

Travel Characteristics of Junior and Senior High School Students

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This paper describes a survey of socioeconomic characteristics and travel behavior conducted among junior and senior high school students in Dutchess County, New York. Dutchess County, which is approximately 120 km (75 miles) north of New York City, contains one large city (Poughkeepsie, with a population of 32 000), a smaller city (Beacon, with a population of 13 000), and a number of small towns. The total population of the county is approximately 225 000. The area is chiefly agricultural and residential with a few major industrial and commercial firms. In 1975, the median family income was approximately \$14 000.

The survey sample was obtained by using a cluster design. About 1200 pupils were randomly selected from 40 homerooms in the county. Of the 40 homerooms selected, 37 were located in public schools, and the remaining 3 were located in parochial schools. In general, the homerooms contained a representative sample of students. The teachers in these homerooms were asked to distribute and collect the survey forms during a homeroom period in early May 1974. The 919 useful survey forms returned make this survey one of the largest available data sources for detailed travel habits of young people with respect to academic ability and socioeconomic variables. The sex and grade level of the sampled students are given in Table 1.

In addition to providing basic demographic data such as sex, grade level, family ownership of car, and household size, the students provided information about all trips made after school on the previous day (yesterday) and all trips made on the previous Saturday. The trip information requested included mode choice, purpose, origin and destination, and frequency of similar trips. Students were also asked to describe any trips they desired to make but did not make on those days.

This analysis describes the associative relation between trip rates and grade level, household size, car ownership, and trip purpose, mode choice, and day of

the week. Detailed results and complete tables can be found in another report (1). The results contained in this paper can be compared with those described by Hoel (2) and Gurin (3).

EFFECT OF GRADE LEVEL

The grade level, which was presumed to be a surrogate for age, had a significant effect on travel behavior. As given in Table 1, the boys generally made more trips on weekdays and fewer trips on weekends than did the girls. Trip rates also increased as the students became older. The influence of grade level on mode choice was less significant: Only small changes occurred in the percentage of car-passenger trips made on the weekday as the grade level changed. Although there was a slightly higher percentage of car-passenger trips by seventh graders and a somewhat lower percentage by twelfth graders, the percentage of car-passenger trips by all grades was about 34. The percentage of walk and bicycle trips decreased among older students, and there was an obvious increase in the percentage of car-driver trips for eleventh and twelfth graders. On Saturdays there was a somewhat greater percentage of car-passenger trips, reflecting family outings or chauffeuring of younger students. For older students, increased car transportation was made available through use of parents' cars and through friends who had access to a car on weekends.

The percentage of weekday recreational trips decreased as the students advanced in grade level, and the percentage of trips for employment purposes increased for both weekday and Saturday trips as the students became older. In general, the major reasons for not making trips were lack of transportation and too busy. Some other reasons were no companions and parents will not give permission. High school seniors were less concerned about transportation difficulties than seventh through eleventh graders. Being too busy to make desired trips was a greater problem for seniors than for other students.

EFFECT OF CAR OWNERSHIP

Household car ownership had a significant effect on stu-

Table 1. Sample size and trip rates of study participants.

Grade	Sample Size			Average Number of Trips per Student			
				Yesterday		Saturday	
	Boys	Girls	Uniden-	Boy	Girl	Boy	Girl
7	75	81	3	1.37	1.33	1.32	1.36
8	128	134	10	1.60	1.40	1.49	1.56
9	71	51	6	1.62	1.37	1.39	1.78
10	43	48	1	1.49	1.73	1.56	2.04
11	39	49	4	1.97	1.71	1.46	1.94
12	78	91	4	2.42	2.21	2.09	2.35
Uniden-	0	0	3	-	-	-	-
Total	434	454	31	1.75	1.63	1.56	1.84
Avg				1.69		1.70	

dent trip rates and mode choice, almost no effect on trip purpose, and little effect on reasons for not making trips. There was little difference in weekday trip rates when the number of cars owned was between zero and two. Students from households that owned three or more cars (one car being theirs or an older child's) did make more trips per day than the rest of the sample. For trips on Saturday, a consistent pattern of greater trip rates for those owning cars emerged. A decline in the percentage of walking and bicycle trips and a significant increase in the percentage of car-driver trips were observed as household car ownership increased. A higher percentage of car ownership is often associated with suburban living since activities may be too far for walking or bicycling. Students from households owning three or more cars made a much larger percentage of car-driver trips (31 compared to 18 for the entire sample). Students from multicar households made slightly more work trips and had a slightly lower proportion of shopping trips. Also the percentage of students citing reasons other than lack of transportation for not making trips increased as car ownership levels rose.

EFFECT OF FAMILY SIZE

With the exception of cars owned, no major variable was influenced by family size: No significant pattern for trip rates, mode choice, or trip purpose was ascertained from households that were large, small, or medium in size. There was no discernible relation between household size and trip purpose or mode. There was a strong tendency for larger families to have more cars. The family of almost all students sampled owned at least one car; family car ownership averaged 1.95. The families sampled were somewhat rural, and the percentage of large families was relatively high.

EFFECT OF TRIP PURPOSE

In general, trip purpose had a major effect on trip frequency and a somewhat lesser effect on mode choice and reasons for trips that were not made. Weekday trips that were made most often were educational and home trips. Work and home trips were the most frequently made weekend trips. Bicycles were primarily used for recreational purposes. Health care trips were most likely made as a car passenger. Car driver was the most common mode for employment trips. No clear pattern emerged that explained why trips were not made even though the trips that were not made were most often recreational, social, personal business, shopping, and other. Of the trips made yesterday, those most likely to be made 5 to 7 d/week were for educational and em-

ployment purposes and to go home. The trips least likely to be repeated 5 to 7 d/week were trips for shopping and health care. Health care trips are likely to be made less often than 1 to 3 d/month.

Trips made on Saturday are likely to have different destinations than those made during the week: Of all weekday trips, 52 percent were made more frequently than 1 to 2 d/week; of the Saturday trips, only 28 percent were made more frequently than 1 to 2 d/week.

Changes in trip purpose were reflected in changes in mode choice. Students were most likely to drive to employment and tended to be car passengers on trips for health care. Bicycles were mainly used for recreational trips and almost never used for weekday health trips. It was somewhat surprising to learn that students rarely walked to extracurricular activities on Saturday. This probably reflects the fact that the bulk of these activities are sports activities that are frequently held at other schools.

MODE CHOICE

Students in the sample were asked, "How do you normally get to school?" The most interesting result was that students rarely took their bicycles to school. Up to age 15, 20 percent of the students walked to school; this percentage dropped sharply among older students. Over 60 percent of those under 18 used the school bus as their primary mode. Although the survey was not designed to obtain information on trip lengths, the results indicate that students made almost all of their trips inside their school districts. Almost all trips that were desired but not made fell into one of the following categories: recreation, social, personal business, shopping, or other. Lack of transportation had its greatest effect on shopping, social, and personal business trips during the week and on social and other trips on Saturday. Being too busy was most likely to affect recreational trips during the week and personal business trips on weekends.

DAY OF THE WEEK

The results from stratification indicate that the day of the week (yesterday versus Saturday) often influenced mode choice and trip rates, purpose, and frequency. Although the overall trip rates were the same for yesterday and Saturday, the trip rates given in Table 1 are higher for boys on weekdays and for girls on Saturdays. Car-passenger trips were 34 percent on weekdays and 50 percent on Saturdays. In contrast, 10 percent of nonschool trips on weekdays were by school bus, and this figure falls to 1 percent on weekends. The walking mode choice was much more likely on weekdays than on Saturdays (21 and 13 percent respectively). There was, however, little change for the other modes. The proportion of trips for recreational and social purposes was larger on Saturdays (39 percent) than on weekdays (29 percent). And, as previously mentioned, 52 percent of the trips made yesterday occurred more than 1 to 2 d/week, while only 28 percent of the Saturday trips occurred more than 1 to 2 d/week.

CONCLUSIONS

Most of the survey results were predictable. The primary importance of the survey lies in the fact that assumed patterns of behavior were confirmed by this extensive survey. The major conclusions of the survey follow:

1. Trip-making rates for boys are higher on weekdays and lower on weekends than the rates for girls.

2. Trip rates for weekdays and Saturdays are similar, but trip purposes are quite different.
3. Car ownership does not have a significant effect on weekday trip rates for students unless the family owns three or more cars.
4. Family size has little effect on mode choice, trip rates, or trip purposes.
5. Use of the local bus by students is very low (1 percent of all trips).
6. Approximately one-third of all car trips are made as passengers, and this figure exhibits little change as grade levels change.
7. Almost 80 percent of all trips made by seniors are as a car driver or passenger.
8. The two major reasons desired trips were not made were lack of transportation or too busy.
9. Students generally make short trips, and almost all trips were made to localities in the student's school district.

REFERENCES

1. G. S. Cohen. Travel Characteristics of Junior and Senior High School Youth. Planning Division, New York State Department of Transportation, Preliminary Research Rept. 88, 1975.
2. L. A. Hoel and others. Latent Demand for Urban Transportation. Transportation Research Institute, Carnegie-Mellon Univ., Pittsburgh, 1968.
3. D. B. Gurin. Travel Patterns and Problems of Suburban High School Males. Office of Program and Policy Planning, U.S. Department of Transportation, 1974.