Performance Measure Summary - Portland OR-WA

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)	2,070	2,070	2,060	2,050	2,030	2,010
Rank	23	23	23	23	22	23
Commuters (1000s)	909	909	904	900	887	870
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,190	15,180	15,070	14,717	14,689	14,516
Arterial Streets	11,996	14,939	14,830	14,738	14,641	14,467
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)	2.97	3.07	3.34	2.69	2.42	2.64
Diesel (\$/gallon)	3.12	3.14	3.44	2.68	2.42	2.68
System Performance	2020	2019	2018	2017	2016	2015
Congested Travel (% of peak VMT)				36.7		
Congested System (% of lane-miles)				22.1		
Congested Time (number of "Rush Hours")				4.8		
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	16,151	35,070	34,938	34,972	34,700	34,143
Rank	23	20	20	19	19	18
Fuel per Peak Auto Commuter (gallons)	14	31	31	31	32	31
Rank	17	10	9	7	6	6
Annual Delay						
Total Delay (1000s of person-hours)	36,065	78,309	76,905	75,475	74,141	71,704
Rank	26	23	23	23	23	23
Delay per Auto Commuter (pers-hrs)	31	68	67	66	64	62
Rank	24	12	12	14	14	15
Travel Time Index	1.10	1.35	1.35	1.35	1.35	1.36
Rank	29	8	7	6	6	6
Commuter Stress Index	1.11	1.45	1.44	1.43		
Rank	31	7	6	10		
Freeway Planning Time Index (95th Pctile)		2.11	2.13	2.37		
Rank		8	7	5		
Congestion Cost						
Total Cost (\$ millions)	836	1,726	1,721	1,652	1,592	1,522
Rank	26	23	22	23	23	23
Cost per Auto Commuter (\$)	690	1,424	1,427	1,377	1,362	1,308
Rank	19	16	15	15	15	14
Truck Congestion						
Annual Person-Hours of Delay (000)	2,137	4,039	3,907	3,796	3,729	3,607
Rank	21	22	21	22	22	22
Annual Gallons of Wasted Fuel (000)	3,807	7,195	7,064	7,245	7,189	7,073
Rank	22	21	20	19	19	19
Annual Congestion Cost (\$ million)	115	200	218	204	192 22	176
Rank	20	26	21	22	22	22
Annual Greenhouse Gases (CO2) Produced	162 205	252 100			I	
Excess Due to Congestion (tons)	162,205	352,199				
Rank	23	20				
Due to All Travel (tons) Rank	2,851,195	6,190,845				
	30	33				
Truck Annual Greenhouse Gases (CO2) Produced	41.052	70 101		1	I	
Excess Due to Truck Congestion (tons)	41,853	79,101				
Rank Due to Truck Travel (tons)	725 700	21				
Due to Truck Travel (tons)	725,799	1,371,743				
Rank	36	36				

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

Inventory Measures	2014	2013	2012	2011	2010	2009
Urban Area Information						
Population (1000s)	1,990	1,975	1,950	1,925	1,900	1,861
Rank	23	23	23	23	23	23
Commuters (1000s)	850	834	824	811	798	780
Daily Vehicle-Miles of Travel (1000s)						
Freeway	13,974	13,536	13,565	15,084	14,788	14,000
Arterial Streets	14,375	13,799	13,880	14,039	13,857	13,600
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)	3.51	3.70	3.67	3.56	2.86	2.42
Diesel (\$/gallon)	3.71	3.92	4.06	3.91	3.10	2.63
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)	33,501	33,343	32,751	31,220	29,255	27,376
Rank	18	18	18	19	19	21
Fuel per Peak Auto Commuter (gallons)	29	29	29	28	27	23
Rank	8	6	5	6	6	10
Annual Delay						
Total Delay (1000s of person-hours)	69,134	68,197	65,790	61,575	57,165	52,493
Rank	23	23	22	24	25	25
Delay per Auto Commuter (pers-hrs)	60	58	55	54	51	48
Rank	14	14	17	16	15	19
Travel Time Index	1.35	1.35	1.35	1.34	1.32	1.31
Rank	6	6	6	7	8	9
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	1,493	1,451	1,381	1,283	1,135	1,015
Rank	23	23	22	23	24	25
Cost per Auto Commuter (\$)	1,254	1,250	1,223	1,179	1,130	1,054
Rank	14	14	13	16	18	20
Truck Congestion						
Annual Person-Hours of Delay (000)	3,478	3,430	3,309	3,098	2,876	2,641
Rank	22	22	22	22	24	24
Annual Gallons of Wasted Fuel (000)	6,941	6,908	6,785	6,468	6,061	5,671
Rank	19	19	19	20	23	23
Annual Congestion Cost (\$ million)	171	159	150	155	133	118
Rank	22	22	22	22	23	24
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	I					

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

Inventory Measures	2008	2007	2006	2005	2004	2003
Urban Area Information						
Population (1000s)	1,830	1,800	1,755	1,730	1,700	1,650
Rank	23	24	25	25	25	26
Commuters (1000s)	764	750	730	715	700	677
Daily Vehicle-Miles of Travel (1000s)						
Freeway	13,365	13,625	13,605	13,620	13,085	12,945
Arterial Streets	13,540	13,810	13,945	13,850	13,555	12,510
Cost Components	10,0.0	10,010	10,5 .0	10,000	10,000	12,010
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)	3.54	3.14	2.81	2.48	2.11	1.65
Diesel (\$/gallon)	4.27	3.45	3.03	2.77	2.19	1.65
System Performance	2008	2007	2006	2005	2004	2003
·						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)	27,170	26,918	26,381	25,864	25,470	24,200
Rank	23	23	24	23	23	23
Fuel per Peak Auto Commuter (gallons)	23	23	22	22	22	21
Rank	13	13	18	15	12	13
Annual Delay						
Total Delay (1000s of person-hours)	49,618	49,158	48,176	47,232	46,513	44,195
Rank	27	27	27	25	25	25
Delay per Auto Commuter (pers-hrs)	46	47	47	47	47	46
Rank	25	24	24	22	22	20
Travel Time Index	1.31	1.31	1.32	1.32	1.32	1.31
Rank	9	11	11	8	7	8
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	999	943	891	839	790	720
Rank	25	25	25	25	25	25
Cost per Auto Commuter (\$)	988	1,018	1,024	1,038	1,057	1,033
Rank	26	26	23	23	22	22
Truck Congestion						
Annual Person-Hours of Delay (000)	2,496	2,472	2,423	2,376	2,340	2,223
Rank	24	23	23	23	24	24
Annual Gallons of Wasted Fuel (000)	5,629	5,576	5,466	5,359	5,276	5,014
Rank	23	23	24	24	23	23
Annual Congestion Cost (\$ million)	120	110	102	96	88	78
Rank	23	23	23	23	23	24
Annual Greenhouse Gases (CO2) Produced	I		I		1	
Annual Greenhouse Gases (CO2) Produced Excess Due to Congestion (tons)						
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Excess Due to Congestion (tons)		 		 	 	
Excess Due to Congestion (tons) Rank				 		
Excess Due to Congestion (tons) Rank Due to All Travel (tons) Rank				 		
Excess Due to Congestion (tons) Rank Due to All Travel (tons) Rank Truck 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)	 	 	 	 		
Excess Due to Congestion (tons) Rank Due to All Travel (tons) Rank Truck Annual Greenhouse Gases (CO2) Produced	 	 	 		 	

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

Inventory Measures	2002	2001	2000	1999	1998	1997
Urban Area Information						
Population (1000s)	1,615	1,590	1,545	1,510	1,470	1,440
Rank	26	26	26	26	26	26
Commuters (1000s)	652	632	604	581	557	536
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,905	12,670	12,595	12,350	12,020	11,900
Arterial Streets	11,610	11,440	11,470	11,340	11,230	10,970
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)	1.52	1.67	1.64	1.47	1.19	1.40
Diesel (\$/gallon)	1.47	1.67	1.61	1.37	1.27	1.39
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)	23,217	22,296	20,717	19,294	18,039	17,001
Rank	22	22	22	22	23	23
Fuel per Peak Auto Commuter (gallons)	21	20	18	17	16	16
Rank	12	11	16	17	18	14
Annual Delay						
Total Delay (1000s of person-hours)	42,399	40,718	37,832	35,234	32,943	31,047
Rank	25	25	25	26	27	27
Delay per Auto Commuter (pers-hrs)	46	45	44	42	41	40
Rank	17	17	16	17	17	17
Travel Time Index	1.31	1.31	1.30	1.29	1.28	1.27
Rank	5	5	5	5	5	6
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	672	638	576	516	469	439
Rank	25	24	24	25	27	26
Cost per Auto Commuter (\$)	1,013	984	941	906	867	829
Rank	21	19	20	21	21	23
Truck Congestion						
Annual Person-Hours of Delay (000)	2,132	2,048	1,903	1,773	1,657	1,562
Rank	24	24	24	24	25	25
Annual Gallons of Wasted Fuel (000)	4,810	4,619	4,292	3,997	3,737	3,522
Rank	23	24	23	23	23	24
Annual Congestion Cost (\$ million)	72	68	61	54	49	46
Rank	24	24	23	23	25	25
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						
			· I			
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)	1,355	1,330	1,305	1,275	1,245	1,220
Rank	28	27	28	28	27	28
Commuters (1000s)	497	480	463	445	428	413
Daily Vehicle-Miles of Travel (1000s)						
Freeway	11,610	11,105	10,630	10,315	9,760	9,000
Arterial Streets	10,580	10,505	10,485	10,480	10,225	10,115
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)	1.37	1.28	1.24	1.26	1.26	1.48
Diesel (\$/gallon)	1.40	1.31	1.26	1.29	1.33	1.28
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)	15,132	13,952	12,791	11.750	10,803	10,163
Rank	25	25	26	25	26	26
Fuel per Peak Auto Commuter (gallons)	14	13	12	11	10	10
Rank	18	19	21	22	24	19
Annual Delay						
Total Delay (1000s of person-hours)	27,634	25,479	23,358	21,458	19,729	18,560
Rank	28	30	30	29	29	28
Delay per Auto Commuter (pers-hrs)	38	36	34	33	31	30
Rank	17	19	19	18	22	20
Travel Time Index	1.26	1.25	1.23	1.22	1.21	1.20
Rank	6	6	6	6	9	11
Commuter Stress Index						
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	382	342	305	274	246	227
Rank	28	29	28	29	29	27
Cost per Auto Commuter (\$)	755	716	678	639	605	588
Rank	27	30	31	29	29	27
Truck Congestion						
Annual Person-Hours of Delay (000)	1,390	1,282	1,175	1,079	992	934
Rank	25	25	25	25	24	24
Annual Gallons of Wasted Fuel (000)	3,135	2,890	2,650	2,435	2,238	2,105
Rank	25	25	25	25	25	25
Annual Congestion Cost (\$ million)	41	37	33	30	28	26
Rank	25	25	25	25	24	24
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.

Inventory Measures	1990	1989	1988	1987	1986	1985
Urban Area Information						
Population (1000s)	1,190	1,180	1,170	1,160	1,155	1,150
Rank	28	28	27	27	27	27
Commuters (1000s)	396	389	383	376	371	366
Daily Vehicle-Miles of Travel (1000s)						
Freeway	8,605	8,385	7,905	7,530	7,060	6,470
Arterial Streets	9,810	9,690	9,705	9,670	9,655	9,635
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)	1.16	1.32	1.22	1.22	1.19	1.56
Diesel (\$/gallon)	1.01	1.17	1.08	1.08	1.06	1.38
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)	9,151	8,728	8,364	8,021	7,547	7,195
Rank	26	26	25	23	22	21
Fuel per Peak Auto Commuter (gallons)	8	7	7	7	6	6
Rank	35	39	27	22	28	22
Annual Delay	33	37	27		20	
Total Delay (1000s of person-hours)	16,712	15,939	15,274	14,648	13,782	13,140
Rank	30	27	26	24	24	13,140
Delay per Auto Commuter (pers-hrs)	28	27	27	26	25	24
Rank	21	21	18	17	17	15
Travel Time Index			1.18		1.17	
Rank	1.19	1.19		1.18		1.16
Commuter Stress Index	12	10	11	10	10	10
Rank						
Freeway Planning Time Index (95th Pctile)						
Rank						
Congestion Cost						
Total Cost (\$ millions)	194	179	164	152	138	132
Rank	30	26	25	24	24	24
Cost per Auto Commuter (\$)	553	557	562	562	551	532
Rank	29	27	23	23	24	23
Truck Congestion						
Annual Person-Hours of Delay (000)	840	802	768	736	693	661
Rank	26	24	24	24	23	23
Annual Gallons of Wasted Fuel (000)	1,896	1,809	1,733	1,662	1,564	1,491
Rank	25	25	23	22	22	22
Annual Congestion Cost (\$ million)	22	21	20	19	18	17
Rank	25	24	23	22	22	22
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			 			
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^{*} Note: Zeroes in the table reflect values less than 0.5.

Inventory Measures	1984	1983	1982
Urban Area Information			
Population (1000s)	1,140	1,130	1,130
Rank	27	26	26
Commuters (1000s)	359	353	350
Daily Vehicle-Miles of Travel (1000s)			
Freeway	5,955	5,725	5,500
Arterial Streets	9,705	9,865	9,760
Cost Components		Ì	
Value of Time (\$/hour)	7.75	7.43	7.20
Commercial Cost (\$/hour)	23.94	23.63	23.31
Gasoline (\$/gallon)	1.58	1.61	1.69
Diesel (\$/gallon)	1.40	1.43	1.50
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)	6,711	6,188	5,684
Rank	21	21	21
Fuel per Peak Auto Commuter (gallons)	7	5	5
Rank	12	22	16
Annual Delay	12	22	10
Total Delay (1000s of person-hours)	12 256	11,301	10,380
Rank	12,256	24	10,380
Delay per Auto Commuter (pers-hrs)	23	24	20
Rank	13	14	15
	-		
Travel Time Index	1.15	1.14	1.13
Rank	13	14	14
Commuter Stress Index			
Rank			
Freeway Planning Time Index (95th Pctile)			
Rank			
Congestion Cost			
Total Cost (\$ millions)	120	107	96
Rank	24	24	23
Cost per Auto Commuter (\$)	516	497	474
Rank	21	21	21
Truck Congestion			
Annual Person-Hours of Delay (000)	616	568	522
Rank	23	23	22
Annual Gallons of Wasted Fuel (000)	1,390	1,282	1,177
Rank	21	21	21
Annual Congestion Cost (\$ million)	16	14	13
Rank	22	22	21
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 Excess Due to Truck Congestion (tons)			
· · · ·		 	
Excess Due to Truck Congestion (tons)	 	 	

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