#### Performance Measure Summary - St. Louis MO-IL

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)	2,195	2,195	2,195	2,200	2,200	2,200
Rank	20	20	20	20	20	20
Commuters (1000s)	1,117	1,117	1,117	1,120	1,120	1,120
Daily Vehicle-Miles of Travel (1000s)						
Freeway	26,906	31,993	32,027	32,408	31,693	30,883
Arterial Streets	15,892	18,896	18,838	19,150	18,759	18,712
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)	2.09	2.37	2.62	2.16	1.98	2.08
Diesel (\$/gallon)	2.49	2.69	3.01	2.31	2.11	2.31
System Performance	2020	2019	2018	2017	2016	2015
Congested Travel (% of peak VMT)				18.8		
Congested System (% of lane-miles)				12.3		
Congested Time (number of "Rush Hours")				2.5		
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	21,143	29,582	29,106	28,919	28,752	28,596
Rank	16	24	24	24	24	24
Fuel per Peak Auto Commuter (gallons)	14	19	19	19	19	19
Rank	17	62	58	55	53	50
Annual Delay						
Total Delay (1000s of person-hours)	51,115	71,517	71,400	71,481	70,712	69,729
Rank	17	26	26	25	25	24
Delay per Auto Commuter (pers-hrs)	33	46	46	46	46	45
Rank	17	57	49	47	47	45
Travel Time Index	1.08	1.14	1.14	1.15	1.15	1.15
Rank	44	79	76	69	69	67
Commuter Stress Index	1.08	1.17	1.16	1.15		
Rank	58	67	77	78		
Freeway Planning Time Index (95th Pctile)		1.37	1.38	1.40		
Rank		58	54	54		
Congestion Cost						
Total Cost (\$ millions)	1,175	1,610	1,582	1,550	1,506	1,462
Rank	17	25	25	24	24	24
Cost per Auto Commuter (\$)	719	986	969	947	943	925
Rank	14	44	44	43	41	40
Truck Congestion						
Annual Person-Hours of Delay (000)	3,434	4,358	4,122	4,008	3,965	3,911
Rank	13	19	19	19	19	19
Annual Gallons of Wasted Fuel (000)	5,795	7,355	7,175	6,969	6,928	6,891
Rank	13	18	19	20	20	20
Annual Congestion Cost (\$ million)	181	256	226	210	200	186
Rank	13	17	19	19	19	19
Annual Greenhouse Gases (CO2) Produced					1	
Excess Due to Congestion (tons)	214,610	300,269				
Rank	16	24				
Due to All Travel (tons)	7,932,212	11,098,251				
Rank	10	15				
Truck Annual Greenhouse Gases (CO2) Produced					1	
Excess Due to Truck Congestion (tons)	64,038	81,274				
Rank	14	18				
Due to Truck Travel (tons)	2,414,303	3,064,121				
Rank	1 7	12				

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2014	2013	2012	2011	2010	2009	
Urban Area Information							
Population (1000s)	2,200	2,200	2,200	2,195	2,195	2,190	
Rank	20	20	20	20	20	20	
Commuters (1000s)	1,120	1,142	1,142	1,137	1,133	1,127	
Daily Vehicle-Miles of Travel (1000s)					-		
Freeway	30,549	30,557	29,490	30,207	30,181	29,700	
Arterial Streets	19,163	19,248	19,185	19,743	19,726	18,900	
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)	3.16	3.36	3.30	3.24	2.49	2.09	
Diesel (\$/gallon)	3.47	3.67	3.69	3.54	2.77	2.33	
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)	28,421	28,209	28,007	27,804	27,780	27,369	
Rank	24	24	24	24	23	22	
Fuel per Peak Auto Commuter (gallons)	19	19	19	20	20	19	
Rank	47	45	42	32	29	27	
Annual Delay							
Total Delay (1000s of person-hours)	68,106	66,414	65,347	63,120	62,483	60,407	
Rank	24	24	23	22	22	22	
Delay per Auto Commuter (pers-hrs)	44	44	43	42	43	42	
Rank	44	43	43	42	34	35	
Travel Time Index	1.15	1.15	1.16	1.16	1.16	1.16	
Rank	68	68	57	56	54	55	
Commuter Stress Index							
Rank							
Freeway Planning Time Index (95th Pctile)							
Rank							
Congestion Cost							
Total Cost (\$ millions)	1,454	1,394	1,350	1,298	1,226	1,156	
Rank	24	24	23	22	22	22	
Cost per Auto Commuter (\$)	898	886	883	880	899	883	
Rank	40	40	39	38	38	36	
Truck Congestion							
Annual Person-Hours of Delay (000)	3,818	3,724	3,665	3,539	3,503	3,387	
Rank	19	19	19	19	19	19	
Annual Gallons of Wasted Fuel (000)	6,849	6,797	6,748	6,700	6,694	6,595	
Rank	20	20	20	18	18	18	
Annual Congestion Cost (\$ million)	183	168	161	171	157	147	
Rank	19	19	19	19	19	19	
Annual Greenhouse Gases (CO2) Produced							
Excess Due to Congestion (tons)							
Rank							
Due to All Travel (tons)							
Rank							
				T			
Truck Annual Greenhouse Gases (CO2) Produced			I				
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)							
Excess Due to Truck Congestion (tons) Rank	 	 		 	 	 	
Excess Due to Truck Congestion (tons)		  		  		  	

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2008	2007	2006	2005	2004	2003
Urban Area Information						
Population (1000s)	2,185	2,175	2,160	2,150	2,130	2,115
Rank	20	20	19	19	19	18
Commuters (1000s)	1,120	1,107	1,092	1,079	1,063	1,050
Daily Vehicle-Miles of Travel (1000s)						
Freeway	29,455	29,610	27,860	27,200	27,665	27,200
Arterial Streets	18,000	18,145	17,100	17,500	17,390	17,565
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)	3.31	2.85	2.54	2.20	1.78	1.43
Diesel (\$/gallon)	4.01	3.22	2.72	2.36	1.80	1.39
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)	29,028	28,317	27,674	26,956	26,116	25,258
Rank	21	21	21	22	22	20
Fuel per Peak Auto Commuter (gallons)	22	21	21	21	20	19
Rank	19	23	24	20	21	23
Annual Delay						
Total Delay (1000s of person-hours)	61,019	59,524	58,172	56,663	54,898	53,094
Rank	22	22	22	22	22	22
Delay per Auto Commuter (pers-hrs)	41	42	42	42	42	41
Rank	35	33	32	31	30	30
Travel Time Index	1.17	1.17	1.16	1.16	1.16	1.15
Rank	51	54	58	57	55	62
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	1,212	1,126	1,062	994	920	857
Rank	22	22	22	22	22	22
Cost per Auto Commuter (\$)	884	897	899	905	907	902
Rank	32	35	34	36	37	35
Truck Congestion						
Annual Person-Hours of Delay (000)	3,422	3,338	3,262	3,178	3,079	2,977
Rank	18	19	19	19	19	18
Annual Gallons of Wasted Fuel (000)	6,995	6,824	6,669	6,496	6,294	6,087
Rank	18	18	18	18	16	17
Annual Congestion Cost (\$ million)	159	145	133	124	112	102
Rank	19	19	19	19	19	18
Annual Greenhouse Gases (CO2) Produced					ı	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced					ı	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons)						
Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	2002	2001	2000	1999	1998	1997
Urban Area Information						
Population (1000s)	2,100	2,075	2,040	2,005	2,000	2,000
Rank	18	19	19	19	19	19
Commuters (1000s)	1,027	998	966	933	916	902
Daily Vehicle-Miles of Travel (1000s)						
Freeway	26,900	26,400	25,900	25,600	24,960	24,195
Arterial Streets	17,560	17,540	17,425	17,380	17,315	17,775
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)	1.30	1.33	1.48	1.02	1.01	1.06
Diesel (\$/gallon)	1.25	1.40	1.41	1.02	1.04	1.15
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)	24,493	23,667	22,665	21,729	20,749	19,809
Rank	20	20	20	20	19	19
Fuel per Peak Auto Commuter (gallons)	19	18	17	17	16	15
Rank	18	23	24	17	18	17
Annual Delay						
Total Delay (1000s of person-hours)	51,486	49,749	47,642	45,675	43,616	41,640
Rank	22	21	21	21	21	21
Delay per Auto Commuter (pers-hrs)	40	40	39	38	37	36
Rank	30	29	30	32	31	28
Travel Time Index	1.15	1.15	1.15	1.15	1.14	1.14
Rank	58	55	53	50	53	46
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	809	770	720	658	616	581
Rank	22	21	21	21	21	20
Cost per Auto Commuter (\$)	892	874	861	854	833	809
Rank	34	31	29	27	24	24
Truck Congestion						
Annual Person-Hours of Delay (000)	2,887	2,789	2,672	2,561	2,446	2,335
Rank	18	17	17	16	16	16
Annual Gallons of Wasted Fuel (000)	5,903	5,703	5,462	5,236	5,000	4,774
Rank	17	17	17	16	16	16
Annual Congestion Cost (\$ million)	95	90	83	75	71	67
Rank	18	17	17	16	16	16
Annual Greenhouse Gases (CO2) Produced				ı	I	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)  Rank		 				
Truck Annual Greenhouse Gases (CO2) Produced				ı	I	
Excess Due to Truck Congestion (tons)						
Rank Due to Truck Travel (tons)						
Due to Truck Travel (tons)						
Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1996	1995	1994	1993	1992	1991
Urban Area Information						
Population (1000s)	1,995	1,995	1,990	1,980	1,970	1,965
Rank	19	19	19	18	18	17
Commuters (1000s)	885	870	856	837	820	804
Daily Vehicle-Miles of Travel (1000s)						
Freeway	23,765	23,310	22,460	20,730	18,700	17,500
Arterial Streets	17,635	17,645	15,100	14,000	13,250	12,415
Cost Components						
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)	1.22	1.04	0.95	0.98	0.96	1.01
Diesel (\$/gallon)	1.34	1.14	1.04	1.08	1.08	1.09
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)	18,853	18,026	17,065	15,364	14,183	12,642
Rank	19	18	17	19	19	19
Fuel per Peak Auto Commuter (gallons)	15	14	13	12	11	9
Rank	13	15	15	16	16	27
Annual Delay						
Total Delay (1000s of person-hours)	39,631	37,892	35,872	32,296	29,814	26,574
Rank	21	21	21	21	21	21
Delay per Auto Commuter (pers-hrs)	35	33	32	29	27	25
Rank	25	31	27	33	38	39
Travel Time Index	1.13	1.13	1.12	1.11	1.10	1.09
Rank	50	47	50	52	58	61
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	545	504	463	408	367	319
Rank	19	20	20	21	21	21
Cost per Auto Commuter (\$)	787	775	755	699	667	612
Rank	23	22	22	25	25	26
Truck Congestion						
Annual Person-Hours of Delay (000)	2,222	2,124	2,012	1,810	1,672	1,490
Rank	16	16	16	16	18	18
Annual Gallons of Wasted Fuel (000)	4,543	4,344	4,113	3,702	3,418	3,046
Rank	16	16	16	15	16	16
Annual Congestion Cost (\$ million)	64	60	55	49	45	40
Rank	16	16	16	16	17	18
Annual Greenhouse Gases (CO2) Produced				ı	1	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced				ı	1	
Excess Due to Truck Congestion (tons)						
Rank						
Due to Truck Travel (tons)						
Rank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	1,960	1,955	1,950	1,940	1,930	1,910
Rank	17	16	15	15	15	14
Commuters (1000s)	789	782	773	764	753	740
Daily Vehicle-Miles of Travel (1000s)						
Freeway	17,670	17,085	16,835	15,860	16,255	15,590
Arterial Streets	12,000	11,750	11,480	11,170	10,900	10,400
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)	0.98	1.11	1.02	1.03	1.00	1.31
Diesel (\$/gallon)	0.98	1.04	0.96	0.96	0.94	1.23
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)	12,002	11,047	10,156	9,882	9,633	8,844
Rank	18	18	18	19	18	18
Fuel per Peak Auto Commuter (gallons)	10	9	7	7	8	6
Rank	14	19	27	22	14	22
Annual Delay						
Total Delay (1000s of person-hours)	25,229	23,222	21,350	20,772	20,249	18,591
Rank	21	21	21	20	19	20
Delay per Auto Commuter (pers-hrs)	24	22	21	20	20	19
Rank	39	40	38	36	32	30
Travel Time Index	1.09	1.08	1.08	1.08	1.08	1.07
Rank	56	55	49	45	43	48
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	291	257	226	213	201	184
Rank	21	21	20	20	20	20
Cost per Auto Commuter (\$)	609	591	571	579	588	551
Rank	25	25	22	21	20	19
Truck Congestion			4			
Annual Person-Hours of Delay (000)	1,415	1,302	1,198	1,164	1,135	1,043
Rank	18	18	18	18	16	16
Annual Gallons of Wasted Fuel (000)	2,892	2,662	2,447	2,381	2,321	2,131
Rank	16	16	16	16	15	15
Annual Congestion Cost (\$ million) Rank	37 18	34 18	30 18	29 18	28 16	26 16
	16	10	10	10	10	10
Annual Greenhouse Gases (CO2) Produced				ı	I	
Excess Due to Congestion (tons)  Rank						
Nank Due to All Travel (tons)	 					
Rank	 					 -
Truck Annual Greenhouse Gases (CO2) Produced				ı	I	
Excess Due to Truck Congestion (tons)  Rank						
Nank Due to Truck Travel (tons)	 					
Rank	 			 		
Kank						

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	1,890	1,875	1,870
Rank	14	14	13
Commuters (1000s)	727	716	705
Daily Vehicle-Miles of Travel (1000s)			
Freeway	14,620	14,000	13,365
Arterial Streets	10,000	9,850	9,700
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
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)	8,475	7,795	7,365
Rank	17	16	16
Fuel per Peak Auto Commuter (gallons)	7	6	4
Rank	12	13	19
Annual Delay			
Total Delay (1000s of person-hours)	17,816	16,386	15,482
Rank	20	20	18
Delay per Auto Commuter (pers-hrs)	18	17	16
Rank	30	30	28
Travel Time Index	1.07	1.06	1.06
Rank	42	45	42
Commuter Stress Index			
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	171	152	141
Rank	20	19	17
Cost per Auto Commuter (\$)	546	525	513
Rank	18	18	18
Truck Congestion			
Annual Person-Hours of Delay (000)	999	919	868
Rank	16	16	16
Annual Gallons of Wasted Fuel (000)	2,043	1,879	1,774
Rank	16	16	15
Annual Congestion Cost (\$ million)	25	23	21
Rank	16	16	16
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			

<sup>\*</sup> Note: Zeroes in the table reflect values less than 0.5.