

URBAN PUBLIC TRANSPORT PLANNING

1. To explain the criteria for good public transport in urban area
2. To develop guidelines for effective services between residential, industrial, commercial and shopping areas
3. To provide the basis for a positive approach to the improvement of public transport for the benefit of the community

Basic characteristic of bus operations

- Level of service – passengers will be attracted by alternative levels of service and fares
- Three main elements:
 - ▣ Density of the route network and spacing of bus stops – accessibility of the passenger
 - ▣ Frequency of service – related with waiting time
 - ▣ Period of operation – hours/day, days/week

Basic characteristics

- Element of journey
 - ▣ Access time: from point of origin to boarding point
 - ▣ Waiting time: at bus stop or station, and including interchange time where more than one vehicle is involved
 - ▣ Travelling time; time spent to the vehicle
 - ▣ Access time: from alighting point to destination

Basic Characteristics

- Route and service patterns
 - ▣ Stage carriage: the normal bus service stopping at frequent intervals over the whole route
 - ▣ Limited stop: a semi-fast service stopping at regular but less frequent intervals
 - ▣ Express: a service operating non-stop or with only a small number of intermediate stops
 - ▣ Local or feeder: a short service covering a particular locality, linking with longer distance bus or rail services at a district centre
 - ▣ Dial-a-bus or community bus: flexible routed services on demand, particularly in lower density areas
 - ▣ Contract: specific services, for example, schools or works not normally available to the general public

Basic Characteristics

- Services, categorised by period of operation:
 - Basic all day services – the regular bus service
 - Peak period only – essentially for commuter trips
 - Off peak only – perhaps a shopper service
 - Night service – outside normal daytime periods of operation
 - Limited time service – works, often related to shift times: school, including recreational journey
 - Occasional – for specific purposes, such as market days hospital visiting

Basic Characteristics

- Routes:
 - ▣ Radial – terminating in the city centre
 - ▣ Crosstown – essentially two radial routes linked together
 - ▣ Circular or circumferential – providing inter suburban links
 - ▣ Local – serving a particular residential area and local centre

Basic Characteristics

Routes can also be divided into:

- Main routes (trayek utama)
- Branch routes (trayek cabang)
- Sub branch routes (trayek ranting)

Basic Characteristics

□ Fare system

- Graduated by distance – fares charged according to distance travelled, either on a fine scale with closely spaced fare stages, or on a coarse scale with larger distances covered by an individual fare. A taper is often applied, reducing the price per km as journey distance increases. This has the dual purposes of encouraging longer distance journeys which are often optional journeys, and of reflecting the true nature of the costs imposed by a passenger boarding bus. The cost of picking up, collecting fares and setting down is constant, irrespective of the distance travelled by the passenger
- Zonal: fares charged according to the number of geographical zones traversed.
- Flat: single fare, irrespective of distance travelled
- Time-based: fares charged for a given time period of travel, such as any distance within one hour

Basic Characteristics

Time table. There is a relationships between network density and frequency. It is recommended, for the comfortability of the passengers, that the average load factor should be less than 70 %. However, according to the bus operator, load factor should be high, so that the bus operation is financially feasible.

Two elements in developing time table

- The vehicle
- The crew

Basic Characteristics

The number of vehicles required:

$$N = T/f$$

N = number of vehicles required

T = total round trip time including layovers in minutes

f = service frequency (headway) in minutes

It is preferable to operate only clock face frequencies.

The headway (minutes) must be divisible into 60.

Basic Characteristics

The crew.

- Signing on time
- Maximum driving time before and between breaks
- Length of break
- Walking times or riding times between signing-on point and relief point
- Maximum driving time per day and per week
- Signing-off time

Basic Characteristics

- Licensing

Route, schedules and vehicle type are subject to statutory approval through the Traffic Agency (Dishub)

Vehicle Characteristics

Bus types and capacity.

- Minibus – a small capacity bus, 10 – 17 passengers, 4 – 6 m length
- Midibus – a small to medium capacity bus, 20 – 30 passengers, 6 – 8 m length
- Single deck – medium capacity bus, 40 – 60 passengers, 10 – 12 m length
- Double deck – high capacity bus, 70 – 100 passengers, 9.5 – 10 m length
- Articulated single deck – high capacity bus, 75 – 150 passengers, 16 – 18 m length

Criteria for bus routes

- Providing direct routes for buses between points of primary attraction
- Providing balanced housing densities along such routes within convenient walking distance
- Providing pedestrian access to stopping places at regular intervals
- Locating secondary traffic objectives on the line of the route between key points, for example, schools, local centres, post offices or public buildings

Criteria for bus routes

- Furthest walking distance from a bus stop should be 400 m. For hilly area, it should be less than 400 m.
- Housing location and density should be planned in relation to possible bus route alignment. Eighty percent of the population in the city must be covered by bus routes with walking distance less than 400 m
- The optimum spacing depends on the density of roadside development and on the average length of passengers journeys but is normally in the range two or three stops per km.
- Footpath should be included in the design of bus routes
- Environmental factors associated with bus stops need to be considered. Waiting passengers may provide a source of noise, litter and visual intrusion by residents nearby.
- Parking at the bus stop should be eliminated to enable buses to pull in close to the kerb so that passenger avoid stepping into the carrageway

Bus stations and interchanges

- Providing a readily identifiable focal point for passengers
- An easy interchange between services
- Better passenger accommodation, information and related facilities
- Easier operational control of services
- Staff accommodation directly related to services
- Removal of standing vehicles from the highway

Bus station location

- Affecting the passengers:
 - ▣ ease of walking to and from shops, offices and leisure centres
 - ▣ Sufficient space for adequate passenger facilities without conflict with moving buses
 - ▣ It would be better to be located at railway station or near airport

- Affecting the operator
 - ▣ Routes must have direct access to the site
 - ▣ Access must be reasonable, and not into narrow or congested streets

Integrated public transport mode

