

Performance Measure Summary - Provo-Orem UT

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2017. 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 2017 (estimated at \$18.29 per hour of person travel and \$59.94 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.

Mobility Data for Provo-Orem UT

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	555	550	545	540	530	515
Rank	76	76	76	76	76	77
Commuters (1000s)	261	258	255	253	253	245
Daily Vehicle-Miles of Travel (1000s)						
Freeway	5,190	5,053	4,492	4,170	3,995	3,870
Arterial Streets	3,943	3,825	3,652	3,414	3,204	3,270
Cost Components						
Value of Time (\$/hour)	18.12	17.91	17.69	17.67	17.39	17.14
Commercial Cost (\$/hour)	52.14	50.20	46.87	44.82	41.23	39.66
Gasoline (\$/gallon)	2.47	2.28	2.69	3.51	3.61	3.24
Diesel (\$/gallon)	2.69	2.43	2.54	3.73	3.89	3.91
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	1.1	--	--	--	--	--
Congested System (% of lane-miles)	7.3	--	--	--	--	--
Congested Time (number of "Rush Hours")	0.7	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	5,235	5,128	4,979	4,741	4,668	4,366
Rank	79	80	80	80	80	81
Fuel per Peak Auto Commuter (gallons)	15	15	16	15	16	15
Rank	84	83	73	81	71	78
Annual Delay						
Total Delay (1000s of person-hours)	8,701	8,423	8,107	7,652	7,466	6,920
Rank	91	92	90	91	90	92
Delay per Auto Commuter (pers-hrs)	25	24	23	22	22	22
Rank	98	98	98	97	97	97
Travel Time Index						
Rank	1.11	1.11	1.11	1.12	1.12	1.11
Rank	96	96	96	92	92	94
Commuter Stress Index						
Rank	1.12	--	--	--	--	--
Rank	96	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	1.27	--	--	--	--	--
Rank	78	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	181	172	165	159	153	139
Rank	91	90	90	90	90	90
Cost per Auto Commuter (\$)	473	464	442	416	408	385
Rank	99	99	99	99	99	99
Truck Congestion						
Annual Person-Hours of Delay (000)	365	354	340	321	314	291
Rank	91	92	90	91	90	92
Annual Gallons of Wasted Fuel (000)	1,110	1,087	1,055	1,005	990	926
Rank	79	80	80	80	80	81
Annual Congestion Cost (\$ million)	20	18	17	16	15	14
Rank	87	90	87	88	88	88

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

Mobility Data for Provo-Orem UT

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	500	485	470	450	440	435
Rank	79	79	79	80	80	80
Commuters (1000s)	238	230	222	212	206	203
Daily Vehicle-Miles of Travel (1000s)						
Freeway	4,031	3,955	3,800	3,650	3,830	3,765
Arterial Streets	3,141	3,082	2,949	3,040	3,090	2,990
Cost Components						
Value of Time (\$/hour)	16.79	16.28	16.01	16.07	15.47	15.06
Commercial Cost (\$/hour)	44.62	42.50	41.83	40.77	39.30	37.88
Gasoline (\$/gallon)	3.33	2.80	2.15	3.35	3.23	2.58
Diesel (\$/gallon)	3.69	3.07	2.56	4.13	3.70	2.91
System Performance	2011	2010	2009	2008	2007	2006
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	4,068	3,940	3,948	4,004	4,017	3,958
Rank	83	83	82	83	81	81
Fuel per Peak Auto Commuter (gallons)	13	12	12	13	13	13
Rank	84	89	83	84	85	81
Annual Delay						
Total Delay (1000s of person-hours)	6,331	6,075	5,973	5,770	5,788	5,703
Rank	94	94	94	94	94	94
Delay per Auto Commuter (pers-hrs)	22	21	22	22	22	22
Rank	97	96	94	95	94	94
Travel Time Index						
Rank	1.11	1.11	1.11	1.12	1.12	1.12
Rank	93	93	92	90	90	88
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	126	116	110	112	108	101
Rank	93	93	91	93	93	93
Cost per Auto Commuter (\$)	362	359	361	343	358	362
Rank	99	99	99	99	98	96
Truck Congestion						
Annual Person-Hours of Delay (000)	266	255	251	242	243	240
Rank	94	94	94	94	94	93
Annual Gallons of Wasted Fuel (000)	862	835	837	849	852	839
Rank	83	83	82	83	81	81
Annual Congestion Cost (\$ million)	14	12	11	12	12	10
Rank	89	90	89	88	87	89

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

Mobility Data for Provo-Orem UT

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	430	425	420	415	410	400
Rank	79	79	78	78	77	78
Commuters (1000s)	199	195	192	187	182	175
Daily Vehicle-Miles of Travel (1000s)						
Freeway	3,655	3,535	3,450	3,375	3,300	3,225
Arterial Streets	3,170	2,955	2,880	2,800	2,715	2,650
Cost Components						
Value of Time (\$/hour)	14.58	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	36.51	35.19	33.92	32.69	31.51	30.38
Gasoline (\$/gallon)	2.32	1.98	1.61	1.41	1.60	1.54
Diesel (\$/gallon)	2.69	2.11	1.56	1.41	1.61	1.50
System Performance	2005	2004	2003	2002	2001	2000
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	3,878	3,635	3,531	3,278	3,191	2,777
Rank	80	81	81	79	79	79
Fuel per Peak Auto Commuter (gallons)	13	12	12	10	11	9
Rank	81	83	83	87	78	84
Annual Delay						
Total Delay (1000s of person-hours)	5,588	5,237	5,088	4,724	4,597	4,001
Rank	94	93	92	92	90	92
Delay per Auto Commuter (pers-hrs)	22	21	21	20	20	18
Rank	94	94	94	94	94	94
Travel Time Index						
Rank	1.12	1.12	1.11	1.11	1.11	1.10
Rank	86	84	87	84	84	86
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	95	85	79	71	69	58
Rank	90	92	92	91	89	90
Cost per Auto Commuter (\$)	369	357	354	339	335	295
Rank	96	96	96	95	95	96
Truck Congestion						
Annual Person-Hours of Delay (000)	235	220	214	198	193	168
Rank	94	93	92	92	90	92
Annual Gallons of Wasted Fuel (000)	822	771	749	695	676	589
Rank	80	81	81	79	79	79
Annual Congestion Cost (\$ million)	10	8	8	7	6	5
Rank	88	89	85	85	87	89

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

Mobility Data for Provo-Orem UT

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	395	390	380	375	365	360
Rank	77	76	76	76	76	75
Commuters (1000s)	170	165	159	154	148	143
Daily Vehicle-Miles of Travel (1000s)						
Freeway	3,175	3,100	3,050	3,000	2,900	2,825
Arterial Streets	2,600	2,535	2,420	2,350	2,300	2,240
Cost Components						
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37	11.06
Commercial Cost (\$/hour)	29.28	28.89	28.50	28.12	27.75	27.38
Gasoline (\$/gallon)	1.26	1.14	1.31	1.29	1.15	1.11
Diesel (\$/gallon)	1.25	1.22	1.42	1.37	1.22	1.17
System Performance	1999	1998	1997	1996	1995	1994
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	2,767	2,501	2,419	2,167	2,097	2,055
Rank	79	80	79	79	79	78
Fuel per Peak Auto Commuter (gallons)	10	8	9	7	7	8
Rank	77	83	75	82	77	65
Annual Delay						
Total Delay (1000s of person-hours)	3,987	3,604	3,485	3,122	3,022	2,961
Rank	90	91	88	90	87	86
Delay per Auto Commuter (pers-hrs)	18	17	17	15	16	16
Rank	93	93	92	93	91	89
Travel Time Index						
Rank	1.10	1.09	1.09	1.08	1.08	1.08
Rank	84	84	83	87	84	80
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	55	49	47	41	38	37
Rank	89	90	87	88	87	86
Cost per Auto Commuter (\$)	307	283	280	254	258	254
Rank	95	95	94	94	94	93
Truck Congestion						
Annual Person-Hours of Delay (000)	167	151	146	131	127	124
Rank	90	91	88	89	87	86
Annual Gallons of Wasted Fuel (000)	587	530	513	459	445	436
Rank	79	80	79	79	79	78
Annual Congestion Cost (\$ million)	5	4	4	4	4	3
Rank	84	88	86	82	79	85

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Mobility Data for Provo-Orem UT

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	350	340	330	320	310	300
Rank	76	75	76	77	78	80
Commuters (1000s)	137	131	126	120	115	111
Daily Vehicle-Miles of Travel (1000s)						
Freeway	2,750	2,700	2,630	2,540	2,475	2,400
Arterial Streets	2,200	2,160	2,100	2,040	2,000	1,960
Cost Components						
Value of Time (\$/hour)	10.78	10.47	10.17	9.75	9.25	8.83
Commercial Cost (\$/hour)	27.02	26.66	26.30	25.95	25.60	25.26
Gasoline (\$/gallon)	1.15	1.16	1.15	1.05	1.20	1.11
Diesel (\$/gallon)	1.22	1.20	1.22	1.07	1.18	1.09
System Performance	1993	1992	1991	1990	1989	1988
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	1,718	1,706	1,676	1,361	1,299	1,085
Rank	79	79	78	80	80	80
Fuel per Peak Auto Commuter (gallons)	5	5	6	4	5	3
Rank	82	82	67	81	63	81
Annual Delay						
Total Delay (1000s of person-hours)	2,475	2,458	2,415	1,961	1,872	1,563
Rank	89	85	83	87	87	87
Delay per Auto Commuter (pers-hrs)	14	14	14	12	12	10
Rank	90	90	88	89	89	89
Travel Time Index						
Rank	83	76	71	76	80	74
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	30	29	28	22	20	16
Rank	88	85	83	85	85	85
Cost per Auto Commuter (\$)	217	223	234	192	198	177
Rank	94	92	87	90	88	91
Truck Congestion						
Annual Person-Hours of Delay (000)	104	103	101	82	79	66
Rank	89	85	83	87	87	87
Annual Gallons of Wasted Fuel (000)	364	362	355	289	275	230
Rank	79	79	78	80	80	80
Annual Congestion Cost (\$ million)	3	3	3	2	2	2
Rank	82	80	80	83	82	80

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

Mobility Data for Provo-Orem UT

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	295	290	280	270	250	250
Rank	80	80	81	82	82	82
Commuters (1000s)	108	105	101	97	89	88
Daily Vehicle-Miles of Travel (1000s)						
Freeway	2,300	2,220	2,180	2,100	2,000	1,900
Arterial Streets	1,920	1,880	1,850	1,800	1,750	1,700
Cost Components						
Value of Time (\$/hour)	8.48	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	24.93	24.60	24.27	23.94	23.63	23.31
Gasoline (\$/gallon)	1.11	1.08	1.42	1.43	1.47	1.53
Diesel (\$/gallon)	1.09	1.07	1.40	1.41	1.44	1.51
System Performance	1987	1986	1985	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)	1,008	927	852	760	684	632
Rank	81	81	80	80	78	77
Fuel per Peak Auto Commuter (gallons)	3	3	3	2	2	2
Rank	80	74	66	79	69	55
Annual Delay						
Total Delay (1000s of person-hours)	1,453	1,336	1,228	1,096	985	911
Rank	86	86	86	87	87	88
Delay per Auto Commuter (pers-hrs)	10	9	9	8	8	8
Rank	85	87	83	83	76	73
Travel Time Index						
Rank	79	74	64	75	68	61
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	14	13	12	10	9	8
Rank	86	85	85	86	84	85
Cost per Auto Commuter (\$)	166	166	144	140	130	128
Rank	92	91	91	90	90	89
Truck Congestion						
Annual Person-Hours of Delay (000)	61	56	52	46	41	38
Rank	86	86	86	87	87	88
Annual Gallons of Wasted Fuel (000)	214	197	181	161	145	134
Rank	81	81	80	80	78	77
Annual Congestion Cost (\$ million)	2	1	1	1	1	1
Rank	79	84	83	81	78	75

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