Public Transportation

Introduction

Public transportation is a form of travel offered locally that enables more people to travel together along designated routes. Typical examples of **forms of public transportation** include:

- buses,
- trains,
- trams.
- High-speed rails,
- airlines,
- and coaches dominate public transportation between cities.

Most public transport services operate on stipulated timelines. Some transportation systems operate on a full capacity basis, which means the vehicle will not start until it's full. However many cities across the world provide shared taxis when the essence of time is a factor.

Various Public Transportation Modes

A brief description of the various transit modes follows:

- Taxis: automobiles operated by a driver and hired by users for individual trips, tailored entirely to the user's desire.

- Dial- a- ride -a - bus: minibus or vans directed from a central dispatching office. Passengers call the office and gave their origin, destination and desired time of travel. the office plans the bus routing to maximize the number of passengers on single trip.

- Carpools: prearranged ride sharing services where parties of two or more people travel together in a car on regular basis. It is privet transport and therefore cannot be organized, scheduled, or regulated by an agency, but it can be encouraged by employers.

- Vanpools: privately or publicly provided vans (7-15 seat) transporting groups of persons to and from work on daily basis. They need a somewhat formal organization for vehicle purchase, maintenance, and driving.

- Regular buses: buses operating along fixed schedules. Vehicles vary from minibuses (20 to 35) to articulated buses (up to 130 spaces).

- Express buses: provide fast, comfortable travel on long routes with widely spaced stops.

- Trolley buses: same as regular buses except that they are propelled by electronic power, and therefore constrained to operate only where power lines exist.

- Semi rapid buses: regular or right -performance buses on routes that include substantial sections of R/W categories A and B. Buses on busway consist of an

exclusive busway on the freeway or in the median utilized by a great number of bus routes. They typically represent commuter transit.

- Light- rail transit: mode utilizing predominantly reserved, but not necessarily grade-separated R/W. It is electrically propelled.

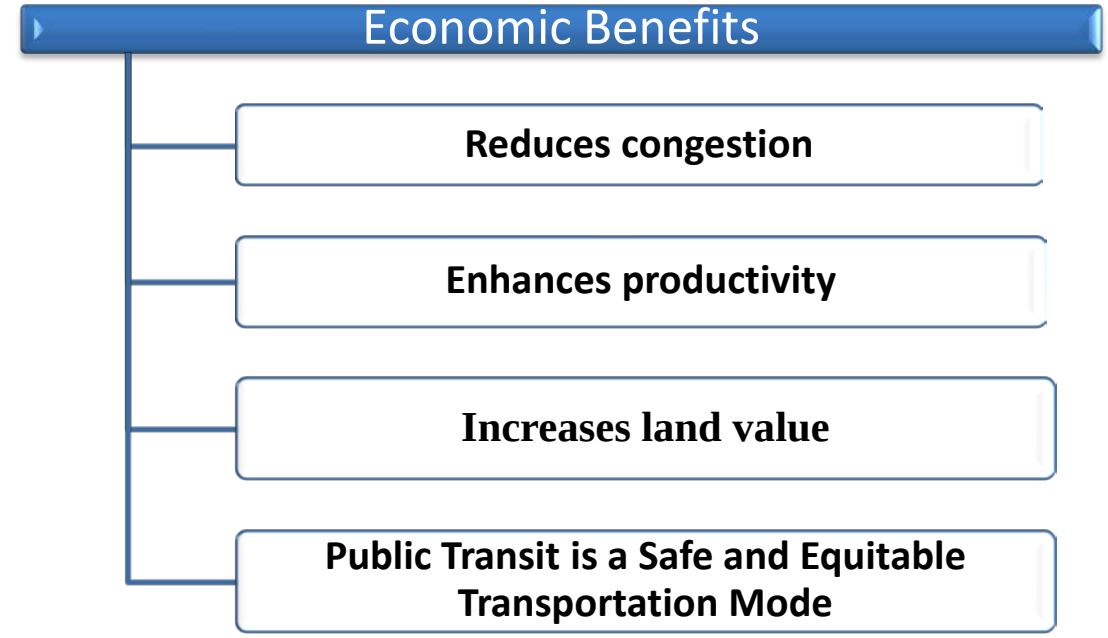
- Rapid transit: includes the following:
  - Light rail rapid transit consisting of light rail vehicles operating on R/W category A only.

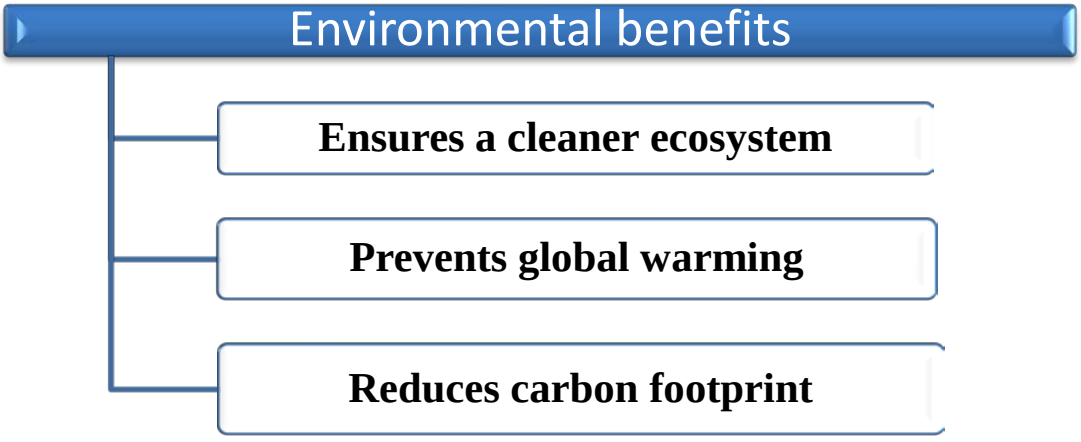
- Rubber-tired rapid transit consisting of moderately large vehicles, supported or guided by rubber tires running on wooden, steel, or concrete surface.

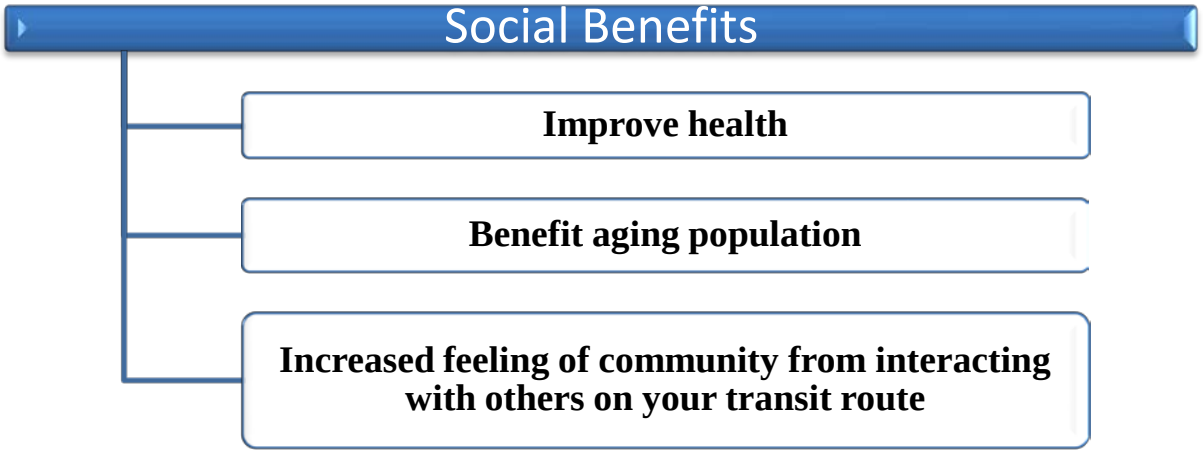
- Rail rapid transit, typically having four-axle rail vehicles operating in trains of up to 10 cars on fully controlled R/W category A with high speed, reliability and capacity.

- Regional rail operated on long route with few stations at high speed on exclusive R/W category A.

Benefits of Public Transportation







Modes of Green Transportation

We've learned that the existing modes of transportation require enormous amounts of energy, for example, fossil fuels (natural gas, coal, oil) to power vehicles on the roads. Many recognize that these very automobiles cause a lot of pollution, which impacts the environmental and lead to health complications. Promising innovative technologies could be the ultimate solution, but before such innovations come to fruition, the world can play a significant role by utilizing eco-friendly modes of transportation obtainable.

Though it is much more comfortable and convenient to drive one's own private vehicle to office or market every other day but being a responsible citizen one should opt for green transportation that are easily accessible to everyone. Let's look at some of the modes of green transportation available in this age.

Types of Green Transportation:

- Bicycle

- Electric bike

- Electric vehicles

- Green trains

- Electric motorcycles

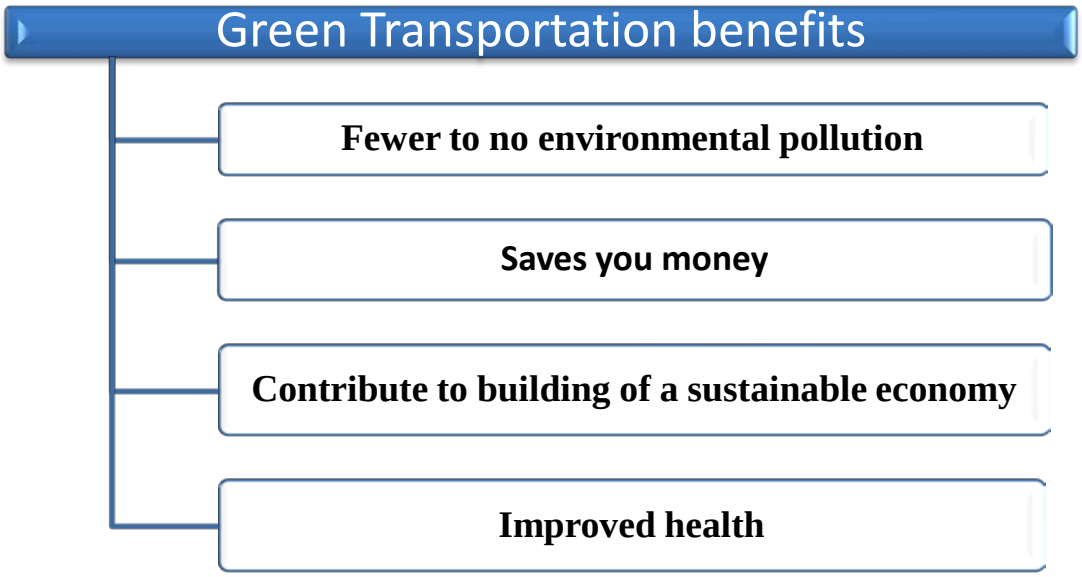
- Hybrid cars

- The new hybrid buses (Public Transportation)

- Pedestrians

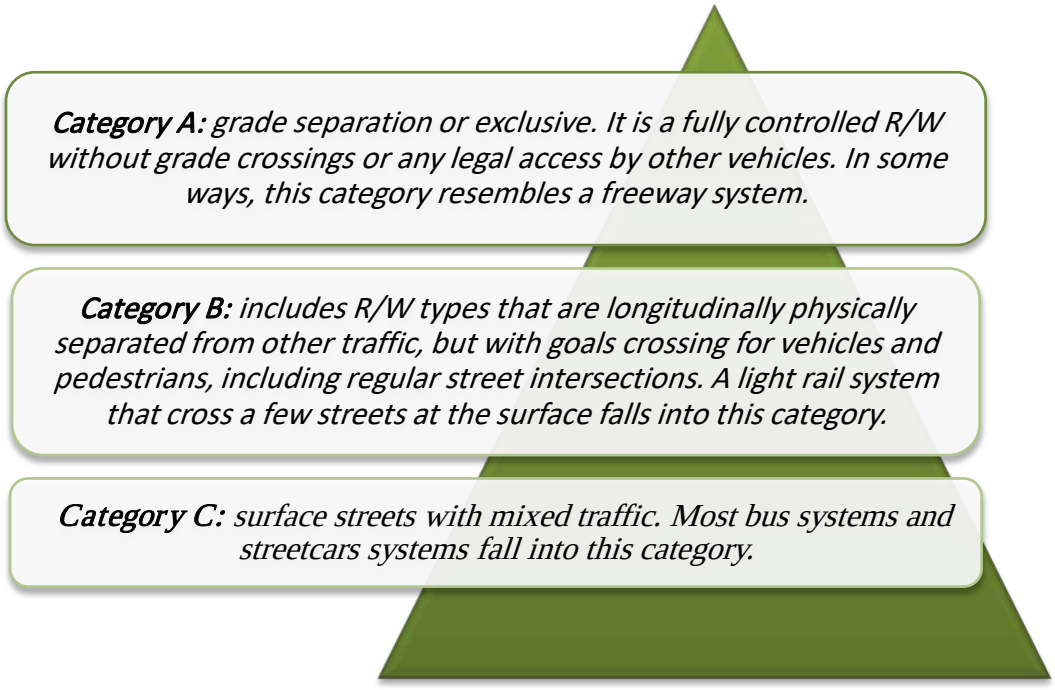
Benefits of Green Transportation

Green transportation has wide ranging benefits – environmental, health, economic and individual budgets. Enlisted below are some of the key benefits of using green transportation:



Transit Characteristics

The classification of modes can be done for transit based on three characteristics: right of way (R/W), technology and type of service. The right of way (R/W) is the strip of lane in which transit vehicle operates. There are three basic R/W categories, distinguished by the degree of separation from other traffic:



Right of Ways

Based on degree of segregation:

- Surface with mixed traffic: buses, light rail: with/without preferential treatment
- Longitudinal separation but at-grade crossing interference: light rail, bus rapid transit
- Full separation: at grade, tunnel, elevated.

Technologies

Key technological characteristics:

- Support -contact between vehicle and surface
  - rubber tire on concrete.
  - steel wheel on steel rail.
  - others.
- Guidance -lateral control:
  - steered by driver.
  - guided by track.
  - others.
- propulsion
  - diesel.
  - electronic.
  - hybrid.
- Control
  - manual/ visual.
  - automatic.

Transit System Operations, Service and Characteristics

Transit operations include such activities as scheduling, crew restoring, running and supervisions of vehicles, fare collection, and system maintenance. They produce transportation that is offered to potential users. Transit system characteristics are classified in four categories:

1. System Performance: refers to the entire set of performance elements, the most important of which are:

- Service frequency (f), number of transit unit departures per hour.
- Operating speed (v_0), speed of travel on the line that passengers experience.
- Reliability, expressed as percentage of vehicle arrivals with less than a fixed- time deviation from schedule (e.g. 4 minutes).

- Safety, measured by the number of fatalities, injuries, and property damage per 100 million passenger-km(passenger -mi) or similar unit.
- Line capacity (c), the maximum number of persons that transit vehicles can carry past a point along the line.
- Productive capacity (P_c), the product of operating speed and line capacity.
- Productivity, the quantity of output per unit of resource (e.g. vehicle-km(-mi), space-km(-mi) per unit of labor, operating cost, fuel, R/W width, etc.).
- Utilization, also the ratio of output to input, but of the same unit, for example, person-km/ space -km (person-mi/space-mi) offered.

2. Level of Service (LOS): is the overall measure of all service characteristics that affect users. LOS is a basic element in attracting potential users to the system. Major factors comprising LOS can be divided into two groups:

- Performance elements that affect users, such as operating speed, reliability, and safety.
- Service quality (SQ), consisting of qualitative elements of service, such as convenience and simplicity of using the system, riding comfort, aesthetics, clean lines, and behavior of passengers.

3. Impacts: are the effects that transit service has on its surroundings and the entire area it serves. They may be positive or negative. Short-run impacts include reduced street congestion, changes in air line pollution, noise new line. Long- run impacts consist of changes in land values, economic activities, physical form, and social environment of the city.

4. Costs: are usually divided into two major categories; investment costs (or capital costs) are those required to construct or later make permanent changes in the physical plant of the transit system. Operating costs are costs incurred by regular operation of the system.

Evaluation and comparative analysis of transit systems must include all four categories:

- Performance,
- LOS,
- impacts,
- and costs of each system.

The preferred mode is usually not the one of one with the highest performance or lowest costs, but the one with most advantageous 'package' or combination of the four.