Performance Measure Summary - Dayton OH

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)	740	740	740	745	745	740
Rank	60	60	60	60	60	60
Commuters (1000s)	375	375	375	378	378	376
Daily Vehicle-Miles of Travel (1000s)	373	373	373	270	370	370
Freeway	6,976	8,188	8,091	7,964	7,758	7,214
Arterial Streets	5,351	6,281	6,283	6,311	6,284	5,708
	3,331	0,281	0,283	0,311	0,264	3,708
Cost Components	20.15			10.10	45.4	4= 60
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)	2.20	2.78	2.70	2.29	2.17	2.18
Diesel (\$/gallon)	2.76	2.96	3.14	2.53	2.29	2.49
System Performance	2020	2019	2018	2017	2016	2015
Congested Travel (% of peak VMT)				8.4		
Congested System (% of lane-miles)				6.0		
Congested Time (number of "Rush Hours")				0.6		
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	4,047	6,379	6,172	6,178	6,108	6,076
Rank	69	74	74	74	73	73
Fuel per Peak Auto Commuter (gallons)	9	14	13	13	13	13
Rank	70	95	96	93	92	92
Annual Delay	1				7-	
Total Delay (1000s of person-hours)	9,187	14,481	14,188	14,377	13,919	13,608
Rank	71	76	76	76	76	76
	21	32	32	32	30	30
Delay per Auto Commuter (pers-hrs) Rank	77	96	96	93	93	92
Travel Time Index	1.08	1.12	1.12	1.12	1.12	1.12
Rank	44	91	91	93	93	92
Commuter Stress Index	1.08	1.13	1.14	1.13		
Rank	58	93	84	90		
Freeway Planning Time Index (95th Pctile)		1.15	1.15	1.19		
Rank		92	94	93		
Congestion Cost						
Total Cost (\$ millions)	210	322	310	308	294	283
Rank	71	75	76	76	76	76
Cost per Auto Commuter (\$)	435	666	642	634	618	601
Rank	74	93	94	93	93	92
Truck Congestion						
Annual Person-Hours of Delay (000)	545	662	632	630	610	596
Rank	65	71	76	74	75	75
Annual Gallons of Wasted Fuel (000)	991	1,204	1,190	1,183	1,170	1,164
Rank	62	73	73	72	72	72
Annual Congestion Cost (\$ million)	29	39	35	34	31	29
Rank	65	67	76	72	74	72
Annual Greenhouse Gases (CO2) Produced	1					·-
Excess Due to Congestion (tons)	40,409	63,698			[_
Rank	69	74				
Due to All Travel (tons)	2,151,975	3,392,222	 			
Rank	2,131,973	5,392,222				
	40	J 4				
	1					
Truck Annual Greenhouse Gases (CO2) Produced	10.00=	10.005		1	1	
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)	10,887	13,233				
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons) Rank	62	73	 	 	 	
Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)				 		

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

Inventory Measures	2014	2013	2012	2011	2010	2009
Urban Area Information						
Population (1000s)	740	740	745	745	745	745
Rank	59	58	56	56	56	55
Commuters (1000s)	376	382	385	384	383	382
Daily Vehicle-Miles of Travel (1000s)						
Freeway	7,030	6,957	6,905	7,384	7,318	7,200
Arterial Streets	5,638	5,217	6,235	6,335	6,310	6,200
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	3.48	3.58	3.25	2.64	2.19
Diesel (\$/gallon)	3.67	3.91	3.87	3.69	2.96	2.58
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)	6,058	6,017	5,965	5,914	5,849	5,666
Rank	72	72	72	72	72	72
Fuel per Peak Auto Commuter (gallons)	13	13	12	12	12	11
Rank	88	89	93	89	89	91
Annual Delay	88	67	73	67	67	71
Total Delay (1000s of person-hours)	12 119	13,240	13,009	12,664	12 204	11,688
Rank	13,448	75	75	75	12,294	75
Delay per Auto Commuter (pers-hrs)	28	27	27	26	26	24
Rank	94	93	93	91	91	91
					-	
Travel Time Index Rank	1.12	1.11	1.11 94	1.11	1.11	1.11 92
Commuter Stress Index	92	96		93		
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	285	277	269	258	240	222
Rank	76	75	74	75	75	74
Cost per Auto Commuter (\$)	591	586	584	588	588	570
Rank	91	91	91	90	89	88
Truck Congestion	71	7.1	7.1	, ,	0,	
Annual Person-Hours of Delay (000)	589	580	570	555	539	512
Rank	73	71	68	68	69	71
Annual Gallons of Wasted Fuel (000)	1,160	1,152	1,143	1,132	1,120	1,085
Rank	70	69	69	69	69	70
Annual Congestion Cost (\$ million)	29	27	26	27	25	23
Rank	70	69	66	68	65	67
Annual Greenhouse Gases (CO2) Produced	, ,	Ü,	0.0		00	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
	1					
			1			
Rank						
Rank Truck Annual Greenhouse Gases (CO2) Produced						
Rank Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)						<u></u>
Rank Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons) Rank		 	 			
Rank Truck Annual Greenhouse Gases (CO2) Produced Excess Due to Truck Congestion (tons)						

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

Inventory Measures	2008	2007	2006	2005	2004	2003
Urban Area Information						
Population (1000s)	745	745	745	745	745	740
Rank	54	54	52	52	52	52
Commuters (1000s)	380	378	376	373	371	367
Daily Vehicle-Miles of Travel (1000s)						
Freeway	7,115	7,360	7,460	7,485	7,505	6,870
Arterial Streets	6,105	6,250	6,400	6,365	6,400	6,460
Cost Components	0,103	0,230	0,100	0,505	0,100	0,100
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)	3.40	2.88	2.58	2.24	1.81	1.52
Diesel (\$/gallon)	4.17	3.35	2.83	2.48	1.94	1.49
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)	6,111	6,177	6,053	5,926	5,974	6,206
Rank	72	69	68	67	65	58
Fuel per Peak Auto Commuter (gallons)	13	13	13	12	12	13
Rank	84	85	81	86	83	74
Annual Delay						
Total Delay (1000s of person-hours)	12,004	12,136	11,891	11,643	11,735	12,192
Rank	74	73	71	68	66	60
Delay per Auto Commuter (pers-hrs)	25	25	25	24	25	26
Rank	91	91	91	91	88	88
Travel Time Index	1.12	1.12	1.11	1.11	1.11	1.12
Rank	90	90	95	92	91	81
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	237	228	216	203	195	196
Rank	73	71	69	69	65	60
Cost per Auto Commuter (\$)	577	608	611	619	644	689
Rank	82	84	83	81	71	65
Truck Congestion						
Annual Person-Hours of Delay (000)	526	532	521	510	514	534
Rank	68	67	66	66	64	62
Annual Gallons of Wasted Fuel (000)	1,170	1,183	1,159	1,135	1,144	1,188
Rank	67	64	65	65	63	60
Annual Congestion Cost (\$ million)	25	24	22	20	19	19
Rank	66	65	64	65	62	60
Annual Greenhouse Gases (CO2) Produced		00	Ų 1		Ů-2	
Excess Due to Congestion (tons)						_
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced				1	ı	
Excess Due to Truck Congestion (tons)						
Rank						
	1					
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)	735	730	720	710	695	685
Rank	52	52	52	51	52	52
Commuters (1000s)	360	353	344	335	324	315
Daily Vehicle-Miles of Travel (1000s)						
Freeway	6,500	6,200	6,000	5,850	5,700	5,555
Arterial Streets	6,350	6,300	6,280	6,260	6,220	6,100
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)	1.38	1.30	1.55	1.14	1.11	1.13
Diesel (\$/gallon)	1.36	1.49	1.53	1.15	1.17	1.25
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)	6,072	5,926	5,647	5,420	5,145	4,891
Rank	57	57	57	57	58	58
Fuel per Peak Auto Commuter (gallons)	13	13	13	12	12	11
Rank	71	63	56	64	53	54
Annual Delay	71	03	30	01	33	J1
Total Delay (1000s of person-hours)	11,928	11,641	11,093	10,647	10,107	9,610
Rank	61	59	61	59	59	60
Delay per Auto Commuter (pers-hrs)	26	25	25	24	24	23
Rank	86	87	87	86	81	77
Travel Time Index	1.12	1.12	1.11	1.11	1.11	1.11
Rank	81	78	79	78	77	71
Commuter Stress Index						/1
Rank			 			
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	186	178	167	153	142	133
Rank	61	60	60	59	59	60
Cost per Auto Commuter (\$)	687	681	665	661	644	621
Rank	61	57	59	56	56	54
Truck Congestion						
Annual Person-Hours of Delay (000)	523	510	486	466	443	421
Rank	61	60	59	59	60	60
Annual Gallons of Wasted Fuel (000)	1,163	1,134	1,081	1,038	985	936
Rank	61	61	61	61	61	60
Annual Congestion Cost (\$ million)	17	17	15	14	13	12
Rank	60	59	60	59	60	60
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)		<u></u>				
Rank			 		 	
Due to Truck Travel (tons)			 		 	
Rank			 			
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^{*} Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1996	1995	1994	1993	1992	1991
Urban Area Information						
Population (1000s)	675	660	645	620	605	600
Rank	51	50	50	52	53	53
Commuters (1000s)	307	296	286	271	261	256
Daily Vehicle-Miles of Travel (1000s)						
Freeway	5,365	5,175	4,225	4,845	4,335	4,235
Arterial Streets	5,995	5,900	5,810	5,710	5,550	5,410
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)	1.28	1.12	1.08	1.09	1.11	1.13
Diesel (\$/gallon)	1.39	1.22	1.17	1.19	1.19	1.25
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)	4,489	4,126	3,994	3,640	3,380	3,185
Rank	59	59	58	58	58	58
Fuel per Peak Auto Commuter (gallons)	10	9	9	9	7	8
Rank	57	59	56	49	59	45
Annual Delay						
Total Delay (1000s of person-hours)	8,820	8,106	7,847	7,152	6,640	6,258
Rank	61	62	61	60	60	59
Delay per Auto Commuter (pers-hrs)	22	20	20	19	19	18
Rank	79	82	80	78	74	72
Travel Time Index	1.10	1.09	1.09	1.09	1.09	1.08
Rank	76	77	75	74	67	68
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	120	107	101	90	81	75
Rank	60	62	60	60	60	58
Cost per Auto Commuter (\$)	581	555	550	517	494	480
Rank	55	55	50	50	51	48
Truck Congestion						
Annual Person-Hours of Delay (000)	387	356	343	313	291	274
Rank	61	61	60	58	59	59
Annual Gallons of Wasted Fuel (000)	859	790	765	697	647	610
Rank	60	61	58	59	58	57
Annual Congestion Cost (\$ million)	11	10	10	9	8	7
Rank	60	60	55	55	57	57
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						

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

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	595	595	595	595	595	595
Rank	53	53	53	50	49	49
Commuters (1000s)	250	248	247	244	243	241
Daily Vehicle-Miles of Travel (1000s)						
Freeway	4,220	3,850	3,415	3,300	3,145	3,190
Arterial Streets	5,255	5,160	5,005	4,900	4,740	4,600
Cost Components	<u> </u>	,	,	,	,	
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	1.08	1.00	1.00	0.98	1.28
Diesel (\$/gallon)	1.10	1.05	0.97	0.97	0.95	1.24
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)	2,927	2,720	2,566	2,317	2,154	2,021
Rank	59	56	56	57	58	53
Fuel per Peak Auto Commuter (gallons)	6	6	6	5	4	5
Rank	60	53	45	48	54	32
Annual Delay						
Total Delay (1000s of person-hours)	5,751	5,345	5,042	4,551	4,230	3,970
Rank	60	58	57	58	59	55
Delay per Auto Commuter (pers-hrs)	17	16	15	13	13	12
Rank	70	68	67	75	64	63
Travel Time Index	1.08	1.07	1.07	1.06	1.06	1.05
Rank	62	65	59	65	56	64
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	66	58	53	46	41	39
Rank	59	58	57	58	58	55
Cost per Auto Commuter (\$)	459	449	446	427	404	390
Rank	49	49	44	41	43	38
Truck Congestion						
Annual Person-Hours of Delay (000)	252	234	221	199	186	174
Rank	58	57	58	57	57	53
Annual Gallons of Wasted Fuel (000)	560	521	492	444	413	387
Rank	57	57	54	54	55	54
Annual Congestion Cost (\$ million)	7	6	6	5	5	4
Rank	54	55	52	54	51	53
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						
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)	595	595	595
Rank	49	49	49
Commuters (1000s)	239	237	235
Daily Vehicle-Miles of Travel (1000s)			
Freeway	3,015	2,935	2,700
Arterial Streets	4,360	4,150	4,000
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
Gasoline (\$/gallon)	1.29	1.32	1.38
Diesel (\$/gallon)	1.26	1.29	1.34
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)	1,769	1,591	1,548
Rank	56	54	53
Fuel per Peak Auto Commuter (gallons)	4	3	3
Rank	41	46	34
Annual Delay			
Total Delay (1000s of person-hours)	3,476	3,125	3,041
Rank	57	58	55
Delay per Auto Commuter (pers-hrs)	10	9	9
Rank	70	70	65
Travel Time Index	1.05	1.04	1.04
Rank	57	68	61
Commuter Stress Index	37	08	01
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	33	29	27
Rank	56	57	54
Cost per Auto Commuter (\$)	353	336	333
Rank	42	42	42
	72	72	72
Truck Congestion Annual Person-Hours of Delay (000)	152	127	122
Rank	152 56	137	133 53
Annual Gallons of Wasted Fuel (000)	339	55 205	33
Rank	55	305 53	
Annual Congestion Cost (\$ million) Rank	50	3 54	3 50
	30	34	30
Annual Greenhouse Gases (CO2) Produced			
Excess Due to Congestion (tons)			
Rank Due to All Troyal (tons)			
Due to All Travel (tons) Rank			
Truck Annual Greenhouse Gases (CO2) Produced			
Excess Due to Truck Congestion (tons)			
Rank Due to Truck Troval (tone)			
Due to Truck Travel (tons)			
Rank			1

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