

Chapter 18

Overview of Mitigation Strategies that Reduce Traffic Demand

18.1 Introduction

Managing travel demand is increasingly recognized as a means of addressing urban traffic congestion—especially in large metropolitan areas. Commonly called “transportation demand management” (TDM), the strategy focuses on reducing the demand for single occupant vehicles. Emphasis is typically placed on reducing vehicle-miles of travel (VMT).

The travel time and travel time variability benefits of new capacity (or of existing capacity restored) cannot be *sustained* without mechanisms that preserve these gains in future years. To sustain the life of these benefits traffic demand reduction strategies are needed because when there is pent-up demand the capacity added is soon fully utilized.

Therefore reducing automobile travel demand becomes a necessary strategy to keep congestion at manageable levels and to maintain mobility in future years.

The major benefit from demand reduction strategies on roadways congested for several hours during each peak period, is from reducing the duration rather than the intensity of congestion.

Traffic demand reduction strategies can be aimed at specific routes, areas or zones. They can have region-wide applications, and they can be applied during specific time periods. They are intended to modify person travel and goods movement behavior by encouraging a mode shift away from private vehicles or a time shift in trip making; by diverting trips from congested locations, and/or by reducing the need to travel.

The synergistic effects of combining strategies can further help to relief congestion. Examples include (1) coordinating transit investments with land use planning, (2) coupling bottleneck reductions with congestion pricing, and (3) coordinating traffic operations improvements with pricing policies.

Traffic demand reduction strategies can be categorized into two groups: those that *directly* aim at changing travel behavior (e.g., congestion pricing), and those that are intended to change behavior *indirectly* (e.g., through transit service expansion). Illustrative strategies in each group along with their expected effects and implication challenges are shown in Table 18.1.

A brief description of these direct demand reduction and indirect demand reduction strategies follows.

18.2 *Direct* Demand Strategies

Direct demand strategies focus on changing traveler behavior through policies that rely on various pricing or regulatory mandates.

These include:

- Pricing strategies for roadways (Chap. 19)
- Regulatory Restrictions on Car Use (Chap. 20)
- Freight Demand Management (Chap. 20).

18.3 *Indirect* Demand Strategies

Indirect demand strategies include actions that encourage a reduction in private vehicle use.

These strategies focus on reducing private vehicle use through land use planning and design, the enhancing of alternative modes of travel, and reducing the need to travel (e.g., telecommuting).

They include:

- Employer and Institutional Participation in the Work Commute (Chap. 21)
- Reducing the Need to Travel (Chap. 21)
- Parking Supply and Pricing (Chap. 22)
- Land Use Changes (Chap. 23)
- Transit and Pedestrian/Bicycle Improvements (Chap. 23).

18.4 Implications

Strategies that can effectively reduce the demand for roads (and parking spaces) will require urban areas to adopt a common vision of how they should develop. Achieving this vision at the regional level is a challenging task as it requires coordinating land use decisions at the local level with transportation decisions at the regional level.

Table 18.1 Congestion management strategies that reduce the demand for motor vehicle travel

Strategy	Substrategy	Effectiveness		Extent of application		Implementation issues		
		Local	Area wide	Current	Potential future	Cost	Non cost barriers	Time frame
1	Land use	Low	Medium	Limited	Moderate (all new/redevelop areas)	Low or cost savings	High	Long-term
2	Road pricing	High	High	None	Extensive	High/revenue generating	High	Mid-term
3	Freight demand management	Varies	?	Limited (two major ports)	Limited (ports, CBDs?)	Low	Medium to high	Short-term
4	Nonmotorized improvements	Low	Low	Moderate	Moderate	Low to medium	Low to medium	Long-term
5	Parking policy	High	Low	Limited	Moderate	Low to medium	Low to medium	Short-term
6	Park-and-ride	High	Medium					Mid-term
7	Regulatory restrictions	High	Medium	Limited	Limited	Low to medium	High	Mid-term
8a	Transit enhancements	Low	Low to medium	Limited	Extensive (bus systems)	Low to high	Low to medium	Mid-term
8b		Low	Low to medium	Moderate (new rail in ~30 metro areas)	Moderate (larger metro areas)	High	Medium to high	Long-term
9a	Commuter choice/workplace TDM	Low to medium	Low	Limited to moderate	Moderate (larger metro areas/activity centers)	Low to medium	Medium	Short-term
9b	Telecommuting and alternative work schedules	Low to medium	Low	Moderate	Moderate (30–40 % workforce)	Low	Medium	Short-term

Source Adapted from reference [1]

Reference

1. NCHRP 20-24A Task 63: Effective Management Practices for Congestion Management: Final Report. Requested by: American Association of State Highway and Transportation Officials (AASHTO). Prepared by: Cambridge Systematics and Resource Systems Group. November 2008