

Performance Measure Summary - Washington DC-VA-MD

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2014. There is no single performance measure that experts agree "says it all." A few key points should be recognized by users of the Urban Mobility Scorecard data.

Use the trends – The multi-year performance measures are better indicators, in most cases, than any single year. Examining a few measures over many years reduces the chance that data variations or the estimating procedures may have caused a "spike" in any single year. (*5 years is 5 times better than 1 year.*)

Use several measures – Each performance measure illustrates a different element of congestion. (*The view is more interesting from atop several measures.*)

Compare to similar regions – Congestion analyses that compare areas with similar characteristics (for example, population, growth rate, road and public transportation system design) are usually more insightful than comparisons of different regions. (*Los Angeles is not Peoria.*)

Compare ranking changes and performance measure values – In some performance measures a small change in the value may cause a significant change in rank from one year to the next. This is the case when there are several regions with nearly the same value. (*15 hours is only 1 hour more than 14 hours.*)

Consider the scope of improvement options – Any improvement project in a corridor within most of the regions will only have a modest effect on the regional congestion level. (*To have an effect on areawide congestion, there must be significant change in the system or service.*)

Performance Measures and Definition of Terms

Travel Time Index – A measure of congestion that focuses on each trip and each mile of travel. It is calculated as the ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates that a 20-minute free-flow trip takes 26 minutes in the peak.

Planning Time Index – A travel time reliability measure that represents the total travel time that should be planned for a trip. Computed with the 95th percentile travel time it represents the amount of time that should be planned for a commute trip to be late for only 1 day a month. If it is computed with the 80th percentile travel time it represents the amount of time that should be planned for a trip to be late for only 1 day a week. A PTI of 2.00 means that for a 20-minute trip in light traffic, 40 minutes should be planned.

Peak Commuters – Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.

Annual Delay per Commuter – A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of traffic slowdowns as well as the length of each trip.

Total Delay – The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).

Free-Flow Speeds – These values are derived from overnight speeds in the INRIX speed database. They are used as the national comparison thresholds. Other speed thresholds may be appropriate for urban project evaluations or sub-region studies.

Excess Fuel Consumed – Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Congestion Cost – Value of travel delay for 2014 (estimated at \$17.67 per hour of person travel and \$94.04 per hour of truck time) and excess fuel consumption estimated using state average cost per gallon.

Urban Area – The developed area (population density more than 1,000 persons per square mile) within a metropolitan region. The urban area boundaries change frequently (every year for most growing areas), so increases include both new growth and development that was previously in areas designated as rural.

Number of Rush Hours – Time when the road system might have congestion.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	2014	2013	2012	2011	2010
Urban Area Information					
Population (1000s)	4,920	4,825	4,740	4,650	4,560
Rank	8	8	8	8	8
Commuters (1000s)	1,838	1,827	1,795	1,757	1,717
Daily Vehicle-Miles of Travel (1000s)					
Freeway	39,071	37,786	37,680	40,082	39,413
Arterial Streets	45,433	44,894	45,105	49,729	48,899
Cost Components					
Value of Time (\$/hour)	17.67	17.39	17.14	16.79	16.30
Commercial Cost (\$/hour)	94.04	89.60	89.56	86.81	88.12
Gasoline (\$/gallon)	3.20	3.79	3.66	3.58	2.86
Diesel (\$/gallon)	3.52	4.05	4.08	3.74	3.11
System Performance	2014	2013	2012	2011	2010
Congested Travel (% of peak VMT)	45	--	--	--	--
Congested System (% of lane-miles)	35	--	--	--	--
Congested Time (number of "Rush Hours")	5.40	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	88,130	86,908	86,607	86,134	85,165
Rank	6	6	6	5	4
Fuel per Peak Auto Commuter (gallons)	35	35	35	35	34
Rank	1	1	1	1	1
Annual Delay					
Total Delay (1000s of person-hours)	204,375	201,541	200,844	199,747	197,499
Rank	4	4	4	4	4
Delay per Peak Auto Commuter (pers-hrs)	82	82	83	84	85
Rank	1	1	1	1	1
Travel Time Index					
	1.34	1.34	1.34	1.35	1.35
Rank	8	8	8	6	5
Commuter Stress Index					
	1.43	1.42	1.43	1.44	1.44
Rank	9	9	8	7	7
Freeway Planning Time Index (95th Pctile)					
	3.48	--	--	--	--
Rank	2	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	4,560	4,569	4,620	4,690	4,783
Rank	5	5	5	4	4
Cost per Peak Auto Commuter (\$)	1,834	1,838	1,858	1,886	1,924
Rank	1	1	1	1	1

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	2009	2008	2007	2006	2005
Urban Area Information					
Population (1000s)	4,470	4,390	4,330	4,300	4,280
Rank	8	8	8	8	8
Commuters (1000s)	1,679	1,643	1,617	1,603	1,586
Daily Vehicle-Miles of Travel (1000s)					
Freeway	38,900	38,175	39,045	38,400	38,580
Arterial Streets	48,900	47,000	45,500	43,900	42,000
Cost Components					
Value of Time (\$/hour)	16.01	16.10	15.47	15.06	14.58
Commercial Cost (\$/hour)	89.75	81.52	82.56	80.43	78.05
Gasoline (\$/gallon)	2.36	3.50	3.15	2.79	2.40
Diesel (\$/gallon)	2.86	4.13	3.48	2.93	2.59
System Performance	2009	2008	2007	2006	2005
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	83,421	82,021	79,468	77,279	75,214
Rank	5	5	5	7	7
Fuel per Peak Auto Commuter (gallons)	34	33	32	31	30
Rank	1	1	2	3	3
Annual Delay					
Total Delay (1000s of person-hours)	193,455	190,208	184,287	179,211	174,422
Rank	4	5	5	5	5
Delay per Peak Auto Commuter (pers-hrs)	85	86	84	83	81
Rank	1	1	1	2	1
Travel Time Index					
	1.35	1.36	1.35	1.34	1.34
Rank	5	6	6	6	6
Commuter Stress Index					
	1.44	1.44	1.44	1.43	1.42
Rank	5	8	8	9	9
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	4,764	4,666	4,695	4,690	4,717
Rank	4	5	6	6	5
Cost per Peak Auto Commuter (\$)	1,916	1,877	1,888	1,886	1,897
Rank	1	2	3	3	4

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	2004	2003	2002	2001	2000
Urban Area Information					
Population (1000s)	4,275	4,250	4,185	4,030	3,900
Rank	7	7	7	7	8
Commuters (1000s)	1,578	1,562	1,541	1,487	1,442
Daily Vehicle-Miles of Travel (1000s)					
Freeway	38,200	37,815	36,200	35,770	34,535
Arterial Streets	40,960	40,395	38,385	36,000	35,395
Cost Components					
Value of Time (\$/hour)	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	74.17	72.23	70.86	71.38	70.47
Gasoline (\$/gallon)	2.04	1.62	1.53	1.75	1.61
Diesel (\$/gallon)	2.09	1.73	1.54	1.73	1.67
System Performance	2004	2003	2002	2001	2000
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	72,326	69,912	67,211	63,003	58,770
Rank	7	7	7	7	8
Fuel per Peak Auto Commuter (gallons)	29	28	27	25	24
Rank	3	3	3	3	3
Annual Delay					
Total Delay (1000s of person-hours)	167,726	162,128	155,863	146,105	136,289
Rank	5	5	6	6	6
Delay per Peak Auto Commuter (pers-hrs)	78	76	75	72	70
Rank	2	2	2	3	3
Travel Time Index					
	1.33	1.32	1.31	1.30	1.29
Rank	6	6	6	7	7
Commuter Stress Index					
	1.41	1.40	1.39	1.38	1.37
Rank	9	8	8	9	8
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	4,689	4,654	4,576	4,357	4,180
Rank	6	6	6	6	6
Cost per Peak Auto Commuter (\$)	1,886	1,872	1,840	1,752	1,681
Rank	4	4	3	3	4

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	1999	1998	1997	1996	1995
Urban Area Information					
Population (1000s)	3,885	3,800	3,660	3,570	3,510
Rank	8	9	9	9	8
Commuters (1000s)	1,439	1,408	1,359	1,328	1,308
Daily Vehicle-Miles of Travel (1000s)					
Freeway	33,975	33,930	33,340	33,045	32,460
Arterial Streets	35,165	34,965	34,370	34,575	33,880
Cost Components					
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37
Commercial Cost (\$/hour)	66.76	65.76	66.83	66.20	64.27
Gasoline (\$/gallon)	1.10	1.11	1.21	1.32	1.24
Diesel (\$/gallon)	1.27	1.18	1.34	1.47	1.37
System Performance	1999	1998	1997	1996	1995
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	57,610	55,564	52,677	51,025	49,563
Rank	6	6	6	5	5
Fuel per Peak Auto Commuter (gallons)	23	22	21	21	20
Rank	4	4	3	3	3
Annual Delay					
Total Delay (1000s of person-hours)	133,600	128,853	122,159	118,328	114,938
Rank	6	6	6	5	5
Delay per Peak Auto Commuter (pers-hrs)	68	68	66	66	65
Rank	3	3	3	3	3
Travel Time Index					
	1.28	1.28	1.28	1.27	1.27
Rank	7	6	6	5	5
Commuter Stress Index					
	1.37	1.36	1.36	1.35	1.35
Rank	7	7	7	7	6
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	4,235	4,175	4,020	3,983	3,983
Rank	6	6	6	5	5
Cost per Peak Auto Commuter (\$)	1,704	1,679	1,617	1,602	1,602
Rank	3	3	3	3	3

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	1994	1993	1992	1991	1990
Urban Area Information					
Population (1000s)	3,480	3,420	3,300	3,250	3,100
Rank	8	8	9	9	10
Commuters (1000s)	1,297	1,277	1,235	1,219	1,165
Daily Vehicle-Miles of Travel (1000s)					
Freeway	31,565	29,320	27,985	26,000	25,080
Arterial Streets	34,080	33,035	30,420	27,525	25,305
Cost Components					
Value of Time (\$/hour)	11.06	10.78	10.47	10.17	9.75
Commercial Cost (\$/hour)	62.23	60.84	59.01	57.31	55.03
Gasoline (\$/gallon)	1.10	1.12	1.18	1.12	1.08
Diesel (\$/gallon)	1.22	1.25	1.31	1.39	1.26
System Performance	1994	1993	1992	1991	1990
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	48,541	45,776	42,700	39,134	35,917
Rank	5	5	5	6	7
Fuel per Peak Auto Commuter (gallons)	20	18	17	16	14
Rank	3	3	3	3	5
Annual Delay					
Total Delay (1000s of person-hours)	112,569	106,156	99,023	90,752	83,292
Rank	5	5	5	6	6
Delay per Peak Auto Commuter (pers-hrs)	64	61	59	55	53
Rank	3	3	3	3	3
Travel Time Index					
	1.27	1.25	1.25	1.23	1.22
Rank	4	4	4	4	5
Commuter Stress Index					
	1.35	1.33	1.33	1.31	1.30
Rank	6	7	7	8	8
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	4,012	3,880	3,728	3,519	3,366
Rank	5	5	5	5	6
Cost per Peak Auto Commuter (\$)	1,614	1,561	1,499	1,415	1,354
Rank	3	4	4	4	5

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	1989	1988	1987	1986	1985
Urban Area Information					
Population (1000s)	3,080	3,040	2,980	2,920	2,860
Rank	10	10	10	9	9
Commuters (1000s)	1,146	1,120	1,089	1,058	1,026
Daily Vehicle-Miles of Travel (1000s)					
Freeway	24,590	23,455	22,365	21,345	19,460
Arterial Streets	24,530	24,045	23,930	22,885	21,165
Cost Components					
Value of Time (\$/hour)	9.25	8.83	8.48	8.18	8.03
Commercial Cost (\$/hour)	52.81	50.04	48.53	46.57	47.83
Gasoline (\$/gallon)	1.10	1.02	1.02	0.99	1.30
Diesel (\$/gallon)	1.20	1.11	1.11	1.08	1.42
System Performance	1989	1988	1987	1986	1985
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	34,100	32,807	31,212	29,915	26,941
Rank	7	8	9	8	8
Fuel per Peak Auto Commuter (gallons)	14	13	13	12	11
Rank	5	5	4	5	5
Annual Delay					
Total Delay (1000s of person-hours)	79,079	76,081	72,381	69,374	62,476
Rank	7	6	6	7	8
Delay per Peak Auto Commuter (pers-hrs)	51	50	49	48	45
Rank	3	3	3	3	4
Travel Time Index					
	1.21	1.21	1.20	1.20	1.19
Rank	5	5	5	5	6
Commuter Stress Index					
	1.29	1.28	1.28	1.28	1.26
Rank	8	8	7	8	8
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	3,368	3,397	3,365	3,343	3,067
Rank	6	6	7	7	7
Cost per Peak Auto Commuter (\$)	1,355	1,366	1,353	1,345	1,233
Rank	5	4	4	4	6

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Washington DC-VA-MD

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	2,810	2,780	2,700
Rank	9	9	9
Commuters (1000s)	999	980	942
Daily Vehicle-Miles of Travel (1000s)			
Freeway	18,015	16,255	15,200
Arterial Streets	19,230	18,105	17,375
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	46.47	44.23	43.08
Gasoline (\$/gallon)	1.31	1.34	1.41
Diesel (\$/gallon)	1.43	1.46	1.53
System Performance	1984	1983	1982
Congested Travel (% of peak VMT)	--	--	--
Congested System (% of lane-miles)	--	--	--
Congested Time (number of "Rush Hours")	--	--	--
Annual Excess Fuel Consumed			
Total Fuel (1000 gallons)	24,625	21,675	19,904
Rank	10	10	11
Fuel per Peak Auto Commuter (gallons)	10	9	8
Rank	7	7	9
Annual Delay			
Total Delay (1000s of person-hours)	57,106	50,265	46,158
Rank	9	10	10
Delay per Peak Auto Commuter (pers-hrs)	42	37	36
Rank	4	5	4
Travel Time Index			
	1.17	1.16	1.15
Rank	7	7	8
Commuter Stress Index			
	1.25	1.23	1.22
Rank	12	13	13
Freeway Planning Time Index (95th Pctile)			
	--	--	--
Rank	--	--	--
Congestion Cost (constant 2014 \$)			
Total Cost (\$ millions)	2,903	2,666	2,526
Rank	9	10	10
Cost per Peak Auto Commuter (\$)	1,168	1,072	1,016
Rank	9	9	9

* Note: Cells containing "--" indicate no available data.