

# PRAGMATIC EVALUATION OF TELEPHONES, ACTIVITY SCHEDULING, AND OTHER STRATEGIES TO MODIFY TRAVEL BEHAVIOR OF POPULATION SUBGROUPS

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## ABRIDGMENT

Social science literature and information from a comprehensive case study of a population subgroup's physical mobility were used to forecast behavioral responses to 8 strategies to overcome problems associated with urban transportation. Strategies included substituting telephone calls for trip making, reducing family household and personal stresses, reducing tensions from poor home design, increasing home-centered activities, expanding home deliveries of goods and services, increasing spatial distribution of trip generators, improving the household location decision, and rescheduling school and work activities. The case study population was male high school students from working-class Boston suburbs. These strategies appear unlikely to be implemented on a large scale. Formidable opposition from parents, town residents, and institutions (especially in working-class communities) is anticipated. Costs, adult indifference, and a lack of respect for teenagers and the importance of these strategies are key barriers to be overcome. Even if these strategies manage to be implemented, empirical evidence is lacking that reductions in trip generation, trip distances, peak-hour travel, and other strategy objectives will actually occur. Fundamental sociological and psychological factors associated with the causes of travel behavior will remain unchanged. Optimistic predictions of the impacts of these strategies should therefore be avoided. Behavioral changes are likely to occur very slowly among non-middle-class subgroups. Transportation planners should consider trying to accommodate existing behavioral patterns rather than count on their modification.

•URBAN transportation problems such as immobility, congestion, and pollution have generated a variety of efforts to solve them. This paper evaluates travel behavior modification strategies that, at first glance, appear to have the conceptual potential to reduce transportation problems without having to increase transportation system capacity or manage (by economics or traffic control) the availability or use of existing transportation vehicles and facilities. These strategies are intended to reduce people's needs to generate trips, travel to distant destinations, or move during peak periods (10). They could conceivably help both car drivers and those without access to cars or transit.

Eight strategies are to be discussed that involve substitutes for personal trip making, reductions of psychological stresses that generate trips, and reorganization of land uses and activity scheduling. Explanations for existing travel behavior of an illustrative population subgroup are offered together with a review of necessary conditions and policies

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to implement the proposed strategies. Forecasts of strategy impacts are hypothesized and generalized to other populations. Recommendations for future research are also included.

The importance of anticipating the application of each strategy on unique population subgroups is revealed in this paper. Special implementation problems and impacts that might have been overlooked in a general strategy evaluation are illustrated by focusing on a particular subgroup, teenagers from working-class communities, that was studied as part of a comprehensive research project (8). A variety of research methods were used to generate and validate information and ideas—a review of social science literature, direct observations of nonexperimental behavior, and interviews and surveys involving subgroup members and people knowledgeable about subgroup travel behavior and its modification (parents, guidance counselors, police) were made. The most useful information came from in-depth surveys and 3 months of weekly panel discussions with 50 white male high school students living near Boston, Massachusetts.

### ANALYSIS OF STRATEGIES TO MODIFY TEENAGER TRAVEL BEHAVIOR

The comments in this section suggest that practical technology, staff availability, and professional knowledge are necessary but not sufficient for programs to be implemented and effective in changing the travel behavior of working-class male teenagers. Substantial changes in the attitudes of subgroup members, families, institutions, and society will also have to occur to secure their support for these programs.

#### Strategies to Reduce Trip Generation

##### Substituting Telephone Calls for Travel

Substituting telephone calls for travel could conceivably reduce travel. This might be fostered by increasing the availability of telephones for teenagers and by educating them about the methods and advantages of telephone use. Several implementation barriers are anticipated. As long as public telephone equipment is vandalized and local telephone service costs increase, telephone companies are unlikely to cooperate in the widespread expansion of inexpensive telephone service in places where teenagers congregate. Telephones are likely to be located where equipment can be monitored by adults and where long conversations can be discouraged. Working-class teenagers reported parental reluctance to install home telephone extensions in rooms where teenagers could hold private conversations. Schools have not developed effective consumer education methods relating to telephone use, and school supervisors in working-class towns expect parental opposition to the introduction of new instruction topics (1).

The provision of telephones and telephone education would still be unlikely to foster telephone use as a common substitute for travel. Teenagers value face-to-face interactions to develop and strengthen friendship bonds and establish trust of strangers (4, 6, 9, 11, 16). Requests, bargaining, teasing, and other common teenager interactions are felt to be more effective in person. Working-class male teenagers tend to spend time outdoors and away from homes and adult activity locations where telephones are likely to be found. Teenagers' social conversations often take place in groups, which telephone systems cannot usually handle. As teenagers mature, their circle of friends and acquaintances expands faster than their knowledge of telephone numbers; similarly, teenagers frequently lack the familiarity with newly discovered goods and services to order them by telephone. Teenaged panelists also expressed a distrust of telephone operators and the telephone company.

Teenagers seem frustrated by the shortcomings of telephone technology and parental and community suppliers' neglect of specialized service for youth (8, 14). Their adaptive behavioral response to these conditions has been to handle their communications needs by themselves by trip making and by creating social mechanisms such as con-

gregating in particular hangouts. Existing home telephone use, especially among younger or female teenagers, may occur only because convenient transportation is unavailable or because parental rules keep children home rather than because teenagers choose to substitute telephone calls for trips. In fact, telephones may generate more trips than would occur without their availability, if telephones facilitate trip planning and coordination.

### Reducing Household or Personal Tensions

Reducing household or personal tensions could reduce trips made to relieve psychological stresses. Increased family and individual counseling would be needed in many situations. Implementation barriers would develop, however, because mental health treatment is still not a widely accepted approach to emotional problems; many parents, schools, churches, and other institutions either do not recognize stress as a serious mental problem with negative behavioral consequences or they are opposed to treatment methods and costs (7).

Ironically, preliminary evidence suggests that effective counseling might not reduce overall household trip-generation levels. Improved household relations and personal self-image appear to lower trip levels of some people, but, as increased support and cooperation develops within a household, family trip making, chauffeuring, and less stringent car-borrowing rules and curfews tend to occur also (8). (However, effective counseling can result in less rebellious trip purposes and improved driver attitudes that affect safety.)

### Improving Dwelling Design to Lessen Family Conflicts and "Escape" Trips

Improving dwelling design to lessen family conflicts and "escape" trips will require policies to provide more spacious, quieter (air-conditioned) buildings. Building code changes and other institutional changes would be needed to minimize or lower the costs of providing these features. Parental support for these features, however, is not always present in working-class towns; parents would not necessarily invest savings in house features that reduce their teenagers' home tensions (6, 7, 8, 12, 14, 16). Even if parental, community, and construction industry resistance to improved home designs were overcome, little trip reduction might be expected among teenagers who are peer oriented rather than household oriented. (Better design might result in more home-based entertaining of teenager's friends, however.)

### Increasing Home-Centered Recreational Activities

Increasing home-centered recreational activities could reduce travel. Policies to emphasize home (rather than team) sports, hobbies, reading, and similar activities would be necessary. Opposition to this strategy would arise from parents who normally encourage their children to get out of the house (to lessen crowding or other stressful housing conditions), parents who want to avoid expensive home recreation improvements, or parents who have few home interests themselves. Opposition from recreational institutions can also be expected if their incomes are threatened.

Teenagers' interests in meeting and socializing with their peers is such a fundamental part of adolescence that the provision or parental accommodation of home-centered recreation is unlikely to reduce teenager travel significantly (4, 6, 8, 9). Reductions are even less likely among the many working-class teenagers whose parents are perceived to lead dull or unhappy home lives and have unfulfilling jobs; these teenagers often view adolescence as their last chance for adventure and excitement before they start working and settle down to marriage (8).

## Fostering Home Delivery of Goods and Services

Fostering home delivery of goods and services could reduce shopping and personal business trip making. Stores, carryout restaurants, and certain social service agencies are among the institutions that could send parcels or personnel to homes. One barrier to implementation is high costs (to service users or suppliers). Parcel security and payment methods could be hard to arrange at homes if parents work during the day, if neighborhoods are subject to doorstep robberies, or if teenagers (or their parents) lack credit cards or checking accounts. Teenagers would not be expected to substitute home deliveries for a significant number of their shopping trips or agency visits. Shopping is often combined with school and recreational travel. Inexperienced, growing teenaged shoppers need to inspect or try on many purchases such as records or clothes. Other purchases such as liquor cannot be home delivered unless teenagers will be home to intercept them without parental detection.

### Strategies to Reduce Trip Length

#### Locating Desired Destinations Nearer to Homes and Workplaces

Locating desired destination activities nearer to homes and workplaces can shorten trip distances (10). Planning and zoning regulation reform would be needed to encourage mixes of land uses and housing densities. Improved quality of housing, goods, and services (including public services such as health and education); relaxed eligibility and membership requirements (for clubs and private schools); and expanded hours of service and availability of stores and facilities throughout metropolitan areas are other factors that effectively bring origins and destinations closer together because they increase the chances that travelers can satisfy their needs without having to travel far. Opposition to policies fostering these conditions would be expected from parents who want segregated, homogeneous neighborhoods or who do not want to pay higher taxes for local services. Specialized institutions that cannot decentralize or that do not want to increase their availability to the public are also likely to object to these policies. Minor reductions in vehicle miles of travel (VMT) (vehicle kilometers of travel) might result from this dispersal strategy. However, the added convenience of nearby activities could increase the number of single-purpose (rather than multiple-purpose) trips and hence increase total VMT (vehicle kilometers of travel). Central business districts would tend to decline as regional trip generators. Crosstown and circumferential travel past apparently satisfactory activity centers (as perceived by planners) will still occur because travelers will continue to see other destination attributes (such as job advancement opportunities, salary differences, or school scholarships) that they value more highly than VMT (vehicle-kilometer-of-travel) savings. [Even well-planned new communities such as Reston, Virginia, have not proved to be very self-contained (12, 14, 16).]

#### Improving Household Location Decisions

Improved household location decisions would help minimize future household trip distances. Better information about existing and planned locations of facilities and services would be needed by those looking for homes. Anticipated institutional barriers include difficulties in maintaining current activity descriptions, predicting important future facility locations, and distributing information to those looking for homes in a timely, appropriate, and efficient way. The home-seeking decision behavior of many parents creates other barriers. Working-class families move relatively infrequently (compared with their upwardly mobile middle-class counterparts); therefore, home location decisions are made infrequently (6, 7, 8, 12, 16). New homes are chosen based on a comprehensible number of factors; as long as destination opportunities are within an acceptable range [usually within several miles (kilometers)], trip distance minimiza-

tion is often ignored (2). Even when desires to reduce trip distances exist, parents cannot predict or seldom consider their teenagers' current or future preferred trip destinations (8, 12, 14, 16).

Behavioral impacts of implementing this strategy seem likely to resemble those described for locating desired destinations nearer to homes and workplaces.

### Strategy to Reduce Peak-Hour Travel

Changing the scheduling of school and work activities could change rush-hour trip-making patterns (10). School schedules are subject to public policy: Daytime hours could be on shifts or they could be lengthened or shortened; evening classes could be provided; summer classes and changes in vacation days could be instituted. Except for some after-school part-time jobs, however, most students' work-trip travel does not occur during rush hours. Parents and schools, especially in working-class, conservative towns, can be expected to oppose major school schedule changes if changes affect parents' work or relaxation opportunities, family vacations, teachers' labor agreements, or school bus fleet usage rates in costly or negative ways. Implementation of school schedule changes should have a major impact in places where student rush-hour traffic is heavy. Lengthening the school day and reducing the total number of school days per school year could add to late afternoon traffic jams on days schools are in session but would lessen peak-hour trip levels on other days. [Annual nonschool trip generation and VMT (vehicle kilometers of travel) might increase substantially because students appear to be more active on nonschool days (8).] Because schools tend to be dispersed throughout metropolitan areas, however, rush-hour traffic congestion in the most densely settled city centers is unlikely to change very much if school schedules are changed.

### Generalizing This Evaluation to Cover Other Teenager Subgroups

Sociology and psychology literature (4, 6, 7, 8, 9, 11, 12, 14, 16) and interviews with former teenagers suggest that the described basic personal, household, and community conditions generating travel demand have been widespread and are likely to be barriers to strategy implementation for other groups during the next 20 years. The activities, privacy preferences, and adult conflicts observed among today's high school males are likely to be observed more frequently among future junior high school students. Youths who live with their parents after finishing high school will also have higher standards of privacy and desires for frequent, nonhome, nonlocal trip making. Over time, female teenagers will seek (and possibly obtain) the privacy and nonlocal shopping and social-recreational freedoms already enjoyed by their male peers. Lower-class youth will probably have behavioral responses that resemble those of working-class youth. Only the children of affluent middle-class parents who accept the proposed strategies are likely to modify their behavior in response to implemented strategies.

## FUTURE RESEARCH TOPICS AND METHODS

The preceding evaluations about the implementation and impacts of each strategy need further empirical documentation as they apply to modifying travel of teenagers and other population subgroups. Research should investigate

1. What the nature and extent of indifference, incapacity, or opposition to modification strategies involving household members, institutions, and society are;
2. What the financial costs of large-scale implementation of counseling and other programs are;
3. What the key policy-sensitive mechanisms for influencing travel are;
4. What the important ways that travel behavior reflects and affects mental health

are, and how much travel is really nonessential;

5. How the social class of individuals and communities affects local travel, strategy implementation, and responses; and

6. How stable (and predictable) the causes of trip generation and other aspects of travel behavior are.

Research should employ a variety of reinforcing methods of data collection and analysis. The methods cited earlier (8, 15) can be refined and expanded to include information from telephone companies, home-delivery services, merchants, and other informants. Personal telephone and activity diaries have considerable potential especially if they are coordinated with panel discussions and trip and budget diaries of contrasting subgroup populations that have different school or work schedules and home locations (8). Controlled experiments could also monitor travel and telephone use as living conditions, therapy, or other behavior-causing factors were systematically changed.

## SUMMARY AND CONCLUSIONS

Desires to reduce congestion, pollution, and other problems associated with metropolitan travel have led planners to consider changing people's needs to travel. Several strategies have been evaluated that are intended to reduce the need to travel, eliminate nonessential trips and VMT (vehicle kilometers of travel), and decrease peak-hour travel, including

1. Substituting telephone calls and home-delivery services for personal trip making,
2. Increasing the spatial distribution of activities,
3. Reducing psychological stresses by use of counseling and home design,
4. Increasing household activities,
5. Improving home location choices, and
6. Rescheduling activities.

This evaluation was done for a case study population.

The preliminary analysis of modifying travel demand with these strategies is not encouraging, at least as the strategies apply to working-class teenagers. Substantial cultural and institutional barriers are anticipated in the implementation of these approaches. Transportation planners have little or no influence in the implementation of these strategies. Program costs are potentially high. Travel appears to be an adaptive behavioral response that serves as an outlet for overcoming problems whose solution is beyond the control of many people. Unless basic changes occur within families, communities, bureaucracies, and industries, not only will existing travel behavior continue or become more prevalent but also trip frequencies and distances might increase despite behavior-modification strategies that have been implemented.

Most of the proposed behavior-modification strategies have been developed by and for middle-class people who are most likely to appreciate them. Further efforts to research and implement them appear to be needed, but, until behavioral evidence is developed, optimistic forecasts of their widespread effectiveness appear to be unwarranted. Contrary evidence suggests that efforts to accommodate travel demand of many non-middle-class people could be essential to their mental health and well-being.

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