Performance Measure Summary - Hartford CT

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)	915	915	915	910	910	910
Rank	51	51	51	51	51	51
Commuters (1000s)	449	449	449	447	447	447
Daily Vehicle-Miles of Travel (1000s)						
Freeway	9,047	11,496	11,499	11,328	11,227	11,222
Arterial Streets	6,095	7,744	7,773	7,800	7,798	7,760
Cost Components						
Value of Time (\$/hour)	20.17	19.14	18.71	18.12	17.91	17.69
Commercial Cost (\$/hour)	55.24	49.49	54.71	52.14	50.20	46.87
Gasoline (\$/gallon)	2.50	2.71	3.04	2.48	2.29	2.48
Diesel (\$/gallon)	3.04	3.16	3.36	2.66	2.50	2.87
System Performance	2020	2019	2018	2017	2016	2015
Congested Travel (% of peak VMT)				19.7		
Congested System (% of lane-miles)				12.5		
Congested Time (number of "Rush Hours")				2.7		
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	7,138	12,053	11,670	10,963	10,939	10,885
Rank	48	51	52	52	52	51
Fuel per Peak Auto Commuter (gallons)	13	22	21	20	20	20
Rank	28	39	42	47	47	42
Annual Delay						
Total Delay (1000s of person-hours)	16,928	28,583	28,120	27,436	27,021	26,428
Rank	46	51	50	50	50	50
Delay per Auto Commuter (pers-hrs)	31	52	51	50	49	48
Rank	24	36	34	37	37	35
Travel Time Index	1.07	1.17	1.17	1.17	1.17	1.17
Rank	57	49	48	47	46	46
Commuter Stress Index	1.09	1.18	1.19	1.18		
Rank	44	60	51	56		
Freeway Planning Time Index (95th Pctile)		1.42	1.43	1.48		
Rank		50	48	46		
Congestion Cost						
Total Cost (\$ millions)	385	620	616	587	569	550
Rank	47	51	50	50	50	50
Cost per Auto Commuter (\$)	606	976	970	929	921	896
Rank	37	45	43	45	45	45
Truck Congestion						
Annual Person-Hours of Delay (000)	870	1,307	1,228	1,152	1,135	1,110
Rank	48	51	51	52	52	52
Annual Gallons of Wasted Fuel (000)	1,382	2,075	2,047	2,024	2,020	2,010
Rank	49	54	53	51	51	51 54
Annual Congestion Cost (\$ million) Rank	46 48	64 53	68 51	61 52	58 52	54 52
	48	33	31	32	32	32
Annual Greenhouse Gases (CO2) Produced	71 277	120.521		1	I	
Excess Due to Congestion (tons) Rank	71,377	120,521				
Nank Due to All Travel (tons)	2,235,550	3,774,745				
Rank	2,233,330	51	 			 -
	40	31				
Truck Annual Greenhouse Gases (CO2) Produced	15 156	22.767		1	I	
Excess Due to Truck Congestion (tons)	15,156	22,767				
Rank Due to Truck Travel (tons)	49 546 037	54 820 240				
Due to Truck Travel (tons)	546,037	820,240				
Rank	48	53				

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

Inventory Measures	2014	2013	2012	2011	2010	2009
Urban Area Information						
Population (1000s)	910	905	905	905	900	900
Rank	51	51	51	51	51	49
Commuters (1000s)	447	450	450	450	446	445
Daily Vehicle-Miles of Travel (1000s)						
Freeway	11,052	10,785	10,545	11,693	11,580	11,100
Arterial Streets	7,753	7,322	7,520	7,428	7,420	7,400
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)	3.65	3.82	3.78	3.59	2.91	2.41
Diesel (\$/gallon)	3.87	4.20	4.15	3.90	3.20	2.88
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)	10,844	10,763	10,675	10,587	10,871	10,898
Rank	51	50	50	50	50	49
Fuel per Peak Auto Commuter (gallons)	21	21	21	20	21	21
Rank	30	30	28	32	24	15
Annual Delay						
Total Delay (1000s of person-hours)	26,100	25,451	25,017	24,363	24,557	24,159
Rank	49	49	49	48	47	47
Delay per Auto Commuter (pers-hrs)	49	48	48	46	46	44
Rank	32	32	29	30	26	28
Travel Time Index	1.18	1.18	1.17	1.17	1.18	1.19
Rank	39	39	47	43	38	39
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	554	532	515	496	479	459
Rank	50	49	49	48	47	47
Cost per Auto Commuter (\$)	879	866	863	866	902	902
Rank	44	44	42	41	36	33
Truck Congestion						
Annual Person-Hours of Delay (000)	1,096	1,069	1,051	1,023	1,031	1,015
Rank	52	52	52	51	48	48
Annual Gallons of Wasted Fuel (000)	2,002	1,987	1,971	1,954	2,007	2,012
Rank	51	51	51	51	51	50
Annual Congestion Cost (\$ million)	54	50	47	50	47	45
Rank	51	51	51	49	48	48
Annual Greenhouse Gases (CO2) Produced						
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons)						
Rank						
Truck Annual Greenhouse Gases (CO2) Produced						
Truck Annual Greenhouse Gases (CO2) Produced		 	 	 		
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)	895	895	895	890	885	880
Rank	49	49	48	48	48	48
Commuters (1000s)	441	440	439	434	429	425
Daily Vehicle-Miles of Travel (1000s)						
Freeway	10,780	10,840	10,745	10,590	10,565	10,425
Arterial Streets	7,470	7,585	7,520	7,495	7,225	7,015
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)	3.55	3.23	2.83	2.35	2.08	1.60
Diesel (\$/gallon)	4.46	3.66	2.99	2.65	2.11	1.68
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)	11,056	10,403	9,967	9,344	8,983	8,514
Rank	50	50	51	51	51	51
Fuel per Peak Auto Commuter (gallons)	23	21	20	19	19	18
Rank	13	23	28	34	27	30
Annual Delay						
Total Delay (1000s of person-hours)	23,343	21,962	21,043	19,728	18,965	17,976
Rank	47	47	49	50	51	51
Delay per Auto Commuter (pers-hrs)	43	42	40	40	38	37
Rank	31	33	40	38	42	45
Travel Time Index	1.19	1.18	1.18	1.18	1.17	1.16
Rank	39	43	42	41	46	52
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	459	413	381	342	316	288
Rank	47	47	50	50	51	51
Cost per Auto Commuter (\$)	863	844	831	807	801	780
Rank	38	44	46	45	46	47
Truck Congestion						
Annual Person-Hours of Delay (000)	980	922	884	829	797	755
Rank	48	50	52	52	52	52
Annual Gallons of Wasted Fuel (000)	2,041	1,920	1,840	1,725	1,658	1,572
Rank	50	51	51	53	54	55
Annual Congestion Cost (\$ million)	47	41	37	33	30	26
Rank	48	49	52	52	52	52
Annual Greenhouse Gases (CO2) Produced					I	
Excess Due to Congestion (tons)						
Rank						
Due to All Travel (tons) Rank						
Truck Annual Greenhouse Gases (CO2) Produced					I	
Excess Due to Truck Congestion (tons)						
Rank Due to Taylok Troyal (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	870	865	860	850	845
Rank	46	44	43	43	43	42
Commuters (1000s)	417	410	402	395	385	378
Daily Vehicle-Miles of Travel (1000s)					Ì	
Freeway	10,360	10,175	10,215	9,735	9,400	9,185
Arterial Streets	6,900	6,730	6,310	6,105	5,790	5,510
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)	1.46	1.77	1.70	1.24	1.22	1.39
Diesel (\$/gallon)	1.42	1.60	1.58	1.16	1.19	1.30
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)	8,261	7,998	7,620	7,115	6,856	6,302
Rank	52	52	52	52	52	52
Fuel per Peak Auto Commuter (gallons)	17	17	16	15	14	13
Rank	34	31	32	32	31	38
Annual Delay						
Total Delay (1000s of person-hours)	17,440	16,886	16,087	15,021	14,476	13,306
Rank	51	50	50	50	50	49
Delay per Auto Commuter (pers-hrs)	36	36	34	33	32	30
Rank	45	43	49	51	52	56
Travel Time Index	1.16	1.16	1.15	1.14	1.14	1.13
Rank	50	48	53	58	53	60
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	271	261	241	215	203	185
Rank	51	50	50	51	50	49
Cost per Auto Commuter (\$)	774	757	743	716	708	661
Rank	46	45	47	49	44	46
Truck Congestion						
Annual Person-Hours of Delay (000)	732	709	676	631	608	559
Rank	53	53	51	51	51	51
Annual Gallons of Wasted Fuel (000)	1,525	1,477	1,407	1,313	1,266	1,164
Rank	55	53	54	53	52	53
Annual Congestion Cost (\$ million)	24	23	21	19	18	16
Rank	53	51	51	51	50	51
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	 	 	 	 		
- '		 		 		

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

Inventory Measures	1996	1995	1994	1993	1992	1991
Urban Area Information						
Population (1000s)	845	840	835	835	830	830
Rank	42	41	41	41	41	40
Commuters (1000s)	373	367	360	355	349	344
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,875	8,795	8,580	8,480	8,315	7,680
Arterial Streets	5,300	5,020	4,690	4,350	4,100	3,950
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)	1.47	1.34	1.18	1.23	1.26	1.23
Diesel (\$/gallon)	1.41	1.29	1.13	1.18	1.25	1.38
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)	6,023	5,908	5,464	5,046	4,946	4,366
Rank	51	48	48	48	47	48
Fuel per Peak Auto Commuter (gallons)	12	13	12	10	11	10
Rank	38	19	21	38	16	19
Annual Delay						
Total Delay (1000s of person-hours)	12,716	12,473	11,536	10,652	10,443	9,217
Rank	49	49	49	49	47	48
Delay per Auto Commuter (pers-hrs)	29	29	27	25	25	22
Rank	54	48	51	53	45	53
Travel Time Index	1.13	1.13	1.12	1.11	1.11	1.10
Rank	50	47	50	52	49	51
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	174	165	148	134	128	110
Rank	49	49	49	49	47	48
Cost per Auto Commuter (\$)	648	651	620	590	596	544
Rank	44	35	38	40	30	38
Truck Congestion						
Annual Person-Hours of Delay (000)	534	524	485	447	439	387
Rank	51	48	48	49	47	48
Annual Gallons of Wasted Fuel (000)	1,112	1,091	1,009	932	914	806
Rank	50	50	50	51	49	48
Annual Congestion Cost (\$ million)	16	15	13	12	12	11
Rank	48	48	48	49	47	46
Annual Greenhouse Gases (CO2) Produced					1	
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					1	

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

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	825	815	805	800	795	785
Rank	40	39	39	39	39	38
Commuters (1000s)	338	331	324	319	314	307
Daily Vehicle-Miles of Travel (1000s)						
Freeway	7,200	6,915	6,720	6,480	6,155	5,900
Arterial Streets	3,915	3,800	3,725	3,595	3,510	3,400
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)	1.12	1.21	1.12	1.12	1.09	1.43
Diesel (\$/gallon)	1.20	1.23	1.14	1.14	1.11	1.45
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)	3,785	3,425	3,080	2,661	2,483	2,101
Rank	50	50	51	52	50	52
Fuel per Peak Auto Commuter (gallons)	8	8	7	5	6	5
Rank	35	26	27	48	28	32
Annual Delay						
Total Delay (1000s of person-hours)	7,991	7,232	6,502	5,617	5,242	4,436
Rank	50	50	50	50	49	50
Delay per Auto Commuter (pers-hrs)	20	18	17	14	14	12
Rank	59	59	58	64	57	63
Travel Time Index	1.09	1.08	1.07	1.06	1.06	1.05
Rank	56	55	59	65	56	64
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	91	79	68	57	51	43
Rank	50	50	50	50	48	50
Cost per Auto Commuter (\$)	492	472	448	397	386	335
Rank	43	42	43	53	52	57
Truck Congestion						
Annual Person-Hours of Delay (000)	336	304	273	236	220	186
Rank	49	49	48	49	50	51
Annual Gallons of Wasted Fuel (000)	698	632	569	491	458	388
Rank	49	50	50	51	51	53
Annual Congestion Cost (\$ million) Rank	9 48	8 47	7 46	6 48	6 46	5 46
	46	4/	40	46	40	40
Annual Greenhouse Gases (CO2) Produced				1	I	
Excess Due to Congestion (tons) Rank						
Nank Due to All Travel (tons)						
Rank						 -
Truck Annual Greenhouse Gases (CO2) Produced				1	I	
Excess Due to Truck Congestion (tons) Rank						
Rank Due to Truck Travel (tons)						
Rank		 	 		 	
IXGIIK						

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

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	780	775	775
Rank	38	39	38
Commuters (1000s)	303	298	295
Daily Vehicle-Miles of Travel (1000s)			
Freeway	5,525	5,250	4,790
Arterial Streets	3,355	3,305	3,255
Cost Components			
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
Gasoline (\$/gallon)	1.44	1.48	1.55
Diesel (\$/gallon)	1.47	1.50	1.57
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)	1,842	1,530	1,522
Rank	53	57	54
Fuel per Peak Auto Commuter (gallons)	5	3	2
Rank	27	46	55
Annual Delay			
Total Delay (1000s of person-hours)	3,889	3,231	3,213
Rank	52	56	51
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			
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	37	30	29
Rank	51	54	51
Cost per Auto Commuter (\$)	300	267	266
Rank	58	60	58
Truck Congestion			
Annual Person-Hours of Delay (000)	163	136	135
Rank	52	56	52
Annual Gallons of Wasted Fuel (000)	340	282	281
Rank	54	57	54
Annual Congestion Cost (\$ million)	4	3	3
Rank	50	54	50
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			
1			
Due to Truck Travel (tons)			

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