

# Performance Measure Summary - Wichita KS

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 Wichita KS

Inventory Measures	2017	2016	2015	2014	2013	2012
<b>Urban Area Information</b>						
Population (1000s)	515	515	515	510	510	510
Rank	78	79	79	79	79	79
Commuters (1000s)	284	284	284	282	281	276
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	4,428	4,326	4,335	4,201	4,070	4,215
Arterial Streets	3,069	3,060	3,030	3,052	5,058	4,840
<b>Cost Components</b>						
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)	2.23	2.04	2.17	3.24	3.42	3.38
Diesel (\$/gallon)	2.43	2.20	2.42	3.57	3.81	3.86
System Performance	2017	2016	2015	2014	2013	2012
<b>Congested Travel (% of peak VMT)</b>	3.2	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	4.7	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	1.0	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	5,200	5,160	5,117	5,082	4,997	4,952
Rank	80	79	79	79	79	79
Fuel per Peak Auto Commuter (gallons)	16	16	16	16	16	16
Rank	77	76	73	70	71	69
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	12,081	11,747	11,447	11,171	10,786	10,495
Rank	81	81	80	80	80	80
Delay per Auto Commuter (pers-hrs)	36	35	34	34	32	31
Rank	89	88	89	85	85	86
<b>Travel Time Index</b>						
Rank	1.14	1.14	1.14	1.14	1.14	1.15
Rank	80	80	80	80	78	71
<b>Commuter Stress Index</b>						
Rank	1.15	--	--	--	--	--
Rank	78	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	1.26	--	--	--	--	--
Rank	82	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	245	234	225	224	214	205
Rank	81	81	80	80	80	80
Cost per Auto Commuter (\$)	503	493	479	463	452	444
Rank	97	96	96	95	94	94
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	507	493	481	469	453	441
Rank	81	81	80	80	80	80
Annual Gallons of Wasted Fuel (000)	1,102	1,094	1,085	1,077	1,059	1,050
Rank	80	79	79	79	79	79
Annual Congestion Cost (\$ million)	26	24	22	22	20	19
Rank	80	80	80	80	80	80

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

# Mobility Data for Wichita KS

Inventory Measures	2011	2010	2009	2008	2007	2006
<b>Urban Area Information</b>						
Population (1000s)	510	510	500	490	475	465
Rank	76	76	77	77	77	77
Commuters (1000s)	274	272	265	257	248	242
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	4,558	4,500	4,300	4,175	4,215	4,195
Arterial Streets	4,805	4,796	5,050	5,205	5,330	5,290
<b>Cost Components</b>						
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)	3.30	2.61	2.19	3.36	2.94	2.59
Diesel (\$/gallon)	3.64	2.89	2.45	4.12	3.42	2.88
System Performance	2011	2010	2009	2008	2007	2006
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	4,840	4,674	4,461	5,010	4,908	4,677
Rank	79	79	79	79	79	79
Fuel per Peak Auto Commuter (gallons)	17	17	13	17	18	18
Rank	60	61	80	61	49	47
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	10,162	9,724	9,193	9,832	9,631	9,178
Rank	80	80	81	80	80	80
Delay per Auto Commuter (pers-hrs)	30	29	28	27	28	28
Rank	85	85	85	86	85	85
<b>Travel Time Index</b>						
Rank	1.14	1.14	1.14	1.14	1.15	1.15
Rank	77	73	74	79	72	72
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	196	179	165	184	172	158
Rank	80	80	80	80	80	80
Cost per Auto Commuter (\$)	444	440	422	447	454	445
Rank	94	94	94	94	94	94
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	427	408	386	413	405	385
Rank	80	80	81	80	80	80
Annual Gallons of Wasted Fuel (000)	1,026	991	946	1,062	1,040	991
Rank	79	79	79	79	79	79
Annual Congestion Cost (\$ million)	20	18	16	19	18	16
Rank	80	80	81	80	79	79

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

# Mobility Data for Wichita KS

Inventory Measures	2005	2004	2003	2002	2001	2000
<b>Urban Area Information</b>						
Population (1000s)	455	445	440	435	430	425
Rank	77	77	74	74	74	74
Commuters (1000s)	235	228	224	219	214	209
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	4,075	3,915	3,740	3,635	3,535	3,405
Arterial Streets	5,065	4,950	4,885	4,820	4,765	4,700
<b>Cost Components</b>						
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)	2.29	1.89	1.52	1.34	1.34	1.52
Diesel (\$/gallon)	2.48	1.93	1.49	1.32	1.49	1.46
System Performance	2005	2004	2003	2002	2001	2000
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	4,265	3,997	3,733	3,554	3,475	3,331
Rank	78	78	77	77	77	77
Fuel per Peak Auto Commuter (gallons)	16	15	14	12	13	11
Rank	58	65	69	78	63	74
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	8,369	7,844	7,327	6,974	6,819	6,536
Rank	80	80	80	80	78	77
Delay per Auto Commuter (pers-hrs)	28	29	29	29	28	28
Rank	85	83	81	80	81	76
<b>Travel Time Index</b>						
Rank	1.16	1.16	1.15	1.15	1.14	1.14
Rank	61	59	64	61	68	65
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	138	124	111	103	99	93
Rank	80	80	80	79	77	77
Cost per Auto Commuter (\$)	420	406	391	382	378	373
Rank	95	94	93	93	92	90
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	352	329	308	293	286	275
Rank	80	80	80	80	78	77
Annual Gallons of Wasted Fuel (000)	904	847	791	753	737	706
Rank	78	78	77	77	77	77
Annual Congestion Cost (\$ million)	14	12	10	9	9	8
Rank	79	79	80	79	77	77

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

# Mobility Data for Wichita KS

Inventory Measures	1999	1998	1997	1996	1995	1994
<b>Urban Area Information</b>						
Population (1000s)	415	410	405	400	395	385
Rank	73	73	73	72	72	73
Commuters (1000s)	201	197	192	187	182	176
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	3,270	3,070	2,845	2,615	2,400	2,230
Arterial Streets	4,640	4,600	4,535	4,450	4,375	4,300
<b>Cost Components</b>						
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)	1.05	1.03	1.10	1.22	1.09	1.01
Diesel (\$/gallon)	1.07	1.07	1.20	1.37	1.22	1.13
System Performance	1999	1998	1997	1996	1995	1994
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	3,212	3,022	2,976	2,849	2,711	2,606
Rank	76	76	75	75	75	75
Fuel per Peak Auto Commuter (gallons)	12	10	10	11	9	9
Rank	64	73	66	49	59	56
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	6,303	5,930	5,841	5,591	5,320	5,113
Rank	77	76	76	75	75	75
Delay per Auto Commuter (pers-hrs)	28	27	28	27	26	26
Rank	72	71	63	63	61	55
<b>Travel Time Index</b>						
Rank	1.14	1.13	1.14	1.13	1.13	1.13
Rank	61	66	47	50	47	42
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	85	79	77	72	66	62
Rank	76	76	76	75	75	75
Cost per Auto Commuter (\$)	373	357	358	351	342	338
Rank	89	87	87	84	83	83
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	265	249	245	235	223	215
Rank	76	76	76	75	75	75
Annual Gallons of Wasted Fuel (000)	681	641	631	604	575	552
Rank	76	76	75	75	75	75
Annual Congestion Cost (\$ million)	8	7	7	7	6	6
Rank	76	76	75	74	75	73

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

# Mobility Data for Wichita KS

Inventory Measures	1993	1992	1991	1990	1989	1988
<b>Urban Area Information</b>						
Population (1000s)	380	375	365	365	360	350
Rank	73	73	73	72	72	72
Commuters (1000s)	171	167	160	158	155	149
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	2,150	2,105	1,940	1,890	1,720	1,645
Arterial Streets	4,235	3,958	3,815	3,630	3,540	3,325
<b>Cost Components</b>						
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)	1.08	1.02	1.04	1.03	1.11	1.02
Diesel (\$/gallon)	1.21	1.18	1.16	1.02	0.96	0.89
System Performance	1993	1992	1991	1990	1989	1988
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	2,478	2,370	2,236	2,057	1,840	1,553
Rank	74	73	73	72	71	72
Fuel per Peak Auto Commuter (gallons)	8	8	9	8	7	5
Rank	58	53	27	35	39	58
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	4,863	4,651	4,388	4,037	3,611	3,049
Rank	75	75	74	73	73	75
Delay per Auto Commuter (pers-hrs)	25	25	24	22	20	18
Rank	53	45	43	46	48	52
<b>Travel Time Index</b>						
Rank	44	40	38	41	43	43
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	58	54	49	44	37	30
Rank	75	75	74	72	73	74
Cost per Auto Commuter (\$)	330	327	318	304	288	259
Rank	80	78	77	76	77	79
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	204	195	184	170	152	128
Rank	75	75	74	72	73	74
Annual Gallons of Wasted Fuel (000)	525	502	474	436	390	329
Rank	74	73	73	72	71	72
Annual Congestion Cost (\$ million)	5	5	5	4	4	3
Rank	75	73	70	71	69	73

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

# Mobility Data for Wichita KS

Inventory Measures	1987	1986	1985	1984	1983	1982
<b>Urban Area Information</b>						
Population (1000s)	345	340	335	330	325	320
Rank	73	73	73	73	73	73
Commuters (1000s)	146	143	140	136	133	130
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	1,595	1,525	1,475	1,460	1,450	1,400
Arterial Streets	3,265	3,110	3,065	3,040	3,000	2,900
<b>Cost Components</b>						
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)	0.89	0.87	1.14	1.15	1.18	1.23
System Performance	1987	1986	1985	1984	1983	1982
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	1,472	1,387	1,296	1,193	1,099	974
Rank	71	71	70	70	68	69
Fuel per Peak Auto Commuter (gallons)	5	5	4	4	5	2
Rank	48	40	50	41	22	55
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	2,889	2,721	2,544	2,341	2,157	1,912
Rank	73	72	71	70	68	70
Delay per Auto Commuter (pers-hrs)	17	16	16	15	14	13
Rank	51	52	45	45	44	44
<b>Travel Time Index</b>						
Rank	44	42	39	42	39	43
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	28	25	23	21	19	16
Rank	72	72	71	70	68	70
Cost per Auto Commuter (\$)	253	244	238	224	214	192
Rank	79	75	69	70	70	75
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	121	114	107	98	91	80
Rank	73	72	71	70	68	70
Annual Gallons of Wasted Fuel (000)	312	294	275	253	233	207
Rank	71	71	70	70	68	69
Annual Congestion Cost (\$ million)	3	3	3	2	2	2
Rank	69	67	65	70	66	65

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