

Methodology for the Population Estimates of the Puerto Rico Commonwealth and Its Municipios by Age and Sex (Vintage 2013): April 1, 2010 to July 1, 2013

The U.S. Census Bureau produces annual estimates of the resident population for the Commonwealth of Puerto Rico and its municipios. The estimates are produced by age and sex using a cohort-component approach as described below.

Overview

The cohort-component population estimation method starts with the 2010 Census base population by age and sex. It then follows each birth cohort as it ages and experiences mortality and migration. The estimates are produced annually by age and sex by updating the base population with data on the components of population change using the following procedure:

- (1) base population
- (2) plus births to Puerto Rico resident women
- (3) minus deaths to Puerto Rico residents
- (4) plus net migrants

This procedure is repeated for each year of the estimation period, by age and sex.

Methodology

Base Population

The 2010 Census population for the Commonwealth and its municipios serve as the starting point for the estimates by sex and single year of age (0-99 and 100+). The population estimates base is updated to reflect changes to the 2010 Census population due to the Count Question Resolution (CQR) program, legal boundary updates reported by January 1, 2013, and other geographic program revisions.¹

Fertility

Final birth data for each month from January 2010 to December 2011, and preliminary birth data for each month from January 2012 to December 2012 were obtained from the Puerto Rico Institute of Statistics. The birth records are retrieved from the Puerto Rico Department of Health's vital registration system. The birth data include month and year of birth, sex of the child, mother's age, and mother's country and municipio of residence. For 2013, we projected births by holding 2012 births constant.

¹ At the time of estimates production, no CQR revisions had been made for the Commonwealth of Puerto Rico or its municipios.

Mortality

Final death data for each month from January 2010 to December 2011, and preliminary death data from each month from January 2012 to December 2012 were obtained from the Puerto Rico Institute of Statistics. The death records are retrieved from the Puerto Rico Department of Health's vital registration system. The death data include month and year of death, sex, age, and the decedent's country and municipio of residence. For 2013, deaths were projected by holding 2012 deaths constant.

Net Migration

Commonwealth

The migration estimates used in producing the annual Puerto Rico Commonwealth population estimates consist of two components: in-migrants from the United States (US) to Puerto Rico (PR) and out-migrants from Puerto Rico to the United States. The US/PR migration was estimated using a respondent's current residence and the "Residence One Year Ago" (ROYA) question in the American Community Survey (ACS) and the Puerto Rico Community Survey (PRCS). People who indicated on the PRCS that they lived in the United States one year ago are considered immigrants. People who indicated on the ACS that they lived in Puerto Rico one year ago are considered emigrants. Because children under 1 year of age would not have a residence one year ago, the value is assumed to be one-half of the estimate for the 1 year olds. Total US/PR in-migrants and out-migrants by sex for the Commonwealth are calculated using the 3-year (2010-2012) ACS/PRCS files. Age distributions are derived from the 3-year (2010-2012) ACS/PRCS files.

Municipio

Net migration for the Puerto Rico municipios was estimated using a residual method. The expected population for each municipio on April 1, 2010 was projected from the Census 2000 count by accounting for change since that census due to births and deaths. Differences between the expected population and the population enumerated in the 2010 Census are assumed to represent net migration over the decade. The residual, which represents events over a period of 10 years, was converted into an annual average migration rate by age and sex for each municipio. Net migration is then calculated each year by multiplying the population estimate by the average annual rate.