

# Estimating Vehicle Hours of Travel

We look at vehicle miles traveled (VMT) to understand how the U.S. highway system is being used. But it's also important to know how the system is performing.

Vehicle hours traveled (VHT) is calculated from data on speed and miles traveled to measure the quality of service highways provide.

Highway performance matters because our time matters. Time is the only non-renewable resource, and it is the largest economic cost of traveling and shipping.

## Developing America's Travel Time Data

Economists at the U.S. Department of Transportation's Volpe Center obtain vehicle counts for thousands of road segments from the Federal Highway Administration (FHWA) Highway Performance Monitoring System (HPMS).

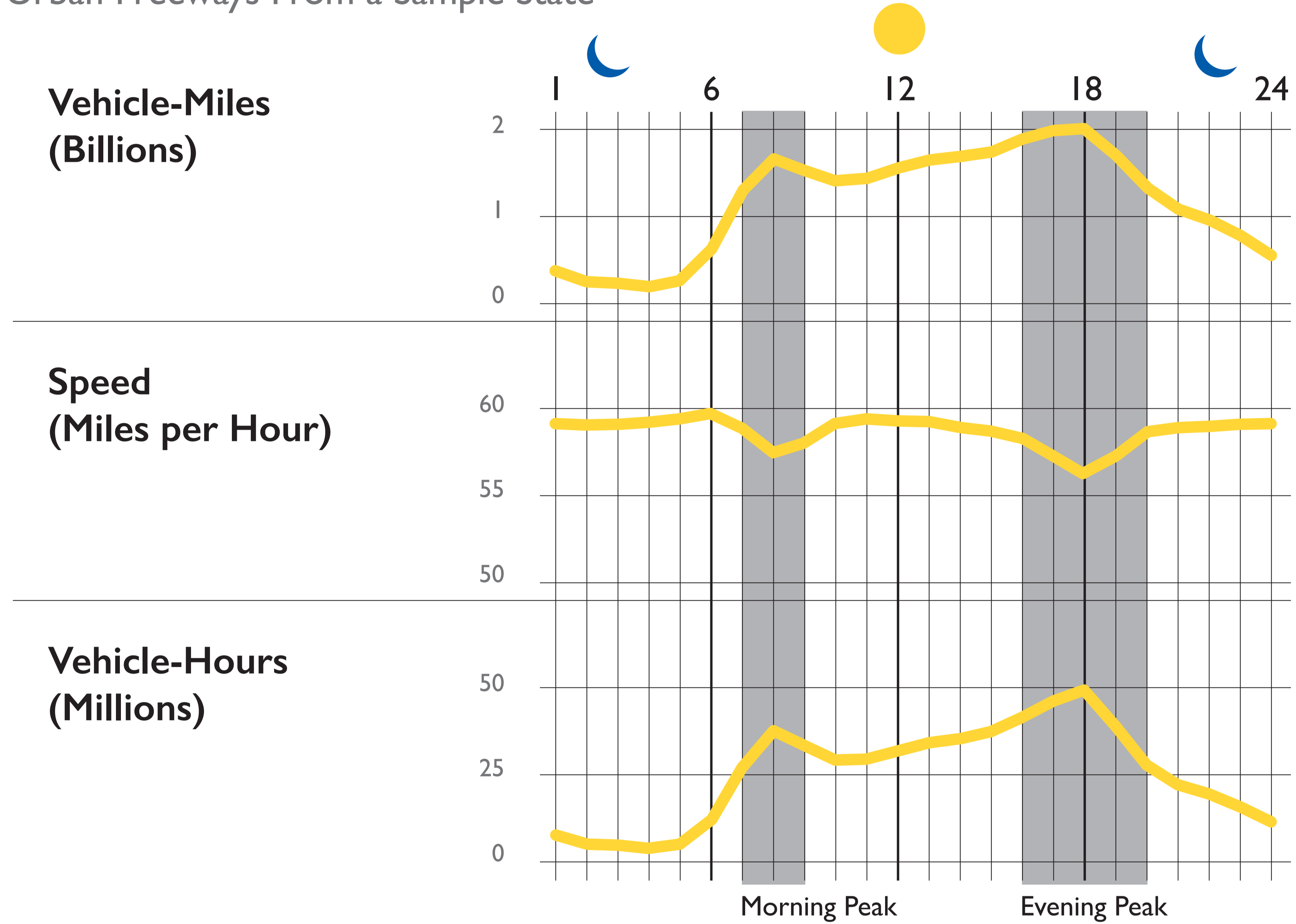
Then, the Volpe economists allocate daily car and truck travel on each segment by hour of the day and direction. And they match hourly speeds measured by GPS to each HPMS section.

Finally, they calculate VHT for cars and trucks during each hour of the day—hourly vehicle miles traveled divided by hourly average speed.

FHWA can then explore how VHT varies by peak and off-peak travel times, roadway type, State, and more.

## Distribution Factors by Hour of Day

Urban Freeways From a Sample State



## Major Urban Roadways Account for Half of Travel Time

Major Urban Other Urban Rural

Functional Class	Location	% of 2016 VMT	% of 2016 VHT %
U1 Interstate	Urban	18	12
U2 Principal Arterial – Other Freeways and Expressways	Urban	8	6
U3 Principal Arterial – Other	Urban	15	20
U4 Minor Arterial	Urban	13	19
U5 Major Collector	Urban	6	7
U6 Minor Collector	Urban	1	1
U7 Local	Urban	10	13
R1 Interstate	Rural	8	4
R2 Principal Arterial – Other Freeways and Expressways	Rural	1	1
R3 Principal Arterial – Other	Rural	6	4
R4 Minor Arterial	Rural	5	4
R5 Major Collector	Rural	5	4
R6 Minor Collector	Rural	2	1
R7 Local	Rural	4	4

## Potential Uses of VHT Data

- Assess trends in highway performance and travel quality.
- Compare performance by location and type of roadway.
- Estimate economic costs of congestion.
- Distinguish normal rush-hour congestion from delays due to incidents, construction, weather, and special events.
- Map incident reports, construction, special events by date, time, and location to identify traffic hot spots.



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