

The 2010 Census Benchmark for California's Growing and Changing Population

by John Pitkin & Dowell Myers

This is the second in a series of short reports that will present estimates and assessments of 2010 Census results for California, including important characteristics that were asked in previous censuses but not in the short-form-only 2010 Census. These estimates will be modeled to be consistent with other factors that are or will be known from the 2010 Census and other sources. The reports and estimates are being issued under the title of What the Census Would Show (WCWS).

The first report, issued last December prior to the release of the 2010 census counts, focused on estimates of the count. The new round of 2010 estimates in this report, denoted WCWS.2, are the result of simulations using the new, updated version of the California Demographic Futures (CDF) population model. Projective estimates for April 1 2010 have been prepared both to calibrate the model and for purposes of developing new base period estimates and components for the 2011 round of population projections to 2040 for the state.

Assessing the Census Count

The 2010 Census counted 37.25 million people in California, up 3.38 million from the last census, the smallest census-to-census growth since 1930 to 1940. For the first time since becoming a state, California failed to gain seats in Congress with a new census.

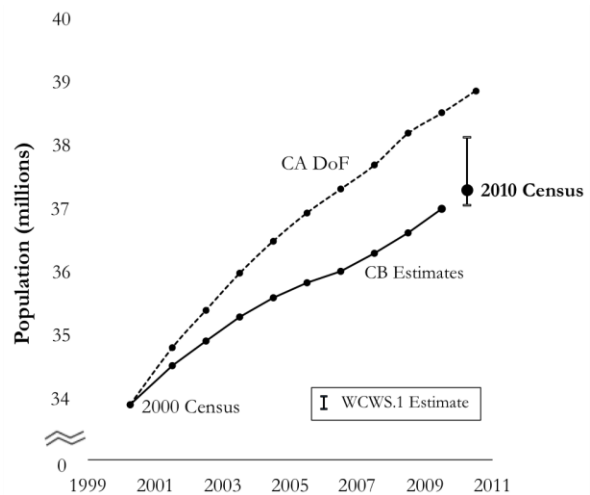
The result also marks the culmination, if not the resolution, of an on-going dispute about the pace of migration to California since the 2000 Census. By 2009, the State of California's official estimate of the population was 1.51 million above the estimate of the U.S. Census Bureau. Our independent demographic analysis issued before the release of the census count projected a somewhat narrower range of

estimates, reflecting uncertainty about the amount of immigration during the decade (Pitkin and Myers 2011).

The Census count released in late December, 2010, was slightly above the Census Bureau's most recent, 2009, estimate, well below current and recent estimates by the State, and near the lower of our own (WCWS.1) estimates. See Figure 1.

In the end, the gap between Census Bureau's most recent estimate of the state's population¹ and the Census count, was very small relative to the state's population, in fact smaller than in any

Figure 1. California Population, 2000 Census, Three Estimates, and 2010 Census

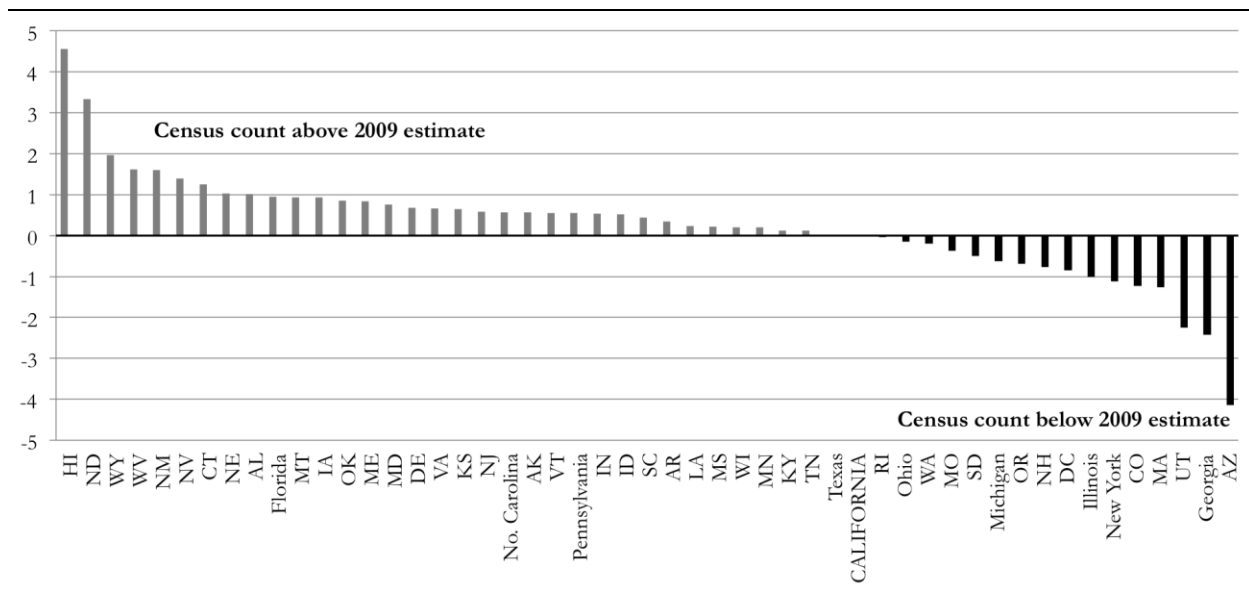


Sources: 2000 and 2010 Censuses, U.S. Bureau of the Census Current Population Estimates (2009), and California Department of Finance.

What the Census Would Show

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Figure 2. Comparison of Population Estimates and 2010 Census Counts for 50 States

Sources: 2010 Census and U.S. Bureau of the Census Current Population Estimates (2009)

Note: See endnote 1.

other state. As can be seen from Figure 2, the Census Bureau's estimate and the 2010 count were also very close for Texas, the second largest state after California. The largest shortfalls of Census count relative to Census Bureau estimates occurred in Utah and Georgia (by >2 %) and Arizona (by >4 %). For a majority of states, the count deviated slightly (less than 1 % above or below) the Census Bureau estimate. In nine states the count exceeded the recent estimate by more than one percent; none of these is among the ten largest. The count for another seven states fell below the estimates by one percent or more.

In order for the much higher official California state estimate to be correct, a deviation of 3.8 % from the Census Bureau's own estimate, it would mean that the Census missed (undercounted) 1.49 million Californians on net. This would represent a large deterioration from 2000 in the accuracy of the census and make the 2010 Census substantially less accurate even than the 1990 Census, the most recent one to have had a large documented net undercount in

California². According to the post-enumeration surveys that are used to estimate census coverage at the state level, almost no Californians were missed on net in the 2000 Census and 2.7 % were missed in 1990.

Historically population coverage has tended to improve from census to census since 1940 when the first systematic estimate by the Census Bureau calculated that more than 5 percent of the U.S. population had been missed.³ The lone exception to the trend was in 1990 when coverage of the national population fell by an estimated .5 percent. In view of this history, a large decline in census population coverage either for the nation or in the most populous state would require a substantial break with the trend toward more complete coverage.

Coverage estimates for California and the nation from the 2010 Census post-enumeration survey won't be released for another year. Until that time we will have to rely on less definitive indicators of the accuracy of the Census.

One indicator is the agreement between the national census population count with earlier estimates: the 2010 Census, demographic analysis and current population estimates of California's population were all within .1 % of each other.⁴ The estimates are based on a combination of population counts from the previous census, recorded numbers of births and deaths, and estimates of migration. A gap between the new census count and estimates worked forward from the previous one (2000) would indicate either that coverage of the population had changed between the censuses – that the net uncounted population had changed -- or that migration has been higher or lower than estimated.⁵

The agreement between the latest population estimates and the 2010 Census count, though not in itself a measure of census accuracy is a positive sign. The possibility cannot be dismissed that offsetting errors produced a count so close to estimates, i.e., that higher than estimated immigration could have been canceled out by a net decrease in coverage of the census. However, it seems unlikely that such an effect would be large because the American Community Survey provides a more statistically robust basis for estimating immigration during the decade than was available before 2000.

Other indicators of the accuracy of the census are found in the census process itself. Census Director Robert M. Groves has reported on the quality of the process in his blog (July 14, 2010. <http://blogs.census.gov/2010census/page/5/>) Here the signs are mixed. The mail participation rate for the nation was 74 %, slightly higher than in 2000, (72 percent short form response), and 73 % in California. Mailing of a Spanish-language questionnaire in predominantly Spanish-speaking neighborhoods increased response in those areas. On the other hand cooperation with the Census has declined since 2000, reflecting the trend to lower participation in most surveys.

Important new indicators will be the 2010 Census data for California with detail by Hispanic origin, race, age, and sex that are to be released in the near future. Past anomalies in these data have indicated problems with census coverage of the population – notably the relative lack of young children of all races and of black males in early adulthood in censuses going back to 1940. They also have indicated past problems with estimates of immigration – notably the large increase in the Hispanic population seen between 1990 and 2000.

These detailed data on Hispanic origin, race, age, and sex will not only help us evaluate the quality of the 2010 Census, they will also provide insights on the sources of population growth. In the meantime, our working assumption is that the level of coverage of the 2010 census yields a net undercount that is no different than in 2000.

What the 2010 Census Will Tell About the Origins of the 2010 Population

Data on race have been collected since the first U.S. Census. Information on Hispanic origin, in the sense of ethnic heritage, not place of birth, was collected for the first time in the 1970 Census. These data are particularly significant for California because of what they can tell us about the sources of population change as well as their implications for issues such as immigration policy and immigrant rights.

The first information for California from the 2010 census that pertains to Hispanic origin, race, and age will be the PL94-171 data, which have already been released for several states and are scheduled for California before the end of March. From the results for the 21 states that have already been released, including Texas and Nevada, we can see (Figure 3) that most of the variance of the Census counts from the pre-Census population estimates is in the Hispanic population. In 15 of the 21 states, the difference between the Census count of Hispanic

population and the estimate was more than 1 %, with 8 states deviating by more than 5 %. In contrast, among the non-Hispanic population, only two of these same states exceeded the 1 % threshold. Despite this variance found for the Hispanic population, it bears emphasis that the difference between the census and estimates in 2010 was smaller than observed in 2000, as shown in Figure 4.

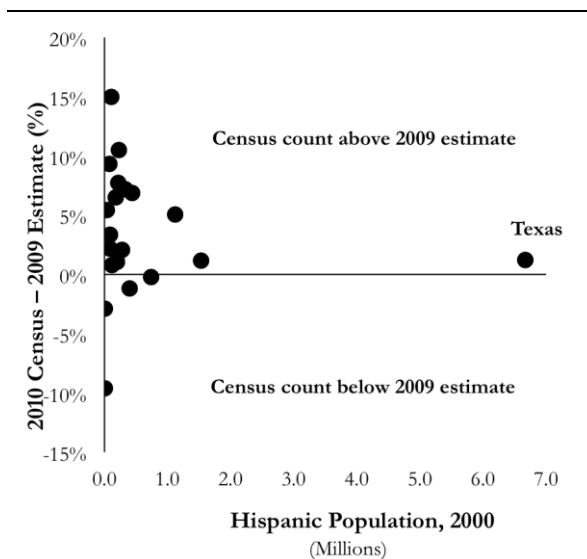
From Figure 3 we can also see that the proportional deviations of the estimated Hispanic populations are largest for states with relatively small and rapidly growing Hispanic populations in new immigrant destinations. Such new settlement areas may be difficult for the population estimates program to track and measure. However, this is not the case in California or Texas where the Hispanic population is both large and long established, and we observe in Figure 3 and 4 that Texas has a very small variance between Census count and estimate. It therefore seems likely that the 2010 Census count of Hispanic population in California, when it is released this month, will be close to the most recent (2009) Census

Bureau population estimate.

The above reasoning has been factored into our projected estimate of what the census would show with regard to number of Hispanic residents in California. In Figure 5 we compare our WCWS.2 (second round) estimate of Hispanic population on April 1, 2010 to the annual trend in Census Bureau estimates and Department of Finance (DoF) estimates. Our estimate is slightly above the Census Bureau trend line but approximately one million lower than the DoF trend line.

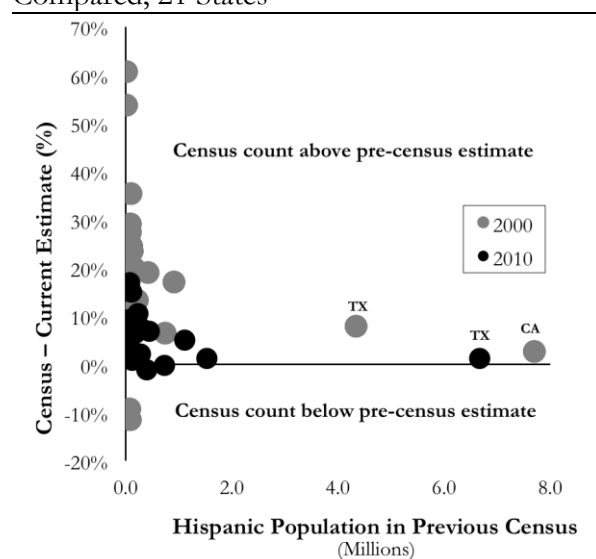
The 2010 WCWS.2 estimate is the result of a simulation using our new version of the California Demographic Futures (CDF) population projection model. The 2005 version has been substantially enhanced in scope and has now been closely calibrated to post-2000 component measures for both California and the U.S.⁶ Predictive estimates for April 1, 2010 have been prepared, both as a test of model accuracy and also for purposes of developing new base period estimates for the next round of the California Demographic Futures (CDF) population projections for the state. Like both

Figure 3. Hispanic Population in 2010 Census and Current Estimates Compared, 21 States



Sources: 2010 Census and U.S. Bureau of the Census Current Population Estimates (2009).

Figure 4. Hispanic Population in 2000 and 2010 Census and Current Estimates Compared, 21 States



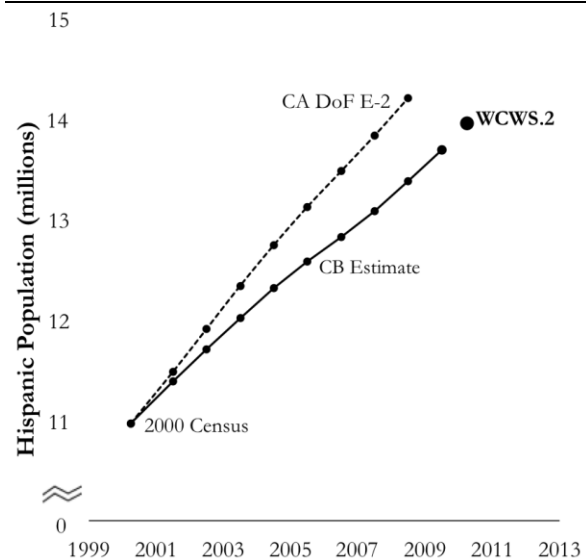
Sources: 2000 and 2010 Censuses and U.S. Bureau of the Census Current Population Estimates (1999 and 2009).

the Census Bureau's and State's estimates, our estimates use the 2000 Census as a base population and incorporate vital statistics data on births and deaths to state residents. Our estimates differ slightly in that they incorporate estimates of domestic migration and immigration from the annual estimates of mobility in the American Community Survey (2002-2009) and the predecessor Census Supplemental Survey (2000-2001).⁷ We now also factor in the 2010 Census total population count for the state as a control on the estimates of net migration for the decade. The WCWS estimate of the Hispanic population (13.95 million) is slightly above the trend of the Census Bureau estimates, as seen in Figure 5.

The continued rollout of progressively more detailed data from the 2010 census will permit more detailed analyses and comparisons to our prior estimates as well as those of the Census Bureau and the state DoF. The SF1 Census data to be released this summer will give information about the age and sex composition of the total and Hispanic population and the population by race and provide deeper insights into differences between the estimates and the Census counts as well as the contribution of immigration to population change in California. However, neither the SF1 nor later data releases will include information on nativity or place of birth.

Absence of data collected in the 2010 Census on nativity or place of birth is a major shortcoming. Ironically, despite the high level of immigration as well as the high level of interest in immigration policy, this Census will provide no data on the nativity or place of birth of the population, even though a question on place of birth had been asked in every census since 1850. The Congress, in its zeal for the shortest possible questionnaire dropped the question from the 2010 Census.

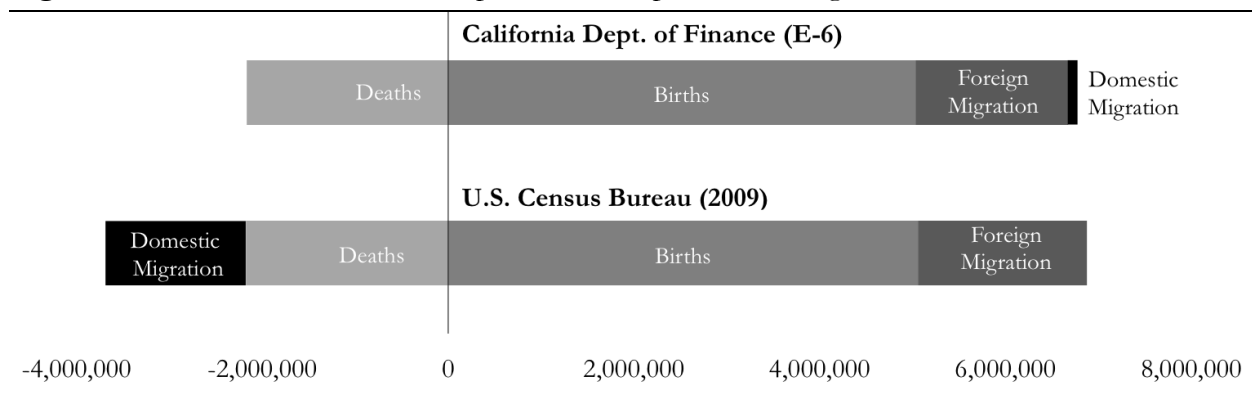
Figure 5. California Hispanic Population, 2000 Census and 2001-2010 Estimates



Source: U.S. Census Bureau and California Department of Finance.

Our analysis series on What the Census Would Show aims to fill this void. Data provided by the American Community Survey on nativity and place of birth cannot provide a direct substitute for the missing census data. Although the ACS is a reliable source for estimates or characteristics of the population, it is a survey and is controlled to population estimates based on the last census. It is subject to both (random) sampling errors and (nonrandom) non-sampling errors and therefore does not provide an estimate of how many immigrants living in the U.S. or any subarea were enumerated in the 2010 Census.

As we have already seen from the data for 21 states, ACS estimates of the Hispanic population do not line up exactly with the 2010 Census. Going forward, it will be critical to understand the extent to which these differences are due to shortcomings in the ACS or to differences between the two censuses in their coverage of the population.

Figure 6. Two Estimates of the Components of Population Change in California, 4/1/00-6/30/09

Source: U.S. Census Bureau & California Department of Finance

Looking Ahead: The 2010 Census as a Benchmark for Population Projections

The 2010 Census, with whatever errors it contains and with its limitations, will be the benchmark for future estimates and projections, including the California Demographic Futures (CDF) projections to be released this spring. We must ask, how consistent is it with the 2000 Census? Any abrupt shifts that are not deliberately accounted for can lead to gross misinterpretations if they are folded into more general trends used for projecting future outcomes. Thus consistency between censuses is a critical issue for understanding past population changes in California – as well as for projecting the future population.

How much difference this makes can be seen from the two estimates of the demographic components of population change between the 2000 Census and mid-2009, shown in Figure 6. The components of natural increase, births and deaths, are essentially the same in the Census Bureau (bottom series) and State of California estimates (top series). Net immigration from abroad is higher in the Bureau's than the State's estimates, by 178 thousand over the nine-year period. By far the largest difference is for domestic migration, which the Bureau puts at minus 1.5 million, i.e., *out*-migration, compared to the State's estimate of net *in*-migration of 105 thousand from other states.

This difference in estimates has substantial implications for population projections for the state. Not only does the new 2010 base population in the two estimates differ by 1.51 million, but even after the DOF adjusts to the new Census Bureau base (as required), a future continuation of the past rate of domestic migration would imply a difference of over 3 million in the projected population of California by 2030.

As noted above, the State's population estimate implies a large decline, equal to 3.8 % of the population, in the net coverage (increase in undercount) of the population between the 2000 and 2010 Censuses. The most definitive statistical basis for estimating 2010 population coverage at the state level – and potentially validating the State's claim of an undercount – is expected to be the results of the post-enumeration re-interview survey that will be released next year.

In the nearer term, the PL94-171 data may provide clues about the validity of the competing estimates. Most non-Hispanic Whites are native-born, Whites make up a large proportion of domestic migrants, and Whites have always been covered by censuses quite well. Accordingly, the State's domestic migration estimates, if correct, should cause the Census to find substantially higher numbers of

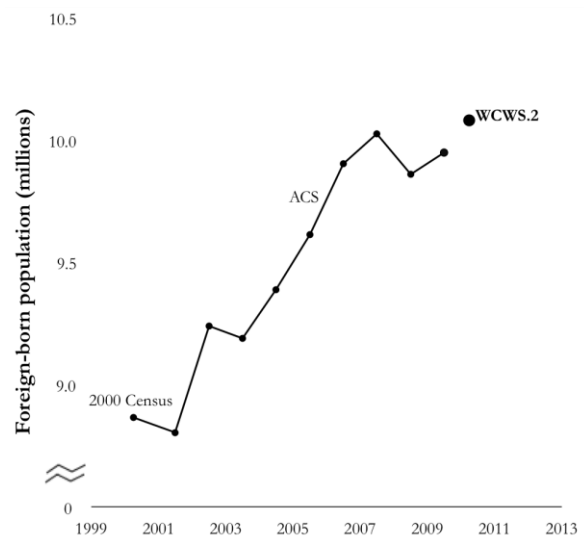
non-Hispanic Whites than expected by the Bureau's own estimates. If the count for this category is substantially higher than the Census Bureau's estimate, that will support the State's estimate of higher domestic migration and hence its claim of a higher population.⁸ Conversely, agreement between the Census and the Bureau's estimate of non-Hispanic White population will tend to support the Bureau's estimate of domestic migration for the decade and also the 2010 Census count of population in California.

The WCWS.2 estimates reported here are made independently of the Census Bureau's estimates. They incorporate estimates of domestic migration based on the ACS rather than data on matched IRS income tax filings used by the Bureau. Gross immigration from abroad in our model is also based on the annual ACS mobility estimates, and in that respect is similar to the Bureau's estimate. Model foreign-born emigration rates are slightly higher in this new estimate. However net immigration for the decade is now raised⁹ as a balancing component so that our April 1, 2010 estimate hits the Census count of 37.25 million.

As mentioned previously, the WCWS predictive estimate of the Hispanic population for California in 2010 is slightly above the Census Bureau estimate (trended from 2009 to 2010). Other detailed population characteristics in our current estimates and the coming CDF population projections include age, sex, race, and nativity. We plan to compare the age, sex, and race current estimates with the 2010 Census results as they are released. However, the estimates for nativity can now be benchmarked against the ACS, which is already available.

Our current estimates of What the Census Would Show include nativity and are shown in Table 1. As seen in Fig. 7, the total foreign born

Figure 7. California Foreign-Born Population, 2000 Census and 2001-2010 Estimates



Sources: U.S. Census Bureau, 2000 Census and American Community Surveys.

population estimated by the ACS in California has fluctuated since rising to a peak in 2006, and in 2009 stood at 26.9 % of the state's population. In contrast, our 2010 WCWS estimate of the percent foreign-born in California, 27.1 %, is above all recent ACS estimates.¹⁰ Since the model underlying the WCWS estimate agrees with the ACS that the foreign-born share in recent years has been flat to trending slightly down, the inference is that the ACS covers the foreign-born population somewhat less well than of the native-born population. (There is no reason to believe that the foreign-born share rose sharply between 2009 ACS and April 2010).

The current plan is for the CDF projections to use the 2010 Census count both as a benchmark for population change and a base for the projections unless and until the coverage study or other evaluation indicates a need to adjust for changed coverage between the 2000 and 2010 Censuses.

Table 1. WCWS.2 Estimates of the Population of California on April 1, 2010, and Components of Change for 4/1/2000 to 4/1/2010, by Nativity and Sex (in millions)

	Total population			Foreign-born		
	Both sexes	Male	Female	Both sexes	Male	Female
Total Population on 4/1/2000	33.87	16.87	17.00	8.86	4.40	4.46
(Census)						
Births	5.45	2.78	2.67	NA	NA	NA
Deaths	2.35	1.16	1.19	0.52	0.27	0.25
Net domestic migration	-1.63	-0.84	-0.79	-0.26	-0.16	-0.11
Foreign-born immigration	2.58	1.36	1.22	2.58	1.36	1.22
Foreign-born emigration	0.59	0.33	0.26	0.59	0.33	0.26
Net native migration*	-0.07	-0.04	-0.03	NA	NA	NA
Total Population on 4/1/2010 (WCWS.2, simulation)	37.25	18.63	18.62	10.08	5.03	5.04

Notes: Net native migration includes born abroad of American parents, Armed Forces overseas, and migration to and from U.S. possessions. Components may not sum to net population change due to rounding.

Source: USC Population Dynamics Research Group, 2010 Census Year California Profile Project, by John Pitkin.

Endnotes

1. The most recent Census Bureau estimates of state population totals are for July 1, 2009, as reported in “Table 1. Annual Estimates of the Resident Population for the United States, Regions, States, and Puerto Rico: April 1, 2000 to July 1, 2009,” NST-EST2009-01 (issued December 2009 by Population Division, Census Bureau). We have adjusted those estimates nine months to April 1, 2010 by adding three-fourths of the growth estimated by the Census Bureau for each state between 2008 and 2009.
2. Net undercoverage or undercount results when more people are missed by the census than are double-counted. For the U.S. as a whole, in the 2000 Census an estimated 6 million people were missed an almost equal number were counted twice, resulting in a net coverage error of + .49 %. U.S. Bureau of the Census, “Summary of Estimated Net Coverage,” DSSD A.C.E. Revision II Memorandum Series #PP-54, December 2002.
3. Demographic analysis estimates. U.S. Bureau of the Census, “The Development and Sensitivity Analysis of the 2010 Demographic Analysis Estimates” Population Division, 1/29/2010.
4. “This is comforting to the statisticians and demographers who are trying to evaluate the national totals. In short, when we try to measure the size of the national population in three different ways we achieve about the same national total.” Census Director Robert M. Groves, blog entry Feb. 7, 2011 <http://blogs.census.gov/2010census/>.
5. Estimates of natural increase, the other component of population change, are thought to be highly accurate due to the nearly complete coverage of births and deaths by the vital statistics registration system.
6. Explanation and results of the 2005 California Demographic Futures projections are reported in Myers, Pitkin and Park (2005) and may be found at <http://www.usc.edu/schools/sppd/research/opdynamics/research-areas-california-demographic-futures.html>.
7. Whereas the domestic migration estimates of the Census Bureau are based on the zip codes of IRS 1040 income tax filers in successive years and those of the California DoF on California driver’s licenses issued to and surrendered by interstate movers.
8. The census count of non-Hispanic White population exceeded the Bureau’s latest estimate by more than one percent in only two of the 22 states for which PL94-171 data have been released, Hawaii and Nevada.
9. By 420 thousand from the combined ACS mobility estimates of gross immigration and WCWS.1 estimate of emigration.
10. The number of foreign born and its share of the total population has leveled off in recent years, fluctuating up and down from year to year in California and many of its major counties. This is reported in Myers, Dowell and John Pitkin, with Sarah Mawhorter, Janna Goldberg, and Seong Hee Min, “The New Place of Birth Profile of Los Angeles and California Residents in 2010,” Special Report, Population Dynamics Research Group, March 2010.

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