Four Years Later: The Status and Prospects of TSM

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Since its introduction in the joint Urban Mass Transportation Administration (UMTA)-Federal Highway Administration (FHWA) planning regulations in September 1975, the concept of transportation system management (TSM) has received much attention. Initially, this attention focused on the implications of TSM for existing planning processes and on the different institutional strategies and frameworks with which individual communities were responding to the new requirement (1-4). During the past four years, TSM has evolved in a variety of ways, each reflective of the communities in which it has occurred. In some areas, for example, TSM has simply given a new nomenclature to existing planning activities. Elsewhere, however, it has led to fundamentally restructured planning processes and the development of new opportunities for intermodal transportation management.

We are now in a position to examine the evolution of TSM during these past four years and ask ourselves some questions: What has been accomplished? Why has TSM evolved in different ways in different settings and at different rates? What can be done to encourage more serious attention to the objectives and strategies that are represented by TSM?

When we attempt to answer these questions, it is necessary to begin with a common background on the purpose of TSM, why it was deemed necessary, and the dimensions of its current application. This discussion can hardly present the definitive statement on TSM—such a task would be impossible given the varied interpretations the concept has acquired as a planning process, as an action agenda for transportation system improvement, and as a federal requirement—but perhaps the following can serve as a basic point of departure for the remainder of this conference.

UMTA-FHWA PLANNING REGULATIONS

During the mid-1970s, conservation—of fiscal resources, of declining central city areas, of energy, and of environmental quality—emerged as a central theme of national urban policy. In the area of transportation, this theme surfaced in several major policy initiatives from the U.S. Department of Transportation (DOT) that involved attempts to shift the focus of planning toward actions that are service-oriented (rather than facility-oriented), that emphasize low-capital solutions, and that prefer the more efficient use of existing resources to the construction of new facilities. Above all, these new policies embraced a concept of urban transportation as a single, intermodal system in which both transit and highway resources could be managed together for improved overall system performance.

Perhaps the most important policy statement in this regard is that found in the joint UMTA-FHWA planning regulations of September 17, 1975, which advanced the following key elements:

1. Incorporating into the transportation plan of a metropolitan region an element (the TSM element) that would address the short-range transportation problems of the area and

2. Programming of highway and transit projects into a single, area-wide transportation improvement program (TIP) designed to facilitate the concept of federal funds as transportation resources and to maximize the complementary nature of transit and highway improvements on the overall transportation system.

As such, TSM reconciled and redirected what had been formerly separate planning processes for transit and highway programs. Its emphasis on management reflected concern for both increasing system efficiency (rather than expanding the system to accommodate more vehicles) and improving performance through low-capital actions, more-efficient use of resources, and coordination. That transit service is an integral part of managing the highway network (and vice versa) and that regional transportation management must address both demand and supply are fundamental principles of TSM.

One year after the joint planning regulations were issued, a national Conference on Transportation System Management was held in Minneapolis, Minnesota, to identify and discuss the many issues surrounding the new policy (5). It was apparent throughout the conference that one of the most important issues to be resolved was the very definition of TSM. Not only was there an institutional dimension to this question (i.e., who should be responsible for TSM and what roles should other agencies assume?), but there were technological and methodological dimensions as well (i.e., what constitutes a TSM action? how are its impacts to be evaluated?). As stated by then UMTA Administrator Robert E. Patricelli, however, the future of TSM would rest not in the hands of those who initiated the policy but rather with those who were to carry it out:

I hope [these brief remarks] have helped to clarify the meaning and some of the implications of transportation system management. If you are still not sure what it means, then I can only leave you with this thought that—whatever it is—it is the most important program direction UMTA is emphasizing. You, more than I, will define its precise meaning over time with your programs and your performance.

The last few years have provided a rich experience of TSM programs and performance, and it is the evolution and the definition that experience has given to the concept of TSM that most concerns us now.

Although there are many analysts who have their own opinions of the origins and intent of TSM, the major objectives of the policy can be summarized as follows:

1. To coordinate all of the individual elements in an urban transportation system—automobiles, public transit, paratransit, pedestrians, and bicycles—through a program of managed, systemwide operating, regulatory, pricing, and service policies;
2. To establish a process in which short-range, low-capital planning activities can effectively compete with long-range capital-intensive planning;
3. To encourage more-judicious use of existing facilities by reorienting the planning process and emphasizing techniques that can improve system performance;
4. To relate the programming process to planning by requiring a link between TSM and the project implementation agenda for the area;
5. To strengthen the role of the metropolitan planning organization (MPO) in the programming and budgeting of federal funds and in the coordination of planning and...
service functions; and
6. To reconcile and redirect the formerly separate planning processes for transit and highway development into one systemic process.

How closely does existing TSM planning correspond to the model implicit in these policy objectives? Let us turn to this issue next.

TSM TODAY

In a summary of the conclusions of a recent series of regional conferences on TSM sponsored by the American Public Transit Association (APTA), it was noted that "One striking, overall impression is the great variety that exists from region to region and from city to city regarding TSM" (6). As a process, a program of projects, and a federal requirement, TSM today appears to represent a ubiquitous but still often-misunderstood element of the urban transportation planning process.

Translating the concept of TSM into a regional planning framework and a program of systemwide transportation management strategies has proven particularly difficult. As has been noted elsewhere, the TSM process confronts deeply rooted problems of compatibility among agency missions, skills, and constituencies (1). Although there are a few significant exceptions, MPOs have not often overcome the conflict between their mandated role as coordinator of the regional TSM process and their usual lack of influence over the actions of local operating agencies. Consequently, a regionally based, intermodal, goal-oriented, strategic TSM approach has been difficult to develop and implement, and the few exemplary models that exist have proved equally difficult to replicate.

To generalize about the current status of TSM is a nearly impossible task, given the widespread differences that exist in terms of institutional structure, policies and objectives, and types of transportation problems confronted. However, an indication of how TSM has been implemented in some urbanized areas and how it is currently being defined can be obtained from two basic sources of information: TSM documents submitted during the past year and the results of the recent APTA-sponsored conference series.

The following statements are quoted directly from recently submitted TSM elements: From Denver (7),

The TSM plan element is a continuing process which focuses on immediate needs which can be met by various types of management practices. The nature of TSM as a management tool implies TSM is a process and not an end-state design for the transportation system.

From Indianapolis (8),

Much of the short-range planning process will be quite familiar to planners and engineers in the agencies that operate or implement transportation improvements. The aim of the TSM is to make this process explicit, to improve the systematic character of these actions and to strengthen their relationship to long-range planning.

From Baltimore (9),

The function of a separate TSM element in the regional transportation plan is to describe current and recommended system management improvements and to establish a process whereby these and new improvements can be identified, studied, selected, implemented and evaluated.

From St. Louis (10),

First, TSM must be an integral part of some overall scheme or approach to transportation planning in the region. Second, in order to be successful, TSM planning must conform to a key set of attributes or requirements. Third, and most important, the process itself is not the end product. TSM planning must produce projects designed to meet preconceived goals and objectives in the most cost-effective and publicly acceptable manner.

Two aspects of these statements should be noted. First, all four emphasize that a TSM process has been established to address the short-range transportation problems of the region. This closely conforms to the emphasis originally placed on the concept of a "process" by federal officials and indicates that the systemic, intermodal planning approach encouraged by the joint planning regulations has been adopted.

Second, the term "management" is used to describe not only control of the supply of transportation service but also control of the process itself. That is, TSM is considered to be a truly continuous management process, not simply the design of a one-time-only transportation development plan.

These observations support some optimism that localities are conforming to the basic intent of the TSM regulations. At the same time, however, one must be careful about drawing any conclusions from a few limited examples. During the recent APTA conferences, for example, many local representatives stated that TSM had had few significant effects on regional planning or the integration of transit and highway improvement programs (6).

Several other observations made during the APTA conferences may also shed light on the current status of TSM planning. First, among the current problems, the most important are still those that pertain to the planning and implementation of intermodal TSM actions and require the cooperation and active support of several agencies or political jurisdictions. Consequently, the most successful TSM examples reflect either unique institutional arrangements that have facilitated intermodal programming or intramodal actions requiring only minimal cooperative support.

Second, the federal agencies responsible for promoting TSM are frequently perceived as holding inconsistent or conflicting perspectives. Separate programming procedures for transit and highway projects may discourage localities from visualizing federal funds as transportation resources and from effectively using the TIP as an action agenda for intermodal TSM strategies. The separate funding provided for air quality and energy-contingency planning is also seen as a potential obstacle to more effective integration between TSM and related urban-conservation strategies. Moreover, the TIP process itself may discourage certain types of TSM actions by emphasizing funded grant projects over no-cost management actions or actions performed within the private sector (e.g., improved transit scheduling techniques or voluntary employer staggering of work hours). Finally, the facts that only UMTA performs a formal review of TSM compliance and that sanctions for insufficient follow-through on previously programmed TSM projects are imposed only on transit operators is viewed as a disincentive to more ambitious, intermodal TSM planning.

A third concern focused on the general ability of MPOs to provide leadership in TSM planning and implementation. Given the conclusions of the TSM conference of three years ago, these concerns are already familiar: lack of leverage over plan implementation by local agencies, lack of a political constituency for TSM, and the distractions resulting from the increased paperwork requirements imposed on MPOs.

In summarizing the current status of TSM, it may be useful to draw a distinction between strategic and tactical
TSM planning. Thus, "strategic" planning can be defined as that characterized by a focus on systemic, intermodal effects and the achievement of regional goals and objectives. "Tactical" planning is that characterized by the solution of localized, intramodal transportation problems.

The APTA conferences revealed few successful examples of strategic TSM, although, as shown by the quotations cited above, it would appear that several areas are attempting to develop frameworks for such planning. Nevertheless, it was clear that "such [strategic] approaches are most prone to goal conflict and most susceptible to the problems of leadership and linkage to transportation investment policy" (6). On the other hand, there are numerous examples of reasonably effective tactical TSM. In some instances, representatives of the transit operator, city traffic engineer, and police department meet periodically to solve transportation bottlenecks through actions that fall within the rubric of tactical TSM. In other examples, teams from UMTA, FHWA, and the U.S. Environmental Protection Agency jointly review local opportunities for cooperative TSM efforts.

Yet, tactical TSM techniques lack both the systematic approach and the analytical methodology that was originally envisioned for TSM. Concentrating on the worst bottleneck conditions or using internal management controls to improve transit and highway performance are not by themselves sufficient to constitute the systemic, strategic approach intended by the joint planning regulations of 1975.

In this context, one of the most promising developments is a growing emphasis on corridor-study approaches to TSM planning. In several cities, e.g., Dayton, San Antonio, Pittsburgh, and San Diego, reducing the scale of the TSM process to the corridor level has allowed planners to consider intermodal approaches that more easily achieve political support and interagency cooperation.

Ultimately, it would appear that the status of TSM today is characterized by lingering problems of institutional and policy conflicts. Although the basic intent of TSM has evidently been adopted within the local planning process, the problem that remains is that implementation and follow-through are weakest where TSM is most vital—in terms of intermodal actions and strategic planning. At the same time, corridor techniques appear to offer one approach that can reconcile political and procedural realities with the spirit of TSM as it was originally envisioned.

FUTURE FORCES ON TSM

It would be wrong to conclude either that TSM has been diluted by the diversity of its applications among cities or that the concept is hopelessly mired by institutional and policy conflicts. That TSM has now entered the planner’s vocabulary to describe a wide range of transportation improvement actions suggests its potential use in improved strategic planning.

In addition, the conservation theme that was fundamental to the origins of TSM has now been underscored by federal directives to conserve liquid fuels used in transportation and to improve urban air quality. It is significant that TSM is frequently cited among the local actions for response in both cases. Certainly in the future, an important challenge to TSM will be the requirements to combine conventional transportation planning with regional strategies to reduce energy consumption and air pollution.

Stated another way, TSM has become a conceptual touchstone for many different processes, ranging from the tactical component of transportation management to the transportation component of urban conservation strategy. In the future, TSM will increase in importance as a technique for building a transportation component into the achievement of regional and national urban policies. Concurrently, the forces that originally led to the TSM concept—the needs for intermodal coordination, for low-capital solutions, and for increased system efficiency in an era of scarce resources—will not abate.

CONCLUSIONS

Let us conclude this paper by responding directly to three questions that can provide a common background for the further discussions at this conference. What is TSM? Why was it deemed necessary? and What are some of its current dimensions?

What Is TSM?

TSM is a short-range element of a regional transportation planning process that addresses ways to improve overall transportation system performance through various low-capital or no-capital management actions. Such actions can be intramodal (e.g., improved transit scheduling techniques, bikeway or pedestrian facilities, express bus operations), intermodal (e.g., bus priorities on streets, parking restrictions, relocation of bus stops that impede traffic flow), or extramodal (e.g., staggered work hours, pricing strategies to discourage long-term parking, employer incentives for ride sharing). The heart of TSM is a concept in which the urban transportation system is a single entity and federal funds are transportation resources. The goal of TSM is to increase the systemwide efficiency of people and goods movement without significant new infrastructure investment, rather than to simply accommodate increasing vehicle travel.

Ideally, TSM is regional in scope, goal-oriented, and intermodal and has its principal leadership and coordination provided through the MPO. In practice, such strategic approaches are rare; TSM is most commonly of a tactical nature involving site-specific actions that have marginal effects on systemwide performance. The recent corridor-study approaches, however, are a potential way to reconcile the practical advantages of tactical TSM with a basic thrust toward strategic planning, particularly to achieve air quality and energy-conservation goals.

Why Was TSM Deemed Necessary?

The joint planning regulations (and, of course, TSM itself) were products of several pressures felt by the DOT during the early 1970s. When demands outstripped federal resources, the need for more-effective multimodal planning and improved transportation system management became evident. To satisfy that need, it was essential that short-range transit and highway planning be focused on low-capital solutions (rather than on justification of new facilities) and on actions that could improve overall system performance and efficiency (rather than on the accommodation of increasing vehicle travel).

Also, TSM reflected an emerging recognition of the potential for complementary transit and highway management. Ample evidence had made obvious the need for more-effective allocation of road space among types of users, increasing vehicle occupancy, complementing new types of transportation service, private-sector involvement, and coordinating the many modal elements of an overall urban transportation system. TSM included all these techniques in a new process for analyz-
ing, selecting, implementing, and monitoring short-range transportation improvement actions.

What Are the Current Dimensions of TSM?

TSM today clearly reflects the variety of strategic and tactical approaches that have created not one, but many, TSM processes throughout the United States. Much of the strategic character of TSM has been subsumed by air quality planning and potentially will be by new efforts at energy-contingency planning. Although a great deal of research and support material has been sponsored by DOT, most of the results have emphasized the tactical focus of TSM planning. Thus, except in those cases where strong agency leadership has been exerted to forge a regional TSM process or where a TSM approach based on corridor planning has been adopted, in many cities, TSM remains what it was three years ago—a collection of independent actions by modal agencies with limited successful coordination.

REFERENCES


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