REFERENCES

- T. Farris and N. E. Daniel. Bus Regulatory Reform Act of 1982. Transportation Journal, Vol. 23, No. 1 (Fall 1983), pp. 4-15.
- P. Larson and P. M. Lima. Rural Public Transportation. Traffic Quarterly, Vol. 29, No. 3 (July 1975), pp. 369-384.
- A. Morrison and C. Winston. The Demand for Intercity Passenger Transportation: The Impact on the Bus Industry in a Changing Environment. Annual Proceedings of the Transportation Research Forum, Vol. 24, No. 1 (Nov. 1983), pp. 526-534.
- A Report to the President and the Congress of the United States. Motor Carrier Ratemaking Study Commission, May 1984.
- The Intercity Bus Industry. Office of Transportation Analysis, Interstate Commerce Commission, Jan. 1984.

- 6. C. L. Stevens and P. R. Norris. The Role of the Intercity Bus Industry in Isolated Rural Regions of Oregon. Annual Proceedings of the Transportation Research Forum, Vol. 24, No. 1 (Nov. 1983), pp. 535-541.
- Report of the Bus Industry Study Group. Interstate Commerce Commission, 1979.
- K. Talley, Introduction to Transportation, South-Western Publishing Company, Cincinnati, Ohio, 1983.

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Intercity Bus Passenger Profile

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ABSTRACT

The Bus Regulatory Reform Act of 1982 required the Motor Carrier Ratemaking Study Commission to assess the impact of the act on persons over the age of 60, particularly those living in rural areas and small towns. As part of that assessment, national and state surveys of bus passengers were reviewed to determine the age distribution, income, trip purpose, availability of a driver's license, availability of an automobile or truck, and means of access transportation of intercity bus passengers. The largest percentage of intercity bus passengers are young, and the next largest user group is the elderly. Most trips are taken for social or recreational reasons, including visiting family and friends and sightseeing. Bus passengers as a group have much lower median household incomes than those traveling on other modes, although the income distribution of bus passengers varies from state to state. Approximately twothirds of all bus passengers have a driver's license, and a majority of them have a vehicle available in the household. Yet that vehicle was not available to the passenger for that trip between 47.5 and 70 percent of the time, according to three state surveys. The evidence presented indicates that although a majority of bus passengers had no private alternative for that trip, intercity bus service has only a minor role in meeting the most essential mobility needs.

As a part of the Bus Regulatory Reform Act of 1982 [P.L. 97-261, 96 Stat. 1104 (49 U.S.C.A. 10922)] Congress directed the Motor Carrier Ratemaking Study Commission to determine the impact of the act on persons over the age of 60, particularly those living in small cities and rural areas, and to assess its effect on the quality of intrastate bus services. An important first step in the task of the study

commission was to examine the current literature regarding the characteristics of bus passengers. In particular, the age distribution of the bus-riding population, the purposes for which they use bus transportation, and any significant differences between interstate and intrastate bus riders had to be known to provide a basis for any assessment of the impact of changes in service.

DEMOGRAPHIC CHARACTERISTICS

National Travel Survey

Unfortunately, there is a lack of data that would enable one to obtain a complete picture of the social, economic, and trip-making characteristics of intercity bus passengers. The National Travel survey (NTS) of the 1977 Census of Transportation (1) provides the most recent publicly available national data describing intercity bus passengers and the trips that they take. The census data have a major limitation in that only information about trips in which a traveler went to a place at least 100 miles from home and returned is included, which excludes many shorter intercity bus trips. In addition, there is no distinction between regular-route bus trips and those made on charters and tours, which may have very different ridership characteristics. Finally, the data are national, with no disaggregation into intrastate or interstate categories. However, despite these limitations the census survey data are important because of the information that is provided, as discussed in the following paragraphs.

Traveler Characteristics

As may be seen in Table 1 (1,pp.35-39), intercity bus passengers compared with those of other modes have a lower median income, are more likely to be black or of Spanish origin, and are much more likely to be female. The educational background of intercity bus passengers is very similar to that of automobile travelers, particularly those traveling with camping equipment, but much lower than that of rail or air passengers. The percentage of bus passengers whose residence was not in a Standard Metropolitan Statistical Area (SMSA) (population 50,000 or greater) is 30.25 percent, slightly less than that for automobile passengers, which is 33.59 percent for those traveling with camping equipment and 32.36 percent for those without such equipment. However, it is very different from that for rail users and air travelers, of whom 19.15 and 18.34 percent, respectively, did not reside in an SMSA.

Age Distribution

The age distribution of bus passengers also is significantly different from that of the other trans-

port modes as may be seen in Table 2 ($\underline{1}$,pp.35-39). Fifty percent of intercity bus passengers are 24 years of age or less, according to the census, whereas 13.36 percent are over 65. Bus passengers are either young or old, with relatively little representation from the age groups in between. Air passengers, by contrast, are drawn heavily from the middle age groups.

Trip Characteristics

The trip characteristics of bus passengers vary considerably from those of other modes, as may be seen in Table 3 (1,pp.13-22). Compared with the other common carrier modes, the trip purpose of bus passengers is most notable for the lack of business trips; instead most bus passengers are visiting friends or relatives, traveling for entertainment, and sightseeing. Even compared with automobile users traveling without camping equipment, the low level of business travel by bus is remarkable, as is the low percentage of bus trips made to attend to personal or family affairs or for medical reasons. Bus trips tend to be shorter than rail trips and much shorter than air trips, although the mean number of persons on the trip is similar for all three common carrier modes. As with the residence of trip makers, the destinations of bus travelers are more likely to not be in an SMSA than those of rail or air passengers.

Nationwide Personal Transportation Study

A second source of data describing the travel behavior of Americans is the Nationwide Personal Transportation Study (NPTS) (2,3). Conducted in 1969 and again in 1977, this survey overcomes the limitations of the NTS regarding trip length by including trips of all lengths in its survey of a sample of travelers. Unfortunately, the NPTS cannot provide any information about the use of intercity buses by persons over the age of 60, because such trips constitute only a small percentage of all travel. Of the 2,411 bus trips in the NPTS sample, only 72 are more than 30 miles long. Because persons over the age of 65 make approximately 10 percent of all bus trips (local and intercity combined), less than 10 of the bus trips in the NPTS file were made by persons in this age group, far too few from which to

TABLE 1 Traveler Characteristics (1)

	Mode					
	Automobile	or Truck				
Characteristic	With Without Camping Camping Equipment Equipment		Bus	Rail	Air	
Median income (\$)	16,081	17,136	12,996	17,927	18,975	
Black or other (%)	7.88	2.41	20.52	15.96	7.84	
Spanish (%)	3.74	3.81	4.79	1.38	3.90	
Age						
Mean	32.00	29.50	33,20	36.50	37.50	
Median	28.60	26.80	23.80	33,20	35.30	
Education (%)						
Elementary	30.12	34.06	34.82	20.20	16.13	
High school	42.44	42.71	42.74	30.45	36.26	
College	27.44	23.22	22.44	49.35	47.67	
Sex (%)						
Male	49.81	54.60	38.75	49.75	50.20	
Female	50.19	45.40	61.25	50.25	49.80	
Non-SMSA residence (%)	32.36	33.59	30.25	19.15	18.34	

TABLE 2 Age of Traveler (1)

	Percentage by Mode								
Automobile With Camping Age Equipment	Automobile	or Truck	Bus	Rail	Air				
	Camping	Without Camping Equipment							
Under 18	27.84	33.05	36.27	18.55	14.32				
18-24	14.10	11.91	14.12	14.14	11.88				
25-34	17.56	18.19	9.56	18.88	21.72				
35-44	12.18	14.14	8.09	13.82	15.83				
45-54	11.93	11.40	9.26	12.09	15.38				
55-64	9.43	7.58	9 33	11_91	11.86				
65 and over	6.96	3.73	13.36	10.60	9.02				

draw any meaningful conclusions (S. Liss, FHWA, Nov. 29, 1983, unpublished data).

Nevertheless, the NPTS provides data on the degree to which persons over the age of 60 use different transportation modes. In Table 4 the data indicate that for all trips, local and intercity, persons in this age group rely on the automobile and truck for a greater percentage of trips than do all persons combined. Note, however, that bus and streetcar use by this age group is also somewhat greater than that for all persons, although it still is a small percentage of all trips. Bus and streetcar use by this population segment declined over the period from 1969 to 1977, whereas automobile and truck use increased. Although these figures obviously reflect the fact that most trips included in the sample are less than 30 miles in length, they illustrate that most persons over the age of 60 continue to rely on the private automobile to meet mobility needs and that for this group the trend is toward increased automobile use and reduced dependence on the bus and streetcar.

The 1969 NPTS also provided data on differences in travel between persons living in unincorporated areas and those living in incorporated places. Persons aged 65 to 69 living in unincorporated areas traveled 55 percent of the time as drivers of automobiles, percent of the time as passengers in automobiles, and about 1 percent of the time by bus. Those 70 and over traveled 51 percent of the time as drivers of automobiles, 41 percent as passengers in automobiles, and less than 1 percent of the time by bus. The same study shows that in incorporated areas, persons aged 65 to 69 traveled 55 percent of

the time as drivers of automobiles, 31 percent of the time as passengers in automobiles, 6 percent of the time by bus, and 1 percent of the time by small truck. The group aged 70 and older traveled 50 percent of the time as drivers of automobiles, 41 percent as passengers in automobiles, 1 percent by small truck, and 5 percent by bus.

STATE SURVEYS

In addition to the NTS and NPTS, information about bus riders is available from a number of studies performed by or on behalf of state governments concerned about the future of intercity bug services. Intercity bus studies that include surveys of bus users are available from Indiana (4); Iowa (5); Georgia (6); Michigan (7); New Mexico (8); North Carolina (9); Oregon (10,11); Tennessee (12); Texas (13); Washington, Oregon, and Idaho (14); and Wisconsin (15). The data from these surveys are perhaps more useful than the national information because none of the states restricted the trip length for which they collected data; instead, they collected data from all persons using buses within that particular state. All the state surveys deal exclusively with regular-route scheduled service. Beyond these few similarities, the state surveys vary considerably in the types of questions asked, the response categories, and the method of data collection. However, it is possible to present a summary of these surveys to illustrate a number of facts about the users of intercity buses and to compare them with the national data already described.

Age

The NTS and state surveys both show that generally bus passengers are either young or old, with relatively little representation from the age groups in the middle. The elderly are not the largest group of intercity bus riders nor are they found on intercity buses in numbers disproportionate to their representation in the general population. Younger riders compose the largest percentage of all bus riders. Table 5 presents the age distributions of bus riders from 10 state surveys. Each state used slightly different age categories to collect the data, but they support the national results. Relatively few bus riders are drawn from middle age groups; most are either young or old. Young riders make up a larger percentage than do the older age groups.

TABLE 3 Trip Characteristics (1)

	Mode						
	Automobile	or Truck					
Characteristic	With Without Camping Camping Equipment Equipment		Bus	Rail	Air		
Trip purpose (% household trips)							
Visit relatives or friends	35.69	18.72	23.62	36.02	22.02		
Business	21.90	5.76	4.56	37.16	50.69		
Convention	1.83	1.13	3.89	2.32	4.11		
Outdoor recreation	11.69	45.80	10.69	2.27	2.67		
Entertainment	7.09	8.77	16.79	5.77	5.47		
Sightseeing	3.77	9.08	13.85	4.49	4.73		
Personal, family, or medical affairs	12.99	5.70	7.83	10.48	7.09		
Shopping	0.82	0.24	0.80	0.36	0.06		
Other	4.22	4.80	17.95	1.11	3.17		
Round-trip distance (miles)							
Mean	487	710	585	878	1,845		
Median	338	400	396	456	1,586		
Destination not in SMSA (%)	45.70	61.65	29.62	10.12	13.11		
Mean no, of persons on trip	1.8	2.2	1.2	1.3	1.2		

TABLE 4 Trips by Persons in Selected Age Groups by Means of Transportation, 1969 and 1977 (2,3)

	All	Age Group of Tripmaker (%)			
Mode	Persons (%)	60-64	65-69	70 or More	
Automobile and truck					
1977	92.2	95.7	94.6	94.6	
1969	90.7	91.7	93.2	93.8	
Bus and streetcar					
1977	2.3	2.4	4.0	3.5	
1969	2.7	4.6	4.6	4.0	

Note: Total percentages do not sum to 100.0 because other modes have been omitted from this summary table.

TABLE 5 Age of Bus Passengers

Age Group	Percentage of Total	Age Group	Percentage of Total		
Georgia: 1980 (6,	p.148)	Oregon: 1976 (11, p. 13)			
Up to 17 18-29 30-39 40-49 50-59 60-64 65 and over	7.0 (8.0) ^a 47.4 (43.0) 11.2 (10.4) 11.0 (12.7) 8.7 (10.4) 3.3 (5.2) 11.4 (10.4)	Up to 16 16-44 (16-35) 45-65 65 and over	10 52 9 20 18		
	p.37)	Up to 16	7.1		
Up to 17 18-24 25-34 35-44 45-54 55-64	2.5 24.7 17.0 11.0 13.4 13.7	16-25 26-35 36-45 46-55 56-65 65 and over	38.0 17.5 10.9 9.2 9.4 8.0		
65 and over 17.7		Texas: 1981 (13,p.116)			
Michigan: 1977 (2 Up to 18 19-29 30-39 40-49 50-64 65 and over	6.1 46.9 11.2 9.2 15.3 11.3	Up to 18 18-29 30-39 40-49 50-64 65 and over Washington, Ore 1982 (14, pp. 3-9			
New Mexico: 198	0 (8,pp.35,59)				
Up to 18 18-24 25-34 35-44 45-54	8.6 (14.6) ^b 22.8 (25.6) 19.7 (22.0) 10.2 (7.9) 7.2 (9.1)	Up to 16 16-34 35-44 45-60 60 and over	9.5 41.0 7.0 12.0 30.6		
55-64 65 and over	11.6 (9.8) 13.9 (10.1)	Wisconsin: 1976	(15, p. 19)		
No response North Carolina: 19	6.0 (0.9)	Up to 18 18-24 25-34	14.1 32.0 13.2		
Up to 20 21-29 30-39 40-49 50-59 50-and over	23 31 16 9 10	35-44 45-54 55-64 65 and over	6.5 7.5 11.2 10.2		

^aFigures in parentheses are percentage of intrastate passengers only.

Income

Bus passengers, including persons over 60, have much lower median incomes than do passengers of other intercity transportation modes, as was seen in Table 1, which presents data from the NTS. State surveys of bus passengers that provide income data also show that many bus riders have very low household incomes. Table 6 provides the distribution of household in-

come for bus passengers surveyed in Texas; Oregon; Michigan; Georgia; New Mexico; Wisconsin; Washington; Oregon, and Idaho; Indiana; and Tennessee. The state studies each used different income range categories. However, it is possible to conclude that there is a substantial percentage of bus riders with household incomes below \$10,000, ranging from 30.8 percent in New Mexico to 60 percent in Oregon. In Michigan 37 percent had incomes less than \$9,000, and in Georgia 34.7 percent were in the same category. In Tennessee 41 percent had a household income less than \$7,500. Additional information concerning the income of bus passengers may exist in the market research efforts of the carriers. This information is generally considered proprietary, but Greyhound did present some summary statistics to the American Bus Association (16). These indicate that passenger characteristics may well differ by firm, because Greyhound passengers appear to have slightly higher incomes than do bus passengers generally (see Table 1). Almost 50 percent of Greyhound passengers under the age of 35 make more than \$15,000 per year; 30 percent of all Greyhound passengers earn more than \$20,000, of which 21 percent earn more than \$25,000.

Thus, although it can be said that intercity bus riders include a disproportionate number of low-income passengers, particularly when compared with the passengers on other common carrier intercity modes, by no means do all intercity bus passengers fall into that category.

TABLE 6 Family Income of Bus Passengers

Income Range (\$)	Percentage of Total	Income Range (\$)	Percentage of Total	
Texas: 1980 (13,p.16	03)	Wisconsin: 1976 (15, p. 21)		
0-10,000 10,000-20,000 20,000-30,000 30,000+	45 33 13 9	0-4,999 5,000-9,999 10,000-14,999 15,000-19,999	18.8 16.8 12.6 10.5	
Oregon: 1976 (11,р.	15)	20,000-24,999 25,000+ No response	6.5 8.8 26.0	
Less than 5,000 5,000-9,999 10,000-14,999 15,000+	36 24 16 24	Washington, Oregon, 1982 (14, pp. 3-9)		
Michigan: 1977 (7,p.	16)	Less than 5,000 5,000-7,500 7,500-10,000	12.6 13.9 13.2	
Less than 2,999 3,000-5,999 6,000-8,999 9,000-11,999 12,000-14,999 15,000-24,999 25,000+	13 13 11 9 10 18 11	10,000-15,000 15,000-20,000 20,000-25,000 25,000-35,000 35,000-50,000 Over 50,000	18.1 10.7 8.7 13.4 7.6 1.8	
No response Georgia: 1980 (6, p. 1		Indiana: 1980 (4,p		
Less than 2,999 3,000-5,999 6,000-8,999 9,000-11,999 12,000-14,999	4.8 (3.6) ^a 7.7 (9.6) 22.2 (25.5) 30.0 (28.3) 18.8 (19.9)	5,000-10,000 10,000-20,000 20,000-30,000 30,000-40,000 40,000+	33.0 25.0 22.0 12.0 3.0 4.0	
15,000-24,999 25,000+	11.8 (9.6) 4.6 (3.6)	Tennessee: 1982 (12	,p.56)	
New Mexico: 1980 (8 1,000-4,999 5,000-9,999 10,000-14,999 15,000-19,999 20,000-24,999 25,000+ No response	14.1 (18.3) ^b 16.7 (20.4) 16.2 (15.2) 8.8 (12.5) 6.9 (6.4) 9.6 (8.8) 27.7 (18.3)	Under 7,500 7,501-15,000 15,001-25,000 25,001-35,000 35,001+	41.0 29.0 17.9 7.7 4.3	

^aFigures in parentheses are percentage of intrastate passengers only.

^bFigures in parentheses are percentage of New Mexico residents.

^cOnly those aged 12 and over were surveyed,

 $^{{}^{\}rm b}{\rm Figures}$ in parentheses are percentage of New Mexico residents.

Trip Purpose

As mentioned in the discussion on the NTS (Table 3), the trip characteristics of bus passengers vary considerably from those of other modes. The state surveys of bus passengers present similar results. The major conclusion that can be drawn from the state surveys is that the most common trip purpose of bus users is to visit friends or relatives or for social or recreational purposes. Table 7 presents the percentage of bus users in each state according to their reasons for taking the surveyed trips. To provide a summary exhibit, some interpretation of category definitions was necessary; differences in wording are noted in the footnotes.

As can be seen in Table 7, the percentage of riders visiting or traveling for other social or recreational reasons is the largest category in every state; the lowest percentages occur in those states that also include "return home" as a separate category. Also of note are the low percentages of users traveling for nondiscretionary purposes. Work trips varied from 7.5 to 20.3 percent, with various categories of business ranging from 3.8 to 28.0 percent. Medical trips, often cited as a critical use of intercity bus services, range from 1.0 to 12.4 percent of all trips, depending on the state. Shopping trips constitute between only 1.2 and 3.0 percent of all trips. School trips were also a small percentage, ranging from 1.5 to 8.0 percent of the trips surveyed.

These findings generally support the NTS results, although the NTS included several categories of discretionary travel that, if combined, are even larger than the state surveys indicate, perhaps because of the charter and tour trips included in the NTS sample.

These findings are not surprising if one recognizes that essential trips for shopping, work, personal business, or medical purposes are usually local and occur frequently, perhaps even daily. In a 1980 study for the U.S. Department of Transportation (17, pp. 3-5, 3-7, and 7-12 to 7-19), the transportation alternatives available for such essential, frequent trip needs were evaluated and it was found that intercity bus service had a low potential for meeting these needs, primarily due to infrequent service and inconvenient schedules. Intercity bus services were rated as having only moderate potential for trips to visit friends and relatives and high potential for sightseeing and other recreation trips.

The survey data reviewed for this study indicate that the trip purposes given by bus passengers reflect their own similar evaluations of the potential of the intercity bus for meeting various trip needs. Most intercity bus travel does not involve essential medical, work, or shopping trips.

Access to Automobile

The information on the social, economic, and tripmaking characteristics of bus passengers may lead to
the hypothesis that the bus is the mode of last resort and that bus passengers have no alternatives.
The NTS does not provide data concerning the availability of alternatives, but a number of states do.
Several of these studies have asked bus riders
whether they had a driver's license, how many automobiles and trucks were owned by the bus passenger's
household, and, in a few instances, whether the trip
could have been taken if bus service had not been
available. The findings are summarized in Tables 8
and 9.

Note in Table 8 that approximately two-thirds of the surveyed intercity bus passengers did have a driver's license. Yet, as indicated in Table 9, in three of the states, the question of whether an automobile was available to the passenger for that trip brought a negative response 47.5 to 70 percent of the time. Given this admittedly limited evidence, it would appear that perhaps one-third of bus passengers have no choice due to lack of a driver's license or an automobile, whereas an additional percentage of hus passengers simply did not have an automobile available for that particular trip. Compared with other public transportation modes, the bus is more likely to be used by those with no option, but many passengers apparently choose to ride the bus even though they are capable of driving and have an auto or truck available in their household.

A number of the state surveys also asked bus passengers how they traveled to the bus station from their trip origin and how they got from the bus station to their final destination. The data in Table 10 indicate that for the 10 states listed, an average of 60.7 percent of surveyed bus passengers used a private automobile to get to and from the bus station. The remaining percentage is accounted for by other modes, including taxi, local city bus, walking, and other intercity bus services. Because most of the surveys were conducted in the larger termi-

TABLE 7 Trip Purpose (4,6,7,9-15)

	Percentage by State									
Purpose	Oregon	Georgia Interstate and Intrastate	Georgia Intrastate Only	Texas	North Carolina	Michigan	Wisconsin ^a	Washington, Oregon, Idaho	Indiana	Tennessee
Work	11.0	12.8	15.1	11.5	9.0	14.4	7.5	11.7	20,3	8.8
Shopping	2.0	1.2	2.4	-	3.0	1.0	1.0	1.2	3.0	-
Business	12.0 ^b	12.6	12.4	-	28.0 ^b	16.5	-	3.8	*	10.7
Visit friends or relatives	50.0°	48.9	45.4	37.7	_	48.5	33.7	36.7 ^d	43.0	49.5
Vacation	-	10.4	4.0	7.3	4	6.2	9.5	22.2	16.9	18.1
Other social or recreational	11.0 ^e	0.4	0.8	-	50.0	-	-	-		-
Medical	5.0	7.0	12.4	4.7	1.0	-	1.1	2.6	4.0	4.6
School	2.0	4.8	5.2	3.8	8.0	-	2.5	1.5	3.0	6.8
Military	16.0	-	-	_	1.0	-	-	-	-	_
Return home	-	-	-	26.4	-	-	30.7	_	777	-
Other	6.0	1.5	2.4	8.7	1.0	13.4	5.7	18.8	9.0	1.4
Move	-	_	-	-	-	_	-	1.4	_	_

aWisconsin survey asked for "Activity at Destination."

 $^{^{\}mbox{\scriptsize b}_{\mbox{\tiny 11}}}\mbox{\scriptsize Personal Business"}$ was the actual category name in North Carolina and Oregon.

c...Social" was the actual category name in Oregon.

dActual category was "Social."

e"Recreation" was the actual category name in Oregon.

TABLE 8 Availability of Driver's License Among Intercity Bus Passengers

State Surveyed	Hold Driver's License (%)	Without Driver's License (%)
Oregon (11, p. 15)	69.0	31.0
Wisconsin (15, p. 20)	80.3	19.7
Georgia (6, p. 148)	66.2	33.8
North Carolina (9, p. 2)	67.0	33.0
Texas (13)	75.1	24.9
Washington, Oregon, Idaho (14, pp. 3-8)	70.0	30.0

TABLE 9 Availability of Household Automobile for Surveyed Intercity Trips

State Surveyed	Automobile Available (%)	No Automobile Available (%)
Wisconsin (15, p. 20)	42.5	47.5
North Carolina (9, p. 2)	30.0	70.0
Texas (13)	47.9	52.1
Washington, Oregon, Idaho (14,pp.3-8)	78.2	21.7

TABLE 10 Intercity Bus Passenger Use of Automobile to Reach the Bus (6, p. 144)

State Surveyed	At Trip Origin (%)	At Trip Destination (%)	Combined Origin and Destination (%)
Georgia (6, p. 144)	56.5	63.4	(60) ^a
Iowa (5, p. 62)	2	-	73.0
Michigan (7, p. 6)	53.0	52.0	$(52.5)^{a}$
Oregon (10, p. 78)	-	-	59.0
Tennessee (12, p. 56)	*	-	62.1
North Carolina (9, p. 1)	74.0	74.0	74.0
Wisconsin (15, p.8)		H.	55.0
Texas (13, p. 116)	68.4	68.4	68.4
Oregon (11, p. 11)	59.0	52.0	$(55.5)^{a}$
New Mexico (8, p. 40)	/ /= :	-	47.5
Combined mean			60.7

Note: Data do not include taxi use.

^aCalculated mean of percentage of automobile use at origin and at destination.

nals in each state, the automobile use figure is probably lower than it would be in smaller towns or rural areas where taxi and local bus are unavailable and where walking distances are greater due to lower population density. These results support the notion that approximately one-third of all intercity bus passengers do not have a car or a driver's license available, whereas the other two-thirds have vehicles that are not necessarily available for that intercity trip.

The lack of cross-tabulations of age and automobile availability does not permit any conclusion as to whether older Americans are more dependent on intercity bus service than other groups. However, the Indiana Intercity Bus Study found that 47 percent of elderly bus passengers could not have made a particular trip without bus service, a higher percentage than for any other age group (4). Thus, it may well be that older Americans have fewer alternatives than younger bus riders, although again the evidence is limited.

SUMMARY

The foregoing studies provide the most complete information available concerning the age distribution, trip purpose, and the availability of private automobile alternatives to intercity bus passengers.

However, the published results present only incomplete evidence, because cross-tabulations of age group by trip purpose, automobile availability, SMSA, or rural residence are simply not available in the NTS, the NPTS, or the state surveys.

The evidence indicates that intercity bus service generally is not used to meet essential trip needs for work, shopping, medical, or personal business purposes. Most essential bus trips are local in nature, whereas intercity bus service is oriented toward infrequent intercity travel and thus is most often used for social or recreational purposes. For the significant percentage of persons living in rural areas who do face a transportation disadvantage, intercity bus service plays only a minor role in meeting the most essential mobility needs.

These impressions appear to be confirmed by a recent survey of residents and bus users in eight small towns, four with intercity bus service and four without, that was made in rural Oregon to study the role of intercity bus service (18). In each town an inventory of alternative freight and passenger services was made. The survey revealed that older Americans often have a van available to meet their transportation needs. The Oregon study found that although some older Americans depend on intercity bus service for particular kinds of out-of-town medical treatment, in general it is the nonelderly, low-income, and some package express customers who would be most disadvantaged by the loss of intercity bus service.

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REFERENCES

- National Travel Survey: Travel During 1977. Report TC77-N-2. Bureau of the Census, U.S. Department of Commerce, Oct. 1979.
- 1977 Nationwide Personal Transportation Study: Report 11--Person-Trip Characteristics. FHWA, U.S. Department of Transportation, Dec. 1983.
- 1969 Nationwide Personal Transportation Study: Report 9--Mode of Transportation and Personal Characteristics of Tripmakers. FHWA, U.S. Department of Transportation, 1969.
- Indiana Intercity Bus Study. Report 1980(028)-01. Institute for Urban Transportation, Indiana University, Bloomington, June 1981.
- Intercity Passenger Carrier Improvement Study. Engineering Research Institute, Iowa State University, Ames, Aug. 1977.
- M.J. Moskaluk et al. Georgia Intercity Bus System Evaluation. GDOT Research Project 7801. engineering Experiment Station, Georgia Institute of Technology, Atlanta, Feb. 1980.
- Michigan Intercity Bus Study: Ridership and Travel Characteristics. Michigan Department of State Highways and Transportation, Lansing, Nov. 1977.
- J.H. Holmlund et al. Intercity Bus Transportation in New Mexico. Institute for Applied Research Services, University of New Mexico, Santa Fe, July 1980.
- North Carolina Intercity Bus Market Study. Stone and Webster Management Consultants, Inc., Raleigh, N.C., Aug. 1982.

- 10. Intercity Bus Transportation in Oregon: Preliminary Report. Oregon Department of Transportation, Salem, 1974.
- Oregon Intercity Bus Passenger Study. Oregon Department of Transportation, Salem, Dec. 1976.
- 12. Tennessee Intercity Bus Study, Vol. 1: Study Report. J.R. Wilburn and Associates, Inc., Huntsville, Ala., Nov. 1981.
- 13. T. Urbanik II et al. The Intercity Bus Industry in the U.S. and Texas. Technical Report 0965-17. Texas Transportation Institute, Texas A&M University System, College Station, Aug. 1981.
- 14. Intercity Bus Study--Washington, Oregon, Idaho: Study Report 1982. Public Transportation and Planning Division, Washington State Department of Transportation, Olympia, July 1982.
- Intercity Bus Transportation in Wisconsin, Vol.
 User Characteristics. Wisconsin Department of Transportation, Madison, April 1977.

- 16 R.E. Puskar. Remarks to the American Bus Association. Bozell and Jacobs Advertising, Inc., Montreal, Canada, Dec. 3, 1981.
- 17. Intercity Bus, Rail, and Air Service for Residents of Rural Areas. Report DOT-P-10-80-18. Office of the Assistant Secretary for Policy and International Affairs and Office of Intermodal Transportation, U.S. Department of Transportation, Jan. 1980.
- 18. P.R. Norris and C.L. Stevens. The Role of the Intercity Bus Industry in Isolated Rural Regions of Oregon. Abstract MCCP-7. Oregon Department of Transportation, Salem, March 1983, revised July 1983.

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Bus Station Security: Crime at Intercity Bus Stations

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ABSTRACT

The issue of crime at California's intercity bus stations is examined through a review of records maintained by public and private carriers and by law enforcement agencies at the federal, state, and local levels. None of these sources provides complete information on crime at intercity bus stations. Intercity carrier records of station crime are generally inaccurate and incomplete, in part because of confusion over definitions of crimes and discretionary reporting practices. National crime statistics, and the police agency records from which they are compiled, do not identify crimes on the basis of a specific location. Newspapers were used as a supplementary source of information but proved to be of limited value because of inconsistencies in their coverage of these crimes. Crimes reported during 1983 at California bus stations are reviewed, and the legal implications of crime for bus station operators and specific countermeasures to station crime are also discussed. To overcome the current deficiencies in transportation security, a uniform transportation crime-reporting (UTCR) system is proposed.

Crime in the transportation environment (statutory offenses committed within the vehicles, facilities, property, or other domain of a public or private transportation system) has a documented negative impact on public transportation (1). This study examines the issue of crime at intercity bus stations, those places defined as "service points where tickets for transportation services are sold and facilities for passenger comfort may be provided" (2) and where, according to experts in the field of transportation security, most transportation-related crimes occur (3).

This study is focused on the state of California, where there are approximately 270 bus stations (4). Nearly 70 percent of these stations, however, are

locations with fewer than 100 bus departures per week; many are places where the sale of tickets for transportation service is incidental to some principal activity or interest such as the sale of groceries, pharmaceuticals, or automobile parts. Such stations do not come within the scope of this review because criminal acts committed there may not necessarily reflect or typify transportation-related crime.

Information was sought for 30 of the remaining 85 stations, including the largest 25 statewide (based on number of departures per week). It is here that the greatest volumes of passengers are served and where one would expect to find the greatest crime problem.