

Performance Measure Summary - Kansas City MO-KS

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2014. 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 overnight speeds 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 2014 (estimated at \$17.67 per hour of person travel and \$94.04 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.

The Mobility Data for Kansas City MO-KS

Inventory Measures	2014	2013	2012	2011	2010
Urban Area Information					
Population (1000s)	1,600	1,600	1,595	1,585	1,575
Rank	32	31	31	31	31
Commuters (1000s)	831	839	840	837	829
Daily Vehicle-Miles of Travel (1000s)					
Freeway	22,986	22,187	21,315	21,701	21,564
Arterial Streets	12,479	12,773	12,755	12,242	12,500
Cost Components					
Value of Time (\$/hour)	17.67	17.39	17.14	16.79	16.30
Commercial Cost (\$/hour)	94.04	89.60	89.56	86.81	88.12
Gasoline (\$/gallon)	3.16	3.36	3.30	3.24	2.49
Diesel (\$/gallon)	3.47	3.67	3.69	3.54	2.77
System Performance	2014	2013	2012	2011	2010
Congested Travel (% of peak VMT)	22	--	--	--	--
Congested System (% of lane-miles)	21	--	--	--	--
Congested Time (number of "Rush Hours")	2.50	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	21,349	21,108	20,832	20,556	20,152
Rank	34	34	33	33	33
Fuel per Peak Auto Commuter (gallons)	18	18	18	18	17
Rank	62	57	55	51	58
Annual Delay					
Total Delay (1000s of person-hours)	45,570	45,055	44,466	43,878	43,015
Rank	34	33	33	34	33
Delay per Peak Auto Commuter (pers-hrs)	39	38	38	38	37
Rank	51	52	50	50	54
Travel Time Index					
	1.15	1.15	1.15	1.15	1.14
Rank	76	74	74	74	76
Commuter Stress Index					
	1.17	1.17	1.17	1.16	1.16
Rank	79	79	77	82	82
Freeway Planning Time Index (95th Pctile)					
	1.99	--	--	--	--
Rank	59	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	1,085	1,090	1,091	1,099	1,112
Rank	32	32	32	31	31
Cost per Peak Auto Commuter (\$)	933	937	939	945	956
Rank	49	51	48	49	48

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Kansas City MO-KS

Inventory Measures	2009	2008	2007	2006	2005
Urban Area Information					
Population (1000s)	1,550	1,530	1,525	1,520	1,500
Rank	31	31	31	31	31
Commuters (1000s)	813	800	792	783	768
Daily Vehicle-Miles of Travel (1000s)					
Freeway	21,300	21,050	21,015	20,820	20,675
Arterial Streets	12,779	13,000	13,315	13,000	12,970
Cost Components					
Value of Time (\$/hour)	16.01	16.10	15.47	15.06	14.58
Commercial Cost (\$/hour)	89.75	81.52	82.56	80.43	78.05
Gasoline (\$/gallon)	2.09	3.31	2.85	2.54	2.20
Diesel (\$/gallon)	2.33	4.01	3.22	2.72	2.36
System Performance	2009	2008	2007	2006	2005
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	19,521	20,102	19,373	19,125	18,942
Rank	33	33	34	34	33
Fuel per Peak Auto Commuter (gallons)	17	17	17	16	16
Rank	54	61	57	60	55
Annual Delay					
Total Delay (1000s of person-hours)	41,667	42,909	41,353	40,824	40,432
Rank	32	33	34	33	33
Delay per Peak Auto Commuter (pers-hrs)	37	38	37	37	37
Rank	55	56	60	57	55
Travel Time Index					
	1.14	1.15	1.14	1.14	1.14
Rank	76	76	80	78	77
Commuter Stress Index					
	1.16	1.17	1.16	1.16	1.16
Rank	82	79	85	83	81
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	1,095	1,123	1,124	1,140	1,167
Rank	31	31	32	30	31
Cost per Peak Auto Commuter (\$)	942	966	967	981	1,003
Rank	52	53	58	55	50

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Kansas City MO-KS

Inventory Measures	2004	2003	2002	2001	2000
Urban Area Information					
Population (1000s)	1,500	1,500	1,475	1,425	1,420
Rank	31	31	31	32	31
Commuters (1000s)	763	759	736	699	686
Daily Vehicle-Miles of Travel (1000s)					
Freeway	20,185	20,185	20,070	19,350	19,310
Arterial Streets	12,970	12,980	12,890	12,840	12,725
Cost Components					
Value of Time (\$/hour)	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	74.17	72.23	70.86	71.38	70.47
Gasoline (\$/gallon)	1.78	1.43	1.30	1.33	1.48
Diesel (\$/gallon)	1.80	1.39	1.25	1.40	1.41
System Performance	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)	18,716	17,695	17,215	16,307	15,584
Rank	32	33	33	33	33
Fuel per Peak Auto Commuter (gallons)	16	15	15	14	13
Rank	53	52	49	52	53
Annual Delay					
Total Delay (1000s of person-hours)	39,951	37,770	36,746	34,807	33,265
Rank	32	33	33	33	33
Delay per Peak Auto Commuter (pers-hrs)	37	35	35	35	34
Rank	53	57	53	47	50
Travel Time Index					
	1.14	1.14	1.14	1.13	1.13
Rank	75	72	70	73	72
Commuter Stress Index					
	1.16	1.15	1.15	1.15	1.15
Rank	77	83	82	79	76
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	1,192	1,157	1,151	1,108	1,089
Rank	31	32	32	34	34
Cost per Peak Auto Commuter (\$)	1,025	995	990	953	936
Rank	45	46	43	42	45

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The Mobility Data for Kansas City MO-KS

Inventory Measures	1999	1998	1997	1996	1995
Urban Area Information					
Population (1000s)	1,390	1,375	1,355	1,340	1,330
Rank	30	30	30	30	27
Commuters (1000s)	660	642	623	606	592
Daily Vehicle-Miles of Travel (1000s)					
Freeway	18,790	18,225	17,310	16,940	15,960
Arterial Streets	12,705	12,610	12,600	12,585	12,510
Cost Components					
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37
Commercial Cost (\$/hour)	66.76	65.76	66.83	66.20	64.27
Gasoline (\$/gallon)	1.02	1.01	1.06	1.22	1.04
Diesel (\$/gallon)	1.02	1.04	1.15	1.34	1.14
System Performance	1999	1998	1997	1996	1995
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	15,412	14,323	13,439	12,662	12,234
Rank	32	32	33	33	32
Fuel per Peak Auto Commuter (gallons)	13	12	12	11	11
Rank	44	47	38	41	35
Annual Delay					
Total Delay (1000s of person-hours)	32,897	30,574	28,686	27,029	26,114
Rank	32	32	33	34	34
Delay per Peak Auto Commuter (pers-hrs)	34	33	31	30	30
Rank	47	47	50	50	45
Travel Time Index					
	1.13	1.13	1.12	1.12	1.11
Rank	70	66	69	67	68
Commuter Stress Index					
	1.15	1.14	1.14	1.14	1.13
Rank	74	76	73	68	71
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	1,113	1,057	1,007	971	966
Rank	33	34	33	33	32
Cost per Peak Auto Commuter (\$)	957	909	866	835	831
Rank	39	39	38	40	36

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The Mobility Data for Kansas City MO-KS

Inventory Measures	1994	1993	1992	1991	1990
Urban Area Information					
Population (1000s)	1,320	1,300	1,200	1,160	1,160
Rank	27	27	30	32	30
Commuters (1000s)	579	560	509	484	476
Daily Vehicle-Miles of Travel (1000s)					
Freeway	15,260	14,900	13,240	12,520	12,555
Arterial Streets	12,365	12,050	11,730	11,185	10,615
Cost Components					
Value of Time (\$/hour)	11.06	10.78	10.47	10.17	9.75
Commercial Cost (\$/hour)	62.23	60.84	59.01	57.31	55.03
Gasoline (\$/gallon)	0.95	0.98	0.96	1.01	0.98
Diesel (\$/gallon)	1.04	1.08	1.08	1.09	0.98
System Performance	1994	1993	1992	1991	1990
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	11,814	11,084	9,987	9,259	8,748
Rank	29	29	29	29	29
Fuel per Peak Auto Commuter (gallons)	10	10	9	8	8
Rank	37	24	28	31	25
Annual Delay					
Total Delay (1000s of person-hours)	25,217	23,660	21,318	19,764	18,673
Rank	31	28	31	31	29
Delay per Peak Auto Commuter (pers-hrs)	29	28	28	27	26
Rank	41	39	31	30	27
Travel Time Index					
	1.11	1.11	1.11	1.10	1.10
Rank	63	54	49	51	46
Commuter Stress Index					
	1.13	1.13	1.13	1.12	1.12
Rank	65	62	51	54	51
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	959	923	856	818	805
Rank	30	30	30	30	29
Cost per Peak Auto Commuter (\$)	825	794	737	703	692
Rank	33	30	33	34	31

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The Mobility Data for Kansas City MO-KS

Inventory Measures	1989	1988	1987	1986	1985
Urban Area Information					
Population (1000s)	1,155	1,145	1,140	1,135	1,130
Rank	30	29	28	28	28
Commuters (1000s)	471	463	458	451	446
Daily Vehicle-Miles of Travel (1000s)					
Freeway	12,370	12,220	11,920	10,905	10,190
Arterial Streets	10,100	9,535	8,820	8,215	7,530
Cost Components					
Value of Time (\$/hour)	9.25	8.83	8.48	8.18	8.03
Commercial Cost (\$/hour)	52.81	50.04	48.53	46.57	47.83
Gasoline (\$/gallon)	1.11	1.02	1.03	1.00	1.31
Diesel (\$/gallon)	1.04	0.96	0.96	0.94	1.23
System Performance	1989	1988	1987	1986	1985
Congested Travel (% of peak VMT)	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--
Annual Excess Fuel Consumed					
Total Fuel (1000 gallons)	7,979	7,276	6,495	5,413	4,618
Rank	30	29	26	31	34
Fuel per Peak Auto Commuter (gallons)	7	6	6	5	4
Rank	29	31	27	33	40
Annual Delay					
Total Delay (1000s of person-hours)	17,031	15,532	13,863	11,555	9,858
Rank	28	28	29	30	32
Delay per Peak Auto Commuter (pers-hrs)	24	22	20	17	14
Rank	28	32	37	47	55
Travel Time Index					
	1.09	1.08	1.08	1.06	1.06
Rank	48	48	44	57	54
Commuter Stress Index					
	1.11	1.10	1.09	1.08	1.07
Rank	52	55	59	63	66
Freeway Planning Time Index (95th Pctile)					
	--	--	--	--	--
Rank	--	--	--	--	--
Congestion Cost (constant 2014 \$)					
Total Cost (\$ millions)	774	740	688	594	516
Rank	29	27	28	30	32
Cost per Peak Auto Commuter (\$)	666	636	592	511	444
Rank	32	30	34	40	46

* Note: Cells containing "--" indicate no available data.

The Mobility Data for Kansas City MO-KS

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	1,100	1,095	1,090
Rank	29	29	29
Commuters (1000s)	431	426	419
Daily Vehicle-Miles of Travel (1000s)			
Freeway	9,380	8,985	8,425
Arterial Streets	6,720	6,010	5,520
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	46.47	44.23	43.08
Gasoline (\$/gallon)	1.33	1.36	1.42
Diesel (\$/gallon)	1.24	1.27	1.33
System Performance	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)	3,932	3,696	3,364
Rank	37	36	34
Fuel per Peak Auto Commuter (gallons)	3	3	3
Rank	54	42	36
Annual Delay			
Total Delay (1000s of person-hours)	8,394	7,890	7,181
Rank	34	34	34
Delay per Peak Auto Commuter (pers-hrs)	13	12	11
Rank	53	52	54
Travel Time Index			
	1.05	1.05	1.04
Rank	57	55	61
Commuter Stress Index			
	1.07	1.06	1.06
Rank	62	67	66
Freeway Planning Time Index (95th Pctile)			
	--	--	--
Rank	--	--	--
Congestion Cost (constant 2014 \$)			
Total Cost (\$ millions)	455	446	419
Rank	35	34	34
Cost per Peak Auto Commuter (\$)	392	384	361
Rank	52	47	50

* Note: Cells containing "--" indicate no available data.