

# Performance Measure Summary - Riverside-San Bernardino CA

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 Riverside-San Bernardino CA

Inventory Measures	2017	2016	2015	2014	2013	2012
<b>Urban Area Information</b>						
Population (1000s)	2,075	2,050	2,035	2,020	2,005	1,990
Rank	21	21	22	22	22	22
Commuters (1000s)	1,114	1,100	1,091	1,081	1,073	1,056
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	26,237	26,238	26,070	23,134	23,865	22,865
Arterial Streets	13,554	13,498	12,363	14,203	15,113	15,650
<b>Cost Components</b>						
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)	2.96	2.78	3.18	3.63	3.89	3.89
Diesel (\$/gallon)	2.95	2.68	2.86	3.85	4.12	4.20
System Performance	2017	2016	2015	2014	2013	2012
<b>Congested Travel (% of peak VMT)</b>	43.2	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	24.8	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	6.5	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	28,106	27,955	27,813	27,678	27,490	26,758
Rank	24	24	24	24	24	24
Fuel per Peak Auto Commuter (gallons)	20	20	19	18	17	17
Rank	47	47	50	57	64	61
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	107,411	105,419	103,091	100,804	98,348	94,868
Rank	18	18	18	18	18	18
Delay per Auto Commuter (pers-hrs)	70	68	66	62	60	59
Rank	11	11	11	12	11	11
<b>Travel Time Index</b>						
Rank	1.34	1.34	1.33	1.33	1.32	1.31
Rank	11	11	12	12	13	13
<b>Commuter Stress Index</b>						
Rank	1.44	--	--	--	--	--
Rank	8	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	2.10	--	--	--	--	--
Rank	12	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	2,154	2,081	2,012	1,975	1,896	1,802
Rank	18	18	18	18	18	18
Cost per Auto Commuter (\$)	1,288	1,272	1,237	1,205	1,186	1,159
Rank	16	16	15	13	13	13
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	4,511	4,428	4,330	4,234	4,131	3,984
Rank	18	18	18	18	18	18
Annual Gallons of Wasted Fuel (000)	5,959	5,927	5,896	5,868	5,828	5,673
Rank	24	24	24	24	24	24
Annual Congestion Cost (\$ million)	224	211	195	189	173	162
Rank	18	18	18	18	18	18

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

# Mobility Data for Riverside-San Bernardino CA

Inventory Measures	2011	2010	2009	2008	2007	2006
<b>Urban Area Information</b>						
Population (1000s)	1,980	1,970	1,960	1,970	1,950	1,910
Rank	22	22	22	22	22	22
Commuters (1000s)	1,045	1,038	1,028	1,026	1,010	984
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	22,302	21,994	23,212	23,470	24,210	24,510
Arterial Streets	14,021	13,827	13,700	13,645	12,945	13,170
<b>Cost Components</b>						
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)	3.51	3.05	2.61	3.84	3.24	2.88
Diesel (\$/gallon)	4.02	3.20	2.71	4.39	3.60	3.17
System Performance	2011	2010	2009	2008	2007	2006
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	26,636	26,370	25,452	27,040	26,734	26,168
Rank	24	24	24	24	24	24
Fuel per Peak Auto Commuter (gallons)	17	18	15	17	17	18
Rank	60	46	62	61	61	47
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	92,717	90,943	86,135	87,153	86,165	84,340
Rank	17	16	16	16	16	16
Delay per Auto Commuter (pers-hrs)	58	58	56	57	58	58
Rank	11	10	10	8	9	7
<b>Travel Time Index</b>						
Rank	1.31	1.31	1.30	1.31	1.32	1.33
Rank	11	11	11	9	9	8
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	1,740	1,642	1,521	1,580	1,490	1,411
Rank	17	17	16	16	16	16
Cost per Auto Commuter (\$)	1,170	1,182	1,140	1,142	1,175	1,180
Rank	13	12	13	12	11	13
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	3,894	3,820	3,618	3,660	3,619	3,542
Rank	17	16	16	16	16	16
Annual Gallons of Wasted Fuel (000)	5,647	5,591	5,396	5,733	5,668	5,548
Rank	24	24	24	24	24	24
Annual Congestion Cost (\$ million)	175	160	147	156	145	135
Rank	18	18	17	16	17	17

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

# Mobility Data for Riverside-San Bernardino CA

Inventory Measures	2005	2004	2003	2002	2001	2000
<b>Urban Area Information</b>						
Population (1000s)	1,870	1,855	1,775	1,715	1,630	1,575
Rank	22	22	23	24	25	25
Commuters (1000s)	961	947	901	867	827	795
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	24,020	22,760	20,500	18,500	17,400	16,600
Arterial Streets	12,965	12,000	11,800	11,700	11,575	11,220
<b>Cost Components</b>						
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)	2.62	2.28	1.78	1.66	1.93	1.72
Diesel (\$/gallon)	2.93	2.27	1.79	1.58	1.78	1.68
System Performance	2005	2004	2003	2002	2001	2000
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	24,883	22,958	21,231	19,454	17,752	16,676
Rank	24	27	27	29	30	31
Fuel per Peak Auto Commuter (gallons)	17	16	15	14	12	12
Rank	48	56	58	61	74	68
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	80,201	73,996	68,430	62,702	57,216	53,748
Rank	16	18	19	20	20	20
Delay per Auto Commuter (pers-hrs)	57	54	52	49	47	46
Rank	8	9	11	12	12	14
<b>Travel Time Index</b>						
Rank	8	12	11	14	16	15
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	1,295	1,148	1,023	914	825	750
Rank	17	18	19	20	20	20
Cost per Auto Commuter (\$)	1,161	1,107	1,051	984	910	879
Rank	13	14	16	18	22	23
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	3,368	3,108	2,874	2,633	2,403	2,257
Rank	16	18	19	20	20	20
Annual Gallons of Wasted Fuel (000)	5,275	4,867	4,501	4,124	3,763	3,535
Rank	24	27	27	29	30	31
Annual Congestion Cost (\$ million)	123	107	94	82	73	66
Rank	17	18	19	20	20	20

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

# Mobility Data for Riverside-San Bernardino CA

Inventory Measures	1999	1998	1997	1996	1995	1994
<b>Urban Area Information</b>						
Population (1000s)	1,525	1,485	1,445	1,430	1,420	1,410
Rank	25	25	25	25	25	25
Commuters (1000s)	764	740	722	711	703	695
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	16,270	15,580	14,940	14,985	14,780	14,015
Arterial Streets	11,100	11,275	11,210	11,200	11,175	11,150
<b>Cost Components</b>						
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)	1.59	1.27	1.40	1.21	1.27	1.16
Diesel (\$/gallon)	1.50	1.39	1.51	1.24	1.31	1.19
System Performance	1999	1998	1997	1996	1995	1994
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	15,366	13,998	13,050	12,432	11,945	11,258
Rank	32	32	32	31	30	29
Fuel per Peak Auto Commuter (gallons)	11	10	8	8	8	7
Rank	72	73	79	76	72	73
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	49,527	45,115	42,062	40,068	38,501	36,285
Rank	20	20	20	20	20	20
Delay per Auto Commuter (pers-hrs)	44	42	40	38	37	36
Rank	15	15	17	17	17	15
<b>Travel Time Index</b>						
Rank	17	20	22	20	18	19
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	667	592	545	506	474	434
Rank	20	20	20	22	20	20
Cost per Auto Commuter (\$)	837	780	739	721	713	692
Rank	24	25	25	25	25	25
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	2,080	1,895	1,767	1,683	1,617	1,524
Rank	20	20	20	20	20	20
Annual Gallons of Wasted Fuel (000)	3,258	2,967	2,767	2,636	2,532	2,387
Rank	32	32	32	31	30	29
Annual Congestion Cost (\$ million)	58	52	48	45	43	39
Rank	20	20	21	23	21	22

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

# Mobility Data for Riverside-San Bernardino CA

Inventory Measures	1993	1992	1991	1990	1989	1988
<b>Urban Area Information</b>						
Population (1000s)	1,395	1,380	1,350	1,285	1,190	1,120
Rank	25	25	26	26	27	31
Commuters (1000s)	685	676	658	617	577	541
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	13,690	13,605	13,460	12,380	11,735	10,575
Arterial Streets	11,100	10,750	10,650	10,150	9,370	9,150
<b>Cost Components</b>						
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)	1.23	1.28	1.11	1.14	1.14	1.05
Diesel (\$/gallon)	1.26	1.25	1.25	1.19	1.09	1.01
System Performance	1993	1992	1991	1990	1989	1988
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	10,777	10,177	9,620	8,501	7,605	6,840
Rank	29	29	29	29	29	29
Fuel per Peak Auto Commuter (gallons)	7	7	7	6	6	5
Rank	67	59	57	60	53	58
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	34,736	32,801	31,006	27,398	24,510	22,045
Rank	20	20	19	19	19	20
Delay per Auto Commuter (pers-hrs)	34	33	32	30	29	28
Rank	16	16	14	16	16	17
<b>Travel Time Index</b>						
Rank	19	18	16	17	17	17
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	407	374	343	292	249	214
Rank	20	20	19	19	19	20
Cost per Auto Commuter (\$)	681	663	647	596	564	532
Rank	22	22	22	23	24	24
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	1,459	1,378	1,302	1,151	1,029	926
Rank	20	20	19	19	19	20
Annual Gallons of Wasted Fuel (000)	2,285	2,158	2,039	1,802	1,612	1,450
Rank	29	29	29	29	29	29
Annual Congestion Cost (\$ million)	37	35	33	28	25	22
Rank	20	20	19	19	19	19

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

# Mobility Data for Riverside-San Bernardino CA

Inventory Measures	1987	1986	1985	1984	1983	1982
<b>Urban Area Information</b>						
Population (1000s)	1,075	1,030	1,005	985	970	955
Rank	31	34	33	33	34	34
Commuters (1000s)	516	491	477	464	455	446
<b>Daily Vehicle-Miles of Travel (1000s)</b>						
Freeway	9,865	8,940	8,200	7,865	6,795	6,290
Arterial Streets	8,900	8,870	8,760	8,650	8,260	7,880
<b>Cost Components</b>						
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)	1.05	1.03	1.35	1.36	1.39	1.46
Diesel (\$/gallon)	1.01	0.99	1.29	1.31	1.34	1.40
System Performance	1987	1986	1985	1984	1983	1982
<b>Congested Travel (% of peak VMT)</b>	--	--	--	--	--	--
<b>Congested System (% of lane-miles)</b>	--	--	--	--	--	--
<b>Congested Time (number of "Rush Hours")</b>	--	--	--	--	--	--
<b>Annual Excess Fuel Consumed</b>						
Total Fuel (1000 gallons)	5,885	5,486	5,058	4,627	4,237	3,877
Rank	29	29	29	28	29	27
Fuel per Peak Auto Commuter (gallons)	4	4	3	3	3	2
Rank	61	54	66	61	46	55
<b>Annual Delay</b>						
Total Delay (1000s of person-hours)	18,966	17,680	16,301	14,913	13,655	12,496
Rank	22	23	22	22	22	21
Delay per Auto Commuter (pers-hrs)	25	24	23	22	20	19
Rank	18	18	17	17	18	17
<b>Travel Time Index</b>						
Rank	1.14	1.13	1.13	1.12	1.11	1.10
Rank	19	19	18	19	18	19
<b>Commuter Stress Index</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Freeway Planning Time Index (95th Pctile)</b>						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
<b>Congestion Cost</b>						
Total Cost (\$ millions)	178	160	147	130	115	103
Rank	22	23	22	23	23	23
Cost per Auto Commuter (\$)	481	464	436	413	396	373
Rank	27	28	29	31	28	29
<b>Truck Congestion</b>						
Annual Person-Hours of Delay (000)	797	743	685	626	574	525
Rank	22	23	22	22	22	21
Annual Gallons of Wasted Fuel (000)	1,248	1,163	1,072	981	898	822
Rank	29	29	29	28	29	27
Annual Congestion Cost (\$ million)	19	17	16	14	13	12
Rank	22	22	22	23	23	21

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