Estimating the Potential Underrepresentation of the Foreign-Born Population in the American Community Survey

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U S C E N S U S B U R E A U

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Abstract

The Demographic Analysis (DA) program at the U.S. Census Bureau uses information from vital statistics records and data on international migration to produce estimates of the population on April 1, 2010 by age, sex, and race (Black/non-Black). In addition, for DA 2010, a separate series of estimates will be produced by age, sex, and Hispanic origin for the population age 19 and under on April 1, 2010. Foreign-born immigration from 2000 to 2010 is a large component of net international migration, and is estimated primarily using data from the American Community Survey (ACS). The representation of recent foreign-born immigrants in the ACS is unknown, and underrepresentation may result in an underestimate of foreign-born immigration. In this paper we present results from our research examining the sensitivity of estimates of foreign-born immigration to alternative assumptions of representation of the foreign born in the ACS. Our main findings show that while the underrepresentation of the foreign-born population in the ACS can be high for some age groups, overall underrepresentation is fairly low.

Data and Methods

The data for this analysis come from the Census 2000 Summary File 1 (SF-1) and Summary File 3 (SF-3), the Dual System Estimates (DSE) of the U.S. population in 2000, and the Census 2000 Supplementary Survey (C2SS). The SF-1 data are the 100-percent short-form data from Census 2000. These data contain information on age, sex, race, and Hispanic origin of the U.S. population on April 1, 2000. The SF-3 data are the long-form sample data from Census 2000 collected from one in six U.S. households. These data contain more detailed information about the demographic and socioeconomic

characteristics (including nativity) of the U.S. population on April 1, 2000. The Dual

System Estimates (DSE) of the U.S. population in 2000 were developed as part of the

Accuracy and Coverage Evaluation (A.C.E.) Revision II project used to identify

population over- and undercounts in the 2000 Census. These estimates were based on

data collected through the Post-Enumeration Survey and are aggregated to the national

level by sex, race (including Hispanic origin), and broad age groups. Finally, we use

estimates of the U.S. population by age, sex, race, Hispanic origin, and nativity from the

C2SS. The C2SS was a large scale demonstration of the American Community Survey

(ACS) and included 1,239 counties and 866,000 HUs (U.S. Census Bureau 2009). Data

are available for both the 2000 ACS (which only included 36 test sites) and the C2SS;

however, the C2SS data are used in this analysis since they are more comparable to later

years of the ACS.

Using these data we create a series of coverage factors to account for

representation of the foreign-born population in the ACS. The first set of factors is

calculated by dividing the foreign-born population in Census 2000 by the foreign-born

population in the C2SS. Foreign-born-specific coverage factors are developed for sub-

population groups by broad age group, sex, and Hispanic origin. This method assumes

that the Census 2000 count of the foreign-born population was completely enumerated

and that there were no coverage-errors, meaning that this is the accurate foreign-born

population. However, information from the A.C.E. estimated that there were coverage

errors in the 2000 Census. In our second approach, we use data from the A.C.E. to

modify the Census estimate of the foreign-born population prior to making any

comparisons to the C2SS. Specifically, we use the Dual System Estimates (DSE) from

the A.C.E. Revision II project to modify the Census 2000 foreign-born population (U.S. Census Bureau 2002a). In order to modify the Census using the DSE estimates, there is the general assumption of independence between the Census and the Post-Enumeration Survey, meaning that the coverage errors in the two surveys are not correlated. Because the independence assumption is thought to be violated by both causal dependence—being included in the Census makes a person more or less likely to be included in the Post-Enumeration Survey—and heterogeneity in the population, we apply correlation bias ratios to the DSE (U.S. Census Bureau 2002b). The correlation bias ratios are taken from the Demographic Analysis (DA) sex ratios by age, sex, and race (Black / Non-Black). After applying the correlation bias ratios to the DSE, we then divide the new DSE estimates by the SF-1 Census counts and apply that proportion to the SF-3 Census count to get the A.C.E. modified Census 2000 population by age group, sex, race, Hispanic origin, and nativity. Dual system estimates are not available by nativity. Therefore, we assume that the A.C.E. results calculated for the total population are applicable to the foreign-born population. If the foreign-born coverage in the DSE cell differs from the coverage of the total population, there will be error in our coverage factor calculation. Finally, we divide the modified Census 2000 foreign-born population by the C2SS foreign-born population to get our coverage factors by broad age, sex, Hispanic origin and nativity. These coverage factors, along with the original coverage factors based on the assumption of full coverage by Census 2000, are then applied to individual years of the ACS from 2000 to 2009 to provide modified estimates of the foreign-born population and alternative immigration flows using information from the question on residence one year ago. Our findings show that while the underrepresentation of the foreign-born

population in the ACS can be high for some age groups, in general, applying the different

factors has a relatively modest impact on our overall estimates of foreign-born

immigration.

References

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