DISTRIBUTION PATTERNS OF AUTOMOBILE TRAVEL IN THE NEW YORK METROPOLITAN AREA

J. David Jordan, Tri-State Regional Planning Commission

ABRIDGMENT

•PLANS for highway improvements are dependent on traffic growth. Even aside from automobile ownership, this growth in traffic can be studied at the household, the basic trip-producing unit. To this end, home interview survey data for selected communities in the New York metropolitan area were processed to obtain the geographic distribution of vehicle-miles traveled in relation to the location of the households owning cars. Of particular interest were variations in the amount and distribution of travel due to the effect of density and supply of expressways.

STUDY DESIGN

Four areas were selected for analysis: 2 in New York City and 2 in the suburbs. Each was 4 square miles in size and was identified by the name of the community that covered most of its area. The areas were chosen in such a manner as to form 2 matched pairs. Within each pair, the 2 constituent communities had similar population densities and roughly equivalent transit service but differed in the supply of expressways.

Area	Community Number	Community Name	Density Range (persons/sq mi)	Expressway Access
New York City	1	Flatbush, Kings County	35,000	Poor
	2	Fordham, Bronx County	40,000	Good
Suburbs	3	Westwood, Bergen County, New Jersey	5,000 to 6,000	Poor
	4	Albertson, Nassau County, New York	5,000 to 6,000	Good

Automobile driver trips originating from or terminating at households within each selected area were summarized according to their airline trip lengths from the area's geometrical center. The vehicle-miles of travel generated by these trips were also summarized according to distance from the center.

RESULTS

The suburban areas generated about twice as many automobile driver trips per automobile as those in the city. Within each of the matched pairs, however, the differences in the supply of expressways had an insignificant effect on the travel generated per vehicle.

Community	Automobile Driver Trips/Automobile
1	2.1
2	1.8
3	4.4
4	3.8

Because there was no significant variation in average trip length among the 4 areas, the suburban areas also generated about twice as many vehicle-miles of travel per automobile as the city pair, with variations in expressway supply causing negligible differences.

Community	Vehicle-Miles of Travel/Automobile
1	7.9
2	8.0
3	17.1
4	16.7

The automobile driver trip distribution pattern displayed minor differences; the city areas had a larger percentage of trips in the 2- to 5-mile range, and the suburban areas had a higher percentage beyond 14 miles. This tendency was more apparent in the distribution of vehicle-miles of travel where the suburban areas had about a quarter of their travel beyond 10 miles, compared to 11 to 16 percent for the city pair.

Community	VMT Within 5 Miles of Area Centroid (percent)	VMT Beyond 10 Miles From Area Centroid (percent)
1	65.1	16.1
2	65.7	11.2
3	56.7	23.4
4	51.5	26.2

Because the 2 pairs of locations represented extremes of density, a third pair of communities was selected for similar analysis. Both locations were in the intermediate density range of 15,000 to 20,000 persons/square mile, but one was better served by limited-access facilities. The amount of vehicle travel generated per automobile was quite similar for both and was between the values obtained earlier for the high density pair and the suburban pair.

CONCLUSION

An analysis of home interview survey travel data in 4 selected communities indicated that the supply of expressways had a minimal effect on the generation and distribution of automobile trips. Residents of the suburban communities generated about twice as many vehicle-miles per automobile as did those who lived in the denser urban areas. Generally, as density increased, the week-day mileage generated per car decreased, no doubt because of an improved level of transit service and the greater costs associated with moving and parking automobiles.

ACKNOWLEDGMENTS

Invaluable aid was received in the preparation of the complete version of this paper from several persons: general guidance and direction from Lawrence V. Hammel and Edward F. Sullivan; technical assistance from William H. Coelln, Thea Edelstein, and Elizabeth Phifer; clerical assistance from Diane Williams; and data processing by Widge Connolly. The preparation of the report was financed in part through funds made available by the Federal Highway Administration and an urban planning grant from the U. S. Department of Housing and Urban Development, under the provisions of Section 701 of the Housing Act of 1954, as amended, and in cooperation with the states of Connecticut, New Jersey, and New York.

SPONSORSHIP OF THIS RECORD

GROUP 1—TRANSPORTATION SYSTEMS PLANNING AND ADMINISTRATION
Charles V. Wootan, Texas A&M University, chairman

Committee on Transportation Forecasting
George V. Wickstrom, Metropolitan Washington Council of Governments, chairman
Mark M. Akins, Daniel Brand, Austin E. Brant, Jr., Henry W. Bruck, Francis E. Coleman, Thomas B. Deen, William L. Grecco, Charles H. Groves, John R. Hamburg, Lawrence V. Hammel, Donald M. Hill, Wolfgang S. Homburger, Frank E. Horton, Gerald H. Johnston, Louis E. Keefer, Robert Kochanowski, Herbert S. Levinson, Brian V. Martin, James J. McDonnell, Eugene R. Mills, Kenneth W. Shiatte, Paul W. Shuldiner, Vergil G. Stover, Anthony R. Tomazinis, Robert T. Wood, Richard D. Worrall

James A. Scott, Highway Research Board staff