

Performance Measure Summary - Cleveland OH

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 Cleveland OH

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	1,760	1,760	1,765	1,765	1,765	1,770
Rank	28	28	28	28	29	28
Commuters (1000s)	872	872	874	874	880	886
Daily Vehicle-Miles of Travel (1000s)						
Freeway	18,958	18,505	17,590	18,076	17,868	16,880
Arterial Streets	13,290	12,946	13,038	12,706	12,862	12,120
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)	2.29	2.17	2.18	3.16	3.48	3.58
Diesel (\$/gallon)	2.53	2.29	2.49	3.67	3.91	3.87
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	15.7	--	--	--	--	--
Congested System (% of lane-miles)	9.7	--	--	--	--	--
Congested Time (number of "Rush Hours")	1.5	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	26,716	26,609	26,158	25,752	25,645	25,445
Rank	28	27	27	27	27	27
Fuel per Peak Auto Commuter (gallons)	23	23	22	22	22	21
Rank	29	27	29	24	24	28
Annual Delay						
Total Delay (1000s of person-hours)	56,070	54,900	53,046	51,770	51,101	49,805
Rank	31	31	32	31	31	31
Delay per Auto Commuter (pers-hrs)	46	46	44	43	43	41
Rank	47	47	49	49	46	50
Travel Time Index						
Rank	1.15	1.15	1.15	1.15	1.15	1.15
Rank	71	71	69	71	70	71
Commuter Stress Index						
Rank	1.15	--	--	--	--	--
Rank	78	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	1.35	--	--	--	--	--
Rank	64	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,144	1,102	1,049	1,046	1,021	983
Rank	31	31	31	31	31	31
Cost per Auto Commuter (\$)	970	956	918	890	888	876
Rank	36	36	37	37	35	34
Truck Congestion						
Annual Person-Hours of Delay (000)	2,355	2,306	2,228	2,174	2,146	2,092
Rank	31	31	32	31	31	31
Annual Gallons of Wasted Fuel (000)	5,664	5,641	5,545	5,460	5,437	5,394
Rank	28	27	27	27	27	27
Annual Congestion Cost (\$ million)	122	114	105	106	99	94
Rank	31	31	31	31	31	31

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

Mobility Data for Cleveland OH

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	1,775	1,780	1,800	1,810	1,820	1,820
Rank	28	27	24	24	23	23
Commuters (1000s)	891	897	906	907	911	909
Daily Vehicle-Miles of Travel (1000s)						
Freeway	18,569	18,635	17,900	17,225	18,120	18,205
Arterial Streets	12,222	12,265	12,000	11,930	12,005	12,065
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)	3.25	2.64	2.19	3.40	2.88	2.58
Diesel (\$/gallon)	3.69	2.96	2.58	4.17	3.35	2.83
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)	25,244	24,559	23,772	24,720	24,305	23,805
Rank	26	26	27	28	28	28
Fuel per Peak Auto Commuter (gallons)	22	22	19	21	20	20
Rank	18	20	27	24	28	28
Annual Delay						
Total Delay (1000s of person-hours)	48,522	46,339	44,015	43,592	42,859	41,978
Rank	32	32	31	30	30	30
Delay per Auto Commuter (pers-hrs)	41	39	36	35	35	34
Rank	45	53	61	66	69	69
Travel Time Index						
Rank	1.14	1.14	1.14	1.14	1.14	1.13
Rank	77	73	74	79	80	82
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	945	862	797	825	770	727
Rank	31	31	30	30	30	30
Cost per Auto Commuter (\$)	881	868	840	822	841	847
Rank	32	34	35	37	37	36
Truck Congestion						
Annual Person-Hours of Delay (000)	2,038	1,946	1,849	1,831	1,800	1,763
Rank	31	32	31	30	30	30
Annual Gallons of Wasted Fuel (000)	5,352	5,207	5,040	5,241	5,153	5,047
Rank	26	26	27	28	28	28
Annual Congestion Cost (\$ million)	100	88	81	87	79	73
Rank	30	30	30	30	30	30

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

Mobility Data for Cleveland OH

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	1,825	1,825	1,820	1,820	1,815	1,805
Rank	23	23	22	22	22	22
Commuters (1000s)	905	902	896	881	866	848
Daily Vehicle-Miles of Travel (1000s)						
Freeway	18,150	18,375	17,390	16,800	16,750	17,285
Arterial Streets	12,185	12,020	11,800	11,490	11,310	11,105
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	1.81	1.52	1.38	1.30	1.55
Diesel (\$/gallon)	2.48	1.94	1.49	1.36	1.49	1.53
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)	23,921	23,908	22,292	22,370	22,867	23,041
Rank	27	24	26	25	23	21
Fuel per Peak Auto Commuter (gallons)	20	21	19	19	19	19
Rank	25	14	23	18	13	11
Annual Delay						
Total Delay (1000s of person-hours)	42,183	42,159	39,310	39,447	40,324	40,630
Rank	30	30	30	30	28	26
Delay per Auto Commuter (pers-hrs)	34	34	32	33	34	35
Rank	67	60	69	59	51	45
Travel Time Index						
Rank	76	74	76	75	73	65
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	701	668	600	586	588	581
Rank	30	30	30	30	27	26
Cost per Auto Commuter (\$)	879	910	870	894	926	958
Rank	34	29	32	30	20	18
Truck Congestion						
Annual Person-Hours of Delay (000)	1,772	1,771	1,651	1,657	1,694	1,706
Rank	30	30	30	30	28	26
Annual Gallons of Wasted Fuel (000)	5,071	5,068	4,726	4,742	4,848	4,885
Rank	27	24	26	25	23	21
Annual Congestion Cost (\$ million)	69	64	56	54	54	53
Rank	30	30	30	29	27	26

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Mobility Data for Cleveland OH

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	1,800	1,790	1,785	1,775	1,770	1,770
Rank	22	22	22	22	22	21
Commuters (1000s)	833	815	800	784	769	758
Daily Vehicle-Miles of Travel (1000s)						
Freeway	17,260	17,120	16,660	16,020	15,695	15,310
Arterial Streets	10,795	10,605	10,255	10,020	9,500	9,215
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)	1.14	1.11	1.13	1.28	1.12	1.08
Diesel (\$/gallon)	1.15	1.17	1.25	1.39	1.22	1.17
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)	23,238	23,099	22,880	22,227	21,158	19,552
Rank	19	17	15	15	15	15
Fuel per Peak Auto Commuter (gallons)	20	19	20	20	19	18
Rank	8	8	8	7	7	8
Annual Delay						
Total Delay (1000s of person-hours)	40,978	40,733	40,347	39,196	37,310	34,478
Rank	24	23	23	22	22	22
Delay per Auto Commuter (pers-hrs)	35	36	36	35	34	32
Rank	41	35	28	25	24	27
Travel Time Index						
Rank	61	55	47	45	41	42
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	559	544	532	509	469	422
Rank	24	23	22	20	22	22
Cost per Auto Commuter (\$)	998	1,016	1,021	1,015	996	948
Rank	15	13	13	12	12	12
Truck Congestion						
Annual Person-Hours of Delay (000)	1,721	1,711	1,695	1,646	1,567	1,448
Rank	24	23	23	22	22	22
Annual Gallons of Wasted Fuel (000)	4,926	4,897	4,851	4,712	4,486	4,145
Rank	19	17	15	15	15	15
Annual Congestion Cost (\$ million)	50	49	48	47	44	40
Rank	24	22	21	19	19	20

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Mobility Data for Cleveland OH

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	1,765	1,765	1,760	1,760	1,755	1,755
Rank	21	21	21	21	20	20
Commuters (1000s)	743	732	719	708	700	693
Daily Vehicle-Miles of Travel (1000s)						
Freeway	14,905	14,125	13,750	13,660	13,175	12,670
Arterial Streets	8,785	8,490	8,210	7,905	7,810	7,590
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	1.11	1.13	1.06	1.08	1.00
Diesel (\$/gallon)	1.19	1.19	1.25	1.10	1.05	0.97
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)	17,320	15,035	13,610	11,968	9,731	7,818
Rank	16	17	18	20	25	26
Fuel per Peak Auto Commuter (gallons)	17	14	13	12	10	9
Rank	8	8	9	9	11	13
Annual Delay						
Total Delay (1000s of person-hours)	30,541	26,513	24,000	21,105	17,159	13,785
Rank	22	23	23	25	28	29
Delay per Auto Commuter (pers-hrs)	29	25	23	21	17	14
Rank	33	45	49	52	62	75
Travel Time Index						
Rank	54	59	62	63	66	84
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	365	309	273	230	179	137
Rank	22	22	23	24	28	29
Cost per Auto Commuter (\$)	862	772	719	662	568	482
Rank	12	17	19	20	23	33
Truck Congestion						
Annual Person-Hours of Delay (000)	1,283	1,114	1,008	886	721	579
Rank	22	23	23	25	28	29
Annual Gallons of Wasted Fuel (000)	3,672	3,187	2,885	2,537	2,063	1,657
Rank	16	17	18	20	25	26
Annual Congestion Cost (\$ million)	35	30	27	23	18	14
Rank	22	22	23	24	28	30

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Mobility Data for Cleveland OH

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	1,750	1,750	1,750	1,750	1,750	1,750
Rank	20	19	19	18	17	17
Commuters (1000s)	685	679	673	666	662	655
Daily Vehicle-Miles of Travel (1000s)						
Freeway	11,115	10,705	10,305	10,600	10,520	10,000
Arterial Streets	7,000	6,775	6,585	6,460	6,310	6,205
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)	1.00	0.98	1.28	1.29	1.32	1.38
Diesel (\$/gallon)	0.97	0.95	1.24	1.26	1.29	1.34
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)	6,275	5,541	5,065	4,513	4,004	3,522
Rank	28	28	28	30	30	32
Fuel per Peak Auto Commuter (gallons)	6	5	4	5	3	3
Rank	32	40	50	27	46	34
Annual Delay						
Total Delay (1000s of person-hours)	11,065	9,771	8,931	7,958	7,060	6,210
Rank	33	34	33	33	34	37
Delay per Auto Commuter (pers-hrs)	11	10	9	8	7	6
Rank	82	83	83	83	85	90
Travel Time Index						
Rank	89	85	81	85	80	76
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	106	91	83	72	62	53
Rank	32	34	33	33	34	35
Cost per Auto Commuter (\$)	403	369	345	316	292	266
Rank	44	50	47	47	52	53
Truck Congestion						
Annual Person-Hours of Delay (000)	465	410	375	334	297	261
Rank	33	34	33	33	34	37
Annual Gallons of Wasted Fuel (000)	1,330	1,175	1,074	957	849	747
Rank	28	28	28	30	30	32
Annual Congestion Cost (\$ million)	11	10	9	8	7	6
Rank	32	30	32	32	34	35

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