

TRANSPORTATION DEMAND MANAGEMENT (TDM)

Transportation System

Content

- Introduction
- Why needs TDM ?
(Benefit of TDM)
- Strategy of TDM
- Implementation Steps



Management:

Derived from the old France language *ménagement*, which means the art of implementing and organizing

Mary Parker Follet:

Define management as the art of getting things done through people

Ricky W. Griffin:

A process of planning, coordinating, and controlling resources to achieved the goals effectively and efficient.

Definition

- ◉ *Transportation Demand Management (TDM)* also known as:
 - *Mobility Management*
- ◉ Is a strategy to change travel behavior (how, when and where)
 - ➔ to improve the efficiency of the transportation system



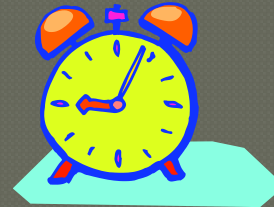
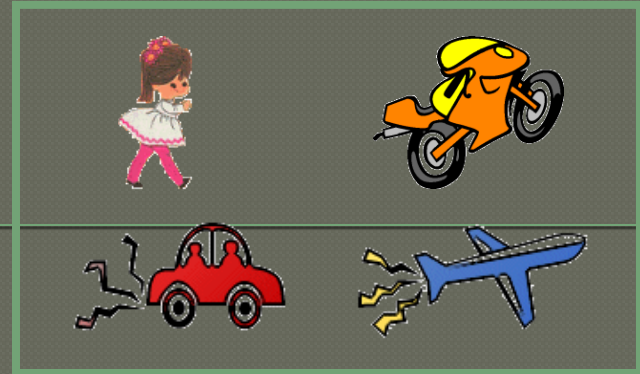
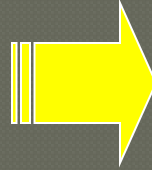
Go to work

Meet with client

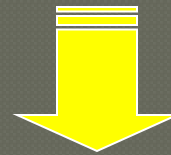
Sport

Shopping

Rereation



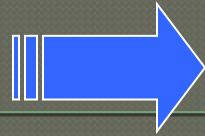
Destination ??



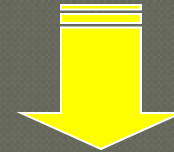
- Comfortability and safety of transportation modes
- Cost
- Land Use Factor

Also apply to goods movement

TDM Strategies



- Comfortability and safety of transportation modes
- Cost
- Land Use Factor



**MORE EFFICIENT
MOVEMENT
PATTERNS**

Example:

- Shifting the travel time of peak to off-peak
- Changing the use of car with the others alternative modes
- Move the destination to nearest location for the same movement

Strategy of TDM

- Improve the selection of Transportation
- Incentives
- Land Use Management
- Programs and Policies

Strategy of TDM

Improving Transportation Facilities Option	Incentives
<ul style="list-style-type: none"><u>Transit improvements</u><u>Nonmotorized improvements</u><u>Rideshare programs</u><u>Flextime</u><u>Car sharing</u><u>Telework</u><u>Taxi improvements</u><u>Bike/transit integration</u><u>Guaranteed ride home</u>	<ul style="list-style-type: none"><u>Road pricing</u><u>Distance-based fees</u><u>Commuter financial incentives</u><u>Parking pricing</u><u>Pay-as-you-drive vehicle insurance</u><u>Fuel tax increases</u><u>Nonmotorized encouragement</u>

Strategiy of TDM

Land Use Management	Programs and Policies
<p><u>Smart growth</u></p> <p><u>New urbanism</u></p> <p><u>Location-efficient development</u></p> <p><u>Parking management</u></p> <p><u>Transit oriented development</u></p> <p><u>Car free planning</u></p> <p><u>Traffic calming</u></p>	<p><u>TDM Programs</u></p> <p><u>Commute trip reduction</u></p> <p><u>Campus transport management</u></p> <p><u>Tourist transport management</u></p> <p><u>TDM marketing</u></p> <p><u>Least-Cost planning</u></p> <p><u>Market reforms</u></p>

Why Should Managed the Transportation Needs?

- Multiple Benefits
- Cost Effectiveness
- Flexibility
- Consumers Benefits
- Equality
- Economic Justifications
- Sustainable Transportation

Multiple Benefits

Benefit	Description
Reduction of congestion	Reduce congestion, delay and cost related (VOC, Time Value, etc.)
Road & Parking Savings	Reduce costs provision of the road and parking facility
Consumer Savings	Saving consumers in ownership terms of vehicles and Vehicle Operating Cost (VOC)
Mode choice	Improve travel option, especially who doesn't have vehicle
Road Safety	Reduce the risk of accident
Environmental Protection	Reduce pollution, crash the animals, and other environmental degradation
Land Use Utilization	Support Land Use strategy, like reduce urban sprawl, redevelop settlement, and reduce the spread of habitat
Social	Improve quality of the local environmental and attachment to the community
Economic Development	Support community economic, like improve productivity, employment, health, property value, and acquisition tax .
Physical Health	Increase public health as a result of increased physical activity, usually with increase by walking or cycling everyday

- Conventional strategy was created to solving one or two problems, but often cause to increase the problem.
- Example :
 - Road widening can be increase the road capacity and reduce congestion, but around the new road. As a result is congestion and parking problem, wasting energy, and urban sprawl
 - Fuel-efficient vehicles can reduce energy problems and pollution, but by saving the cost of trip will cause congestion and parking problems, accidents and urban sprawl.

Cost Effectiveness

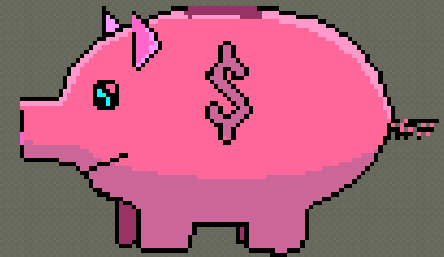
- TDM strategy are generally most effective way to increase transportation
- TDM can change or reduce the desire for road widening and addition of parking facilities, plus the reduction of traffic accidents, saving-energy, and increasing mobility of non-drivers.

Flexibility

- TDM can be respond many problems of transportation including the critical, temporary, changes or unpredicted flexible.
- TDM programs can be implemented quickly and adapted to the specific conditions and transportation user groups.
- Demand Management avoid investment risk becoming useless due to unexpected people's desire changes.

Benefit Consumer /User

- Direct Benefits:
 - Incentives
 - Improving the transport option
 - Providing “financial rewards”
- Indirect Benefits:
 - Reducing congestion
 - Reducing parking problems
 - Reducing the risk of accidents
 - Reducing pollution



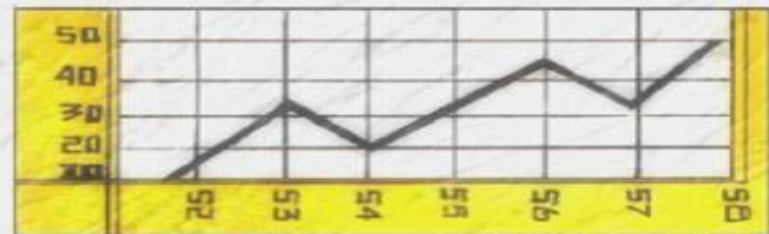
Equity

- TDM can result in a fairer allocation of resources between different demographic and geographic groups.
- Many strategies directly benefit people who are economically, physically or socially disadvantaged by improving transportation options available to non-drivers.



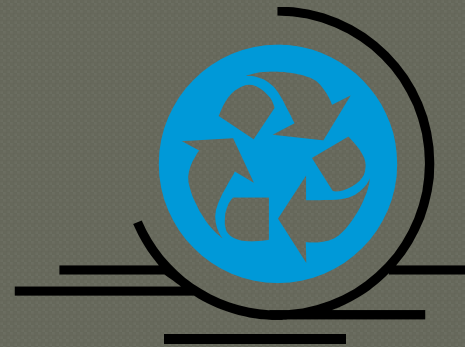
Economic Justifications

TDM support economic development by increasing productivity and reducing the external costs .



Sustainable Transportation

TDM reflects the principle of sustainability, namely efficiency and integration, and to arrange the sustainable achievement, including the conservation of natural resources, equality, environment protection, land use utilization, and community involvement.



Improves Transport Options

Incentives

Land Use Management

Policies and Programs

TDM STRATEGY

Improves Transport Options

- Public transit improvements : a strategy to improve the quality of public transport services, including speed of service, frequency, information for service users, affordability (cost) and convenience to access.
- Nonmotorized improvements : a strategy to improve facilities for pedestrian and cyclist.
- Rideshare programs (Carpooling and Vanpooling). The program includes matching service (help users looking for co-trip), and giving the road priority and parking vehicle rideshare system.
- Flextime (Flextime, Compressed Work Week, Staggered Shifts). Alternative work schedule, so as to reduce commuter trips in the peak period and to accommodate ridesharing and use of public transport.
- Car sharing : Vehicle rental services as a substitute for private vehicle ownership.

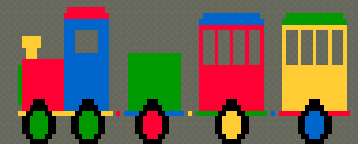
Improves Transport Options

- Telework : Penggunaan jaringan telekomunikasi sebagai pengganti pergerakan fisik, termasuk *teleshopping*, *distance-learning*, *electronic government*, *video conferencing*, dan aktivitas *Internet-based business-to-business*.
- Taxi improvements : Strategi untuk meningkatkan peran taksi dan kualitas pelayanannya.
- Bike/transit integration : Strategi untuk mengintegrasikan perjalanan dengan sepeda dan angkutan umum, termasuk akses bersepeda menuju halte dan stasiun/terminal, penitipan sepeda dan ijin menaikkan sepeda ke dalam angkutan umum.
- Guaranteed ride home : Bantuan bagi pelaku komuter yang menggunakan moda alternatif, yang menyediakan tumpangan bersubsidi bagi pelaku komuter dengan moda alternatif bila di jalan terjadi sesuatu yang tidak diinginkan.
- HOV Priority : High Occupant Vehicle Priority = Prioritas Kendaraan bermuatan banyak, merupakan strategi untuk meningkatkan kecepatan dan kemudahan bagi angkutan umum dan kendaraan *ridesharing*.

1. Public Transit Improvement

Public Transport :

- *Heavy Rail*
- Light Rail Transit/LRT
- Streetcars (trams/trolleys)
- Conventional Bus
- Bus Rapid Transit (BRT)
- Ferry
- Mini bus
- Angkot
- Taxi



1. Public Transit Improvement

- How to improve public transport service :
 - Adding route, improving frequency and increasing operational hours
 - HOV Priority (HOV lanes, busways, queue-jumper lanes, bus-priority traffic signals, etc). Implementation of separates lanes with other traffic to reduce delays by traffic congestion intersection.
 - Road space relocation to transiting and operating.
 - Improving comfortability, including the provision shelter and comfortable seating.
 - Discount for regular users.
 - Convenience payment by using electronic cards.
 - Improved information on the public transportation services including real time information according to arrival.
 - Public transport developing in appropriate land use.

1. Public Transit Improvement

- How to improve public transport service :
 - Pedestrian and cycling improvement
 - Bike-transit integration
 - Vehicle, bus-stops and pedestrian facilities that accommodate disable users
 - Increased security for users and pedestrians
 - Park and Ride facilities
 - Instruction for multi-mode users, including map, schedules, and emergency call and related information

1. Public Transit Improvement

- Public Transport Improving Indicators :
 - Addition of service quantity
 - Addition of service quality
 - Incentives for public transport users
 - Regional development that oriented in public transport service

1. Public Transit Improvement

- Public and private transport service was expensive (including indirect cost by congestion, road using and pollution)
- Improving public transport quality and incentives to increasing load factor of public transport and attracting private transport users will providing a benefit
- In other word, operating of public transport give benefit to community
- Benefit depends on public transport cost, services, number of private cars was replaced, and indirect cost such as saving operational cost, reducing ownership of vehicle, land use saving and safety improving, etc.

2. Nonmotorized Transportation Planning

- Nonmotorized Transportation = Active Transportation = Human Powered Transportation
- Include walking, cycling, small-wheeled vehicles (skates, skateboards, push scooters and hand carts) and wheelchair
- This mode means of transportation as well as recreation

2. Nonmotorized Transportation Planning

Non-motorized transportation improvement :

- Improving sidewalk, crosswalk, and track
- Improving the way for non-motorized
- Fixing facilities management and maintenance for non-motorized, including reducing conflict between users and keep clean.
- Facility design can be used for disable users
- Develop land use and design building based on pedestrian oriented
- Improving relationship between road and pedestrian
- Providing road equipment (such as traffic light)

2. Nonmotorized Transportation Planning

Non-motorized transportation improvement :

- Traffic Calming, Streetscape Improvement, Traffic Speed Reduction, Vehicle Restriction, also relocation Road Space
- Safety education, law enforcement and other support programs
- Improving integration with public transport (bike-transit integration and transit oriented development)
- Providing bicycle parking facilities
- Improving safety for pedestrian and cyclist
- Instruction for multi-mode users, including map, schedules, and emergency call and related information

3. Ridesharing

- Ridesharing to carpooling and vanpooling (sometimes intended for public transport), a vehicle that carrying additional passengers.
- Carpooling use private cars, while vanpooling use rental vehicle. Both of them used for a fairly long distance.
- Ridesharing is one of the common modes of alternative and cost-effective, especially in areas that un-served by public transport.
- Operating vehicle cost divided equally between users, with minimal cost calculated for vehicle capacity, although not charged

3. Ridesharing

Ridesharing Improvement :

- Improving flexibility, e.g:
 - Allowing users for 2 or 3 days per week, shouldn't everyday.
 - Allowing unscheduled uses as there is space, such as to accommodate users who late for entourage
- Empty seat subsidy (payment join when the user < 6)
- Subsidy cost by the owner company where the user working, in retaliation for ease transportation for worker
- Offer 'trial period' for new costumers

3. Ridesharing

Ridesharing Improvement :

- Additional service for user comfortability, such as adding table for working media, newspaper and free drinks for costumers to pay more *Pay-as-You-Drive Vehicle Insurance*, *Commuter Financial Incentive* also *Road Pricing*, as a financial 'reward' for commuter users who switch to Ridesharing
- Fixed service schedule, allowing customers who are going with another vehicle or with another vanpool
- *High Occupancy Vehicle (HOV)* Priority and security parking area

3. Ridesharing

- Rideshare Program need for carpool matching, sponsorship, program marketing, and incentive to reduce the use of private cars
- Rideshare incentives may include HOV Priority (such as special HOV lane), security parking area, and reward
- Support from the company in form Commute Financial Incentives may include cash payment for employees who use carpool and vanpool vouchers