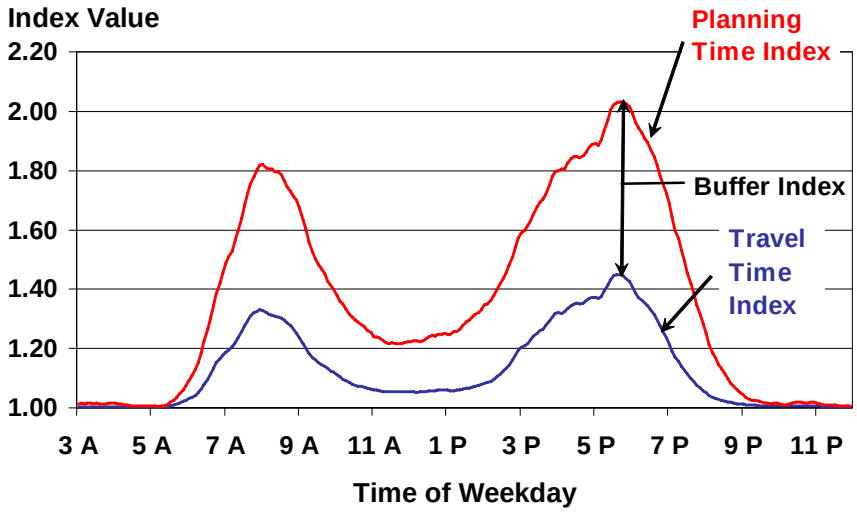
Unreliable Travel Times – One of the Congestion Problems

You have an important family event at home at 5:45 p.m. Your normal commute time is 30 to 35 minutes. But you also know that your travel time varies. The problem is that crashes, vehicle breakdowns, road work, weather and variations in daily traffic volume all change the commute from day to day. In order to arrive before the event starts, you must plan for extra travel time. This extra time, or "buffer time," is part of the congestion problem—unreliability.

The Planning Time Index is similar to the Travel Time Index except that the PTI indicates the travel time needed to make your destination on time 19 days out of 20—essentially the worst weekday of the month (*3*). An Index value of 2.0, for example, would mean that you should allow twice as much time for an important trip as your travel time in uncongested conditions. The difference between the average time and the planning time is a reliability measure termed the "Buffer Index." (Exhibit B-41) In general, the Buffer Index goes up in the peak periods, indicating reliability problems and congestion occur at the same time and explaining why so much extra travel time has to be planned.

Exhibit B-41. The Extra "Buffer" Time Needed When Planning Important Trips



Source: Reference (*3*)

According to data from some of the freeways in 19 metropolitan regions (Exhibit B-42), travelers and freight shippers should plan on twice as much extra travel time if they have an important trip as they would allow in average conditions. For example, in Phoenix a 20-minute free-flow trip takes an average of almost 28 minutes. On one weekday out of 20 (essentially the worst travel day of the month) that trip will take 36 minutes. The frustrating and economically damaging part of this doubling of the extra travel time (16 minutes vs. 8 minutes more than the free-flow travel time of 20 minutes) is that we cannot know which day that is and how it might affect important trips or deliveries.

This distinction between "average" and "important" is crucial to understanding the role of the solutions described in the next few pages. Some strategies reduce congestion for all travelers and at all times on every day. Other strategies provide options that some travelers, manufacturers or freight shippers might choose for time-sensitive travel. Some solutions target congestion problems that occur every day and others address irregular events such as vehicle crashes that cause some of the longest delays and greatest frustrations.

Exhibit B-42. You Should Plan for Much Longer Travel Times if You Wish to Arrive On-Schedule, 2007 Data

Region	Multiply the free-flow travel time by this factor to estimate the time to reach your destination:	
	In Average Conditions (Travel Time Index)	For an Important Trip (Planning Time Index)
Chicago, IL	1.48	2.07
Detroit, MI	1.24	1.65
Houston, TX	1.43	2.01
Los Angeles, CA	1.47	1.92
Minneapolis-St. Paul, MN	1.29	1.70
Orange County, CA	1.40	1.77
Philadelphia, PA	1.29	1.76
Phoenix, AZ	1.38	1.80
Pittsburgh, PA	1.28	1.70
Portland, OR	1.34	1.87
Providence, RI	1.14	1.43
Riverside-San Bernardino, CA	1.34	1.77
Sacramento, CA	1.26	1.61
Salt Lake City, UT	1.16	1.52
San Antonio, TX	1.22	1.61
San Diego, CA	1.31	1.66
San Francisco, CA	1.25	1.51
Seattle, WA	1.44	2.06
Tampa, FL	1.23	1.55

Source: Reference (*3*)

Note: Index values are a ratio of travel time in the peak to free-flow travel time. A Travel Time Index of 1.40 indicates a 20-minute off-peak trip takes 28 minutes on average. A Planning Time Index of 1.80 indicates the 20-minute off-peak trip might take 36 minutes one day each month.

Note: In most regions only a few freeways are included in this dataset. This difference in coverage and differences in the data collection devices make comparisons between the regional values in Exhibit B-42 impossible. These 2007 data are only for freeways and, thus, not comparable with the areawide data.