

REFERENCES

1. Bureau of the Census (1982). The Journey to Work in the United States.
2. Bureau of the Census (1984). 1980 Census of Population: Journey To Work.
Cervero, Robert (1986). Suburban Gridlock, Ch. 2. New Brunswick: Center for Urban Policy Research, Rutgers University.
3. Deakin, Elizabeth (1987). "Transportation and Land Development: Planning, Politics, and Policy." University of California, Berkeley.
4. Garrison, William L., and Elizabeth Deakin (1987.) "Travel, Work, and Telecommunications: A Long View of the Electronics Revolution and Its Potential Impacts". Transportation Research A:
5. Webber, Melvin (1985). "The Emerging Metropolis: Trends and Trepidations". In Mobility for Major Metropolitan Growth Centers: A New Challenge for Public-Private Cooperation. U.S. Dept. of Transportation, Urban Mass Transportation Administration.

MAPPING TRAFFIC MITIGATION ACTIONS TO OBJECTIVE

by
Elizabeth Deakin
University of California at Berkeley

One of the difficulties we often have in discussing traffic congestion and strategies to overcome it is that we start with different assumptions about our objectives. Traffic management objectives range from desires to make better utilization of existing infrastructure, whether or not congestion is reduced, to aspirations to reduce the absolute number of vehicles on the road. Recognizing these differences in objectives is critical if we are to have a useful discussion of traffic management and its potential.

OBJECTIVES FOR TRAFFIC MANAGEMENT

Four different objectives are commonly set for traffic management. They are:

- o to make better use of existing investments, whether or not traffic is reduced.
- o to manage the rate at which congestion increases.
- o to prevent congestion from worsening.
- o to reduce traffic from current levels, while permitting growth to continue.

The first of these objectives, making better use of existing investments, is the traditional aim of traffic engineers and transit managers. The idea is to carry more vehicles on streets and highways, more passengers on buses, and so on, without having to make major new capital investments. A variety of strategies are commonly used to accomplish this objective, from intersection redesign and on-street parking controls to reorganizing transit routes and schedules and marketing transit services. It should be noted that this objective is not necessarily incompatible with worsening congestion -- as long as more vehicles (or people) are being moved using existing facilities and equipment, the intent is satisfied. Usually, programs in this category emphasize supply-oriented measures; they may shy away from demand management.

The second objective, managing the rate at which congestion increases, is quite common in communities that recognize that growth will mean more traffic, but want to assure that it occurs with minimal disruption and at a rate which both the transportation system and citizens can accommodate. Controlling the pace of traffic increases often depends on the use of strategies to tie the pace of development approvals to the rate of transportation investments. This may be accomplished by coordinating land use and transportation plans with public works investment programs, and sometimes by requiring developer provision of facilities and services. In addition, new commercial developments may be required to use flexible work hours to spread the peak, as well as commute alternatives such as ridesharing and transit.

The third objective, preventing congestion from worsening (or avoiding the traffic levels projected to occur in the absence of intervention), is another step more strenuous. Programs designed to accomplish this objective may establish level-of-service standards and require whatever combination of infrastructure investments and commute alternatives programs as may be needed to stay within the standard. Alternatively, the programs as may establish strong demand management requirements, including mandatory employer trip reduction targets and (occasionally) parking management. Communities that pursue this objective often have experienced conflict over growth policies, and some are willing to forego growth if traffic cannot be restrained. Thus growth management may be the implicit or explicit "back-up" measure should traffic management (still, for the most part, aimed at the increment due to new development) fall short of its aims.

The fourth objective, to actually reduce congestion (and/or traffic volumes) from current levels while permitting growth to continue, calls for the most strenuous action. Air quality and energy conservation plans typically would fall in this category; so do some cities' policies). While capacity-enhancing measures are sometimes used in programs designed to meet this objective, in a number of cases they are omitted or down-played out of concern that they will facilitate traffic rather than control it. Traffic reductions generally are sought through extensive use of demand management, applied to established businesses and residents as well as newcomers, and by using growth controls as a back-up. Increasingly, strategies that attempt to design land use patterns to minimize auto dependence also are required, e.g., cluster development with on-site services.

An additional objective sometimes underlies traffic management programs, and

may even be the most important objective in some of them. In cases where citizens are in sharp disagreement with their political leaders' growth policies, where doubts are being voiced over the desirability of specific developments (or over development in general), and where election outcomes may turn on how development policies are handled, traffic management programs may be critically important as evidence that "something is being done about the traffic problem". Indeed, the symbolic value of traffic management may matter more than whether the programs proposed will in fact work as claimed. Forecasts of traffic management's potential may be extremely optimistic; follow-through may be nil. Yet the program may have served its purpose (and may be considered quite satisfactory) if it smoothed trouble waters and allowed desired plans to move ahead.

THE EFFECTIVENESS OF TRAFFIC MANAGEMENT

Arguments about whether traffic management is a worthwhile undertaking or "too small to matter" often reflect a failure to distinguish among the various objectives being pursued. Clearly, there is plenty of experience to support a conclusion that traffic management can effectively increase the carrying capacity of existing infrastructure. Estimates of effectiveness are often site-specific, but capacity improvements, reductions in delay, and for reductions in emissions on the order of 5-10 percent have been reported.

Mounting experience with requirements for growth pacing, as well as with traffic mitigation requirements, suggests that these programs also can be made to work, although some of the specific strategies used raise questions of equity and cost-effectiveness. Reductions on the order of 5-10 percent from the traffic levels that otherwise would be predicted to occur have been reported, with aggressive programs. This is sufficient to avoid congestion only if traffic growth in moderate, however.

If the objective is to reduce traffic from current levels as well as to mitigate all growth effects, there is less evidence on feasibility. Going beyond the 5-10 percent traffic reductions cited above generally requires auto disincentives to be used. Modelling exercises suggest that parking restrictions and pricing strategies could be effective (in most markets, reductions in drive-alone commuting of 15 percent or more could result from price increases of, say, \$2 or \$3/day), but there has been reluctance to use pricing tools. Experience from the fuel price increases of the 1970's suggests that a short-term trip reduction may occur, but over the longer run consumers make other adjustments and resume their previous driving habits (e.g., by buying a more efficient vehicle or retaining an older vehicle a few years longer, trading low costs of ownership for higher fuel costs). The land use strategies look promising but there is little experience on which to base any firm, generalizable conclusions regarding their efficiency.

Whether traffic management can meet its objectives thus is likely to depend on which objective(s) must be met. Those who are looking for an increase in traffic handling capabilities or a way to ease growth pains, and those who are willing to accept modest mode shifts as significant, will probably be satisfied. Those who wish to transform the transportation system should probably look elsewhere.

There is another aspect to traffic management effectiveness that deserves mention. Capital projects may be costly, but once implemented they can be counted on to perform as intended for some years (with a little maintenance.) In contrast, traffic management projects tend to require long-term financial commitments and ongoing efforts to make them work. For example, with the average life of a carpool less than two years, program staff have to keep searching for new people to join pools, just to maintain the level of ridesharing. Parking management requires enforcement and regular price updating, if applicable. Even traffic signals need to be retimed every three to five years in order to maintain their effectiveness. Unfortunately, many local government officials (including a large number of public works directors and planning administrators) seem to be unaware of the continuing effort that traffic management requires. One reason effectiveness is variable is that often, budgets simply don't provide the support that's needed. While this may in part reflect the "symbolic" nature of some traffic management programs, as discussed earlier, it also may be the result of lack of information on what's needed to make traffic management work.

CONCLUDING COMMENTS

I have argued that there is a variety of objectives for traffic management, and that some of these objectives are more easily attained than others. A realistic discussion of traffic management thus should be based on an explicit agreement on what the objectives are in each case.

I also have argued that traffic management programs may be less effective than need be because they are underfunded. Thus perhaps we need to be more convincing, when working with decision-makers, about what it takes to implement a traffic management program and keep it going.

But there is a bigger issue. Most of this discussion has assumed that traffic management is an end in itself, that congestion is a problem to be mitigated through a combination of transportation and land use strategies. An argument can be made, however, that this focus on traffic and congestion misses the point. More important questions may be:

- o How can we design communities that are livable, healthy, flexible, robust? What roles does transportation have to play in such communities?
- o Do the changes in land use and economic development of the last two decades, as well as those anticipated for coming years, call for different kinds of transportation infrastructure and service than we have been providing -- and if so, what are they?
- o Do we need to rethink our institutions and intergovernmental arrangements in order to accommodate emerging transportation, communications, and land use patterns, lifestyles, methods of finance? What kinds of organizations and decision processes would meet emerging needs?

A longer-view, broader-scoped debate over such issues may serve us better than a continuing focus on whether traffic management is a mined-out area of inquiry or one whose promise is still to be fulfilled.