



National Traffic Speeds Survey II: 2009

Vehicle speeds are a crucial factor in traffic safety. NHTSA estimates that speeding is involved in approximately 31% of fatal motor vehicle crashes, costing society over \$40 billion per year.¹ Since speeding is such a pervasive traffic safety issue, NHTSA funded two field surveys to measure driving speeds for all types of motor vehicles on freeways, arterial highways, and collector roads across the United States, to produce national and regional estimates of travel speeds for various types of roads and vehicles, and track these speed measurements over time.

The speed surveys were designed as geographic cluster samples of primary sampling units (PSUs), which can be a city, county, or group of two or three counties. PSUs were chosen to represent a range of combinations of regions of the United States, level of urbanization, and type of topography (flat, hilly, mountainous). Speeds were acquired on randomly drawn road segments on limited access highways, major and minor arterial roads, and collector roads. Speed measurement sites were selected in road segments with various degrees of straight, curved, flat, and hilly geometry. Twenty to 60 sites were selected in each PSU.

Speed data were collected during spring and summer 2007 and spring 2009. Speeds were measured using small, self-contained, on-road sensors temporarily placed on the road surface for a single 24-hour period at each site. In 2009, side-fire radar devices were used on the limited access highways to enhance safety in data collection. About half of the observations were free-flow vehicles. Mean, 85th percentile, and other measures of traffic speeds and speed variation for free-flow traffic compared to all traffic, did not differ by more than 1.4 mph for 2007 and 1.5 mph for 2009.

Overall, there was less than 1 mph difference between 2007 and 2009 speeds measured on arterial roads and

collector roads. However, on limited access roads the mean speeds were 5.8 mph higher and 85th percentile speeds were 4.18 mph higher in 2009 than in 2007 (see Table 1). The greatest increases in speeds from 2007 to 2009 on freeways were for passenger cars, light trucks, and medium-size trucks (up to 49 ft), which increased by 5 to 7 mph. The 50- to 80-foot size class of big trucks also increased in speeds, but only around 3 mph. The largest big trucks had little change in mean speed.

Table 1. Overall Speed Estimates (in MPH) by Road Class (Free-Flow) by Year

FCC ROAD CLASS	Speed Estimate		
	2007	2009	Change
Limited access			
Mean	64.69	70.50	5.80
Median	64.86	70.84	5.98
85th percentile	73.77	77.96	4.18
95th percentile	79.20	81.83	2.63
Major arterial			
Mean	53.62	53.28	-0.34
Median	54.10	53.37	-0.73
85th percentile	64.46	63.68	-0.78
95th percentile	70.64	70.14	-0.50
Minor arterial			
Mean	46.85	47.01	0.17
Median	45.85	46.15	0.29
85th percentile	58.30	57.82	-0.48
95th percentile	65.95	65.56	-0.39

Most traffic exceeded the speed limits in both 2007 and 2009 (see Table 2). While the percentage of vehicles traveling over the speed limit decreased on major arterials and minor arterials from 2007 to 2009, there were still sizeable percentages of vehicles on major arterials (13.3%) and minor arterials (15%) traveling at least 10 mph over the speed limit. The percentage of vehicles exceeding the speed limit on limited access roads increased significantly from 2007 to 2009. On limited

¹ Traffic Safety Facts, 2008 Data: Overview

access roads, the percentage of vehicles exceeding the speed limit by any amount went from 48.3% to 71.7%, vehicles exceeding the speed limit by more than 5 mph went from 28.4% to 45.5% and vehicles exceeding the speed limit by greater than 10 mph went from 14.4% to 20.1%.

Table 2: Percentage of Vehicles Exceeding the Speed Limit by MPH Over Limit and Year

FCC ROAD CLASS	Percentage of Vehicles		
	2007	2009	Change
Limited access			
By Any Amount	48.3%	71.7%	23.4%
By > 5 mph	28.4%	45.5%	17.1%
By > 10 mph	14.4%	20.1%	5.7%
Major arterial			
By Any Amount	59.8%	55.9%	-3.9%
By > 5 mph	34.0%	31.0%	-3.0%
By > 10 mph	15.3%	13.3%	-2.0%
Minor arterial			
By Any Amount	60.8%	59.1%	-1.7%
By > 5 mph	35.2%	33.2%	-2.0%
By > 10 mph	16.2%	15.0%	-1.2%

Vehicles on limited access roads, major arterials, and minor arterials/collectors in rural areas were 8 to 12 mph faster than their counterparts in urban areas in 2009, slightly less than in 2007. While there were only minor changes in speeds for major arterials and minor arterials in most locations, in urban locations limited access roadways and major arterials showed a 4 to 9 mph increase in speeds in 2009 over 2007 speeds. On limited access roads (see Figure 1), urban areas had the widest range of travel speeds compared to other levels of urbanization. However, the range of traffic speeds in urban areas on major arterials and minor arterial/collector roads was slightly lower than the range of speeds for all other levels of urbanization.

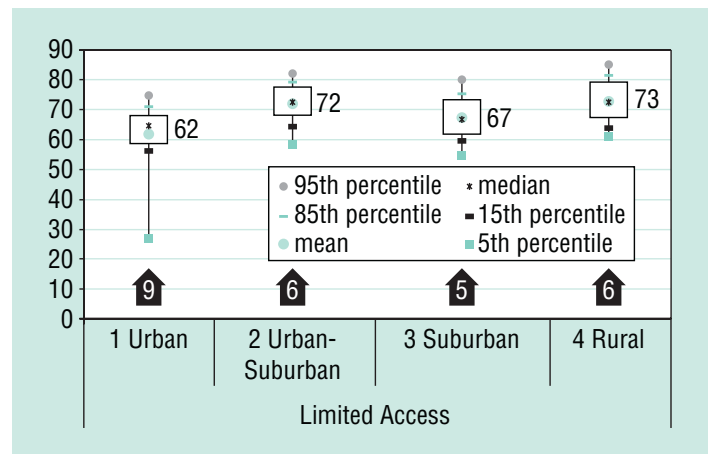
In 2009, mean speeds differed by only 3 to 5 mph across day of week on arterials, collectors, and limited access roads. In 2007, mean speeds on major arterials had a

much broader range, differing by 3 to 10 mph by day of week. Time of day and light conditions had little effect on traffic speeds in either 2007 or 2009.

General increases in speeds measured from 2007 to 2009 may have been due to some timing differences in the data collection waves. The 2007 field period was extended due to bad weather and may have coincided with more special speed enforcement campaigns than during 2009. In addition, there may have been less congestion, resulting in higher speeds since VMT levels in 2009 were much lower than in 2007.

Note: This survey was originally designed with the secondary objective of exploring the relationship between driving speeds and crashes; however, the required crash data were not available prior to the conclusion of this project. The over-sampling of crash sites resulted in a smaller sample of non-crash sites, thereby increasing the variance for estimates that are not specific to crash sites.

Figure 1. 2009 Travel Speeds in MPH Limited Access Roads by Urbanicity (Arrows Show Increases From 2007)



How to Order

Download a copy of *Survey of National Travel Speeds II: 2009* (171 pages), prepared by Westat, Inc., from <http://www.nhtsa.gov/staticfiles/nti/pdf/811647.pdf>. Randolph Atkins, Ph.D., was the task order manager for this project.