	27.8
700	18.1	18.1	18.1	18.1	20.3	23.5
1,000	13.4	13.4	13.4	13.4	17.0	19.6
2,500	5.8	5.8	5.8	7.5	10.8	12.4
5,000	3.0	3.0	3.8	5.3	7.6	8.8
10,000	1.5	1.5	2.7	3.7	5.4	6.2
25,000	0.6	0.8	1.7	2.4	3.4	3.9
50,000	0.3	0.6	1.2	1.7	2.4	2.8
75,000	0.2	0.5	1.0	1.4	2.0	2.3
100,000	0.15	0.4	0.9	1.2	1.7	2.0
150,000	0.10	0.3	0.7	1.0	1.4	1.6
200,000	0.08	0.3	0.6	0.8	1.2	1.4
250,000	0.06	0.2	0.5	0.7	1.1	1.2
300,000	0.05	0.2	0.5	0.7	1.0	1.1
400,000	0.04	0.2	0.4	0.6	0.9	1.0
500,000	0.03	0.2	0.4	0.5	0.8	0.9
600,000	0.03	0.2	0.3	0.5	0.7	0.8
700,000	0.02	0.15	0.3	0.4	0.6	0.7
800,000	0.02	0.14	0.3	0.4	0.6	0.7
900,000	0.02	0.13	0.3	0.4	0.6	0.7
1,000,000	0.02	0.12	0.3	0.4	0.5	0.6
1,500,000	0.01	0.10	0.2	0.3	0.4	0.5
2,000,000	0.01	0.09	0.2	0.3	0.4	0.4
3,000,000	0.01	0.07	0.2	0.2	0.3	0.4

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-7. Albany-Schenectady-Troy, N.Y.; Fort Worth, Tex.; and Memphis, Tenn.-Ark.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	89.6	89.6	89.6	89.6	127.2	146.9
50	81.2	81.2	81.2	81.2	89.9	103.8
100	68.3	68.3	68.3	68.3	68.3	73.4
200	51.9	51.9	51.9	51.9	51.9	51.9
500	30.1	30.1	30.1	30.1	30.1	32.8
700	23.6	23.6	23.6	23.6	24.0	27.8
1,000	17.7	17.7	17.7	17.7	20.1	23.2
2,500	7.9	7.9	7.9	8.8	12.7	14.7
5,000	4.1	4.1	4.5	6.2	9.0	10.4
10,000	2.1	2.1	3.2	4.4	6.4	7.3
25,000	0.9	0.9	2.0	2.8	4.0	4.6
50,000	0.4	0.7	1.4	2.0	2.8	3.3
75,000	0.3	0.5	1.2	1.6	2.3	2.7
100,000	0.2	0.5	1.0	1.4	2.0	2.3
150,000	0.14	0.4	0.8	1.1	1.6	1.9
200,000	0.11	0.3	0.7	1.0	1.4	1.6
250,000	0.09	0.3	0.6	0.9	1.3	1.5
300,000	0.07	0.3	0.6	0.8	1.2	1.3
400,000	0.05	0.2	0.5	0.7	1.0	1.2
500,000	0.04	0.2	0.5	0.6	0.9	1.0
600,000	0.04	0.2	0.4	0.6	0.8	0.9
700,000	0.03	0.2	0.4	0.5	0.8	0.9

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Table B-8. Boston, Mass.; Group C-South and West; and Washington, D.C.-Md.-Va.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	92.0	92.0	92.0	101.6	146.6	169.3
50	85.1	85.1	85.1	85.1	103.7	119.7
100	74.1	74.1	74.1	74.1	74.1	84.6
200	58.9	58.9	58.9	58.9	58.9	59.9
500	36.4	36.4	36.4	36.4	36.4	37.9
700	29.0	29.0	29.0	29.0	29.0	32.0
1,000	22.3	22.3	22.3	22.3	23.2	26.8
2,500	10.3	10.3	10.3	10.3	14.7	16.9
5,000	5.4	5.4	5.4	7.2	10.4	12.0
10,000	2.8	2.8	3.7	5.1	7.3	8.5
25,000	1.1	1.1	2.3	3.2	4.6	5.4
50,000	0.6	0.8	1.7	2.3	3.3	3.8
75,000	0.4	0.6	1.3	1.9	2.7	3.1
100,000	0.3	0.5	1.2	1.6	2.3	2.7
150,000	0.2	0.4	1.0	1.3	1.9	2.2
200,000	0.14	0.4	0.8	1.1	1.6	1.9
250,000	0.11	0.3	0.7	1.0	1.5	1.7
300,000	0.10	0.3	0.7	0.9	1.3	1.5
400,000	0.07	0.3	0.6	0.8	1.2	1.3
500,000	0.06	0.2	0.5	0.7	1.0	1.2
600,000	0.05	0.2	0.5	0.7	0.9	1.1
700,000	0.04	0.2	0.4	0.6	0.9	1.0
800,000	0.04	0.2	0.4	0.6	0.8	0.9
900,000	0.03	0.2	0.4	0.5	0.8	0.9
1,000,000	0.03	0.2	0.4	0.5	0.7	0.8
1,500,000	0.02	0.14	0.3	0.4	0.6	0.7
2,000,000	0.01	0.12	0.3	0.4	0.5	0.6
3,000,000	0.01	0.10	0.2	0.3	0.4	0.5

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-9. Group A; Group C-North; and Phoenix, Ariz.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	93.5	93.5	93.5	113.9	164.3	189.8
50	87.8	87.8	87.8	87.8	116.2	134.2
100	78.3	78.3	78.3	78.3	82.2	94.9
200	64.3	64.3	64.3	64.3	64.3	67.1
500	41.9	41.9	41.9	41.9	41.9	42.4
700	34.0	34.0	34.0	34.0	34.0	35.9
1,000	26.5	26.5	26.5	26.5	26.5	30.0
2,500	12.6	12.6	12.6	12.6	16.4	19.0
5,000	6.7	6.7	6.7	8.1	11.6	13.4
10,000	3.5	3.5	4.1	5.7	8.2	9.5
25,000	1.4	1.4	2.6	3.6	5.2	6.0
50,000	0.7	0.8	1.8	2.5	3.7	4.2
75,000	0.5	0.7	1.5	2.1	3.0	3.5
100,000	0.4	0.6	1.3	1.8	2.6	3.0
150,000	0.2	0.5	1.1	1.5	2.1	2.4
200,000	0.18	0.4	0.9	1.3	1.8	2.1
250,000	0.14	0.4	0.8	1.1	1.6	1.9
300,000	0.12	0.3	0.8	1.0	1.5	1.7
400,000	0.09	0.3	0.7	0.9	1.3	1.5
500,000	0.07	0.3	0.6	0.8	1.2	1.3
600,000	0.06	0.2	0.5	0.7	1.1	1.2
700,000	0.05	0.2	0.5	0.7	1.0	1.1
800,000	0.04	0.2	0.5	0.6	0.9	1.1
900,000	0.04	0.2	0.4	0.6	0.9	1.0
1,000,000	0.04	0.19	0.4	0.6	0.8	0.9
1,500,000	0.02	0.15	0.3	0.5	0.7	0.8
2,000,000	0.02	0.13	0.3	0.4	0.6	0.7
3,000,000	0.01	0.11	0.2	0.3	0.5	0.5
4,000,000	0.01	0.09	0.2	0.3	0.4	0.5

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-10. Anaheim-Santa Ana-Garden Grove, Calif.; Detroit, Mich.; and the Group Consisting of All 20 SMSA's: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	94.5	94.5	94.5	124.1	179.1	206.8
50	89.5	89.5	89.5	89.5	126.6	146.2
100	81.0	81.0	81.0	81.0	89.5	103.4
200	68.1	68.1	68.1	68.1	68.1	73.1
500	46.1	46.1	46.1	46.1	46.1	46.2
700	37.9	37.9	37.9	37.9	37.9	39.1
1,000	30.0	30.0	30.0	30.0	30.0	32.7
2,500	14.6	14.6	14.6	14.6	17.9	20.7
5,000	7.9	7.9	7.9	8.8	12.7	14.6
10,000	4.1	4.1	4.5	6.2	9.0	10.3
25,000	1.7	1.7	2.9	3.9	5.7	6.5
50,000	0.8	0.9	2.0	2.8	4.0	4.6
75,000	0.6	0.8	1.6	2.3	3.3	3.8
100,000	0.4	0.7	1.4	2.0	2.8	3.3
150,000	0.3	0.5	1.2	1.6	2.3	2.7
200,000	0.2	0.5	1.0	1.4	2.0	2.3
250,000	0.17	0.4	0.9	1.2	1.8	2.1
300,000	0.14	0.4	0.8	1.1	1.6	1.9
400,000	0.11	0.3	0.7	1.0	1.4	1.6
500,000	0.09	0.3	0.6	0.9	1.3	1.5
600,000	0.07	0.3	0.6	0.8	1.2	1.3
700,000	0.06	0.2	0.5	0.7	1.1	1.2
800,000	0.05	0.2	0.5	0.7	1.0	1.2
900,000	0.05	0.2	0.5	0.7	0.9	1.1
1,000,000	0.04	0.2	0.5	0.6	0.9	1.0
1,500,000	0.03	0.17	0.4	0.5	0.7	0.8
2,000,000	0.02	0.15	0.3	0.4	0.6	0.7
3,000,000	0.01	0.12	0.3	0.4	0.5	0.6
4,000,000	0.01	0.10	0.2	0.3	0.4	0.5
5,000,000	0.01	0.09	0.2	0.3	0.4	0.5
8,000,000	0.01	0.07	0.16	0.2	0.3	0.4
11,000,000	0.01	0.06	0.14	0.19	0.3	0.3
14,000,000	0.01	0.05	0.12	0.17	0.2	0.3
17,000,000	0.01	0.05	0.11	0.15	0.2	0.3
20,000,000	0.01	0.05	0.10	0.14	0.2	0.2
24,000,000	0.01	0.04	0.09	0.13	0.18	0.2

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-11. Dallas, Tex.; Group B; Minneapolis-St. Paul, Minn.; and Newark, N.J.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	95.2	95.2	97.5	134.2	193.7	223.6
50	90.9	90.9	90.9	94.9	136.9	158.1
100	83.3	83.3	83.3	83.3	96.8	111.8
200	71.4	71.4	71.4	71.4	71.4	79.1
500	50.0	50.0	50.0	50.0	50.0	50.0
700	41.7	41.7	41.7	41.7	41.7	42.3
1,000	33.3	33.3	33.3	33.3	33.3	35.4
2,500	16.7	16.7	16.7	16.7	19.4	22.4
5,000	9.1	9.1	9.1	9.5	13.7	15.8
10,000	4.8	4.8	4.9	6.7	9.7	11.2
25,000	2.0	2.0	3.1	4.2	6.1	7.1
50,000	1.0	1.0	2.2	3.0	4.3	5.0
75,000	0.7	0.8	1.8	2.4	3.5	4.1
100,000	0.5	0.7	1.5	2.1	3.1	3.5
150,000	0.3	0.6	1.3	1.7	2.5	2.9
200,000	0.2	0.5	1.1	1.5	2.2	2.5
250,000	0.2	0.4	1.0	1.3	1.9	2.2
300,000	0.2	0.4	0.9	1.2	1.8	2.0
400,000	0.1	0.4	0.8	1.1	1.5	1.8
500,000	0.10	0.3	0.7	0.9	1.4	1.6
600,000	0.08	0.3	0.6	0.9	1.3	1.4
700,000	0.07	0.3	0.6	0.8	1.2	1.3
800,000	0.06	0.2	0.5	0.8	1.1	1.3
900,000	0.06	0.2	0.5	0.7	1.0	1.2
1,000,000	0.05	0.2	0.5	0.7	1.0	1.1
1,500,000	0.03	0.2	0.4	0.5	0.8	0.9
2,000,000	0.02	0.2	0.3	0.5	0.7	0.8
3,000,000	0.02	0.13	0.3	0.4	0.6	0.6
4,000,000	0.01	0.11	0.2	0.3	0.5	0.6
5,000,000	0.01	0.10	0.2	0.3	0.4	0.5
8,000,000	0.01	0.08	0.17	0.2	0.3	0.4
11,000,000	0.01	0.07	0.15	0.2	0.3	0.3
14,000,000	0.01	0.06	0.13	0.2	0.3	0.3

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Standard Errors for Estimated Percentage of Workers

Table B-12. Los Angeles-Long Beach, Calif.; and Pittsburgh, Penn.: 1977

(68 chances out of 100)

Base of percentage	Estimated percentage[1]					
	0 or 100	1 or 99	5 or 95	10 or 90	25 or 75	50
25	96.6	96.6	116.1	159.9	230.8	266.5
50	93.4	93.4	93.4	113.1	163.2	188.4
100	87.7	87.7	87.7	87.7	115.4	133.2
200	78.0	78.0	78.0	78.0	81.6	94.2
500	58.7	58.7	58.7	58.7	58.7	59.6
700	50.4	50.4	50.4	50.4	50.4	50.4
1,000	41.5	41.5	41.5	41.5	41.5	42.1
2,500	22.1	22.1	22.1	22.1	23.1	26.6
5,000	12.4	12.4	12.4	12.4	16.3	18.8
10,000	6.6	6.6	6.6	8.0	11.5	13.3
25,000	2.8	2.8	3.7	5.1	7.3	8.4
50,000	1.4	1.4	2.6	3.6	5.2	6.0
75,000	0.9	1.0	2.1	2.9	4.2	4.9
100,000	0.7	0.8	1.8	2.5	3.6	4.2
150,000	0.5	0.7	1.5	2.1	3.0	3.4
200,000	0.4	0.6	1.3	1.8	2.6	3.0
250,000	0.3	0.5	1.2	1.6	2.3	2.7
300,000	0.2	0.5	1.1	1.5	2.1	2.4
400,000	0.2	0.4	0.9	1.3	1.8	2.1
500,000	0.14	0.4	0.8	1.1	1.6	1.9
600,000	0.12	0.3	0.7	1.0	1.5	1.7
700,000	0.10	0.3	0.7	1.0	1.4	1.6
800,000	0.09	0.3	0.6	0.9	1.3	1.5
900,000	0.08	0.3	0.6	0.8	1.2	1.4
1,000,000	0.07	0.3	0.6	0.8	1.2	1.3
1,500,000	0.05	0.2	0.5	0.7	0.9	1.1
2,000,000	0.04	0.2	0.4	0.6	0.8	0.9
3,000,000	0.02	0.2	0.3	0.5	0.7	0.8
4,000,000	0.02	0.13	0.3	0.4	0.6	0.7
5,000,000	0.01	0.12	0.3	0.4	0.5	0.6

[1]Standard errors are presented to the nearest one-tenth of 1 percentage point, except when the standard error is less than two-tenths of 1 percentage point. In those cases the standard error is shown to the nearest one-hundredth of 1 percent.

Appendix C. Facsimile of the Travel-to-Work Supplement

↓ ~ PGM 8

Line number of worker (388) | Line number of respondent (389)

If last worker in this household, mark this box → ☐

3a. What is . . .'s principal means of transportation to work?

(390) 1 ☐ Truck . . . . .
2 ☐ Car or carpool

(391)
1 ☐ Drives alone – *Skip to 4a*
2 ☐ Shares driving . . . . . .
3 ☐ Drives others . . . . . .
4 ☐ Rides with someone else
} *Skip to 3c*
5 ☐ Walks only – *Skip to 4a*
6 ☐ Works at home – *Skip to 8a*
7 ☐ Railroad
8 ☐ Subway or elevated
9 ☐ Bus or streetcar
10 ☐ Taxicab
11 ☐ Motorcycle
13 ☐ Bicycle
12 ☐ Other means – *Specify* _____

b. Does . . . usually ALSO use a car for part of the trip to work?

(392) 1 ☐ Yes 2 ☐ No – *Skip to 4a*

c. How many people, including . . . , usually ride in the car to work?

(393) _____ Number

4a. Does . . . usually WORK at the same location each day?

(394) 1 ☐ Yes – *Skip to 4c* 2 ☐ No

b. Does . . . usually REPORT to the same location to begin work each day?

(395) 3 ☐ Yes 4 ☐ No – *Skip to 8a*

c. (1) What is the street address at that location?
Note – If address (number and street name) are not known, enter building name, shopping center name, or other physical location description.

(2) What are the nearest intersecting streets?

(3) In what city, town, village, borough, is this located?

(4) What is the county, State, and ZIP code?
County

State | ZIP code

(5) For whom does . . . work?
Company or business establishment name

4d. Is . . .'s place of work inside the incorporated (legal) limits of (name of city, town, village, etc., listed in 4c(3)?

(396) 1 ☐ Yes 2 ☐ No 3 ☐ Don't know

5. What time does . . . usually leave for work?

(397) _____ Time

(398) 1 ☐ a.m.
2 ☐ p.m.

6. How many minutes does it usually take . . . to get from home to work?

(399) _____ Minutes

7. How many miles does . . . usually travel from home to work?

(400) _____ Miles OR 0 ☐ Less than 1 mile

8a. In the last year, has . . . changed his principal means of transportation to work?

(401) 1 ☐ Yes 2 ☐ No – *Skip to 9*

b. What was . . .'s principal means of transportation to work (prior to the change)?

(402) 1 ☐ Truck . . . . .
2 ☐ Car or carpool

(403)
1 ☐ Drove alone
2 ☐ Shared driving
3 ☐ Drove others
4 ☐ Rode with someone else
5 ☐ Walked only
6 ☐ Worked at home
7 ☐ Railroad
8 ☐ Subway or elevated
9 ☐ Bus or streetcar
10 ☐ Taxicab
11 ☐ Motorcycle
13 ☐ Bicycle
12 ☐ Other means – *Specify* _____

9. If "Yes" marked in 8a – *ASK* **Compared to . . .'s previous means of transportation to work** (Given in 8b), **how satisfied is . . . with his present means of transportation to work – much more, more, about the same, less or much less satisfied?**

If "No" marked in 8a – *ASK* **Compared to a year ago, how satisfied is . . . now with his principal means of transportation to work – much more, more, about the same, less or much less satisfied?**

(404)
1 ☐ Much more satisfied
2 ☐ More satisfied
3 ☐ About the same satisfaction
4 ☐ Less satisfied
5 ☐ Much less satisfied
6 ☐ Don't know
7 ☐ Did not work last year

Go to Check Item A, page 40 for the HEAD.
OR
If last worker, go to item I, Section IV.

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