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WSDOT Transportation GMAP Forum

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II. Overview of Causes and Impacts of Congestion

Travel time is one measurement of congestion: Corridors Sample

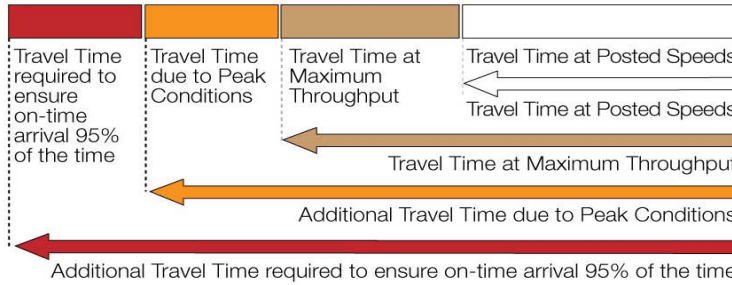
Travel times at posted speeds, maximum throughput speeds, peak travel times, and 95% reliable travel times

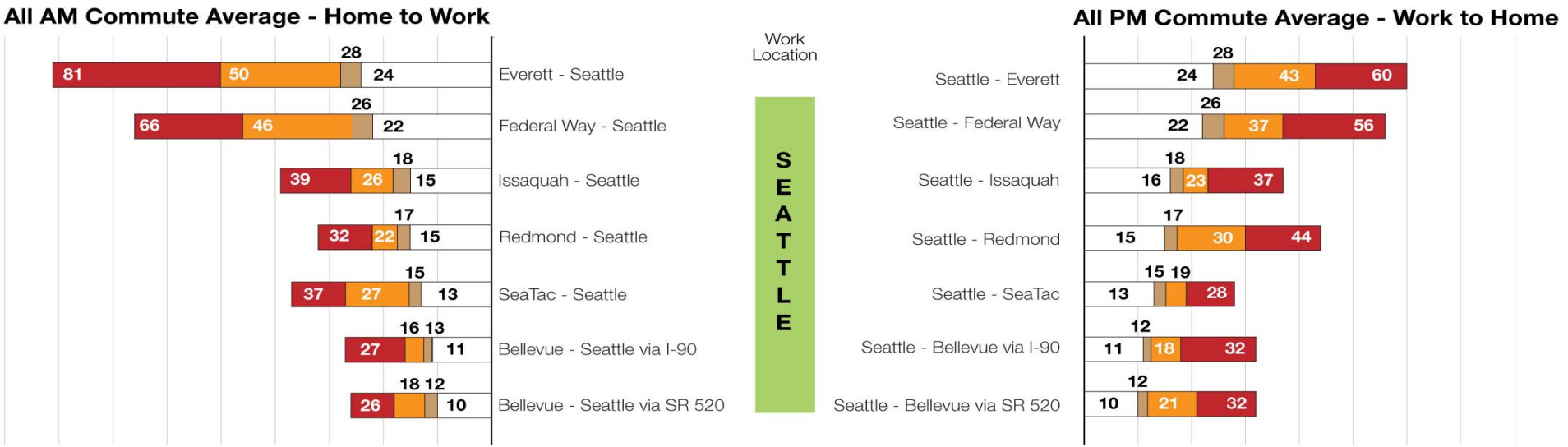
Morning and afternoon commutes by work location

Central Puget Sound Area, 2006

Travel time in minutes

- Travel Time at Posted Speeds with no congestion (in minutes)
- Travel Time due to Peak Condition (in minutes)
- Travel Time at Maximum Throughput Speeds 51 mph (in minutes)
- Travel Time required to ensure on-time arrival 95% of the time (in minutes)





WSDOT has one of the most extensive congestion measurement reporting approaches. It uses multiple measures and indicators to evaluate the condition the worst highway corridors. Table above represents a sample of 14 corridors. It uses multiple measures to evaluate the condition of worst urban highway corridors, and reports them annually in the *Gray Notebook (see also backup slide #19),* " Key Congestion Performance Measures). Among the most relevant to citizens is travel times. In addition, WSDOT provides timely and accurate congestion data for the key commutes in the central Puget Sound region and Spokane to help commuters make informed transportation decisions. The annual congestion report includes:

- Travel time at posted speeds: vehicles travel at approximately the posted speed. Fewer vehicles are on the highway and the segment is not achieving maximum productivity.
- Travel time at maximum throughput measure is when a freeway is used most efficiently, and vehicles travel between 70 to 85% of the posted speed limit.
- 95% Reliable Travel Times provide the estimated time to reach your destination on-time 19 out of 20 days in peak travel periods. This informs drivers how much time to allow as "buffer time" to assure on time arrival.

Measures are also reported in OFM's Attainment Report as well as GMAP forums.

See: http://www.wsdot.wa.gov/NR/rdonlyres/27821903-A307-4549-ADCA-8767BC451680/0/2007_Congestion_Report.pdf

What are the causes and impacts of congestion?

Why do we have congestion?

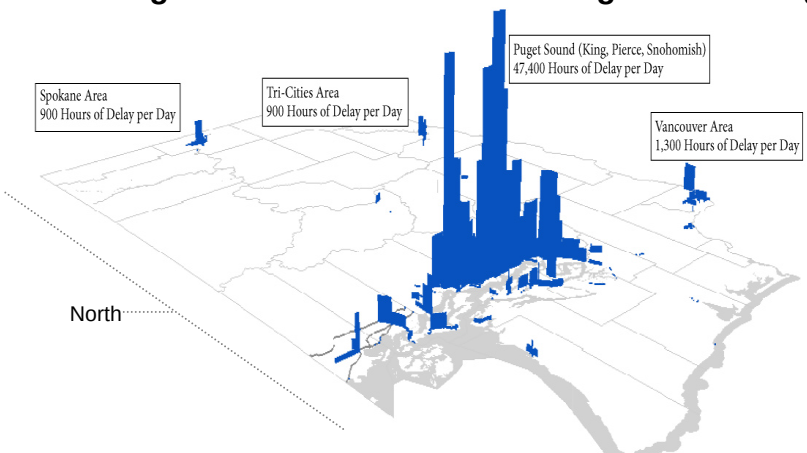
- Washington's growing economy and population put increasing demands on the system while there was little growth in supply.
- Puget Sound highways carry two to five times more traffic than engineers' anticipated in the 1960 original design.
- Between 2004 and 2006, the central Puget Sound population and economy added 107,000 new residents and 91,000 new jobs.

What are the impacts of congestion?

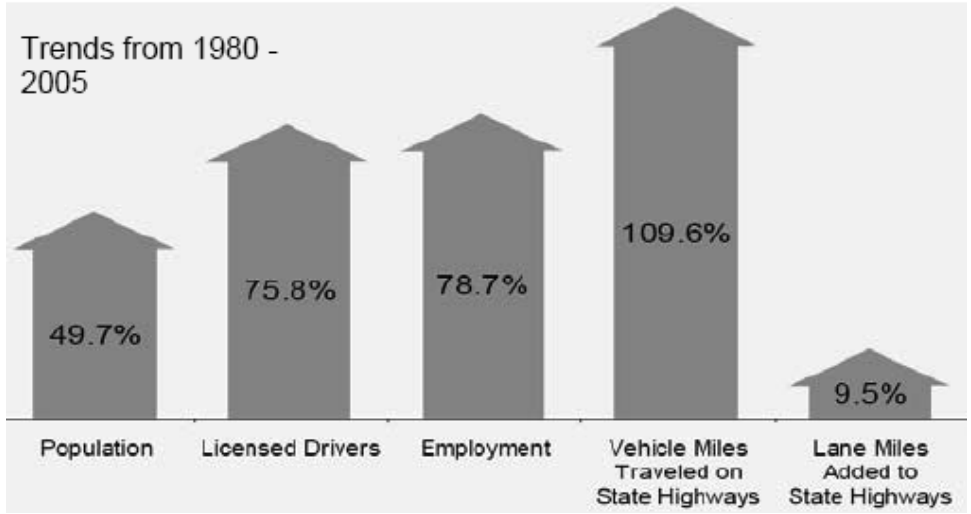
- Unpredictable travel time for people and freight
- Increased travel costs
- Direct shipper/recipient and downstream productivity losses
- Lost opportunities to attract new businesses
- Increased vehicle emissions

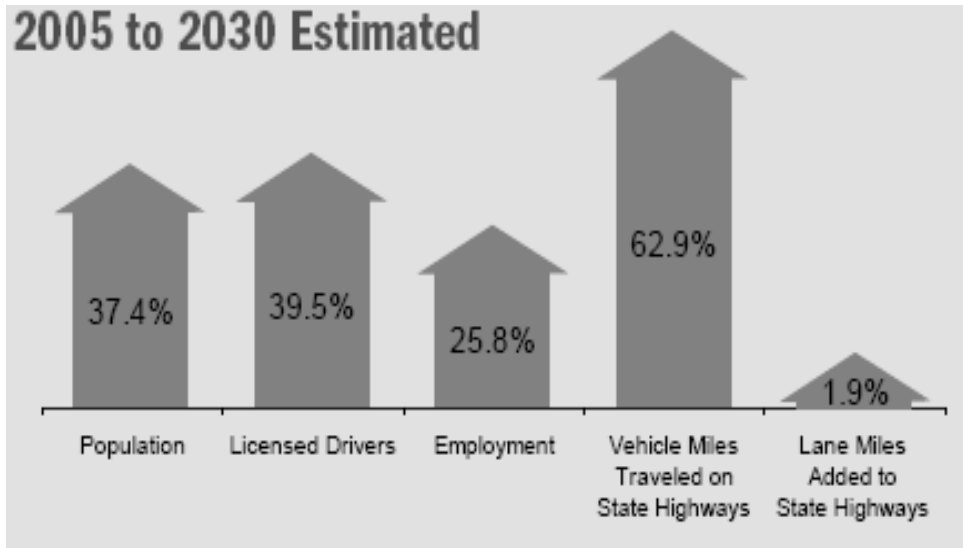
In 2006, on an average day, the number of hours of delay on state highways was 108,100 hours— an estimated annual cost of $624 million.

Most congestion is concentrated in Puget Sound Region



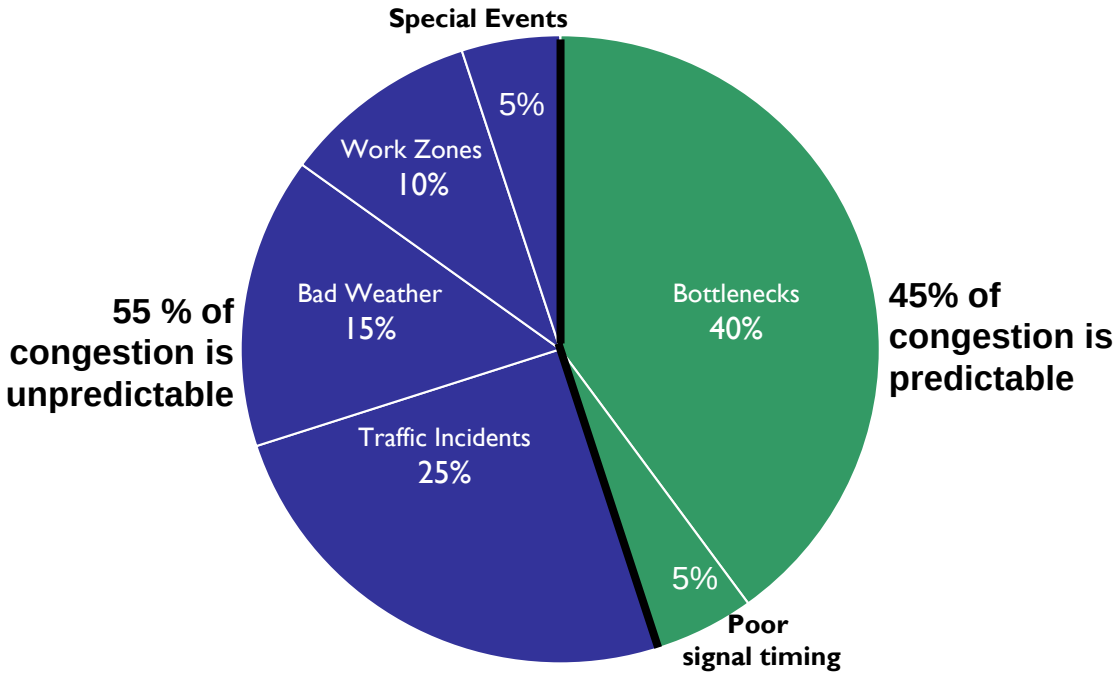
Demands on the system are increasing





Most congestion is caused by unpredictable events

Several factors contribute to congestion



Source: FHWA, 2004. Data reflects national estimate

Unpredictable Congestion – Incident induced, such as, accidents, weather, and a work zone

Predictable Congestion – Too much demand and not enough capacity (too many people using the system)

Any one of the factors in this chart can cause congestion. When two or more are combined, delay is compounded. Conditions are dynamic, and are rarely the same from one day to the next, one highway to another or even from one hour to another.

The majority of transportation dollars are directed at the right side of the chart.