

TP5025

Find out what is 'TDM' (Travel Demand Management) and what is 'TSM' (Transportation Systems Management). Please also elaborate on the difference/similarity between TSM and TDM.

In the 1960s, the solution adopted to reduce congestion is to build more roads to accommodate the increasing demand. However, this measure is found to be ineffective. In the 1970s, Transportation System Management (TSM) is introduced to look at ways to better manage the existing infrastructure. Transportation Demand Management implemented in the early 1980s serve the purpose of changing human behaviour to reduce traffic congestion. In this assignment, I will further elaborate on TSM and TDM.

TSM strategies are generally used to maximize the efficiency of operations of the existing roadway system rather than increasing capacity. TSM approach to congestion mitigation seeks to identify improvements to existing facilities of an operational nature. These techniques are designed to improve traffic flow and safety through better management and operation of existing transportation facilities.

Examples of TSM strategies include intersection improvements, street circulation changes, traffic signal improvements, signage, safety improvements and traffic/parking enforcement. These strategies are developed to reduce travel time and enhance system accessibility.

Intersection improvements, such as turning lanes, pavement striping, bus turnouts, and channelization of traffic helps to reduce traffic backups when the front cars are making turns. Traffic flow operation on arterials and at intersections will be improved as a result.

Street circulation changes focuses on changing and/or restricting the direction of travel or separating two-way traffic on roadways. Changing the designation of roadways from two-way travel to one-way, or visa versa, is a typical application of this technique. The advantages of this technique include: reduced conflicts at intersections; reduced delay resulting in faster travel times; availability of more travel lanes at intersections; simplified intersection operations and fewer vehicular conflicts with crossing pedestrians at intersections.

Traffic signal improvements include upgrading existing traffic signal and installation of detection equipment (such as red light camera), improved signal timing and phasing, traffic signal system coordination, and pedestrian signals. The advantages of signal upgrades include improved operations and safety. In addition, signal coordination further reduces motorist delay and allows control over desired vehicle travel speed. This may reduce rear-end accidents at some locations.

The three main types of signage typically used on roadways are the regulatory, warning, and guide signs. Regulatory signs indicate traffic laws or regulations. Warning signs indicate an existing or potentially hazardous condition. Guide signs inform motorists of routes and destinations. The appropriate use of signs can reduce driver confusion thereby improving traffic operations. Variable message signs such as the Ems alert motorists of changing conditions, accidents or traffic slowdown ahead. This allowed motorist to plan his routes and make necessary changes to avoid the congestion due to the accidents or other events.

Safety Improvements measures that can be implemented to improve safety for motorists, pedestrians, and bicyclists includes, use of reflectors in line marking, installing adequate streetlights, safe pedestrian crosswalks, turn prohibitions and enforcement of safe travel speeds. These improvements can potentially reduce collisions and conflicts among motorist and other road users.

The enforcement of traffic and parking regulations is important to maintain safe and desired levels of traffic flow and parking. Restrictions imposed on road-side parking help to widen the lanes for motorist, especially on narrow driveways where space is already limited and during peak hours where heavy traffic is encountered.

TDM measures are implemented to manage the travel demand component of the transportation system. The main focus is to reduce or maintain the level of vehicular traffic occurring during peak periods and to reduce the use of single occupant automobiles. TDM programs are typically aimed at employees and are generally administered by the employer (by a transportation coordinator) and overseen by a public agency. It is found that most successful applications of TDM have occurred in areas that have high employment and population densities.

Examples of TDM strategies include Vanpool/Carpool Programs, Flextime, Telecommuting and COE , and tax system.

Vanpools and/or bus are typically used to shuttle employees to and from work. Vanpools can pick-up employees at designated areas such as MRT stations or Bus interchange. Carpools can either be formal or informal and the vehicle may be provided either by the employer or employee. Carpool matching services are often provided to commuters at park-and-ride lots, and transit stations. Park and Ride is the system where subsidise parking is offered for those transferring to trains for work. The purpose of these techniques is to reduce the number of single occupant automobiles and thereby reducing the number of cars on major travel routes.

Flextime allows employees to take advantage of a flexible work schedule that help to reduce the number of trips needed to be made during peak commuter periods. Employers and employees will need to work out a schedule on the time of arrival and departure daily before Flextime can be implemented.

Telecommuting allows employees to work away from the main work location. This measure reduces the number of commuter vehicle trips. Employees can either work at home or at work centers. This alternative is especially attractive to those living far away from their main work location. With the advancement of techonogly, meetings can be held through teleconferencing via video hook-up or web cam, replacing the need of meeting in person. Telecommuting can be used as an effective means of reducing peak hour's congestion.

Certificate of entitlement (COE) and road tax system is implemented to raise the cost of owning a private car, thereby making subsidized public transportation or employment shuttles an attractive alternative to single-occupant employment trips. This has greatly helped to reduce the number of cars on the road in the case of Singapore.

The main difference between TSM and TDM is that while TSM strategies focus on imposing (to some extent) physical changes to the infrastructure, TDM targets driver behavior, mode choice and employers to lower the traffic demands on the roads during the peak travel times. That is to say that while drivers have to conform to TSM measures, they have the choice of choosing whether or not they want to follow TDM measures. To an extent, the success of TDM measures is more dependent on individual motorist compared to success of TSM measures which rely more on the measures they implemented.

The similarity between TSM and TDM is that these two policies serve the same aim of reducing traffic congestion, without utilising more lands to build more lanes and roads. Both these policies look at ways to maximise the efficiency of the existing infrastructure without the need for addition of new and costly system. Both TSM and TDM look into ways of providing a safer and more efficient transportation system for the public.

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