



Introduction to Transportation Systems



PART III:

TRAVELER

TRANSPORTATION



Chapter 23:

Traveler Level-of-Service

Traveler LOS

We first discuss the dominant traveler mode, automobiles, and then generalize to LOS variables for travelers.

Why People Like Cars

- ◆ We like the flexibility.
- ◆ The automobile network is universal.
- ◆ It often (but not always) is the fastest mode, depending on levels of congestion, time of day and the available alternatives.
- ◆ Privacy.
- ◆ Automobiles suggest that you are at a higher level of society.
- ◆ People simply enjoy the sensation of driving.

Land Use Patterns

- ◆ Given the way our land-use patterns have developed, particularly in the United States, cars are virtually a necessity. There are areas where taking at least part of your trip without an automobile is virtually impossible.
- ◆ Land-use densities are so low that public transportation is not viable. The automobile is fundamental and a necessity of life, not a luxury, depending upon land-use choices that society makes.

CLASS DISCUSSION

A Final Set of Reasons We Love Cars

- ◆ It is very often a good transportation buy. It is a good value for your transportation dollar.
- ◆ You get this high-quality transportation service which is a good buy, because *somebody else* is paying a lot of the costs for the infrastructure and cleaning up the environment.
- ◆ This choice is economically rational. Highway transportation may well be cheap, or at least cheap relative to the level-of-service that is being provided to you, because of the way in which the costs of the highway infrastructure are paid for.

Traveler LOS Variables

- ◆ Average Trip Time
- ◆ Reliability of Trip Time
- ◆ “Value-of-Time”
- ◆ Aggregating Small Time Savings over Many People

CLASS DISCUSSION

Other LOS Variables

- ◆ Cost
- ◆ Service Frequency
- ◆ Waiting Time
- ◆ Comfort
- ◆ Safety and Security
- ◆ “Intangibles”

LOS variables determine mode choice. The importance of LOS will vary among people and by trip purpose.

Modal Options

- ◆ Private automobile
- ◆ Taxi
- ◆ Bus
- ◆ Train
- ◆ Boat
- ◆ Various intermodal combinations
- ◆ Bicycle
- ◆ Walking

In an urban context one can subdivide auto into single occupancy, carpools, van pools, etc.

For intercity, one adds airlines, train, bus, as well as private auto.

CLASS DISCUSSION

LOS provided by each mode?

Hierarchical Decision-Making

- ◆ Long-Range Choices: employment -- where am I going to work; residence -- where am I going to live relative to where I work.
- ◆ Medium-Range Choices: automobile ownership and mode choice to work.
- ◆ Short-Range Choices: people decide about route choice on a particular day; non-work travel -- judgments about travel to shopping and other ad hoc activities other than the traditional journey to work.

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- ◆ The fundamental insight is that people do not make a single instantaneous judgment about trip-making and mode choice; rather one has to model transportation demand by thinking hierarchically about how long-, medium- and short-range decisions lead to decisions about individual trips.