

LBJ Freeway, Woodall Rodgers are most congested roads in DFW, state says

Michael Lindenberger/Reporter

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LBJ Freeway ranks third -- see this morning's story to see [why it's going to get worse before it gets better](#) -- and Woodall Rodgers Freeway comes in at fifth.

By contrast, Harris County has three of the top five and five of the top 10 most congested roads, providing one more reason -- as if we needed one ;) -- why Dallas is better than Houston.

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Given that Woodall Rodgers isn't much longer than a mile, it scores very high by that measure.

The list put out by TxDOT -- something it did at the demand by Lt. Gov. David Dewhurst -- can be sorted by different variables, however. For instance, sort the list to look at the roads from the point of view of commuters -- what the Texas Transportation Institute calls the commuter stress index -- and the worst road in North Texas is actually Interstate 820 in [Tarrant County](#).

By that measure, Woodall Rodgers ranks 8th.

Update: TxDOT corrects link, says North Texas has three most congested roads in Texas

Michael Lindemberger/Reporter
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Correction: Dallas has the three most congested highways in Texas, according to figures released Thursday by the Texas Department of Transportation.

Woodall Rodgers Freeway, LBJ Freeway and North Central Expressway are the most congested freeways in the state.

Fort Worth's Interstate 35 W was the fourth-most congested.

The information initially posted in this space was wrong. The TxDOT website mistakenly linked to 2010 information.

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2010 Rank	County	Roadway	From	To	Annual Delay per Mile (Hours)	Total Annual Hours of Delay	Annual Cost of Congestion (\$Million)	Texas Congestion Index	Commuter Stress Index	Metropolitan Planning Organization
1	Harris	IH 45	SL 8 North	IH 610	484,630	4,507,059 \$	98.03	1.30	1.71	H-GAC
2	Harris	US 59	IH 610 West	SH 288	440,416	2,422,287 \$	52.68	1.33	2.04	H-GAC
3	Dallas	IH 635	IH 35E	US 75	432,244	3,414,730 \$	74.27	1.34	1.85	NCTCOG
4	Travis	IH 35	SH 71	US 183	421,778	3,880,359 \$	84.40	1.45	2.40	CAMPO
5	Dallas	SS 366 Woodall Rodgers Freeway	IH 35	US 75	397,861	636,577 \$	13.85	1.41	2.39	NCTCOG
6	Harris	IH 45	IH 10	IH 610 South	366,486	2,858,589 \$	62.17	1.26	1.61	H-GAC
7	Harris	IH 45	IH 610 North	IH 10	342,303	1,061,140 \$	23.08	1.22	1.61	H-GAC
8	Tarrant	IH 35W	IH 30	SH 183	339,507	1,120,373 \$	24.37	1.39	1.97	NCTCOG
9	Dallas	US 75	IH 635	SS 366 Woodall Rodgers Freeway	337,201	3,304,567 \$	71.87	1.24	1.72	NCTCOG
10	Harris	US 59	IH 10	SH 288	314,106	973,729 \$	21.18	1.31	1.76	H-GAC
11	Harris	US 290	FM 529	IH 610	313,584	2,853,617 \$	62.07	1.33	2.05	H-GAC
12	Dallas	IH 35E	IH 30	SH 183	313,318	1,723,248 \$	37.48	1.27	1.79	NCTCOG
13	Harris	IH 610	IH 10	IH 45 North	303,228	1,880,016 \$	40.89	1.27	1.81	H-GAC
14	Tarrant	IH 820	I35W	SH 183	288,238	2,219,431 \$	48.27	1.57	1.76	NCTCOG
15	Dallas	US 75	PGBT	IH 635	257,055	1,773,680 \$	38.58	1.22	1.67	NCTCOG
16	Dallas	IH 30	IH 35E	SH 12 East	254,440	2,035,516 \$	44.27	1.26	1.55	NCTCOG
17	Dallas	IH 35E	US 67	IH 30	251,532	1,157,045 \$	25.17	1.38	1.61	NCTCOG
18	Harris	IH 610	UA 90	IH 10	245,117	2,157,029 \$	46.92	1.24	1.57	H-GAC
19	Dallas	IH 35E	SL 12	IH 635	242,208	581,299 \$	12.64	1.21	1.63	NCTCOG
20	Harris	US 59	SL 8	IH 610 West	235,349	1,835,724 \$	39.93	1.17	1.48	H-GAC
21	Tarrant	IH 35W	SH 183	US 81	234,810	1,502,785 \$	32.69	1.35	1.99	NCTCOG
22	Harris	IH 10	SL 8	IH 610 West	205,249	1,354,641 \$	29.46	1.17	1.34	H-GAC
23	Bexar	SL 1604	SH 16	FM 471	197,021	945,701 \$	20.57	1.51	1.70	San Antonio/Bexar County
24	Travis	N Lamar	W 45th Street	W 6th Street	195,573	664,947 \$	14.46	1.58	1.67	CAMPO
25	Harris	US 290	FM 1960	FM 529	187,048	785,601 \$	17.09	1.23	1.86	H-GAC
26	Harris	IH 45	SL 8	IH 610 South	174,824	1,433,556 \$	31.18	1.16	1.39	H-GAC
27	Harris	SH 288	IH 45	IH 610	172,958	830,196 \$	18.06	1.21	1.63	H-GAC

2010 Rank	County	Roadway	From	To	Annual Delay per Mile (Hours)	Total Annual Hours of Delay	Annual Cost of Congestion (\$Million)	Texas Congestion Index	Commuter Stress Index	Metropolitan Planning Organization
28	Harris	FM 1093	SH 6	Post Oak Boulevard	168,249	1,884,390	\$ 40.99	1.25	1.32	H-GAC
29	Dallas	IH 30	Hampton	IH 35E	167,825	520,256	\$ 11.32	1.30	1.36	NCTCOG
30	Dallas	IH 345	Woodall Rodgers	IH 30	162,567	227,594	\$ 4.95	1.18	1.54	NCTCOG
31	Harris	IH 10	IH 45	US 59	161,898	242,848	\$ 5.28	1.20	1.55	H-GAC
32	Dallas	IH 635	SH 78	IH 30	159,692	638,769	\$ 13.89	1.30	1.50	NCTCOG
33	Harris	IH 45	FM 528 / NASA 1	SL 8	157,824	1,073,200	\$ 23.34	1.17	1.45	H-GAC
34	Harris	FM 1960	US 290	IH 45	157,776	2,161,525	\$ 47.01	1.32	1.41	H-GAC
35	Harris	IH 10	IH 610 West	IH 45	157,762	899,242	\$ 19.56	1.16	1.45	H-GAC
36	Dallas	SL 12	SH 356	IH 35E	154,540	726,340	\$ 15.80	1.24	1.74	NCTCOG
37	Tarrant	SH 360	SH 183	IH 20	150,086	1,680,962	\$ 36.56	1.18	1.59	NCTCOG
38	Bexar	US 281	SH 1604	Comal County Ln	149,368	1,180,003	\$ 25.67	1.33	1.59	San Antonio/Bexar County
39	Travis	SL 1	US 183	US 290	146,130	1,753,560	\$ 38.14	1.23	1.72	CAMPO
40	Dallas	IH 635	US 75	SH 78	145,212	1,001,982	\$ 21.79	1.14	1.50	NCTCOG
41	Dallas	IH 35E	IH 635	BS 121H	142,654	1,512,130	\$ 32.89	1.17	1.51	NCTCOG
42	Travis	SL 360	SL 1	US 290	137,546	178,810	\$ 3.89	1.23	1.32	CAMPO
43	Travis	US 290	SL 1	RM 1826	136,493	518,673	\$ 11.28	1.31	1.32	CAMPO
44	Travis	South Lamar/1st Street	0.17 mile west of US 290	IH 35	135,550	704,859	\$ 15.33	1.30	1.36	CAMPO
45	Harris	Bellaire	Puerta Vista Lane	US 59	133,919	857,082	\$ 18.64	1.21	1.25	H-GAC
46	Harris	Bissonnet	US 59	Dairy Ashford	128,943	554,457	\$ 12.06	1.23	1.31	H-GAC
47	Dallas	SL 12	SH 356	IH 30	117,636	352,908	\$ 7.68	1.16	1.59	NCTCOG
48	Bexar	IH 35	Loop 353/Nogalitos	US 281	116,342	488,637	\$ 10.63	1.12	1.34	San Antonio/Bexar County
49	Bexar	IH 35	FM 1518	SL 1604	116,202	255,644	\$ 5.56	1.17	1.51	San Antonio/Bexar County
50	Bexar	FM 3487	SH 471	IH 410	115,093	379,808	\$ 8.26	1.33	1.54	San Antonio/Bexar County

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51	Harris	Montrose	IH 10	US 59	115,065	356,700	\$ 7.76	1.25	1.33	H-GAC
52	El Paso	FM 659	Sun Fire Boulevard	IH 10	114,402	411,847	\$ 8.96	1.30	1.34	El Paso MPO
53	Collin	US 75	SH 121 Toll	SH 190	112,414	1,259,041	\$ 27.38	1.13	1.42	NCTCOG
54	Smith	SL 323	SH 248	US 69	111,575	234,308	\$ 5.10	1.26	1.30	Tyler MPO
55	Harris	UA 90	IH 610	SH 288	108,783	402,498	\$ 8.75	1.19	1.30	H-GAC
56	Bexar	Wurzbach	Military Highway	IH 410	108,249	941,765	\$ 20.48	1.23	1.37	San Antonio/Bexar County
57	Travis	FM 1325	SL 1	US 183	107,362	268,406	\$ 5.84	1.29	1.33	CAMPO
58	Brazos	FM 60	FM 2154	SH 6	106,834	309,819	\$ 6.74	1.25	1.30	Bryan-College Station MPO
59	Harris	IH 610	FM 521	UA 90	106,431	223,504	\$ 4.86	1.12	1.37	H-GAC
60	Harris	FM 1960	Westfield Place Drive	Treaschwig Road	104,461	271,600	\$ 5.91	1.21	1.22	H-GAC
61	Harris	Fondren	UA 90	S Piney Point Road	104,122	812,153	\$ 17.66	1.24	1.28	H-GAC
62	Bexar	IH 35	IH 410 North	SL 1604	102,203	889,163	\$ 19.34	1.12	1.40	San Antonio/Bexar County
63	Harris	Woodway	S Voss Road	Memorial Drive	101,925	346,546	\$ 7.54	1.24	1.30	H-GAC
64	Travis	RM 2222	SL 1	Lamar Boulevard	100,936	201,873	\$ 4.39	1.27	1.39	CAMPO
65	Tarrant	SH 114/SH 26	BS 114L	SH 121	100,001	390,004	\$ 8.48	1.16	1.44	NCTCOG
66	Tarrant	FM 157	SH 180	IH 20	99,738	468,767	\$ 10.20	1.20	1.21	NCTCOG
67	Dallas	Lemmon Ave	Inwood Road	N Haskell Road	99,224	297,671	\$ 6.47	1.21	1.29	NCTCOG
68	Webb	US 59	IH 35	N Arkansas	98,859	217,491	\$ 4.73	1.22	1.28	Laredo Urban Transportation Study
69	Dallas	Forest Ln	North Dallas Tollway	SH 78	96,819	939,146	\$ 20.43	1.21	1.23	NCTCOG
70	Harris	SH 6	IH 10	West Road	96,702	918,672	\$ 19.98	1.22	1.34	H-GAC
71	Dallas	Mockingbird	Inwood Road	SL 12	95,558	621,129	\$ 13.51	1.22	1.28	NCTCOG
72	Travis	RM 2222	SL 1	Mt Bonnell Rd	95,553	286,658	\$ 6.23	1.31	1.37	CAMPO

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73	Dallas	SH 183	SL 12	IH 35E	95,410	305,314	\$ 6.64	1.13	1.41	NCTCOG
74	Denton	FM 2499	FM 407	FM 1171	95,123	256,831	\$ 5.59	1.42	1.50	NCTCOG
75	Bexar	Castroville	SH 151	SW 19th Street	94,736	303,155	\$ 6.59	1.29	1.40	San Antonio/Bexar County
76	Harris	Beechnut	Beckford Drive	IH 610	94,474	859,713	\$ 18.70	1.22	1.24	H-GAC
77	Tarrant	Matlock	FM 157	W Sublett Road	93,826	422,219	\$ 9.18	1.22	1.25	NCTCOG
78	Dallas	Hampton	0.25 mile south of Levee Road	W Illinois Avenue	93,549	505,165	\$ 10.99	1.25	1.35	NCTCOG
79	Denton	FM 1171	Lusk Lane	Dover Drive	91,947	239,063	\$ 5.20	1.44	1.63	NCTCOG
80	Travis/Williams	RM 620	US 183	FM 2222	91,940	524,056	\$ 11.40	1.24	1.36	CAMPO
81	Bexar	SL 345	IH 410	IH 10	91,474	338,456	\$ 7.36	1.29	1.31	San Antonio/Bexar County
82	Harris	SH 288	IH 610	SL 8	91,192	528,916	\$ 11.50	1.17	1.59	H-GAC
83	Tarrant	IH 820	SH 121	IH 30	90,549	316,921	\$ 6.89	1.16	1.44	NCTCOG
84	Dallas	IH 35E	SH 183	SL 12	90,340	397,496	\$ 8.65	1.14	1.39	NCTCOG
85	Harris	N Mac Gregor	Holcombe Boulevard	Calhoun Road	89,532	322,317	\$ 7.01	1.42	1.54	H-GAC
86	Tarrant	SH 121	SH 26	FM 3029	88,891	1,084,465	\$ 23.59	1.13	1.29	NCTCOG
87	Dallas	SH 289	SH 121	IH 635	86,420	1,045,686	\$ 22.74	1.20	1.25	NCTCOG
88	Harris	Dairy Ashford	IH 10	Westpark Tollway/Alief Road	86,136	422,069	\$ 9.18	1.23	1.30	H-GAC
89	Travis	SL 360	SL 1	RM 2244	85,830	308,988	\$ 6.72	1.28	1.56	CAMPO
90	Tarrant	SH 183	SH 121	SH 360	85,760	317,311	\$ 6.90	1.13	1.43	NCTCOG
91	Dallas	Coit	W Spring Creek Parkway	Forest Lane	85,306	870,119	\$ 18.93	1.18	1.22	NCTCOG
92	Harris	Gessner S	Hempstead Highway	W Bellfort Street	84,939	1,240,103	\$ 26.97	1.20	1.22	H-GAC
93	Harris	IH 45	FM 2920	SL 8	84,494	794,240	\$ 17.27	1.07	1.22	H-GAC

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94	Bexar	IH 410	US 281	IH 35	83,857	469,598	\$ 10.21	1.12	1.39	San Antonio/Bexar County
95	Harris	Post Oak	IH 610/ West Loop	FM 2234	83,655	602,313	\$ 13.10	1.19	1.30	H-GAC
96	Bexar	Basse	Naco Perrin Boulevard	US 281	83,527	476,106	\$ 10.36	1.30	1.33	San Antonio/Bexar County
97	Harris	IH 10	IH 610	SL 8	83,265	557,878	\$ 12.13	1.09	1.27	H-GAC
98	El Paso	Lee Trevino	US 62	IH 10	83,079	357,241	\$ 7.77	1.19	1.21	El Paso MPO
99	Dallas	MacArthur	SH 114	SH 183	82,885	314,962	\$ 6.85	1.24	1.29	NCTCOG
100	El Paso	IH 10	US 54	SL 375	82,782	943,709	\$ 20.53	1.10	1.24	El Paso MPO

Analysis Procedures and Mobility Performance Measures 100 Most Congested Texas Road Sections

Prepared by Texas Transportation Institute
August 2010

This memo documents the analysis conducted for the revised "100 Most Congested Road Sections" list. This revision incorporates private sector traffic speed data from calendar year 2009 into the calculation of the mobility performance measures presented in the initial calculations. A longer memorandum is available; it provides more detail on the calculation procedures and the performance measures used in 2010 to improve the information provided about the location and timing of congestion.

The Data Improvements - Overview

TxDOT's 100 Most Congested Road Sections website (<http://apps.dot.state.tx.us/apps/rider56/list.htm>) was designed to illustrate the severity and extent of Texas' traffic congestion problem. The analysis is conducted on all roads in Texas regardless of the agency that built or maintains them. The first methodology used a set of estimation procedures and data provided by TxDOT and regional planning agencies to develop a set of mobility measures. This memo describes the 2010 calculation procedure that uses a dataset of traffic speeds from INRIX, a private company that provides travel time information to a variety of customers. INRIX's data is an annual average of traffic speed for each road segment on each day for every 15 minutes - 672 day/time period cells (24 hours x 7 days x 4 times per hour).

INRIX's speed data improves the freeway and arterial street congestion measures in the following ways:

- "Real" rush hour speeds were used to estimate a range of congestion measures; *speeds are measured not estimated.*
- Overnight speeds were used to identify the free-flow speeds that are used as a comparison standard; *low-volume speeds on each road section will be used as the comparison standard.*
- The volume and roadway inventory data from TxDOT's files were used with the speeds to calculate travel delay statistics; *the best speed data is combined with the best volume information to produce high-quality congestion measures.*

The Congestion Measure Calculation

The following steps were used to calculate the congestion performance measures and identify the 100 most congested road sections.

1. Obtain TxDOT Roadway-Highway Inventory (RHiNo) traffic volume data by road section
2. Match the RHiNo road network sections with the traffic speed dataset road sections
3. Estimate traffic volumes for each 15-minute time interval from the daily volume data
4. Calculate average travel speed and total delay for each 15-minute interval
5. Establish free-flow (i.e., low volume) travel speed
6. Calculate congestion performance measures
7. Combine road segments into sections

The mobility measures require four data inputs: 1) actual travel speed, 2) free-flow travel speed, 3) vehicle volume, 4) vehicle occupancy (persons per vehicle). The 2009 private sector traffic speed data provided a better source for the first two inputs, actual and free-flow travel time. The top 100 congestion analysis required vehicle and person volume estimates for the delay calculations; these were obtained from TxDOT's RHiNo dataset and travel planning studies.

Process Description

The following sections describe the seven calculation steps and the performance measures that were generated for the determination of the 100 most congested road sections. Some short road sections were included in this method (using 2009 speed data for the August 2010 list) but, in general, shorter sections (less than 2 miles) are still not included. Sections of road or times of day without INRIX traffic speed data were estimated using either near time data (the adjacent 15-minute periods) or similar sections of road from similar population size regions based on functional class and volume per lane. There were no sections of road in the top 100 that required significant speed estimation.

Step 1. Identify Traffic Volume Data

The Roadway-Highway Inventory dataset from TxDOT provided the source for traffic volume data, although the geographic designations in the RHiNo dataset are not identical to the private sector speed data. Volume estimates for each day of the week (to match the speed database) were created from the annual average volume data.

Step 2. Combine the Road Networks for Traffic Volume and Speed Data

The road networks for the traffic volume and speed data sources were combined so that an estimate of traffic speed and traffic volume was available for each roadway segment. The segmentation of each roadway was based on the criteria used in the initial top 100 most congested list (for example, sections between 3 and 10 miles long with similar volume and road design features).

Step 3. Estimate Traffic Volumes for Shorter Time Intervals

The third step was to estimate traffic volumes for the 15-minute time intervals. The lowest traffic speeds (morning or evening) were used to assign a traffic volume profiles (volume percentage for each 15-minute period) to each road segment. Congested roads tend to have more than one "peak" hour and many have high volumes in the middle of the day.

Step 4. Calculate Travel Speed and Time

The 15-minute speed and volume data was combined to calculate the total travel time for each 15-minute time period. The 15-minute volume for each segment was multiplied by the corresponding travel time to get a quantity of vehicle-hours.

Step 5. Establish Free-Flow Travel Speed and Time

The calculation of congestion measures required establishing a congestion threshold, such that delay was accumulated for any time period once the speeds are lower than the congestion threshold. For the purpose of the 100 most congested list the data was used to identify the speed at low volume conditions (for example, 10 p.m. to 5 a.m.). The speed limit was used as an upper value and freeway free-flow speeds were capped at 65 mph.

Step 6. Calculate Congestion Performance Measures

The mobility performance measures were calculated using the data generated in Steps 1 to 5.

- Texas Congestion Index – The TCI is a unitless measure that indicates the amount of extra time for any trip. A TCI value of 1.40 indicates a 20-minute trip in the off-peak will take 28 minutes in the peak. Rider 56 specified the TCI as the performance measure for congestion.
- Total delay – The best measure of the size of the congestion problem is the annual travel delay (in person-hours). This measure combines elements of the TCI (intensity of congestion on any section of road) with a magnitude element (the amount of people suffering that congestion).

- **Total delay per mile of road** – One combination of a delay measure and the “indexed” approach is to divide total section delay (in person-hours) by the road length. So the measure of “hours of delay per mile of road” indicates the level of congestion problem without the different section lengths affecting the ranking. **This is the performance measure that best identifies most congested segments.**
- **Congestion Cost** – Two cost components are associated with congestion: delay cost and fuel cost. The cost of delay and fuel in the 2010 most congested list is \$21.75 per hour of delay.
- **Commuter Stress Index** – The CSI measure is calculated as the average of the TCI values from the most congested direction of each peak period (for example, inbound from suburbs in the morning and outbound to the suburbs in the evening).
- **Time of Congestion** – The times of day when each road direction speed is below 75 percent of the street free-flow speed or 80 percent of the freeway free-flow speed is shown for each of the 100 most congested sections (for example, below 48 mph on a 60 mph freeway).

Step 7. Calculate Congestion Performance Measures For Each Road Section

Steps 1 through 6 were performed using the short road segments for analysis. The 100 most congested sections list was intended to identify longer sections of congested road, rather than short bottlenecks. The segment values from two measures – **total delay** and **congestion cost** – can be added together to create a section value. The remaining measures require some sort of averaging process; a weighted average of traveler experience was used in these cases. Time periods or road segments with more volume should “count for more” than time periods/segments with less volume. The following steps were used:

- **Delay per mile** – The delay from the section was divided by the length of the section
- **Time of congestion** – The highest value of any segment was used as the value for the section.
- **Texas Congestion Index and Commuter Stress Index** – The values from the six peak hours (6 to 9 a.m. and 4 to 7 p.m.) for travel time, speed and delay were summed and divided by the total volume to obtain a weighted average travel time, speed and delay for each peak period. A similar approach was used to calculate the combined morning and evening peak period index values.

Change From the 2009 Most Congested List

Exhibits 1 and 2 illustrate the differences between the 2009 and 2010 methodology. In Exhibit 1, the real speed profile does not decline to the levels estimated with the 2009 process and speeds do not remain low for as long as predicted. Delay in the “other peak period” (evening) is also not as serious as estimated in 2009. Midday delay, however, partially compensates for the “missing” peak delay.

Exhibit 2 illustrates a freeway segment at a bottleneck location; a point where the roadway design or traffic volume causes a serious constriction and low speeds. The 2009 method typically underestimates delay at these locations. While the off-peak period delay using the new method is less than would have been estimated, there is more midday delay and the evening peak period congestion begins sooner, lasts longer and results in much worse travel times than the 2009 method would show.

There are more sections like Exhibit 1 than Exhibit 2 in the 2010 list, but the delay differences between the two methods are less than 10 percent for most sections of freeways and streets.

Exhibit 1. Speed Comparison (Old versus New) for Typical High Congestion Freeway Section

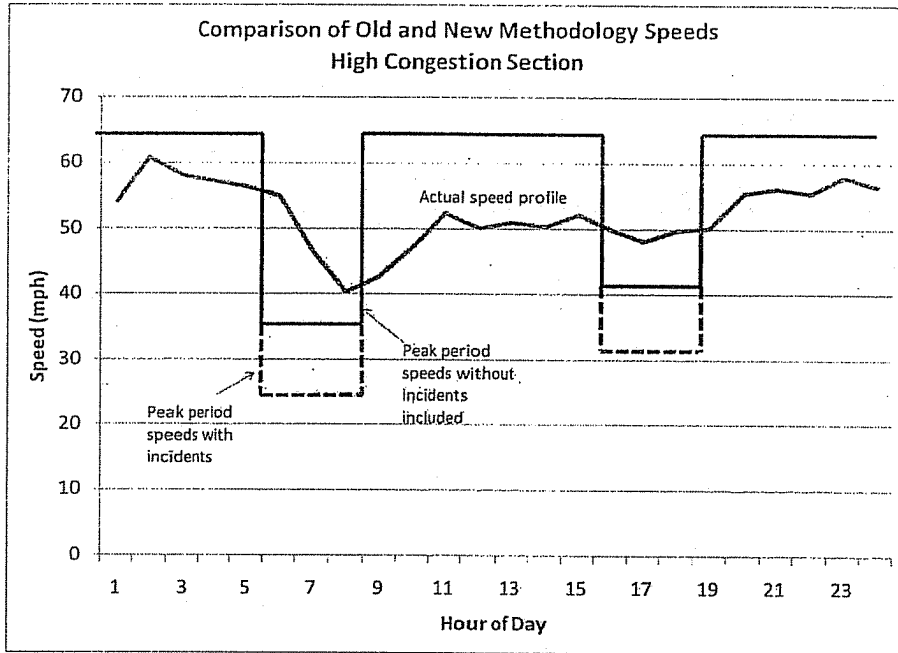


Exhibit 2. Speed Comparison (Old versus New) for a "Bottleneck" Freeway Section

