

surface transportation program that carries us into the 21st Century. An effective response requires an ambitious agenda for change.

NOTES

1. Myths and Facts About Transportation and Growth, Urban Land Institute, 1989
2. Elizabeth A. Deakin, "Suburban Traffic Congestion, Land Use and Transportation Issues", Resource Papers for a Workshop on Urban Congestion and Suburban Activity Centers, Transportation Research Board, 1988.
3. Evaluation of Travel Demand Management (TDM) Measures to Reliever Congestion, Comsis Corporation, FHWA, 1989
4. Stephen C. Lockwood, "Kaleidoscope or Map: Suburban Congestion and Institutional Barriers", Resource Papers for a Workshop on Urban Congestion and Suburban Activity Centers, Transportation Research Board, 1988; and Michael D. Meyer et al., A Toolbox for Alleviating Traffic Congestion, ITE, 1989
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KALEIDOSCOPE OR MAP:

SUBURBAN CONGESTION & INSTITUTIONAL BARRIERS

by

Stephen C. Lockwood
Federal Highway Administration

The current dialogue on congestion has a frustrating kaleidoscopic quality: the fascination with the complexity of settings, techniques, private sector roles and behavior deters rigorous discussion of the more "systemic" aspects required to identify promising -- as distinct from fashionable -- approaches. Since definition of "the problem" usually determines the proposed "solution", a "problem map" is used to structure the discussion and focus attention on particular parts of the system.

In the discussion which follows, general familiarity with the "state of play" about suburban congestion, major activity centers (MAC,s) travel demand management, (TDM) Transportation Management Organizations (TMOs), and the ongoing experiments is assumed consistent with the previous papers (Deakin, Dunphy, Douglas and Pratt). Within such a broad context, a deliberately narrow focus is proposed. this orientation is towards the potential for visibly reducing peak period congestion and delay in office-dominated suburban major activity centers in the middle-term (5-10 years) and within the current institutional context. A presumption is that the overall objective is to reduce single-occupant vehicle (SOV) commuting during peak period in an affordable, socially and politically acceptable manner.

To stabilize the kaleidoscope and to define constraints which must be overcome, a problem map is proposed.

The suburban MAC-related congestion "system" has eight major parts. They are: the specific setting of a suburban major activity center with its land use and transportation system context (1); the current behavior of people who are both creating and noticing the problem (8); the institutional context, both the private establishments (3); and the public sector (4); the various perceptions of the problem on the part of the several parties (2); travel demand management (6); and supply side actions.

The first part of the map, the major activity center, has been addressed by Bob Dunphy. It is important to emphasize that this physical context itself establishes some important solution space boundaries.

Figure 1.

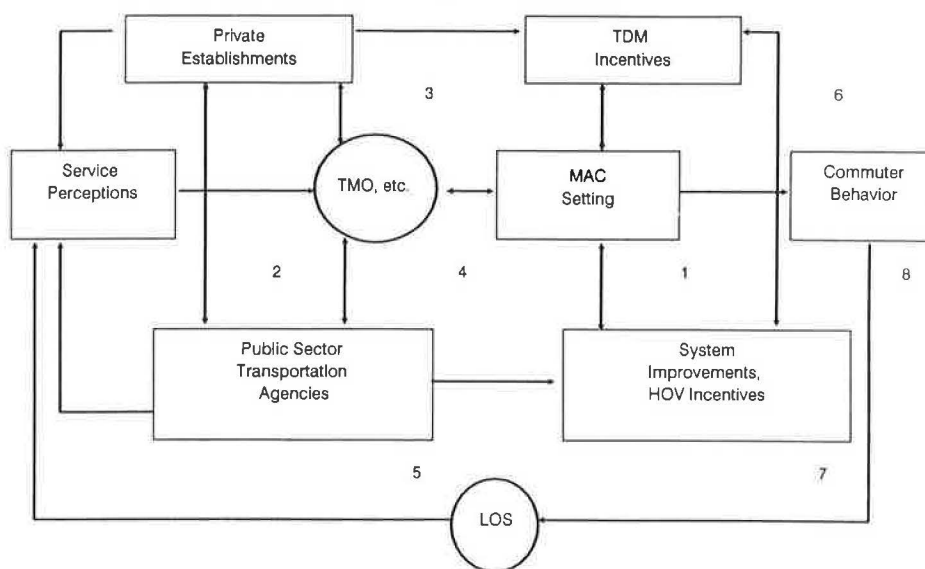


Figure 2.

Context Range: Custom Tailoring Needed

- Land-Use Orientation
- Percent Developed/R.O.W. Availability
- No./Size Employers/Landowners
- Thru vs. Destination Traffic
- Current Services/Behavior Baseline

First, on the demand side, the degree to which an area is already developed can foreclose the range of solution options on the land-use side in terms of planning and design modification to support TDM or local government regulatory leverage over new development (as distinguished from existing establishments). The size and nature of the establishments "on-site" will also be a crucial determinant of the potential participation, and therefore, effectiveness of any demand management strategy.

Second, the availability of right-of-way (R.O.W.) is an important determinant of availability of options for supply-side improvements at reasonable cost and impact. In addition, the degree to which current congestion with respect to the area of interest is caused substantially or only slightly by "through" traffic (versus "locally destined" traffic) will place important limitations on the potential span-of-control of local actions (public or private) on travel behavior and traffic problems.

The right hand side of the "problem map" dealing with supply and demand strategy potentials for problem solving (labeled "TDM Incentives" and "System Improvements"), represents the "kit of tools" that are available to improve levels of service. This range of potential actions can first be categorized (figure 3) by type of impact: modifying transportation supply (facilities or services) versus influencing transportation demand (land-use or transportation behavior). Each action can be further characterized by the typical time frame required for implementation: short-term (1-3 years) or long-term (3-plus). A key issue, with respect to the newer demand management concepts is the relative institutional feasibility of any individual improvement action: what it costs, its organizational requirements, the implementation.

Figure 3.
Congestion Reduction Toolkit

	SHORT-TERM	LONG-TERM
S U P P L Y	<ul style="list-style-type: none"> • Arterial Continuity • Access Management • Intersection Improvements • Improved Ramps/Interchanges • New Suburban Bus Service 	<ul style="list-style-type: none"> • Superstreets • New Suburban Expressways • Suburban HOV Prioritization
D E M A N D	<ul style="list-style-type: none"> • Flexible Arrival Policy • Ride-Sharing • Growth Management • Parking Management • Flow Control 	<ul style="list-style-type: none"> • Land-Use Mix • Urban Design • Land-Use Development Strategies

Figure 4.
Employer-Based Demand Management: Individual Measure Effectiveness
(Peak period single occupancy vehicles)

PRIMARY: Up to 15% auto reduction (highly variable) in combination with Support Measures

- Car/vanpool matching and subsidies
- Flextime/staggered hours
- Parking charges/limitations
- Transit subsidies
- Alternative transportation marketing/coordination

SUPPORT: Less than 5% auto reduction and Synergistic with Primary measures

- Preferential parking for pools
- Transit information
- Site design for transit/bicycle/pedestrians

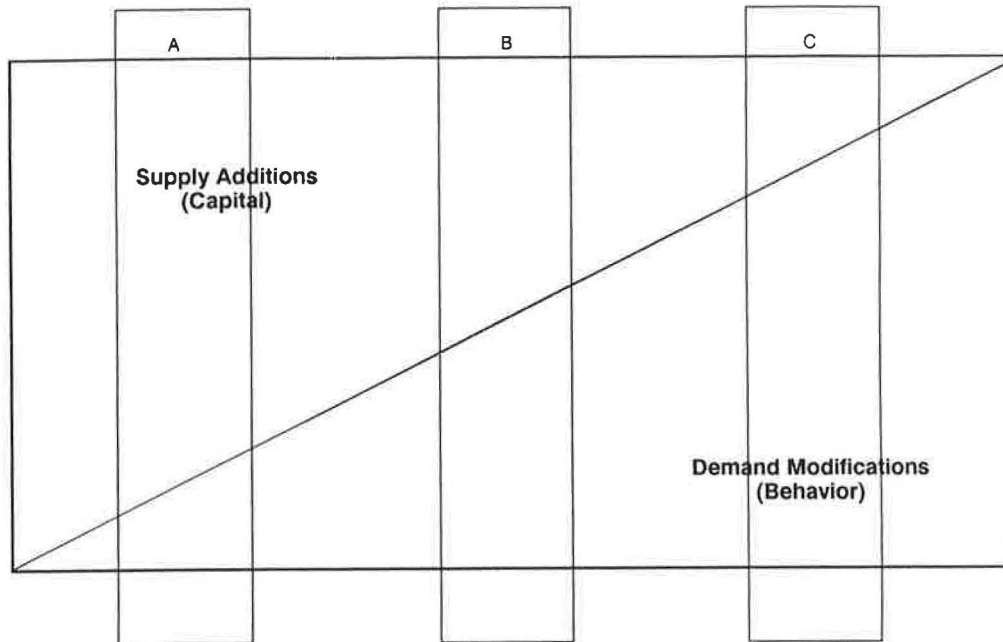
Figure 5.
Participation/Dilution/Dissipation Effects

- Baseline Behavior (existing facilities, use patterns)
X
- Range of Behavior Modification Potential
X
- Area/Site Coverage of Program
X
- Employer Participation: Type, Old vs. New
X
- Establishment Size Impact on Program Penetration
X
- Dilution of Impact: Distance, "Thru" Traffic, Substitution effects, Peaking

Figure 4 indicates the general range of impacts that have been experienced with the most common short-term demand management tools, not only singly, but in combinations. It is clear that scale and consistency measures are of overriding importance in achieving visible off-site results.

Participation, dilution and dissipation effects, (figure 5), in any given MAC will determine the extent of effects beyond individual establishment driveways. A comprehensive approach must incorporate such considerations on an individual basis, since no two centers are precisely the same.

Figure 6.
 Solution Mix Alternatives:
 Effectiveness vs. Acceptability/Affordability



The specific suburban traffic mitigation strategies or "solution mix" (figure 6) being tried today around the country typically fit into either one of two conventional extremes. Most are substantially supply-side-oriented and public sector sponsored, expensive and slow but requiring minimum behavior modification (the "A" band). Barriers to the effectiveness of such public-sector supply side "solutions" are money and time: there are very few suburban MAC contexts where there is enough roadway supply to simply add capacity to "buy" substantial relief, not to mention the 10 year implementation time frame and the likelihood that additional roadway space will be recongested at peak period. Supply-side strategies alone, therefore, are not likely to prove permanent relief.

At the other strategic extreme (the "B" band) are private sector travel demand management actions. TDM actions are relatively quick and cheap, but implementation requires widespread consistent behavior modification associated with ridesharing and flextime programs. Problems of application scale and institutional barriers to inclusiveness also represent complex challenges to comprehensive application.

We recently updated a survey of 30 TMO,s around the country. Regarding the impact of TMOs. It is "TST", -- "too soon to tell." Several of the better known and very well publicized "success stories," appear to be special cases because of their context: substantially new development in very organized jurisdictions; a single employer; or very remote locations with captive employees because of major corporate relations. These success stories are characterized by the absence of the more conventional suburban MAC context characteristics which include a range of establishment types, in various stages of development, and of varying sizes with different motives -- fertile ground for participation, dilution, and dissipation effects. Limited data from these more typical settings suggest the need for skepticism about the potential of voluntary private sector travel demand actions alone to produce substantial traffic mitigation.

There are those who believe that these barriers imply that local government ordinances with mandatory behavior modification requirements are, therefore, necessary to achieve meaningful impact on the congestion problem. TDM Ordinances implemented to date have not yet invoked serious sanction-backed ridesharing or flextime requirements which may be required to achieve substantial behavior modification. We have yet to see the first serious test of consumer resistance to enforced ridesharing much less a court test of its reasonableness.

However, it may be that such a private-sector based "demand-management" approach alone (even with "mandatory" ridesharing) does not respond to what we know about both travel behavior and institutional reality. Both theory and the limited experience that we have with the data suggest that various kinds of supply and demand side encouragement should be considered. Behavior change can be more easily induced if it is perceived by the target as being in his/herself-interest. Such strategies are in the "middle ground" of the "C band" of figure 5, a mix of supply and demand strategies carefully coordinated to work together synergistically where the costs or the impacts are not too high, the time frame is not too long, the degree of individual or establishment behavior modification is not too extreme. Voluntary, rather than mandated response would be induced through to this combination of incentives.

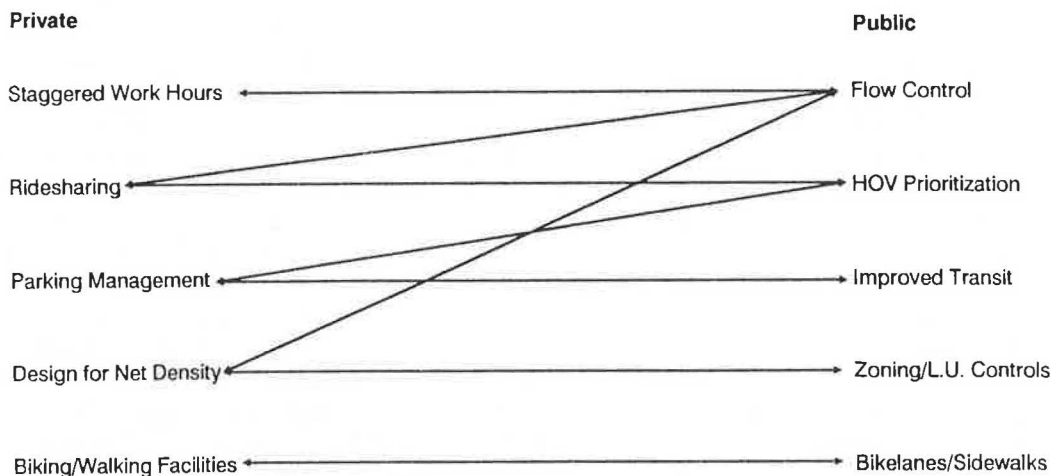
As a practical matter, such strategies would involve combining preferential treatment for High Occupancy Vehicle (HOV's) and work-side based parking management measures together with expressway flow control and employer-based flextime to encourage ridesharing, peak-spreading and other peak period congestion reducing behavior.

Figure 7 indicates some of the relationships. A key aspect of such mixed strategies is the emphasis they place on the importance of a transportation system which can be managed to provide the necessary preferential treatment. This can be used as quid pro quo in return for private establishments demand management behavior change necessary to achieve meaningful peak period SOV reduction. To date, there is little thinking or action with respect to what preferential treatment really means for suburban mobility.

Public policy development with respect to "prioritization" in terms of special facilities to favor high-occupancy vehicles, carpool/vanpool lanes, and exclusive lanes for buses, -- is still in its infancy. Applications around the country, largely limited to HOV lanes in major radial expressways, by no means exhausts the concept of prioritization, either in its freeway application or in more ad hoc less capital-intensive, arterial, parking and other applications that may make more sense in the suburban context. Such strategic use of prioritization and the concept of "manageable infrastructure" also introduces certain new institutional problems.

To begin with, preferential treatment as a policy implies a willingness on the part of public agencies to reward certain kinds of travel behavior with advantageous service. Transportation institutions may be uncomfortable in such a role. The controversies when HOV facilities were installed via "take-a-lane" context in the Los Angeles area are not forgotten. The key issues is: does the public sector have a mandate to reward "socially responsible" (efficient) transportation behavior in the context of congestion? Is it a state and local government responsibility? No institution appears to be accepting responsibility for dealing with this problem.

Figure 7.
Public/Private Synergism



Further complications are introduced by the reality that suburban congestion is area-specific rather than facility-specific or system specific. State transportation agencies have a hard time responding since suburban congestion is not a system-based problem but may be related to streets and highways controlled by several levels of government and jurisdictions. At the same time, local government is hampered by jurisdictional boundaries. Furthermore, the combined supply and demand strategies require close coordinated actions by both the public sector and the private sector.

Private sector participation is complicated by "institutional misalignment" among establishments with differences in motives and time horizons. Additionally, there may be private sector establishments who are the problem or contribute significantly to it. At the same time, the commuters who are both victims and perpetrators may not be a significant constituency. The problem is captured in the perception that "there is no government of Tysons Corner". Many Tysons Corner commuters don't live in that community, county or even the state.

Yet they are subject to the quality of service offered. Where is their political voice, how do you translate the pain into a program? Creating a dialogue among all the necessary parties with the responsibility for either supply or demand on an area-wide basis is certainly a necessary pre-condition to comprehensive action.

Ultimately mixed supply and demand strategies require a new, broader cast of characters including all modes, and jurisdictions. Both state and local transportation agencies must be key players where their facilities are involved. Local governments are also necessary both for their roadway and land-use jurisdiction. Transit agencies and MPO's also have important roles to play.

Figure 8
Suburban Mac Participants

	SHORT-TERM	LONG-TERM
S U P P L Y	<ul style="list-style-type: none"> • Local Govnm't • SDOT (operations) • RTA 	<ul style="list-style-type: none"> • Local Govnm't • SDOT • RTA • RCOG
D E M A N D	<ul style="list-style-type: none"> • Local Govnm't • Employers 	<ul style="list-style-type: none"> • Local Govnm't • Land Owners

DIMENSIONS AND CHARACTERISTICS OF SUBURBAN ACTIVITY CENTERS AND

TRANSPORTATION

by

Philippos J. Loukissas
Rice Center

Suburban mobility is one of the most critical transportation problems facing American cities today. This presentation attempts to provide a better understand on the physical characteristics of suburban activity centers and their relationship to travel behavior by referring to findings from two related studies conducted by Rice Center. The first study was funded by the Urban Mass Transportation Administration. It developed a national data base on major activity centers, including suburban and downtown centers, to be used to examine physical and institutional characteristics, mobility problems, and management and financing of transportation programs (Rice Center 1989). The second study, on Houston's major activity centers, was sponsored by the Houston-Galveston Area Council. It looked at land use and travel characteristics and similarities and differences between suburban activity centers and the CBD (Rice Center 1987).

NATIONAL SUBURBAN ACTIVITY CENTERS

The Rice Center survey compiled information for 63 suburban centers and 22 CBDs in the largest metropolitan areas (an average of about 3 centers per metro area - but 9 areas had more than 4 centers). The variables measured were the following:

- o location
- o size
- o density
- o land use mix
- o travel patterns
- o transportation facilities and services