



TRAFFIC TECH

Technology Transfer Series

DOT HS 811 672

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Motivations for Speeding

Speeding reduces a driver's ability to steer safely around curves or objects in the roadway, extends the distance necessary to stop a vehicle, and increases the distance a vehicle travels while the driver reacts to a dangerous situation. Speeding directly contributes to traffic injury severity and is estimated to be involved in about one-third of all U.S. traffic fatalities. While research has identified key factors connected with speeding or speed-related crashes, the relative importance of factors remains unclear. NHTSA conducted a naturalistic study to identify the reasons why drivers speed, classify speeders, and examine situational, demographic, and personality factors that may predict travel speed.

Drivers from Seattle, Washington, and College Station, Texas, volunteered to have GPS units installed on their vehicles for 3 to 4 weeks. The GPS data compared drivers' speeds to the posted speed limits on the roads they were driving at any given point in time. There were 164 participants, roughly divided equally into four groups – young males (18 to 25 years old), older males (35 to 55), young females (18 to 25) and older females (35 to 55). Participants completed personal inventories to measure demographic, personality, attitudinal, and risk-taking behaviors.

Speeding Patterns

A behavior-based approach was used to define speeding, based on the rationale that if drivers have control over their travel speed, and are not blocked by other traffic, then there is an underlying motivation or behavioral frame that governs their speed selection. "Speeding" was operationally defined as driving 10 mph or more above the posted speed limit. Adjustments were made in the data to account for times during the trip where drivers had no opportunity to speed, such as time spent waiting at a stop light. Combining two measures of speeding behavior -- the percentage of trips with any speeding and the average amount of speeding on each trip—yielded four distinct types of speeding patterns.

1. *Incidental Speeding* – The driver generally does not speed and, if he/she does speed, typically drives at less than 10 mph above the posted speed limit. If speeding occurs, it is on a small number of trips, and for only a small portion of those trips. This speeding may be unintentional.
2. *Situational Speeding* – The driver generally does not speed, but has a small number of trips with a relatively high level

of speeding within the trip. This pattern could reflect situational factors such as being late.

3. *Regular or Casual Speeding* – The driver speeds on a larger proportion of trips. However, speeding generally occurs for just a small part of the trip. This may reflect systematic behaviors.
4. *Habitual* – The driver speeds regularly and for a relatively large proportion of the trip.

Conceptual Approach to Speeding Patterns

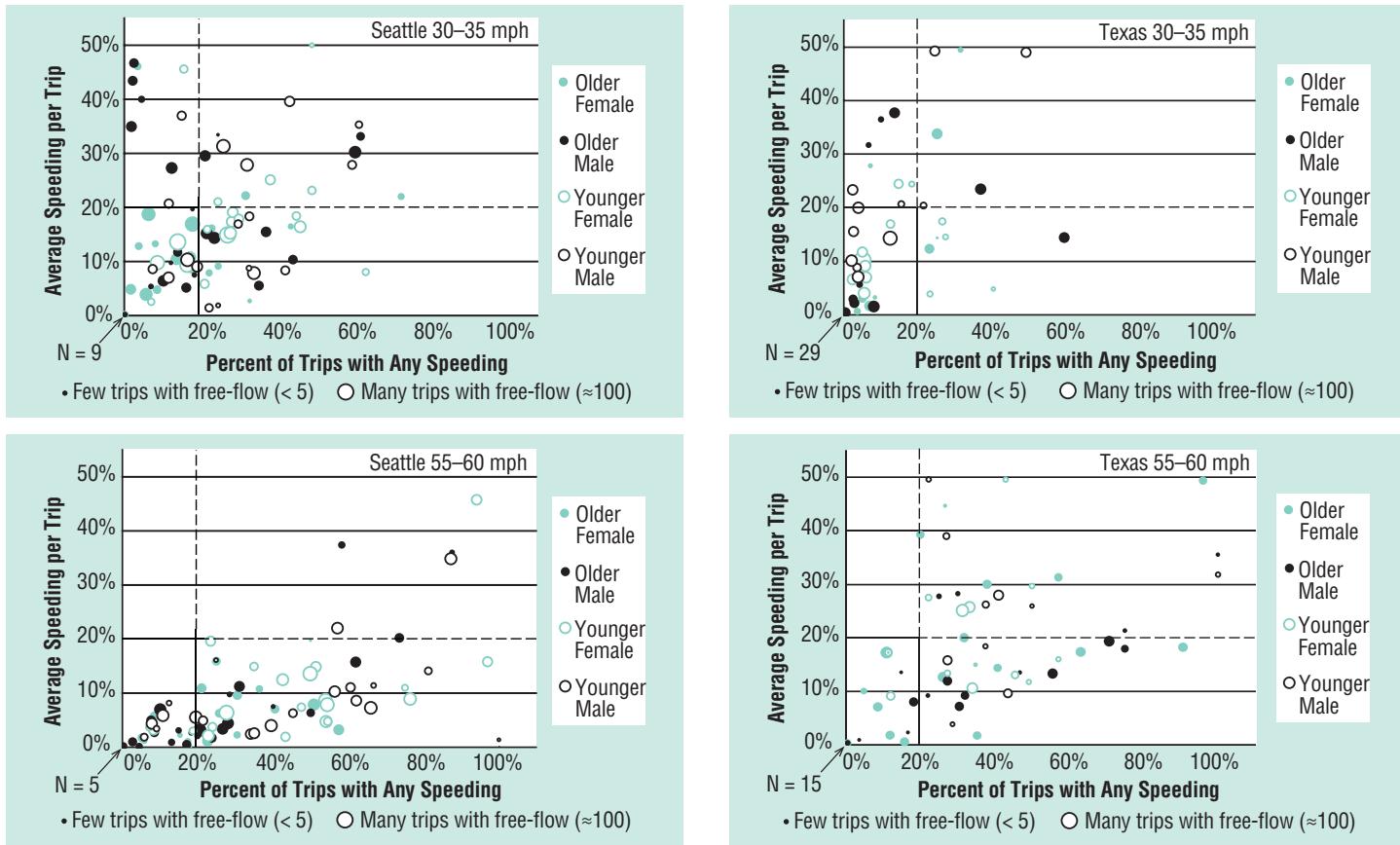
Average Amount of Speeding per Trip	Percent of Trips With Any Speeding	
	Low	High
	Situational	Habitual
High	Incidental	Regular or Casual
Low		

The scatter plots on the following page show the actual speed data for individual Seattle and College Station participants. The size of each data point corresponds to the number of trips taken by each driver that included free-flow driving conditions on roads covering certain speed bands (30 to 35 mph or 55 to 60 mph in both sites, or 70 mph in Texas). The larger circles denote more trips taken by a single driver on the indicated speed band.

For the Seattle drivers, in the 30 to 35 mph speed band, there are multiple drivers in each quadrant or zone. There are more male drivers in the Situational (top left) and Habitual (top right) speeder zones. The pattern at 55 to 60 mph in Seattle is different. Most drivers have many trips with little speeding on those trips. Longer trips can increase the likelihood of a driver having any speeding. Engaging in some speeding on a trip is a regular occurrence for many drivers. There is no evidence of Situational speeding (the upper left quadrant is empty) but there is a small group of Habitual speeders at 55 to 60 mph.

For Texas drivers, the scatter plots are markedly different at each speed band. Over one-third had no speeding on 30 to 35 mph roads and there is a vertical distribution indicating that speeding is less common on these roads. On 55 to 60 mph roads, most drivers had fewer trips, with moderate amounts of per-trip speeding on a regular basis (30 to 50% of trips). Females make up most of the Incidental speeder group. There are no data points in the Situational quadrant. On 70 mph roads (graph not shown), there were fewer trips overall and, on average, relatively little speeding per trip under free-flow

Scatter Plots of Types of Speeding Based on the Percent of Trips With Any Speeding and the Average Speeding per Trip



driving conditions. In general, these scatter plots suggest that roadway type, driving conditions, and driver demographics affected speeding behavior.

Speeding Linked to Personality, Attitudes, Demographics, and Situational Factors

Exploratory analyses that linked self-reported personality, attitudinal, and belief factors to speeding suggested a complex relationship between demographics and speeding. In general, younger males and females were more likely to speed than older females in some speed bands, and, speeding was more likely during the morning rush hour and on weekends. Drivers who scored higher on reckless driving or road rage factors sped more in some speed bands. Those who scored higher in “resisting the temptation to speed when the opportunity presented itself” and those who said they were “influenced by others to maintain the speed limit” sped less.

Conclusions

This behavior-based approach provides a useful framework for organizing driver motivations, attitudes, and beliefs about

speeding. Posted speed, ticket speed, and safe speed seem to represent identifiable “set points” monitored by drivers during a trip. While the posted speed is technically perceived as a limit, drivers have different interpretations of how fast it means they can drive, as well as different beliefs about how fast they can drive before receiving a ticket, and how fast they can drive safely, which may vary by road-type. These perceptions, along with situational, personality and experiential factors, provide motivations for making driving decisions and for drivers’ patterns of speeding.

How to Order

Motivations for Speeding is a three-volume report: Volume I – Summary Report; Volume II – Findings Report; and Volume III – Methodology and Appendices. To order *Motivations for Speeding*, prepared by Battelle’s Center for Human Performance and Safety, write to the Office of Behavioral Safety Research, NHTSA, NTI-130, 1200 New Jersey Avenue SE., Washington, DC 20590, fax 202-366-7394, or download from www.nhtsa.gov. Randolph Atkins, Ph.D., was the task order manager for this project.



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