

WHAT IS THE SOURCE OF DATA FOR THIS REPORT?

This report uses data from federal, state, and local agencies to develop estimates of congestion and mobility within an urban area. The methodology developed by several previous research studies (19,20,21,22,23) yields a quantitative estimate of urbanized area mobility levels, utilizing generally available data, while minimizing the need for extensive data collection.

The methodology primarily uses the Federal Highway Administration’s Highway Performance Monitoring System (HPMS) database, with supporting information from various state and local agencies (1). The HPMS database is used because of its relative consistency and comprehensive nature. State departments of transportation collect, review, and report the data annually. Since each state classifies roadways in a slightly different manner, TTI reviews and adjusts the data to make it comparable and then state and local agencies familiar with each urban area review the data.

The Urban Mobility Report procedures have been modified to take advantage of special issue studies that provide more detailed information, but the assumptions used in the Annual Mobility Report do not fully account for the effect of all operational improvements. Comparisons between cities are always difficult and the local and state studies are typically more detailed and relevant for specific areas. The Urban Mobility Report is more applicable for comparisons of trends for individual cities, rather than any value for a particular year.

Urban Area Boundary Effects

Urban boundaries are redrawn at different intervals in the study states. Official realignments and local agency boundary updates are sometimes made to reflect urban growth. These changes may significantly change the size of the urban area, which also causes a change in system length, travel and mobility estimates. The effect in the Urban Mobility Report database is that travel and roadways that previously existed in rural areas are added to the urban area statistics. It is important to recognize that newly constructed roads are only a portion of the “added” roads.

When the urban boundary is not altered every year in fast growth areas, the HPMS data items take on a “stair-step appearance.” The Urban Annual Report process closely re-examines the most recent years to see if any of the trends or data should be altered (e.g., smoothing some of the stair steps into more continuous curves) to more closely reflect actual experience. This changes some data and measures for previous years. Any analysis should use the most recent report and data—they include the best estimates of the mobility statistics.

Why Is Free-Flow Travel Speed the Congestion Threshold?

The conditions in the middle of the day (or middle of the night) are the ones that travelers generally identify as desirable and use for comparison purposes. It is also relatively easy to understand that those conditions are not achievable during the peak travel periods without significant funding, environmental concerns and social effects. The decisions to make

substantial improvements to achieve some desirable condition using investments in road, transit, operations, demand management or other strategies are products of detailed studies—studies that are not replicated in this report.

For the purposes of a national study, therefore, it is reasonable to set a congestion measurement baseline that everyone generally understands. Free-flow speed—which we estimate is 60 mph on freeways and 35 mph on major streets—is such a baseline. Speeds less than that will be an indication of delay. It is not intended to be the target for peak-hour conditions in urban corridors. The target setting exercise is discussed in more detail in a report section addressing “acceptable conditions” as targets.

Why Use Traffic Counts and Estimates Instead of “Real” Traffic Speeds?

Because there are not enough cities collecting enough high quality traffic speed data on enough roads, estimates are necessary. The Urban Mobility Report series seeks to understand congestion and mobility levels in many urban areas, and unfortunately, the best common database is one that has roadway design and traffic information. The estimation procedures are used to develop travel time and speed measures that can be used to communicate to a variety of audiences. This Annual Report also has some travel speed data from urban traffic operations centers, but until that information is more widely available, estimates will be required.

In the near future, these reports will also include estimates of the effects from several key improvements such as incident management, ramp metering, traffic signal coordination and high-occupancy vehicles lanes. The benefits of these projects are only indirectly included in the current methodology. When more cities and states conduct thorough evaluation studies and the comparison techniques are improved, the operations and demand management programs will be more completely characterized.

Detailed Speed Data and Reliability Information

The high quality speed data that are available were collected as part of the Mobility Monitoring Program (<http://mobility.tamu.edu/mmp>), a joint research effort of Texas Transportation Institute and Cambridge Systematics for the Federal Highway Administration (24). The MMP collected and analyzed detailed traffic volume and speed data for freeways in 29 cities for 2003. The data are prepared for 5-minute time intervals for sections of freeway between one-half and three miles in length. The base data sets were examined for quality and reasonable values and analyzed for a few key performance measures.

The continuous nature of this database provides a very good picture of the variation in conditions through the year—significantly better information than was available before. Variation or reliability in transportation conditions was studied with 2003 data. Some of that data is used in this report.

The detailed traffic operations center data also does not cover very much of the transportation system of the travel even in the most highly monitored cities. The percentage of the freeway system that was monitored during 2003 in the 29 Mobility Monitoring Program cities averaged around 50 percent. There was very little arterial street condition data. It is difficult to construct

a set of city to city comparison measures or interpret the meaning of data under these conditions. While the data are very useful for examining issues, they are less useful for area or trend comparisons. Even the evaluation of incidents is hampered by the lack of arterial street data. Traffic that changes route from the freeway to a street experiences delay, but that delay is not counted because there is no monitoring equipment. So the “real” traffic data does not include all of the delay that occurs. Estimates are required to obtain a full picture of the congestion situation.