

Population density map notes

The accompanying map shows population densities for the southern parts of Santa Cruz County. It is often asserted that the density of our population is insufficient to support the operation of passenger rail along the 32-mile Santa Cruz Branch Rail Line. However our map indicates otherwise. At least population density is not a problem.

Successful passenger rail service depends on several factors. Among the most basic of these is the population density within walking distance of the rail line. The threshold density (as judged by observation of successfully operating railroads) is somewhere in the neighborhood of 4000 to 5000 per square mile. Many parts of our urbanized area have densities in excess of 4000 per square mile. A significant fraction of these areas lie within half a mile (a ten-minute walk) of the line. The highest density in Santa Cruz County occurs for three census tracts in Watsonville, with Tract 1103 having a density in excess of 14000 per square mile.

As seen from the map,¹ the Capitola Mall is less than half a mile from the intersection of the rail line with 41st Avenue. Cabrillo College is even closer, although separated from it by the Highway 1 freeway.

Our population densities are similar to those in the San Jose area, or in the area of the southern San Francisco peninsula.

Our map could be useful for transportation planners in considering not only the feasibility of passenger rail service, but also the feasibility of adding a bicycle and pedestrian path adjacent to the rail tracks within the rail corridor—a **rail trail**. The provision of such a rail trail would be likely to encourage increased use of bicycles as a transportation mode for both commuters and recreationalists, since it would be level, scenic and completely free from motorist conflicts. The average bicyclist travels at approximately 12 miles per hour, or approximately 5 minutes per mile.

The 2010 base map used to prepare the accompanying map was obtained from http://www2.census.gov/geo/maps/dc10map/tract/st06_ca/c06087_santa_cruz/. The 2010 census data, containing the areas and population for each of the 52 census tracts in the county were obtained from the American Factfinder website, easily reached by a link from the above map page, or by clicking on this link: <http://factfinder2.census.gov/faces/nav/jsf/pages/index.xhtml>.

Tips: From the page at the above link,

- (a) click on the “Geographies” tab.
- (b) On the “List” tab, select “Census Tract” as a “geographic type”.
- (c) Select “California” as a state.

¹ The map itself, if a hard copy is desired, will fit nicely on legal size paper, printed from the Acrobat Reader.

- (d) Select “Santa Cruz” as a county.
- (e) Select “All Census Tracts within Santa Cruz County, California”, click the “ADD TO YOUR SELECTIONS” button, and then click on the “CLOSE” button at the upper right.
- (f) A list of over 3,700 table choices will be revealed, so (and this is key) enter “G001” in the “Narrow your search” box and click the “GO” button. This results in a much smaller list of 14 tables—the ones that provide not only the population, but also the areas of census tracts.
- (g) Check the box for either the “2010 SF1 100% Data” or the “2010 SF2 100% Data” table (it doesn’t matter which—they both contain areas and populations of tracts), and then the “Download” button. This will provide you with a zip file entitled “aff_download.zip” that contains a spreadsheet in .csv format. Column “BQ” has the tract number, “BT” has the population and “BO” has the land area of each tract in square meters. (There are 2589989 square meters in one square mile.)

A more fine-grained analysis of population density is possible, since the census also provides populations and areas for subdivisions of census tracts, called *blocks*. However, it is not clear what would be gained by so doing. There are over 5,000 census blocks in Santa Cruz County. A table containing the census tract raw data used to create the map appears on the following page.

Thanks are due to Bruce Sawhill, whose idea it was to have a look at census data, and who prepared an initial version of a map for Santa Cruz County a few years ago.

– Peter Scott
July 30, 2012

SANTA CRUZ COUNTY DATA --- 2010 CENSUS TRACTS

tract no	population	area sq meters	area sq miles	density population/sq mi
1001	2163	3296634	1.27284	1699.35
1002	7071	2437867	0.94127	7512.23
1003	3380	5435347	2.09860	1610.60
1004	7331	4857960	1.87567	3908.47
1005	5370	5428026	2.09577	2562.30
1006	3341	1050182	0.40548	8239.67
1007	2632	940250	0.36303	7250.04
1008	6873	1887469	0.72876	9431.15
1009	4236	1886027	0.72820	5817.09
1010	7866	2130485	0.82258	9562.54
1011	5444	1915932	0.73975	7359.29
1012	3132	4308086	1.66336	1882.93
1101	7466	2453900	0.94746	7880.05
1102	7399	2961316	1.14337	6471.22
1103	6710	1183345	0.45689	14686.19
1104	7976	5982686	2.30993	3452.92
1105.01	7646	1848231	0.71361	10714.60
1105.02	6088	1471424	0.56812	10716.05
1106	8349	2438435	0.94148	8867.91
1107	3357	4403334	1.70014	1974.55
1202	4283	291773868	112.65448	38.02
1203.01	5180	49747728	19.20770	269.68
1203.02	2602	3442245	1.32906	1957.78
1204	4993	26826642	10.35782	482.05
1205	5687	146288078	56.48212	100.69
1206	4733	34484113	13.31439	355.48
1207	4120	21792092	8.41397	489.66
1208	5863	7883176	3.04371	1926.27
1209	8360	24761345	9.56041	874.44
1210	3423	74191114	28.64534	119.50
1211	2963	19147014	7.39270	400.80
1212	6114	32641964	12.60313	485.12
1213	4144	3916509	1.51217	2740.43
1214.01	2683	1184755	0.45744	5865.30
1214.02	4373	1339464	0.51717	8455.64
1214.03	3362	1260990	0.48687	6905.32
1215	4917	1788079	0.69038	7122.16
1216	6159	2059299	0.79510	7746.20
1217	7458	2640892	1.01965	7314.25
1218	4796	1860732	0.71843	6675.65
1220.01	4909	31384823	12.11774	405.11
1220.02	3349	51735243	19.97508	167.66
1220.03	6543	5546513	2.14152	3055.31
1221	3267	2271644	0.87709	3724.83
1222.01	6269	8631589	3.33267	1881.07
1222.02	2221	2629953	1.01543	2187.25
1222.03	3622	2480172	0.95760	3782.37
1223	3943	41846244	16.15692	244.04
1224	7167	106080032	40.95772	174.99
1225	6670	12156087	4.69349	1421.12
1231	2638	7696984	2.97182	887.67
1233	1741	73179700	28.25483	61.62
totals:	262382	1152986019	445.17024	589.40

