Performance Measure Summary - Louisville-Jefferson County KY-IN

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2020. 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 2020 (estimated at \$20.17 per hour of person travel and \$55.24 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.

Annual Greenhouse Gases (CO2) Produced -Tons of CO2 produced from all vehicle travel.

Excess Greenhouse Gases (CO2) Produced due to Congestion-Tons of CO2 produced due to congested portion of travel. The excess CO2 is a subset of the total CO2 produced.

Inventory Measures	2020	2019	2018	2017	2016	2015
Urban Area Information						
Population (1000s)	1,115	1,115	1,115	1,115	1,110	1,110
Rank	43	43	43	42	42	41
Commuters (1000s)	587	587	587	587	585	585
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,846	10,683	10,699	10,536	10,613	10,550
Arterial Streets	6,425	7,760	7,634	7,760	7,743	7,812
Cost Components		,	,	,	,	
Value of Time (\$/hour)	20.17	19.14	18.71	18.12	17.91	17.69
Commercial Cost (\$/hour)	55.24	61.03	54.71	52.14	50.20	46.87
Gasoline (\$/gallon)	2.18	2.51	2.73	2.29	2.14	2.20
Diesel (\$/gallon)	2.64	2.81	3.08	2.44	2.24	2.45
System Performance	2020	2019	2018	2017	2016	2015
Congested Travel (% of peak VMT)				18.4		
Congested System (% of lane-miles)				13.2		
Congested Time (number of "Rush Hours")				1.9		
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	6,125	13,501	13,045	12,370	12,261	12,023
Rank	51	49	48	48	48	48
Fuel per Peak Auto Commuter (gallons)	9	20	19	18	18	18
Rank	70	52	58	63	60	58
Annual Delay						
Total Delay (1000s of person-hours)	13,886	30,610	29,842	29,392	28,889	28,088
Rank	54	48	47	47	47	47
Delay per Auto Commuter (pers-hrs)	22	48	47	46	44	43
Rank	72	47	48	47	53	55
Travel Time Index	1.05	1.17	1.17	1.17	1.17	1.17
Rank	85	49	48	47	46	46
Commuter Stress Index	1.06	1.19	1.19	1.19		
Rank	91	54	51	50		
Freeway Planning Time Index (95th Pctile)		1.29	1.32	1.36		
Rank		70	64	63		
Congestion Cost						
Total Cost (\$ millions)	319	691	664	634	611	584
Rank	54	48	48	47	47	47
Cost per Auto Commuter (\$)	386	835	802	766	757	732
Rank	82	65	70	74	75	71
Truck Congestion						
Annual Person-Hours of Delay (000)	888	1,807	1,694	1,434	1,363	1,280
Rank	44	46	46	48	48	48
Annual Gallons of Wasted Fuel (000)	1,439	2,928	2,772	2,622	2,599	2,549
Rank	47	46	47	47	47	46
Annual Congestion Cost (\$ million)	47	106	93	76	69	62
Rank	44	43	46	47	48	48
Annual Greenhouse Gases (CO2) Produced						
Excess Due to Congestion (tons)	61,623	135,841				
Rank	51	49				
D (AUT 1 ()	2,077,295	4,579,124				
Due to All Travel (tons)	2,011,275		ı İ			
Due to All Travel (tons) Rank	49	41				
		41				
Rank		32,255				
Rank Truck Annual Greenhouse Gases (CO2) Produced	49			 		
Rank Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)	15,847	32,255		 		

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

Inventory Measures	2014	2013	2012	2011	2010	2009
Urban Area Information						
Population (1000s)	1,110	1,070	1,030	1,015	1,000	990
Rank	41	43	44	44	45	44
Commuters (1000s)	585	565	544	535	525	518
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,020	11,877	12,310	12,250	12,160	12,050
Arterial Streets	9,178	9,069	9,430	9,384	9,315	8,900
Cost Components	,		,			
Value of Time (\$/hour)	17.67	17.39	17.14	16.79	16.28	16.01
Commercial Cost (\$/hour)	44.82	41.23	39.66	44.62	42.50	41.83
Gasoline (\$/gallon)	3.21	3.45	3.48	3.29	2.64	2.18
Diesel (\$/gallon)	3.60	3.88	3.84	3.61	2.90	2.48
System Performance	2014	2013	2012	2011	2010	2009
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	11,966	11,899	11,646	11,540	11,358	10,729
Rank	48	48	48	48	48	50
Fuel per Peak Auto Commuter (gallons)	18	18	17	17	19	17
Rank	57	54	61	60	40	43
Annual Delay						
Total Delay (1000s of person-hours)	27,237	26,611	25,811	25,115	24,266	22,495
Rank	47	47	47	47	48	49
Delay per Auto Commuter (pers-hrs)	42	41	40	39	37	34
Rank	55	52	55	54	58	74
Travel Time Index	1.18	1.18	1.18	1.17	1.17	1.17
Rank	39	39	38	43	41	43
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	576	555	531	511	472	426
Rank	48	48	47	47	48	49
Cost per Auto Commuter (\$)	705	697	685	687	685	647
Rank	73	70	70	70	70	73
Truck Congestion						
Annual Person-Hours of Delay (000)	1,174	1,118	1,084	1,055	1,019	945
Rank	49	50	50	48	49	51
Annual Gallons of Wasted Fuel (000)	2,537	2,523	2,469	2,446	2,408	2,275
Rank	46	45	46	45	45	46
Annual Congestion Cost (\$ million)	58	53	50	53	47	43
Rank	49	49	48	48	48	49
Annual Greenhouse Gases (CO2) Produced						
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced						
Excess Due to Truck Congestion (tons)	· I					
- ' '					I	
Rank						
- ' '		 		 	 	

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

Inventory Measures	2008	2007	2006	2005	2004	2003
Urban Area Information						
Population (1000s)	980	970	960	950	940	910
Rank	44	45	45	46	46	47
Commuters (1000s)	511	502	494	485	477	460
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,000	12,085	11,925	11,800	11,730	11,500
Arterial Streets	8,780	8,730	8,700	8,645	8,605	8,495
Cost Components						
Value of Time (\$/hour)	16.07	15.47	15.06	14.58	14.10	13.73
Commercial Cost (\$/hour)	40.77	39.30	37.88	36.51	35.19	33.92
Gasoline (\$/gallon)	3.43	2.92	2.56	2.24	1.83	1.44
Diesel (\$/gallon)	4.05	3.21	2.73	2.38	1.84	1.42
System Performance	2008	2007	2006	2005	2004	2003
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	11,412	10,804	10,670	10,535	10,261	9,931
Rank	49	49	49	49	48	48
Fuel per Peak Auto Commuter (gallons)	19	18	18	17	18	18
Rank	37	49	47	48	38	30
Annual Delay						
Total Delay (1000s of person-hours)	22,787	21,572	21,304	21,034	20,488	19,829
Rank	48	49	48	48	48	48
Delay per Auto Commuter (pers-hrs)	33	33	34	34	33	33
Rank	73	73	69	67	69	65
Travel Time Index	1.17	1.18	1.18	1.18	1.18	1.18
Rank	51	43	42	41	38	38
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	449	404	385	365	340	316
Rank	48	50	48	48	48	48
Cost per Auto Commuter (\$)	649	638	648	660	665	661
Rank	73	78	76	70	68	69
Truck Congestion						
Annual Person-Hours of Delay (000)	957	906	895	883	860	833
Rank	49	52	51	50	49	49
Annual Gallons of Wasted Fuel (000)	2,419	2,290	2,262	2,233	2,175	2,105
Rank	45	46	45	43	42	43
Annual Congestion Cost (\$ million)	46	41	38	35	32 48	29
Rank	49	49	48	50	48	47
Annual Greenhouse Gases (CO2) Produced					I	
Excess Due to Congestion (tons)						
Rank Due to All Travel (tons)						
Due to All Travel (tons) Rank		 				
Truck Annual Greenhouse Gases (CO2) Produced					I	
Excess Due to Truck Congestion (tons)						
Rank Due to Truck Travel (tons)						
Due to Truck Travel (tons)						
Rank						

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

Inventory Measures	2002	2001	2000	1999	1998	1997
Urban Area Information						
Population (1000s)	875	860	850	840	830	830
Rank	46	46	45	45	45	44
Commuters (1000s)	435	421	410	398	387	381
Daily Vehicle-Miles of Travel (1000s)						
Freeway	11,000	10,400	10,200	10,035	9,900	9,600
Arterial Streets	8,140	8,095	8,445	8,350	8,210	7,985
Cost Components						
Value of Time (\$/hour)	13.43	13.22	12.85	12.43	12.17	11.98
Commercial Cost (\$/hour)	32.69	31.51	30.38	29.28	28.89	28.50
Gasoline (\$/gallon)	1.33	1.40	1.48	1.09	1.06	1.12
Diesel (\$/gallon)	1.29	1.45	1.42	1.04	1.10	1.19
System Performance	2002	2001	2000	1999	1998	1997
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	9,491	9,037	8,584	8,131	7,680	7,335
Rank	49	50	49	48	47	47
Fuel per Peak Auto Commuter (gallons)	18	17	16	15	14	14
Rank	27	31	32	32	31	26
Annual Delay						
Total Delay (1000s of person-hours)	18,950	18,045	17,140	16,236	15,334	14,646
Rank	49	49	49	49	48	48
Delay per Auto Commuter (pers-hrs)	33	33	32	32	32	32
Rank	59	58	61	57	52	47
Travel Time Index	1.17	1.17	1.17	1.17	1.16	1.16
Rank	40	38	36	36	36	36
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	294	277	256	232	214	202
Rank	49	49	49	49	48	48
Cost per Auto Commuter (\$)	647	624	608	596	576	560
Rank	70	69	67	67	67	63
Truck Congestion						
Annual Person-Hours of Delay (000)	796	758	720	682	644	615
Rank	49	48	49	49	49	48
Annual Gallons of Wasted Fuel (000)	2,012	1,916	1,820	1,724	1,628	1,555
Rank	43	45	45	44	44	44
Annual Congestion Cost (\$ million)	27	25	23	20 49	19	18
Rank	47	48	48	49	49	47
Annual Greenhouse Gases (CO2) Produced					I	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons) Rank	 	 				
Truck Annual Greenhouse Gases (CO2) Produced				1	I	
Excess Due to Truck Congestion (tons)						
Rank Due to Truck Travel (tons)						
Due to Truck Travel (tons)						
Rank						

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

Inventory Measures	1996	1995	1994	1993	1992	1991
Urban Area Information						
Population (1000s)	825	825	825	820	815	810
Rank	43	43	42	42	42	41
Commuters (1000s)	372	366	361	353	345	337
Daily Vehicle-Miles of Travel (1000s)						
Freeway	9,210	8,665	8,175	7,850	7,110	6,560
Arterial Streets	7,855	7,690	7,770	7,495	7,215	6,810
Cost Components	7,000	7,070	7,770	7,1,50	7,210	0,010
Value of Time (\$/hour)	11.71	11.37	11.06	10.78	10.47	10.17
Commercial Cost (\$/hour)	28.12	27.75	27.38	27.02	26.66	26.30
Gasoline (\$/gallon)	1.25	1.14	1.01	1.05	1.03	1.04
Diesel (\$/gallon)	1.34	1.22	1.08	1.13	1.12	1.15
· •						
System Performance	1996	1995	1994	1993	1992	1991
Congested Travel (% of peak VMT)						
Congested System (% of lane-miles)						
Congested Time (number of "Rush Hours")						
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	6,970	6,659	6,322	5,974	5,749	5,178
Rank	46	44	43	41	41	42
Fuel per Peak Auto Commuter (gallons)	13	13	12	10	11	10
Rank	29	19	21	38	16	19
Annual Delay						
Total Delay (1000s of person-hours)	13,916	13,295	12,623	11,929	11,479	10,338
Rank	48	47	46	45	42	44
Delay per Auto Commuter (pers-hrs)	32	32	31	31	31	29
Rank	43	34	31	26	22	24
Travel Time Index	1.16	1.15	1.15	1.15	1.15	1.13
Rank	34	36	35	31	27	34
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	189	175	161	149	140	123
Rank	48	47	46	46	42	44
Cost per Auto Commuter (\$)	543	534	524	505	504	468
Rank	62	59	56	53	49	50
Truck Congestion						
Annual Person-Hours of Delay (000)	584	558	530	501	482	434
Rank	47	46	46	45	43	45
Annual Gallons of Wasted Fuel (000)	1,478	1,412	1,340	1,267	1,219	1,098
Rank	43	41	39	39	39	39
Annual Congestion Cost (\$ million)	17	16	15	14	13	12
Rank	46	45	45	45	44	42
Annual Greenhouse Gases (CO2) Produced	10	73	73	73	77	72
Excess Due to Congestion (tons)				ı	I	
Rank						
Due to All Travel (tons) Rank						
Truck Annual Greenhouse Gases (CO2) Produced				ı	ı	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons)						
Rank	ı <u></u>					

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

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	810	805	805	790	785	785
Rank	41	40	39	40	40	38
Commuters (1000s)	332	328	325	316	312	309
Daily Vehicle-Miles of Travel (1000s)						
Freeway	6,265	6,130	5,980	5,530	4,930	4,430
Arterial Streets	6,305	6,000	5,970	6,200	6,105	5,950
Cost Components						
Value of Time (\$/hour)	9.75	9.25	8.83	8.48	8.18	8.03
Commercial Cost (\$/hour)	25.95	25.60	25.26	24.93	24.60	24.27
Gasoline (\$/gallon)	1.06	1.10	1.02	1.02	0.99	1.30
Diesel (\$/gallon)	1.06	0.99	0.92	0.92	0.90	1.17
System Performance	1990	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)	4,575	4,259	3,983	3,850	3,538	3,267
Rank	44	41	40	40	40	40
Fuel per Peak Auto Commuter (gallons)	9	7	7	8	6	6
Rank	23	39	27	18	28	22
Annual Delay						
Total Delay (1000s of person-hours)	9,136	8,504	7,952	7,688	7,064	6,523
Rank	45	43	42	41	41	41
Delay per Auto Commuter (pers-hrs)	26	24	23	23	21	19
Rank	27	29	28	25	26	30
Travel Time Index	1.12	1.11	1.11	1.10	1.10	1.09
Rank	35	37	33	37	33	36
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	104	93	83	77	69	63
Rank	45	43	42	40	41	41
Cost per Auto Commuter (\$)	432	424	420	423	401	380
Rank	57	56	53	47	47	40
Truck Congestion						
Annual Person-Hours of Delay (000)	384	357	334	323	297	274
Rank	44	43	43	43	44	43
Annual Gallons of Wasted Fuel (000)	970	903	844	816	750	693
Rank	41	39	38	37	36	36
Annual Congestion Cost (\$ million)	10	9	9	8	7	7
Rank	44	43	42	42	43	41
Annual Greenhouse Gases (CO2) Produced						
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced					1	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons)						
Rank						

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

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	780	780	770
Rank	38	38	39
Commuters (1000s)	305	303	296
Daily Vehicle-Miles of Travel (1000s)			
Freeway	4,330	4,415	4,045
Arterial Streets	5,670	5,610	5,845
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
Gasoline (\$/gallon)	1.31	1.34	1.41
Diesel (\$/gallon)	1.19	1.21	1.27
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)	3,034	2,852	2,755
Rank	40	39	39
Fuel per Peak Auto Commuter (gallons)	5	5	4
Rank	27	22	19
Annual Delay			
Total Delay (1000s of person-hours)	6,057	5,695	5,501
Rank	41	39	39
Delay per Auto Commuter (pers-hrs)	18	17	17
Rank	30	30	24
Travel Time Index	1.09	1.08	1.08
Rank	30	34	29
Commuter Stress Index			
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	57	52	49
Rank	40	39	39
Cost per Auto Commuter (\$)	363	360	354
Rank	40	39	35
Truck Congestion			
Annual Person-Hours of Delay (000)	254	239	231
Rank	43	40	39
Annual Gallons of Wasted Fuel (000)	643	605	584
Rank	36	35	34
Annual Congestion Cost (\$ million)	6	6	6
Rank	42	37	35
Annual Greenhouse Gases (CO2) Produced			
Excess Due to Congestion (tons)			
Rank			
Due to All Travel (tons)			
Rank			
Truck Annual Greenhouse Gases (CO2) Produced			
Excess Due to Truck Congestion (tons)			
Rank			
Due to Truck Travel (tons)			
Rank			

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