Place of Birth and Population Process in Population Projections for the State of California

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by John Pitkin, Analysis and Forecasting, Inc, Cambridge, MA
email: john_pitkin@earthlink.net
and
Dowell Myers, University of Southern California, Los Angeles, CA
email: dowell@usc.edu

Introduction

The structure of the U.S. population is in flux due to more than four decades of high immigration and past variations in fertility and births. In the past several years both immigration and births have declined, complicating the outlook for projections. Nativity and generational status are emerging issues, eclipsing race in salience because of their relevance to many public policies, including most obviously immigration policy. As the largest gateway state, California is in the vanguard of these trends.

The California Demographic Futures (CDF) population modeling system was created to meet the need for population projections by nativity. Projections were issued in 2001 (Myers and Pitkin) and 2005 (Myers, Pitkin and Park). Prior to release of the 2010 Census results, the CDF model was used to develop projective estimates of the Census count and Hispanic population, as well as the foreign-born population (Pitkin and Myers 2010, 2011). New, third generation CDF population projections for California further segment the population by state of birth (California or other) and were made based on the 2010 Census counts with nativity and place of birth characteristics based on the 2010 American Community Survey. A preliminary version was presented at the 2011 meeting of the PAA (Pitkin and Myers 2011a) and a final version incorporating the detailed age-sex-race characteristics from the census was published last April (Pitkin and Myers 2012).[1] (California Demographic Futures materials cited here are available on line at url http://www.usc.edu/schools/price/futures/.)

This paper examines the relationship between place of birth (foreign, California, or other state) and three population processes, immigration, domestic migration, and fertility, in the context of the latest iteration of the CDF model and projections. Large differences in rates of migration and child-bearing among state of birth groups coupled with strong time trends in the state of birth composition of the population indicate gains in forecast accuracy over models that do not segment the population by place of birth, or "single place of birth models." The CDF projections for California will be compared with the projections recently issued by the California Department of Finance (DoF, 2013) and differences that can be attributed to place of birth effects will be identified.

[1] The total population projected for 2020 was 40.8 million, well below the then current state California Department of Finance projection of 44.1 million. The following month the Department of Finance issued a new set of projections including a population of 40.8 million in 2020.

Model Structure

The CDF model is an annual cohort component model with age-sex-race detail extended to identify the population further by nativity, i.e., whether native- or foreign-born; for the foreign-born, by year of arrival in the U.S., and, for the native-born, by state of birth, California or other, and by nativity of mother (defining the "second" and "third" generations). We do this for two reasons.

- First, there is evidence (surveyed in Pitkin and Myers 2011a) of substantial variations in demographic rates by native-born state of birth and among the foreign-born by duration of residence in the U.S. The accuracy of the projections should be improved when these differences in rates are modeled.
- Second, information on place of birth and year of arrival in the U.S. is implicitly modeled but not retained or reported in the conventional cohort component method; this information, on mother's nativity, California state of birth, and foreign-born year of entry to the U.S. is retained and used in the CDF model.

In addition to California, the model treats and describes the population of the rest of the United States as a second region. It does this in order to calculate the number of potential domestic migrants to California.

Projections of the U.S. population with varying degrees of nativity detail have been prepared by Passel and Edmonston (1994), U.S. Bureau of the Census (2000), and Passel and Cohn (2008).

Demographic Processes by Place of Birth

Components of population change have been more variable at the state level than at the national level, e.g., immigration and births declined by a larger percentage in California than in the nation after 2007. Domestic interstate migration, which has varied over time, has no impact on the U.S. population.

The model is run in simulation or calibration mode between the 2000 and 2010 censuses. Demographic rates are calibrated to match vital statistics data (births and deaths) for the period. Migration rates are calibrated as a residual of 2000-2010 population change after accounting for births and deaths.

Immigration

- Distribution of immigration by country of origin, age and sex in calibration period (2000-2010) is based on annual ACS data.
- Level of immigration in calibration period is set to close gap between the 2010 foreign-born population projected forward from 2000 Census and actual, allowing for emigration and domestic migration.
- Future immigration to California is set at fixed share of immigration to U.S. which is set by the results of a Delphi-style survey of other immigration scholars (Pitkin and Myers 2011b).
- What to assume about the 2008-2010 decline in immigration. Is this a dip caused by the Great Recession or a longer-term trend?

Domestic migration

- Schedules by place of birth, age, sex, and race are based on historic (1975-1970, 1985-1990, and 1995-2000) flows (from Census question on residence 5 years ago).
- Domestic migration levels are adjusted to close gap between the 2010 native-born populations projected forward from 2000 Census and 2010 base populations, allowing for 2000-2010 mortality, emigration, and domestic migration at schedule rates.
- Calibrated rates of domestic migration are held constant in projection period with substantial differences by place of birth.

Fertility

- Rates of fertility by place of birth (U.S. / abroad), race-Hispanic origin, and age are calibrated to 2000-2009 births recorded in vital statistics.
- The 2007-2009 decline in births was steeper for foreign-born than native-born women.
- Future birth rates follow trends used in projections of the U.S. Census Bureau (2000).

Projections and Comparison with DoF Projections

Population projections to 2040 are summarized and will be compared with the latest projections of the California State DoF (2013) by age and race. Differences that can reasonably be attributed to specific demographic processes will be identified and discussed.

Implications for the CDF and Other Projections

We will discuss benefits of adding birthplace detail to state-level projections and the pros and cons for making such projections of the population in other subnational areas, other states or subregions of California. The added segmentation not only enriches the model's information about future population characteristics. It also enables more nuanced and accurate measurement and projection of the population processes of immigration, domestic migration, and fertility. At the same time it adds to the complexity of model development and calibration. We suggest that the benefits of such segmentation in terms of projection accuracy for state and other subnational areas may prove to be substantial. We also suggest that segmentation by place of birth may yield greater improvements in forecast accuracy of subnational projections than for national projections.

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