

Performance Measure Summary - Baltimore MD

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 Baltimore MD

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	2,620	2,615	2,610	2,600	2,560	2,540
Rank	19	18	18	18	17	17
Commuters (1000s)	1,280	1,275	1,270	1,261	1,250	1,243
Daily Vehicle-Miles of Travel (1000s)						
Freeway	31,098	30,596	29,008	28,522	28,327	26,900
Arterial Streets	19,243	18,984	19,541	19,119	19,105	18,420
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)	2.35	2.17	2.31	3.28	3.51	3.49
Diesel (\$/gallon)	2.51	2.28	2.55	3.52	3.82	3.86
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	32.3	--	--	--	--	--
Congested System (% of lane-miles)	21.4	--	--	--	--	--
Congested Time (number of "Rush Hours")	4.7	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	37,067	36,551	35,905	35,600	34,997	34,280
Rank	18	18	18	18	18	19
Fuel per Peak Auto Commuter (gallons)	22	21	21	21	20	19
Rank	32	37	36	30	37	42
Annual Delay						
Total Delay (1000s of person-hours)	93,815	91,419	88,266	86,755	84,539	82,074
Rank	20	20	20	20	20	20
Delay per Auto Commuter (pers-hrs)	59	57	55	54	51	50
Rank	22	22	24	23	25	23
Travel Time Index						
Rank	1.25	1.25	1.25	1.26	1.25	1.25
Rank	25	25	24	22	24	23
Commuter Stress Index						
Rank	1.25	--	--	--	--	--
Rank	34	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	1.73	--	--	--	--	--
Rank	29	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,897	1,818	1,733	1,730	1,662	1,590
Rank	20	20	20	20	20	20
Cost per Auto Commuter (\$)	1,046	1,000	960	939	923	907
Rank	32	32	32	32	32	32
Truck Congestion						
Annual Person-Hours of Delay (000)	3,940	3,840	3,707	3,644	3,551	3,447
Rank	20	20	20	20	20	20
Annual Gallons of Wasted Fuel (000)	7,858	7,749	7,612	7,547	7,419	7,267
Rank	18	18	18	18	18	19
Annual Congestion Cost (\$ million)	200	187	172	170	157	148
Rank	20	20	20	20	20	20

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

Mobility Data for Baltimore MD

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	2,525	2,510	2,500	2,475	2,450	2,425
Rank	17	17	17	17	17	17
Commuters (1000s)	1,238	1,226	1,217	1,200	1,180	1,160
Daily Vehicle-Miles of Travel (1000s)						
Freeway	26,805	26,678	26,400	26,200	26,670	26,480
Arterial Streets	18,338	18,251	18,100	18,080	18,555	18,545
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)	3.41	2.73	2.25	3.40	3.00	2.70
Diesel (\$/gallon)	3.66	2.98	2.60	4.24	3.43	2.84
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)	33,564	33,098	32,157	32,957	34,254	33,831
Rank	19	19	18	17	16	16
Fuel per Peak Auto Commuter (gallons)	19	20	18	18	19	19
Rank	40	29	34	49	40	36
Annual Delay						
Total Delay (1000s of person-hours)	78,206	75,705	72,179	70,452	73,224	72,320
Rank	20	20	20	20	20	20
Delay per Auto Commuter (pers-hrs)	48	47	45	44	47	47
Rank	26	24	25	28	24	24
Travel Time Index						
Rank	1.24	1.24	1.24	1.25	1.26	1.26
Rank	25	24	24	24	24	23
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,503	1,391	1,293	1,308	1,297	1,237
Rank	20	20	20	20	20	20
Cost per Auto Commuter (\$)	894	891	865	835	903	917
Rank	31	31	31	33	29	29
Truck Congestion						
Annual Person-Hours of Delay (000)	3,285	3,180	3,032	2,959	3,075	3,037
Rank	20	20	20	20	20	20
Annual Gallons of Wasted Fuel (000)	7,115	7,017	6,817	6,987	7,262	7,172
Rank	19	19	18	17	16	16
Annual Congestion Cost (\$ million)	155	139	129	135	131	121
Rank	20	20	20	20	20	20

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

Mobility Data for Baltimore MD

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	2,400	2,370	2,340	2,295	2,250	2,200
Rank	17	17	17	17	17	17
Commuters (1000s)	1,139	1,119	1,099	1,062	1,024	986
Daily Vehicle-Miles of Travel (1000s)						
Freeway	26,455	26,335	26,050	25,130	23,555	22,660
Arterial Streets	18,720	18,440	18,230	17,530	16,640	16,490
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)	2.32	1.95	1.52	1.42	1.63	1.57
Diesel (\$/gallon)	2.52	1.99	1.57	1.41	1.58	1.56
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)	32,979	32,385	30,841	29,595	28,336	25,802
Rank	16	16	16	16	16	18
Fuel per Peak Auto Commuter (gallons)	19	19	18	18	18	16
Rank	34	27	30	27	23	32
Annual Delay						
Total Delay (1000s of person-hours)	70,499	69,230	65,929	63,265	60,575	55,157
Rank	20	20	20	19	19	19
Delay per Auto Commuter (pers-hrs)	46	46	45	44	44	41
Rank	26	25	24	24	20	24
Travel Time Index						
Rank	22	21	21	19	18	22
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,157	1,088	997	932	883	781
Rank	20	20	20	19	19	19
Cost per Auto Commuter (\$)	923	938	917	899	874	816
Rank	28	26	27	28	28	29
Truck Congestion						
Annual Person-Hours of Delay (000)	2,961	2,908	2,769	2,657	2,544	2,317
Rank	20	20	20	19	19	19
Annual Gallons of Wasted Fuel (000)	6,992	6,866	6,538	6,274	6,007	5,470
Rank	16	16	16	16	16	18
Annual Congestion Cost (\$ million)	112	103	93	85	80	70
Rank	20	20	20	19	19	19

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Mobility Data for Baltimore MD

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	2,160	2,155	2,150	2,145	2,140	2,130
Rank	17	17	17	17	17	16
Commuters (1000s)	951	934	917	900	883	866
Daily Vehicle-Miles of Travel (1000s)						
Freeway	21,755	21,290	20,775	20,435	19,770	18,945
Arterial Streets	16,370	16,560	16,290	16,370	16,380	16,370
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)	1.10	1.08	1.19	1.29	1.23	1.08
Diesel (\$/gallon)	1.16	1.19	1.27	1.39	1.32	1.16
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)	24,722	22,933	21,374	20,708	20,234	18,982
Rank	17	18	18	16	16	16
Fuel per Peak Auto Commuter (gallons)	15	14	12	12	12	12
Rank	32	31	47	38	35	21
Annual Delay						
Total Delay (1000s of person-hours)	52,849	49,023	45,691	44,267	43,253	40,578
Rank	19	18	18	18	18	18
Delay per Auto Commuter (pers-hrs)	41	38	36	35	35	33
Rank	21	26	28	25	20	22
Travel Time Index						
Rank	22	24	24	24	21	22
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	714	649	598	570	541	492
Rank	19	18	18	18	18	18
Cost per Auto Commuter (\$)	809	769	728	720	727	701
Rank	28	27	27	26	23	24
Truck Congestion						
Annual Person-Hours of Delay (000)	2,220	2,059	1,919	1,859	1,817	1,704
Rank	19	18	18	18	18	18
Annual Gallons of Wasted Fuel (000)	5,241	4,862	4,531	4,390	4,290	4,024
Rank	17	18	18	16	16	16
Annual Congestion Cost (\$ million)	63	58	54	52	50	46
Rank	19	18	18	18	17	18

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Mobility Data for Baltimore MD

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	2,110	2,040	2,020	1,990	1,915	1,905
Rank	16	16	16	16	17	17
Commuters (1000s)	844	804	782	758	725	714
Daily Vehicle-Miles of Travel (1000s)						
Freeway	18,030	17,625	16,045	15,800	15,000	13,920
Arterial Streets	16,400	16,000	15,690	15,580	14,930	14,700
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)	1.14	1.18	1.13	1.08	1.11	1.02
Diesel (\$/gallon)	1.22	1.28	1.27	1.13	1.08	0.99
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)	17,931	16,940	16,161	15,151	13,601	12,448
Rank	15	15	15	15	16	16
Fuel per Peak Auto Commuter (gallons)	11	10	10	10	9	8
Rank	22	24	19	14	19	20
Annual Delay						
Total Delay (1000s of person-hours)	38,330	36,213	34,547	32,388	29,075	26,609
Rank	18	17	17	17	17	17
Delay per Auto Commuter (pers-hrs)	32	32	31	30	28	26
Rank	22	17	17	16	19	20
Travel Time Index						
Rank	1.18	1.18	1.17	1.17	1.16	1.15
Rank	20	18	19	17	17	17
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	455	419	389	350	300	262
Rank	18	17	17	17	17	17
Cost per Auto Commuter (\$)	679	661	653	639	606	582
Rank	23	23	21	21	20	20
Truck Congestion						
Annual Person-Hours of Delay (000)	1,610	1,521	1,451	1,360	1,221	1,118
Rank	18	17	17	17	17	17
Annual Gallons of Wasted Fuel (000)	3,801	3,591	3,426	3,212	2,883	2,639
Rank	15	15	15	15	16	16
Annual Congestion Cost (\$ million)	43	40	38	35	31	27
Rank	17	17	17	17	17	17

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

Mobility Data for Baltimore MD

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	1,875	1,860	1,840	1,820	1,750	1,700
Rank	17	16	16	16	17	19
Commuters (1000s)	698	686	674	662	632	607
Daily Vehicle-Miles of Travel (1000s)						
Freeway	13,735	13,015	12,225	10,870	9,250	8,520
Arterial Streets	14,350	13,940	13,470	13,105	12,500	11,180
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)	1.03	1.00	1.31	1.33	1.36	1.42
Diesel (\$/gallon)	0.99	0.97	1.27	1.28	1.31	1.37
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)	11,039	10,408	9,432	8,716	7,683	6,477
Rank	16	16	15	16	17	20
Fuel per Peak Auto Commuter (gallons)	6	7	5	6	5	4
Rank	32	21	32	20	22	19
Annual Delay						
Total Delay (1000s of person-hours)	23,597	22,249	20,163	18,633	16,424	13,847
Rank	17	17	18	19	19	20
Delay per Auto Commuter (pers-hrs)	24	23	21	20	18	16
Rank	20	21	23	23	25	28
Travel Time Index						
Rank	1.13	1.13	1.12	1.11	1.10	1.09
Rank	21	19	20	22	22	25
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	225	205	185	166	142	117
Rank	17	17	18	19	19	20
Cost per Auto Commuter (\$)	540	528	489	467	431	374
Rank	22	23	24	22	25	28
Truck Congestion						
Annual Person-Hours of Delay (000)	991	934	847	783	690	582
Rank	17	17	18	19	19	20
Annual Gallons of Wasted Fuel (000)	2,340	2,206	2,000	1,848	1,629	1,373
Rank	16	16	15	16	17	20
Annual Congestion Cost (\$ million)	24	22	21	19	16	14
Rank	17	17	17	17	19	20

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