have potential air quality, energy conservation, or other TSM benefits would be considered.

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Part 3: Experience of the Service and Methods Demonstration Program with Automobile-Restrictive Measures

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Findings are presented from the perspective of the Urban Mass Transportation Administration's Service and Methods Demonstration Program on the implementation of various physical or operational strategies designed to either alter the supply of road space available to vehicular traffic or to reallocate the supply of road space among different classes of vehicles. These findings include the need for objective technical information on the impacts of similar strategies in other locales and the early and continuous involvement of potentially affected groups, the importance of a quick response to any early construction or operational problems, and the importance of the relationship of enforcement to the political feasibility of a project.

The Urban Mass Transportation Administration's (UMTA's) Service and Methods Demonstration (SMD) program sponsors the development, demonstration, and evaluation of innovative transit operating techniques and services that use existing technology. The program has been involved in two broad categories of automobile-restrictive concepts through the conduct of demonstrations, concept feasibility studies, and case study evaluations. One group consists of physical or operational strategies designed to either alter the supply of road space available to vehicular traffic or to reallocate the supply of roadspace among different classes of vehicles. Within this category are automobile-restricted zones (ARZs), transit malls, residential neighborhood traffic and parking restraint schemes, and various priority treatments for high-occupancy vehicles. The second category of automobile-restrictive measures includes pricing incentives and disincentives aimed at particular groups of travelers; examples would be parking surcharges to discourage general or commuter automobile travel to the downtown and various forms of road pricing. Most of the SMD program activities related to automobile-restrictive strategies have been of the first type; efforts in the pricing area have only recently gotten under way (1).

The SMD program implicitly recognizes that inadequate knowledge and experience regarding innovative service concepts can serve as an institutional barrier to implementation. Urban planners, decision makers, and the general public appear to want objective technical information on the impacts of these strategies in other locales as well as a reasonable prognostication of the impacts and likely barriers to implementation in their own locale. Initial support for these concepts is enhanced by credible examples of success in other places; for example, merchant endorsement of the Boston ARZ plan was spurred by the success of the nearby Quincy Market and an encouraging talk from a major retailer located on Philadelphia's transit mall. Progress in implementating such innovations can be impeded by inadequate knowledge. For example, the difficulties that the SMD program has experienced in finding sites willing to implement road pricing measures can be attributed in part to the general uncertainty about the likely nature and magnitude of impacts and public reaction.

Aside from its recognition of the knowledge base as a significant institutional factor, the SMD program has operated on the assumption that a carrot-stick approach may be the only politically feasible means of implementing automobile-restrictive measures. Thus, projects that entail physical, operational, or pricing restraints on automobile use also include a complementary package of incentives or improvements. The ARZ projects being sponsored in Boston, Memphis, New York City, and Providence illustrate this principle in that they all include a number of visible improvements (for example, improved transit service and pedestrian amenities) that are intended to maintain access to and within the area, minimize adverse impacts on peripheral areas, and provide a more pleasant environment for people within the area. Similarly the two SMD-sponsored demonstrations that involve reserved freeway lanes for high-occupancy vehicles (on Los Angeles' Santa Monica Freeway and Miami's I-95) have encompassed transit service improvements, park-and-ride lots, and carpool matching programs that provide alternatives for single-occupant automobiles denied access to the lanes. A soon-to-be-implemented demonstration in Madison, Wisconsin, will provide transit improvement and incentives along with peak-period parking surcharges.

LESSONS LEARNED FROM THE SMD EXPERIENCE WITH AUTOMOBILE-RESTRICTIVE MEASURES

It is critical that potentially affected groups be involved as early as possible in the planning and design process. This is especially important in the case of merchants and other business owners, who are justifiably concerned about the economic impacts of automobile restrictions, both during construction and afterwards.

It is essential that an effective public information program be launched well in advance of project implementation. This lesson was well demonstrated in the Santa Monica Diamond Lane project, which, like Boston's

Southeast Expressway project, met with an early demise. Throughout its five-month period of operation, the Santa Monica project faced intense public opposition, which was fueled in part by the lack of advance publicity about the project.

There is need for a flexible and effective mechanism to respond to problems and complaints that arise during the construction phase or early in the operation phase. Even when detailed feasibility and design work has been performed ahead of time, some unforeseen difficulties are bound to surface. These problems must be resolved quickly before public annoyance and opposition mount. In the Boston ARZ project, which opened in the summer of 1978, staff members from the city Department of Traffic and Parking had to spend considerable time during the first few weeks responding to merchant complaints about delivery restrictions. Eventually restrictions were modified to accommodate these business concerns.

The degree and effectiveness of enforcement can be critical to the operational and political feasibility of the project. In Boston's Southeast Expressway project, the stepping up of enforcement was one of the major factors leading to public opposition and project termination. In Miami, the minimum requirement for carpool size was eventually reduced from three to two persons because police were unable to enforce the more stringent criterion.

The Boston ARZ experience presents a somewhat different perspective on enforcement. To date, the project has pursued a vigorous program of ticketing and towing parking violators within and around the zone. This enforcement program has cost considerably more than anticipated (since the city pays more for towing service than it receives in fines), but it has been viewed as an essential component of the project, both to promote public awareness of the concept and to provide capacity on peripheral streets for the diverted traffic.

CONCLUSION

Efforts under UMTA's SMD program plus local initiative on the part of several pioneering areas have begun to broaden the U.S. base of experience with automobile-restrictive strategies. It is hoped that other locales will be inspired by these examples to implement similar measures; however, the process of diffusion should not move too hastily or with too little attention to important site-specific details, particularly the local institutional environment. Individuals responsible for planning and implementation of the next generation of projects should place emphasis on early and careful feasibility, design, and planning work, liaison with potentially affected groups, and well-designed public information campaigns.

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Discussion

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An examination of recent transportation programs indicates (at least) two major changes in orientation:

1. A shift in emphasis from the construction of high-capital highway and transit facilities to the improved management of existing transport facilities. Objectives concerning air quality and energy consumption, in many cases, have become as important as the traditional concern with mobility.
2. Key issues associated with the implementation of a project can often be characterized as being institutional in character. Cost, funding source, and design considerations are still important; however, increased attention is being devoted to questions of public acceptability; political support; choice of lead agency; regulation; the consistency of agency priorities; and the appropriate roles of state, regional, and local agencies in the planning and implementation process.

Specific states and urban areas are involved in debate concerning the appropriate role for transportation agencies in managing the use of the private automobile. Unfortunately, the result sometimes has been interagency conflict and stalemate rather than effective, implementable decisions.

The preceding papers examined the implementation experience of representative transportation system management actions in a number of U.S. cities and identified a variety of institutional issues that have either aided or served as a barrier to success. Specific topics addressed include the role of public involvement, interagency coordination, the problems of enforcement, the role of a metropolitan planning organization, the relative costs and effectiveness of different measures, and design considerations.

The papers by Kinstlinger and Deakin provide case studies of implementation experiences in the Denver urban area and the San Francisco Bay area, respectively. Heaton provides a perspective of the SMD program conducted by UMTA. Although Heaton's comments reflect the national orientation of the SMD program, particular attention is devoted to recent activities within the Boston metropolitan area.

In any discussion of transportation measures directed toward the improvement of air quality or energy conservation, an important point is whether such actions may be characterized as (a) disincentives or restrictions on the use of the automobile or (b) incentives to use modes other than the single-occupant automobile or whether there is indeed any difference between an incentive and a disincentive. Are such measures designed and implemented independently and in relative isolation of one another? Or is it possible to consider a coordinated package of interrelated measures that affect a range of available transportation modes and provide changes in a number of cost, travel time, and promotional variables? In an examination of potential institutional issues, the choice of attitude is perhaps most important of all. Are we viewed by the public as designing positive incentives, which implies that benefits exceed costs, or negative discentives, with the associated implication that costs to the public exceed benefits? This question provides an important framework for these papers.

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A number of major common themes appear in the papers presented; these same themes appear and reappear in the literature on transportation innovations as well. The most striking feature in each case is that the transportation improvements being considered are so different from traditional transportation efforts. These differences are subtle as well as obvious. The obvious difference between traffic and environmental management schemes and traditional approaches is that the former attempt to regulate and control the demand for transportation facilities, but traditional transportation improvements have concentrated on significantly expanding the supply of facilities and services. Other comparisons are also obvious; these new approaches are short range, generally noncapital, and often (but certainly not necessarily) cheaper than traditional transportation responses.

This discussion highlights the new and different role for transportation planners that the federal government mandates may be creating. Such mandates require the planners to assume an elitist role in determining (or at least accepting mandated) societal problems and then in fashioning a solution for people, whether they are interested or not. I am not sure that many planners really want to be in the position of telling people what is good for them: Those who feel that they know what is good for individuals or society in general certainly are having an uphill fight, as the papers presented here appear to chronicle.

These newer approaches are very different in the way they are perceived and responded to by the public; measures such as automobile-restrictive techniques rarely have a constituency. They lack groups in society who see direct benefit from their initiation and actively support them. In fact, such measures are frequently opposed by large segments of the public as well as by special affected interests. For example, experience in Seattle and Boston seems to suggest that such projects can only be successful when they in fact create particular benefits for specific individuals or businesses, who will then be willing to actively fight for their implementation. There is also an ironic twist to this situation; a planner cannot be assured of the implementation of a promising automobile-restrictive measure simply because there is no controversy when the measure is first discussed. Public meetings and formal hearings can be held without any opposition voiced, but once, for example, the ground is broken for the park-and-ride lot or streets are made one-way, citizen complaints may suddenly create significant obstacles to implementation. Schemes that lack any strong support or constituency can fail even when exposed to only minor conflict.

Many of the transportation system management and planning strategies proposed are also different from traditional transportation approaches because the benefits to either individuals or society are not obvious and there is some conflict about how well the strategies respond to goals the public has really articulated. Such strategies require transportation planners to expend a great deal of time in calculating the benefits individuals will accrue, whether they perceive them or not. Moreover, not only do planners have to sell the public on how much good a particular measure will do them, the public must also be convinced that the risks of the measure are small or nonexistent. Unfortunately, a number of such measures hold significant risks for affected parties; for example, downtown business people have real fears about losing business to suburban malls if parking bans are implemented.

Also, it is exceedingly difficult to use aggregate statistics on the overall benefits of proposed schemes to convince affected individuals of the overall good to society. Individual benefits from such strategies are often extremely small, perhaps a trip-time savings of 2 or 3 min on a 25-min trip; such numbers sound very good when aggregated but may be meaningless to any one individual.

Kinstlinger suggests that the problems these measures are designed to address may not be perceived as very significant by any one individual either. In essence, many of the strategies considered in these papers and in the literature may create disruptions in people's travel habits in response to a problem people do not perceive, in order to obtain a solution that will not do them much good.

Another significant difference between traditional transportation approaches and those discussed in this set of papers is the extraordinary amount of organization and interagency cooperation that must be achieved. Many funding sources and different organizations may be involved in the newer approaches. This requires the expenditure of significant amounts of time in the structuring of interagency coordination. Problems with the funding sources were not addressed in the papers presented, but my own work clearly reveals that different federal and state sources often have different rules and regulations. Attempts to conform to at least perceived discrepancies among them often create problems in implementation.

Other interorganizational problems are at least briefly mentioned in the papers. One of the most common problems facing endeavors of this kind is the need to coordinate the activities of a number of public and private agencies. In Seattle, for example, a tremendous amount of staff time was required to meet with all affected parties in a carpool program. The Boston ARZ had similar experiences and also illustrates the amount of time and resources lead agencies must expend to get certain measures implemented. It is clear that a tremendous amount of coordination is required, whether or not crucial agencies are supportive of the measure. Even more significant institutional problems arise when key agencies are not supportive.

One particular institutional problem that is only briefly mentioned in the papers is the problem of securing the cooperation of essential organizations whose whole orientation is in opposition to the thrust of the automobile-restrictive or transit-enhancement measure. The most conspicuous example is the need for law enforcement officials to enforce parking restrictions and priority lanes. Many law enforcement agencies identified in our study were quite unwilling to provide such enforcement, not because of the cost but rather because they did not like traffic enforcement activities and gave them a low priority. In Boston, the police would not even change the working hours of the meter maids, so that there is no enforcement at all during the first 1.5 h of the parking bans implemented there. In Miami, police departments in three communities along the transit priority treatment simply refused to continue enforcement activities even though they were paid to do so; in Los Angeles the highway patrol gave back the money they were paid to enforce the Los Angeles Diamond Lane.

The literature calls such problems institutional barriers, but in fact such problems can be predicted, given an understanding of how organizations work. Just as the benefits of certain automobile-restrictive measures seem small or immeasurable to individuals, such benefits may seem insignificant to a number of public organizations as well. These agencies are asked to incur significant expenses (as in Seattle where more transit peak-hour service was promised) or to face significant risks (as in downtown parking bans in San Francisco) or

simply to become involved in activities that are not highly regarded (such as enforcing priority lanes on freeways). Given the large number of reasons not to become involved, it is not surprising that most of the examples we have of automobile-restrictive measures were conceived in response to federal mandates and sanctions. They were rarely developed out of local initiative.

The papers presented here are important because they give planners a clear idea of the dangers involved in assuming easy implementation of rational low-cost transportation improvements. There are clearly a number of lessons to be learned from an in-depth analysis of self-conscious case studies such as these. The most glaring feature common to all the papers is that transportation improvements, or any measures that significantly affect people's behavior, require tremendous foresight and detailed planning and ultimately are tested in a very real political arena.

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