

Performance Measure Summary - Philadelphia PA-NJ-DE-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 Philadelphia PA-NJ-DE-MD

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	5,565	5,565	5,560	5,560	5,550	5,520
Rank	6	6	5	5	5	5
Commuters (1000s)	2,308	2,308	2,305	2,305	2,346	2,334
Daily Vehicle-Miles of Travel (1000s)						
Freeway	39,913	38,730	37,663	37,006	35,794	33,735
Arterial Streets	46,597	46,185	45,578	44,914	45,028	45,055
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)	2.57	2.32	2.44	3.29	3.52	3.55
Diesel (\$/gallon)	2.94	2.59	2.80	3.57	3.93	4.00
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	24.1	--	--	--	--	--
Congested System (% of lane-miles)	15.3	--	--	--	--	--
Congested Time (number of "Rush Hours")	3.4	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	80,817	80,188	79,824	79,264	78,975	78,394
Rank	8	8	8	8	8	8
Fuel per Peak Auto Commuter (gallons)	26	25	24	23	23	23
Rank	15	16	20	19	17	18
Annual Delay						
Total Delay (1000s of person-hours)	194,655	190,385	186,282	181,757	179,493	174,990
Rank	10	10	10	10	10	10
Delay per Auto Commuter (pers-hrs)	62	60	58	55	54	52
Rank	18	20	20	20	21	21
Travel Time Index						
Rank	1.25	1.25	1.24	1.24	1.24	1.24
Rank	25	25	27	27	27	26
Commuter Stress Index						
Rank	1.26	--	--	--	--	--
Rank	31	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	1.65	--	--	--	--	--
Rank	34	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	3,967	3,809	3,679	3,642	3,548	3,415
Rank	10	10	10	10	10	10
Cost per Auto Commuter (\$)	1,203	1,184	1,152	1,118	1,115	1,100
Rank	22	21	22	19	18	18
Truck Congestion						
Annual Person-Hours of Delay (000)	8,176	7,996	7,824	7,634	7,539	7,350
Rank	10	10	10	10	10	10
Annual Gallons of Wasted Fuel (000)	17,133	17,000	16,923	16,804	16,743	16,620
Rank	8	8	8	8	8	8
Annual Congestion Cost (\$ million)	424	396	369	360	338	322
Rank	10	10	10	10	10	10

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

Mobility Data for Philadelphia PA-NJ-DE-MD

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	5,490	5,465	5,430	5,390	5,360	5,330
Rank	5	5	5	5	5	5
Commuters (1000s)	2,366	2,377	2,362	2,371	2,366	2,370
Daily Vehicle-Miles of Travel (1000s)						
Freeway	34,246	34,144	34,956	36,000	36,400	35,945
Arterial Streets	45,784	45,648	45,637	47,000	47,765	47,945
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	2.78	2.33	3.42	2.97	2.68
Diesel (\$/gallon)	3.79	3.12	2.73	4.41	3.56	2.93
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)	78,818	78,584	77,958	78,272	80,480	82,270
Rank	8	7	7	7	6	6
Fuel per Peak Auto Commuter (gallons)	23	23	23	22	23	24
Rank	17	14	10	19	13	10
Annual Delay						
Total Delay (1000s of person-hours)	172,739	170,631	166,108	158,834	163,314	166,946
Rank	10	10	10	10	9	9
Delay per Auto Commuter (pers-hrs)	51	50	48	47	48	49
Rank	19	17	19	21	19	19
Travel Time Index						
Rank	25	24	24	28	27	25
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	3,338	3,152	2,992	2,968	2,906	2,866
Rank	10	10	9	10	9	9
Cost per Auto Commuter (\$)	1,121	1,141	1,132	1,072	1,145	1,203
Rank	15	14	14	14	15	11
Truck Congestion						
Annual Person-Hours of Delay (000)	7,255	7,166	6,977	6,671	6,859	7,012
Rank	10	10	10	10	9	9
Annual Gallons of Wasted Fuel (000)	16,710	16,660	16,527	16,594	17,062	17,441
Rank	8	7	7	7	6	6
Annual Congestion Cost (\$ million)	347	319	301	312	297	284
Rank	10	9	9	9	9	9

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

Mobility Data for Philadelphia PA-NJ-DE-MD

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	5,315	5,300	5,285	5,200	5,125	5,040
Rank	5	4	4	4	4	4
Commuters (1000s)	2,381	2,366	2,346	2,296	2,208	2,123
Daily Vehicle-Miles of Travel (1000s)						
Freeway	35,325	34,440	33,875	30,770	30,050	28,930
Arterial Streets	48,235	47,910	47,245	45,070	42,050	40,015
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)	2.28	1.94	1.51	1.36	1.54	1.51
Diesel (\$/gallon)	2.58	2.03	1.59	1.43	1.59	1.57
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)	81,714	80,649	77,501	74,670	68,055	62,674
Rank	6	6	6	6	6	7
Fuel per Peak Auto Commuter (gallons)	24	25	24	24	22	21
Rank	10	8	9	8	8	8
Annual Delay						
Total Delay (1000s of person-hours)	165,818	163,658	157,270	151,525	138,101	127,182
Rank	8	8	8	8	9	10
Delay per Auto Commuter (pers-hrs)	49	48	47	46	43	41
Rank	18	18	18	17	24	24
Travel Time Index						
Rank	1.25	1.25	1.24	1.23	1.22	1.21
Rank	25	23	25	26	28	27
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	2,731	2,581	2,383	2,235	2,015	1,803
Rank	8	8	8	8	9	10
Cost per Auto Commuter (\$)	1,235	1,260	1,245	1,225	1,132	1,071
Rank	11	11	12	12	12	13
Truck Congestion						
Annual Person-Hours of Delay (000)	6,964	6,874	6,605	6,364	5,800	5,342
Rank	8	8	8	8	9	10
Annual Gallons of Wasted Fuel (000)	17,323	17,098	16,430	15,830	14,428	13,287
Rank	6	6	6	6	6	7
Annual Congestion Cost (\$ million)	268	247	223	205	183	163
Rank	8	8	8	8	9	9

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

Mobility Data for Philadelphia PA-NJ-DE-MD

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	4,950	4,875	4,800	4,725	4,670	4,640
Rank	4	4	4	4	4	4
Commuters (1000s)	2,032	1,958	1,881	1,809	1,746	1,694
Daily Vehicle-Miles of Travel (1000s)						
Freeway	28,625	27,860	26,930	25,445	25,185	24,045
Arterial Streets	38,500	37,105	36,515	35,755	35,560	36,300
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)	1.11	1.06	1.19	1.26	1.19	1.04
Diesel (\$/gallon)	1.19	1.20	1.30	1.39	1.32	1.15
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)	57,822	55,113	51,515	48,140	45,489	42,970
Rank	9	10	8	8	8	8
Fuel per Peak Auto Commuter (gallons)	18	17	16	15	15	14
Rank	12	13	14	13	11	13
Annual Delay						
Total Delay (1000s of person-hours)	117,337	111,839	104,538	97,688	92,309	87,198
Rank	11	11	11	11	11	11
Delay per Auto Commuter (pers-hrs)	39	39	37	36	35	34
Rank	27	22	22	20	20	19
Travel Time Index						
Rank	26	26	26	26	26	26
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,589	1,483	1,372	1,259	1,155	1,058
Rank	11	11	11	11	11	11
Cost per Auto Commuter (\$)	1,022	996	946	905	881	857
Rank	14	14	15	15	16	15
Truck Congestion						
Annual Person-Hours of Delay (000)	4,928	4,697	4,391	4,103	3,877	3,662
Rank	11	11	11	11	11	11
Annual Gallons of Wasted Fuel (000)	12,258	11,684	10,921	10,206	9,644	9,110
Rank	9	10	8	8	8	8
Annual Congestion Cost (\$ million)	141	133	124	115	107	98
Rank	11	11	11	11	11	11

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

Mobility Data for Philadelphia PA-NJ-DE-MD

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	4,625	4,610	4,590	4,580	4,565	4,550
Rank	4	4	4	4	4	4
Commuters (1000s)	1,647	1,604	1,560	1,519	1,499	1,483
Daily Vehicle-Miles of Travel (1000s)						
Freeway	23,395	22,530	22,080	21,210	21,170	19,450
Arterial Streets	35,825	35,580	33,105	33,845	33,440	34,105
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)	1.09	1.14	1.16	1.30	1.06	0.98
Diesel (\$/gallon)	1.21	1.28	1.29	1.08	1.03	0.95
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)	40,202	38,394	35,847	34,603	34,216	34,143
Rank	9	9	9	9	8	7
Fuel per Peak Auto Commuter (gallons)	13	12	11	10	10	10
Rank	12	13	13	14	11	11
Annual Delay						
Total Delay (1000s of person-hours)	81,580	77,912	72,743	70,218	69,432	69,285
Rank	11	11	12	10	10	9
Delay per Auto Commuter (pers-hrs)	33	32	30	30	30	30
Rank	18	17	20	16	15	15
Travel Time Index						
Rank	1.17	1.16	1.15	1.15	1.15	1.15
Rank	23	23	23	21	19	17
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	969	903	822	766	717	684
Rank	11	11	10	10	10	9
Cost per Auto Commuter (\$)	823	811	781	787	824	864
Rank	15	14	15	15	12	10
Truck Congestion						
Annual Person-Hours of Delay (000)	3,426	3,272	3,055	2,949	2,916	2,910
Rank	11	11	12	10	10	9
Annual Gallons of Wasted Fuel (000)	8,523	8,140	7,600	7,336	7,254	7,238
Rank	9	9	9	9	8	7
Annual Congestion Cost (\$ million)	92	87	80	75	73	71
Rank	11	11	10	10	10	9

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

Mobility Data for Philadelphia PA-NJ-DE-MD

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	4,500	4,480	4,470	4,465	4,460	4,450
Rank	4	4	4	4	4	4
Commuters (1000s)	1,452	1,431	1,417	1,401	1,389	1,371
Daily Vehicle-Miles of Travel (1000s)						
Freeway	17,790	16,000	15,585	15,980	15,705	14,110
Arterial Streets	34,295	33,030	30,015	29,145	28,715	28,425
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)	0.98	0.96	1.25	1.27	1.30	1.35
Diesel (\$/gallon)	0.95	0.93	1.22	1.23	1.26	1.32
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)	32,955	29,762	25,260	22,773	21,686	20,532
Rank	7	10	11	11	11	10
Fuel per Peak Auto Commuter (gallons)	11	11	9	7	6	6
Rank	8	7	10	12	13	10
Annual Delay						
Total Delay (1000s of person-hours)	66,874	60,395	51,260	46,212	44,007	41,664
Rank	10	10	11	11	11	11
Delay per Auto Commuter (pers-hrs)	30	27	23	21	20	19
Rank	14	14	17	19	18	17
Travel Time Index						
Rank	17	17	20	22	22	19
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	637	556	472	413	380	351
Rank	10	10	11	11	11	11
Cost per Auto Commuter (\$)	870	816	704	659	657	642
Rank	9	11	13	13	13	13
Truck Congestion						
Annual Person-Hours of Delay (000)	2,809	2,537	2,153	1,941	1,848	1,750
Rank	10	10	11	11	11	11
Annual Gallons of Wasted Fuel (000)	6,986	6,310	5,355	4,828	4,597	4,353
Rank	7	10	11	11	11	10
Annual Congestion Cost (\$ million)	68	61	52	47	44	42
Rank	10	10	11	11	11	11

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