

CHAPTER 1—INTRODUCTION

The persons and freight that move on the nation's transportation system have several factors that determine the basic parameters of the trip—departure time, route, travel mode, and cost. Improvements in the transportation system show up in:

- **Faster travel**—due to more travel options or better travel conditions on the same facilities or modes.
- **More reliable transportation**—crashes and vehicle breakdowns are quickly moved so that they do not affect the system for long periods.
- **More travel options**—in terms of mode, route, time, and cost.
- **Cheaper travel options**—including the value of time, environmental impacts, and other factors in addition to out-of-pocket expenditures.

The travelers and freight carriers that move on the network are concerned with a package of these attributes that most closely optimizes their desires. Arriving at a destination on time and at a minimum cost can be thought of as a fairly typical goal; the choices made from that goal statement, however, are widely disparate. They are related to personal tastes, cost of the trip, trip purpose, mode availability, and trip time.

Decisions that transportation agencies make about which projects and programs to select are also concerned with environmental impacts, quality of life in affected neighborhoods, safety, equity, and a variety of other factors. The agencies must analyze the range of options and decisions and attempt to optimize the expenditure of limited transport funds to improve the system.

Developing a measure that relates all the traveler factors to the range of impacts and concerns that will govern urban decision making, then, is not a narrow issue. This paper is a step toward identifying the key concerns and charting a path that allows travelers, citizens, and businesses to provide comments to the professionals in ways that all groups can understand. The agencies, in turn, will get the benefit of guidance to improve the urban area transportation system or identify the key factors that make improvement an undesirable option for a particular portion of the system or specific policy or strategy.

Each chapter of this report identifies research and practices that meet the needs of modal and multimodal analyses with travel time and speed-based measures. Measures that can be presented and used by both technical and public audiences are emphasized in the paper. Where compromises have been made for simplicity or data collection concerns, the ultimate measures or procedures are identified so that users can understand the path to the future as new models, procedures, or technologies are developed.