

California Economic Policy:
Lawns and Water Demand
in California

Data Box and Appendix

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Data Box: Using County Assessor Data to Measure Trends in Single-Family Lot Sizes

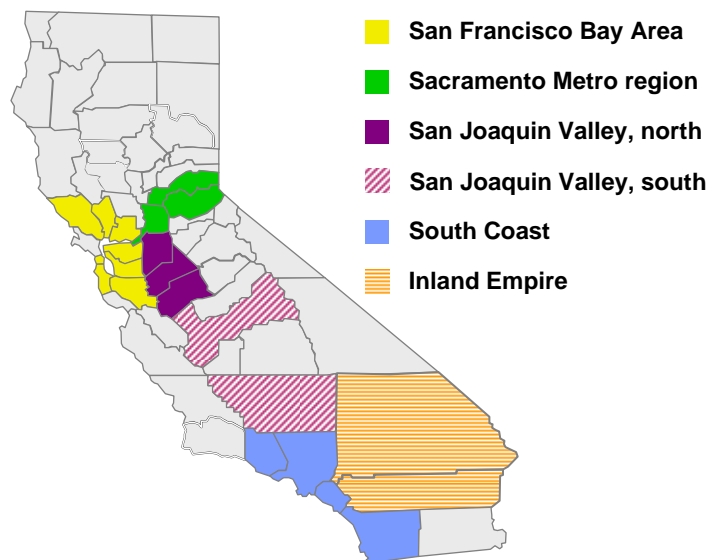
The data on single-family residential lot sizes reported in this study were obtained from the housing research firm DataQuick, which assembles parcel records from county assessors' offices. For 22 counties, these records provided sufficient information to track the evolution of lot sizes over space and time. This group includes most counties in the six metropolitan regions discussed in the text (Figure A.1). Counties that were excluded because of inadequate lot size data include Marin (San Francisco Bay Area); Yolo (Sacramento Metropolitan region); and Kings, Madera, and Tulare (southern San Joaquin Valley). Summary information on housing stock by county, for all 22 counties, is provided in this appendix (Table A.1).

Parcel records provide information on the year a house was built, the lot size, and the location by Census tract. We estimated the building footprint as building square footage divided by the number of stories; we estimated the yard size as the lot size minus this footprint.¹ We excluded the small number of single-family residential parcels larger than 20 acres (less than 0.2% of the total), as well as the few parcels containing houses larger than 10,000 square feet, so as not to skew average lot and building size calculations.

It was necessary to make some adjustments to compensate for missing data. For several counties where some years of parcel records were missing, we used single-family residential permitting data from the Construction Industry Research Board, setting lot sizes equal to recent trends for each climate zone within the county. This problem was most serious for Orange County, for which records were mostly missing after 1990. Other substitutions had to be made for San Joaquin (1997), Fresno (2002), and Napa (1999 to 2002) Counties. For Stanislaus, where year-built data were missing for years before 1998, we interpolated these values using information on year of construction from the 2000 Census, setting lot sizes in each year as a constant proportion of lot sizes in the two neighboring counties (San Joaquin and Merced).

In a number of counties, some parcels did not include information on lot size. When valid records were available for other parcels built in the same tract and year, we interpolated the missing lot sizes by assigning the average sizes and proportions of

Figure A.1 Regions with Detailed Housing Data



¹ Note that this is a conservative estimate of building footprint, since it assumes that upper stories have the same area as lower stories. Interestingly, estimated building footprints were similar across all regions and ET₀ superzones, generally between 1,400 and 1,500 square feet.

small and large lots (up to or above one acre, respectively). Overall, this interpolation was done for 8.3 percent of the parcel records. For several counties (Placer, El Dorado, San Diego, Kern, and Merced), the rate of missing records was higher. Although this method assumes the same distribution for missing lots as for those present in the dataset, it may overstate the importance of large lots if small lots are more likely to be missing. When high shares of missing records were associated with a spike in large lot sizes, we adjusted this proportion downward to correspond to the trend.

Missing story data were interpolated using bootstrap imputation procedures, matching on vintage, building size, and lot size. For several counties missing story data altogether, these matches were made using data from nearby counties.²

Despite these limitations, this dataset provides relatively good coverage of single-family homes in the state. As a point of comparison, we have usable parcel records for 81.7 percent of the 6,768,811 single-family housing stock recorded by the 2000 Census for 22 counties. This corresponds to 78.3 percent of single-family homes in the six regions of interest and 70.8 percent of all single-family homes in the state. In the regional and climate zone totals presented in the text, counties were weighted by their share of single-family housing in the 2000 Census.

² For Orange, San Diego and Ventura Counties, we matched the story data to characteristics of comparable properties in coastal Los Angeles; for Placer County, we used El Dorado County, and for Contra Costa County, we used Alameda County.

Table A.1: County Profiles

For each county in our analysis, the following table shows the share of single-family units in each evapotranspiration superzone, average ET₀ rates (expressed in annual gallons per square foot of landscaping), and average lot sizes for lots of one acre or less for three time periods, all based on county assessor records. The total share of large lots (one to 20 acres) and average lot size up to 2002 are also from county assessor records, and the share of multifamily homes is that reported in the 2000 Census.

	ET ₀ Superzone	Single-Family Units per ET ₀ Superzone		
		Through 1979	1980–1989	1990–2002
San Francisco Bay Area				
Alameda	Coastal	44.6%	13.3%	16.4%
	Inner Coastal	50.4%	77.5%	68.4%
	Central	5.0%	9.3%	15.2%
	Average ET ₀ rate	26.5	29.9	29.7
	Average small lot (square feet)	6,269	6,736	7,239
	% large lots in single-family homes (2002)		0.9	
	Average large lot (square feet)		121,819	
	% multifamily homes (2000)		37.6	
Contra Costa	Coastal	29.7%	14.7%	5.9%
	Inner Coastal	66.4%	60.2%	43.8%
	Central	3.9%	25.2%	50.3%
	Average ET ₀ rate	28.7	30.9	32.7
	Average small lot (square feet)	9,637	9,236	8,414
	% large lots in single-family homes (2002)		2.4	
	Average large lot (square feet)		89,068	
	% multifamily homes (2000)		24.0	
Napa	Coastal	67.6%	51.5%	55.2%
	Inner Coastal	32.4%	48.5%	44.8%
	Average ET ₀ rate	28.0	28.0	28.6
	Average small lot (square feet)	9,870	10,757	8,248
	% large lots in single-family homes (2002)		14.9	
	Average large lot (square feet)		182,505	
	% multifamily homes (2000)		18.2	
San Francisco	Coastal	100.0%	100.0%	100.0%
	Average ET ₀ rate	22.7	23.7	23.9
	Average small lot (square feet)	2,894	2,643	2,399
	% large lots in single-family homes (2002)		0.0	
	Average large lot (square feet)		100,845	
	% multifamily homes (2000)		67.7	

	ET ₀ Superzone	Single-Family Units per ET ₀ Superzone		
		Through 1979	1980–1989	1990–2002
San Mateo	Coastal	44.8%	38.9%	47.0%
	Inner Coastal	55.2%	61.1%	53.0%
	Average ET ₀ rate	27.5	28.2	27.4
	Average small lot (square feet)	7,218	7,617	7,505
	% large lots in single-family homes (2002)		1.9	
	Average large lot (square feet)		87,061	
	% multifamily homes (2000)		32.3	
Santa Clara	Coastal	0.4%	0.5%	0.6%
	Inner Coastal	99.6%	99.5%	99.4%
	Average ET ₀ rate	30.8	30.8	30.8
	Average small lot (square feet)	7,946	7,437	7,502
	% large lots in single-family homes (2002)		3.1	
	Average large lot (square feet)		102,643	
	% multifamily homes (2000)		31.6	
Solano	Coastal	28.7%	15.3%	3.3%
	Inner Coastal	43.0%	56.4%	54.5%
	Central	28.3%	28.2%	42.3%
	Average ET ₀ rate	30.2	31.1	32.0
	Average small lot (square feet)	7,096	7,842	7,344
	% large lots in single-family homes (2002)		3.0	
	Average large lot (square feet)		207,893	
% multifamily homes (2000)		20.7		
Sonoma	Coastal	85.2%	79.0%	74.8%
	Inner Coastal	14.8%	21.0%	25.2%
	Average ET ₀ rate	27.1	27.1	26.9
	Average small lot (square feet)	10,680	9,210	8,308
	% large lots in single-family homes (2002)		15.0	
	Average large lot (square feet)		161,978	
% multifamily homes (2000)		17.7		

ETo Superzone	Single-Family Units per ETo Superzone			
	Through 1979	1980–1989	1990–2002	
South Coast				
Los Angeles	Coastal	38.6%	14.4%	17.2%
	Inner Coastal	57.9%	43.3%	29.4%
	Central	1.8%	13.9%	24.9%
	Desert	1.8%	28.4%	28.5%
	Average ETo rate	31.5	35.2	34.9
	Average small lot (square feet)	7,913	10,641	10,318
	% large lots in single-family homes (2002)		1.8	
	Average large lot (square feet)		115,063	
	% multifamily homes (2000)		42.2	
Orange^a	Coastal	56.0%	39.4%	43.4%
	Inner Coastal	44.0%	60.6%	56.6%
	Average ETo rate	29.1	29.5	29.6
	Average small lot (square feet)	7,320	8,148	7,877
	% large lots in single-family homes (2002)		0.5%	
	Average large lot (square feet)		108,098	
	% multifamily homes (2000)		33.2%	
San Diego	Coastal	49.4%	44.7%	45.8%
	Inner Coastal	49.5%	51.9%	51.0%
	Desert	1.1%	3.4%	3.2%
	Average ETo rate	29.4	30.5	30.4
	Average small lot (square feet)	10,677	18,536	20,866
	% large lots in single-family homes (2002)		7.1%	
	Average large lot (square feet)		129,975	
% multifamily homes (2000)		35.1%		
Ventura	Coastal	41.7%	27.4%	37.3%
	Inner Coastal	56.1%	71.7%	62.1%
	Central	2.2%	0.9%	0.6%
	Average ETo rate	31.8	32.6	31.9
	Average small lot (square feet)	8,857	9,741	8,946
	% large lots in single-family homes (2002)		3.4%	
	average large lot (square feet)		97,914	
% multifamily homes (2000)		20.5%		

^aEstimated data for 1990–2000.

ETo Superzone	Single-Family Units per ETo Superzone			
	Through 1979	1980–1989	1990–2002	
Northern San Joaquin Valley				
Merced	Central	100.0%	100.0%	100.0%
	Average ETo rate	33.1	34.4	34.3
	Average small lot (square feet)	10,064	12,531	14,117
	% large lots in single-family homes (2002)		8.7%	
	Average large lot (square feet)		117,855	
	% multifamily homes (2000)		18.4%	
San Joaquin	Central	100.0%	100.0%	100.0%
	Average ETo rate	33.1	33.4	33.7
	Average small lot (square feet)	8,425	7,639	6,772
	% large lots in single-family homes (2002)		5.4%	
	Average large lot (square feet)		156,596	
	% multifamily homes (2000)		20.9%	
Stanislaus^b	Central	100.0%		100.0%
	Average ETo rate	33.5		33.4
	Average small lot (square feet)	7,831		10,965
	% large lots in single-family homes (2002)		1.2%	
	Average large lot (square feet)		91,781	
	% multifamily homes (2000)		17.0%	
Southern San Joaquin Valley				
Fresno	Inner Coastal	1.5%	1.7%	1.3%
	Central	92.3%	94.6%	95.6%
	Desert	6.2%	3.8%	3.2%
	Average ETo rate	33.1	33.1	32.9
	Average small lot (square feet)	9,499	8,399	8,017
	% large lots in single-family homes (2002)		7.9%	
	Average large lot (square feet)		159,054	
	% multifamily homes (2000)		26.6%	
Kern	Inner Coastal	0.2%	0.1%	0.0%
	Central	90.9%	82.7%	86.5%
	Desert	8.9%	17.2%	13.5%
	Average ETo rate	34.7	34.5	35.5
	Average small lot (square feet)	8,803	10,175	9,181
	% large lots in single-family homes (2002)		12.0%	
	Average large lot (square feet)		150,618	
	% multifamily homes (2000)		18.9%	

^bFirst column through 1997; last column, 1998–2002.

ET ₀ Superzone	Single-Family Units per ET ₀ Superzone			
	Through 1979	1980–1989	1990–2002	
Sacramento Metro Region				
El Dorado	Central	100.0%	100.0%	100.0%
	Average ET ₀ rate	28.3	30.5	32.5
	Average small lot (square feet)	19,609	19,181	15,501
	% large lots in single-family homes (2002)		49.7%	
	Average large lot (square feet)		222,286	
	% multifamily homes (2000)		11.5%	
Placer	Central	100.0%	100.0%	100.0%
	Average ET ₀ rate	30.0	33.0	34.4
	Average small lot (square feet)	14,532	12,943	11,046
	% large lots in single-family homes (2002)		40.0%	
	Average large lot (square feet)		202,839	
	% multifamily homes (2000)		15.9%	
Sacramento	Central	100.0%	100.0%	100.0%
	Average ET ₀ rate	35.5	35.5	35.5
	Average small lot (square feet)	8,722	7,717	7,444
	% large lots in single-family homes (2002)		2.8%	
	Average large lot (square feet)		160,217	
	% multifamily homes (2000)		27.4%	
Inland Empire				
Riverside	Inner Coastal	75.0%	83.0%	74.2%
	Desert	25.0%	17.0%	25.8%
	Average ET ₀ rate	34.1	33.5	34.2
	Average small lot (square feet)	11,039	9,277	8,952
	% large lots in single-family homes (2002)		5.2%	
	Average large lot (square feet)		134,357	
San Bernardino	Inner Coastal	68.5%	58.7%	62.0%
	Central	18.1%	14.2%	9.1%
	Desert	13.3%	27.1%	28.8%
	Average ET ₀ rate	35.4	36.3	36.3
	Average small lot (square feet)	10,464	11,058	9,803
	% large lots in single-family homes (2002)		6.7%	
	Average large lot (square feet)		124,147	
	% multifamily homes (2000)		19.4%	