

Performance Measure Summary - Memphis TN-MS-AR

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2017. 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 time periods with lighter traffic volumes 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 2017 (estimated at \$18.29 per hour of person travel and \$59.94 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.

Mobility Data for Memphis TN-MS-AR

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	1,090	1,090	1,085	1,085	1,070	1,065
Rank	44	44	44	43	43	42
Commuters (1000s)	575	575	572	572	576	573
Daily Vehicle-Miles of Travel (1000s)						
Freeway	10,000	9,453	9,205	9,176	9,237	8,530
Arterial Streets	14,320	13,736	13,850	13,269	12,979	12,725
Cost Components						
Value of Time (\$/hour)	18.12	17.91	17.69	17.67	17.39	17.14
Commercial Cost (\$/hour)	52.14	50.20	46.87	44.82	41.23	39.66
Gasoline (\$/gallon)	2.14	2.00	2.06	3.06	3.29	3.32
Diesel (\$/gallon)	2.35	2.13	2.37	3.49	3.78	3.75
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	12.3	--	--	--	--	--
Congested System (% of lane-miles)	6.6	--	--	--	--	--
Congested Time (number of "Rush Hours")	1.2	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	11,597	11,466	11,343	11,070	10,881	10,796
Rank	51	51	51	51	51	51
Fuel per Peak Auto Commuter (gallons)	18	18	18	18	18	18
Rank	63	60	58	57	54	52
Annual Delay						
Total Delay (1000s of person-hours)	28,015	27,523	26,996	25,891	25,003	24,364
Rank	51	51	51	52	51	51
Delay per Auto Commuter (pers-hrs)	48	47	45	44	43	42
Rank	42	43	45	44	46	46
Travel Time Index						
Rank	1.18	1.18	1.18	1.18	1.17	1.17
Rank	45	45	44	40	51	50
Commuter Stress Index						
Rank	1.19	--	--	--	--	--
Rank	50	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	1.27	--	--	--	--	--
Rank	78	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	565	546	528	516	491	472
Rank	51	51	51	52	51	51
Cost per Auto Commuter (\$)	651	642	627	599	583	575
Rank	87	85	84	84	86	86
Truck Congestion						
Annual Person-Hours of Delay (000)	1,177	1,156	1,134	1,087	1,050	1,023
Rank	51	51	51	52	51	51
Annual Gallons of Wasted Fuel (000)	2,459	2,431	2,405	2,347	2,307	2,289
Rank	51	51	51	51	51	51
Annual Congestion Cost (\$ million)	60	56	52	51	47	44
Rank	51	51	51	52	51	51

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for Memphis TN-MS-AR

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	1,060	1,050	1,045	1,040	1,035	1,025
Rank	42	42	41	42	41	40
Commuters (1000s)	569	562	557	553	546	537
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,541	8,493	8,400	8,300	8,640	8,660
Arterial Streets	12,832	12,759	12,945	13,115	13,640	13,680
Cost Components						
Value of Time (\$/hour)	16.79	16.28	16.01	16.07	15.47	15.06
Commercial Cost (\$/hour)	44.62	42.50	41.83	40.77	39.30	37.88
Gasoline (\$/gallon)	3.21	2.58	2.15	3.32	2.98	2.54
Diesel (\$/gallon)	3.57	2.84	2.45	4.03	3.26	2.72
System Performance	2011	2010	2009	2008	2007	2006
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	10,680	10,707	10,632	10,945	10,611	10,421
Rank	51	51	51	51	50	50
Fuel per Peak Auto Commuter (gallons)	18	18	17	19	19	19
Rank	49	46	43	37	40	36
Annual Delay						
Total Delay (1000s of person-hours)	23,664	23,506	22,904	22,457	21,770	21,381
Rank	51	50	49	50	50	49
Delay per Auto Commuter (pers-hrs)	40	40	38	37	36	36
Rank	49	48	54	54	59	56
Travel Time Index						
Rank	1.17	1.17	1.17	1.18	1.17	1.17
Rank	45	43	45	44	56	53
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	455	432	410	417	386	365
Rank	51	51	49	50	50	49
Cost per Auto Commuter (\$)	577	591	586	569	574	580
Rank	84	83	78	79	85	82
Truck Congestion						
Annual Person-Hours of Delay (000)	994	987	962	943	914	898
Rank	51	50	49	50	50	49
Annual Gallons of Wasted Fuel (000)	2,264	2,270	2,254	2,320	2,250	2,209
Rank	51	51	51	51	50	50
Annual Congestion Cost (\$ million)	47	43	41	43	39	36
Rank	51	51	50	51	50	49

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for Memphis TN-MS-AR

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	1,020	1,010	1,000	990	980	975
Rank	41	41	41	40	40	40
Commuters (1000s)	530	522	514	502	488	479
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,600	8,470	7,815	7,500	7,300	6,900
Arterial Streets	13,590	13,360	13,260	12,135	12,085	12,000
Cost Components						
Value of Time (\$/hour)	14.58	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	36.51	35.19	33.92	32.69	31.51	30.38
Gasoline (\$/gallon)	2.24	1.86	1.46	1.32	1.45	1.47
Diesel (\$/gallon)	2.39	1.87	1.44	1.30	1.47	1.42
System Performance	2005	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)	10,328	10,033	9,700	9,448	9,124	8,863
Rank	50	50	50	50	48	47
Fuel per Peak Auto Commuter (gallons)	19	19	18	19	18	18
Rank	34	27	30	18	23	16
Annual Delay						
Total Delay (1000s of person-hours)	21,190	20,584	19,902	19,385	18,719	18,184
Rank	48	48	48	47	47	48
Delay per Auto Commuter (pers-hrs)	36	36	35	35	35	35
Rank	53	52	53	51	45	45
Travel Time Index						
Rank	1.17	1.17	1.17	1.17	1.16	1.16
Rank	50	47	45	41	51	45
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	348	323	301	285	272	257
Rank	48	48	48	47	48	48
Cost per Auto Commuter (\$)	593	596	591	589	577	575
Rank	80	77	75	71	71	68
Truck Congestion						
Annual Person-Hours of Delay (000)	890	865	836	814	786	764
Rank	48	48	48	47	47	48
Annual Gallons of Wasted Fuel (000)	2,190	2,127	2,056	2,003	1,934	1,879
Rank	50	50	50	50	48	47
Annual Congestion Cost (\$ million)	34	31	28	26	25	23
Rank	49	49	48	47	47	47

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Mobility Data for Memphis TN-MS-AR

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	975	970	960	950	930	905
Rank	40	40	40	40	40	40
Commuters (1000s)	470	461	449	437	421	403
Daily Vehicle-Miles of Travel (1000s)						
Freeway	6,600	6,370	5,920	5,725	5,640	5,480
Arterial Streets	12,015	11,825	11,630	11,715	11,450	11,180
Cost Components						
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37	11.06
Commercial Cost (\$/hour)	29.28	28.89	28.50	28.12	27.75	27.38
Gasoline (\$/gallon)	1.07	1.03	1.13	1.24	1.11	1.03
Diesel (\$/gallon)	1.06	1.11	1.20	1.33	1.21	1.10
System Performance	1999	1998	1997	1996	1995	1994
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	8,527	7,980	7,296	6,807	6,425	6,011
Rank	46	46	49	49	46	45
Fuel per Peak Auto Commuter (gallons)	17	16	15	14	13	12
Rank	17	18	17	18	19	21
Annual Delay						
Total Delay (1000s of person-hours)	17,495	16,372	14,968	13,966	13,181	12,334
Rank	47	47	48	47	48	49
Delay per Auto Commuter (pers-hrs)	35	34	34	33	32	31
Rank	41	40	38	38	34	31
Travel Time Index						
Rank	41	44	41	45	41	42
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	236	217	196	180	164	149
Rank	47	47	48	47	48	49
Cost per Auto Commuter (\$)	574	549	509	486	472	455
Rank	65	65	69	68	66	64
Truck Congestion						
Annual Person-Hours of Delay (000)	735	688	629	587	554	518
Rank	47	47	48	47	48	49
Annual Gallons of Wasted Fuel (000)	1,808	1,692	1,547	1,443	1,362	1,274
Rank	46	46	49	49	46	45
Annual Congestion Cost (\$ million)	21	19	18	16	15	14
Rank	47	47	46	47	46	44

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Mobility Data for Memphis TN-MS-AR

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	885	880	865	860	850	830
Rank	40	39	39	38	38	38
Commuters (1000s)	388	380	367	359	352	341
Daily Vehicle-Miles of Travel (1000s)						
Freeway	5,150	5,070	4,725	4,575	4,286	3,975
Arterial Streets	10,850	9,695	8,700	8,210	7,705	7,405
Cost Components						
Value of Time (\$/hour)	10.78	10.47	10.17	9.75	9.25	8.83
Commercial Cost (\$/hour)	27.02	26.66	26.30	25.95	25.60	25.26
Gasoline (\$/gallon)	1.07	1.08	1.11	1.08	1.12	1.03
Diesel (\$/gallon)	1.14	1.18	1.20	1.07	1.02	0.94
System Performance	1993	1992	1991	1990	1989	1988
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	5,387	5,031	4,580	4,436	3,785	3,129
Rank	46	45	46	45	47	52
Fuel per Peak Auto Commuter (gallons)	11	10	9	9	8	7
Rank	22	24	27	23	26	27
Annual Delay						
Total Delay (1000s of person-hours)	11,053	10,322	9,398	9,101	7,767	6,420
Rank	49	50	48	47	49	51
Delay per Auto Commuter (pers-hrs)	29	27	25	25	22	18
Rank	33	38	39	35	40	52
Travel Time Index						
Rank	44	40	45	41	48	48
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	131	119	106	98	80	63
Rank	49	49	48	47	48	51
Cost per Auto Commuter (\$)	419	404	378	383	345	303
Rank	66	65	65	62	64	71
Truck Congestion						
Annual Person-Hours of Delay (000)	464	434	395	382	326	270
Rank	49	50	48	47	49	51
Annual Gallons of Wasted Fuel (000)	1,142	1,067	971	940	803	663
Rank	46	45	46	45	47	52
Annual Congestion Cost (\$ million)	12	11	10	10	8	7
Rank	49	49	48	42	46	48

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Mobility Data for Memphis TN-MS-AR

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	815	800	775	770	770	760
Rank	38	38	40	40	40	40
Commuters (1000s)	332	323	311	307	305	297
Daily Vehicle-Miles of Travel (1000s)						
Freeway	3,750	3,270	3,050	3,035	3,240	3,200
Arterial Streets	7,095	6,755	6,195	6,630	5,820	5,150
Cost Components						
Value of Time (\$/hour)	8.48	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	24.93	24.60	24.27	23.94	23.63	23.31
Gasoline (\$/gallon)	1.04	1.01	1.32	1.34	1.37	1.43
Diesel (\$/gallon)	0.94	0.92	1.20	1.22	1.24	1.30
System Performance	1987	1986	1985	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)	2,577	2,177	1,928	1,814	1,708	1,535
Rank	55	60	60	56	55	55
Fuel per Peak Auto Commuter (gallons)	6	5	4	3	3	2
Rank	32	40	50	61	46	55
Annual Delay						
Total Delay (1000s of person-hours)	5,287	4,466	3,955	3,722	3,505	3,149
Rank	56	59	58	57	55	55
Delay per Auto Commuter (pers-hrs)	16	13	12	12	11	10
Rank	55	64	63	56	56	58
Travel Time Index						
Rank	1.07	1.06	1.05	1.05	1.05	1.04
Rank	55	57	64	57	55	61
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	50	41	36	33	30	27
Rank	56	58	59	57	55	54
Cost per Auto Commuter (\$)	257	227	203	200	199	182
Rank	78	80	82	78	76	78
Truck Congestion						
Annual Person-Hours of Delay (000)	222	188	166	156	147	132
Rank	56	59	58	57	55	55
Annual Gallons of Wasted Fuel (000)	546	461	409	385	362	325
Rank	55	60	60	56	55	55
Annual Congestion Cost (\$ million)	5	4	4	4	3	3
Rank	56	58	55	49	55	52

* Note: Zeroes in the table reflect values less than 0.5.