

ESTIMATES & PROJECTIONS 2009
Estimates for 2009, 2012, 2014 & 2019

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Description

The Pitney Bowes MapInfo Canadian Estimates and Projections database contains demographic variables such as total population and households as well as the characteristics of populations (for example, age and sex composition) and households (for example, income). These variables are "updated" from their Census 2006 values, where possible, via processes described in the Methodology Statement. Other variable groups in the database include: marital status, family composition, educational attainment, labour force participation, occupation, and home language.

Sources of Information

Strategic Projections Inc. (SPI), Statistics Canada, and Pitney Bowes MapInfo

Updates

Annual

Coverage Area

National

Overview

This methodology statement describes the procedures used by Pitney Bowes MapInfo to create the 2009 update to the Canadian demographic estimates and projections database. Pitney Bowes MapInfo estimates and projections for Canada are updated annually. The reference date for the data is always July 1, which is considered the midpoint for the reference year. The reference date should be considered an annual midpoint and not, strictly speaking, the population number for a location on July 1.

This methodology statement describes procedures used to produce the basic variable types, for example, total population and population characteristics such as age and sex, as well as total households and household characteristics such as income and consumer expenditure potential. Processes are also in place to validate the data against independent sources and to assure data quality in terms of demographic, geographic, and mathematical consistency.

The Pitney Bowes MapInfo demographers, geographers, and statisticians responsible for producing this data update have over 25 years of experience in producing demographic estimates and projections for the U.S. and Canada. The methodologies used to develop and update the Canadian demographic estimates and projections build on this expertise using a combination of traditional demographic techniques as well as innovative processes, which take advantage of proprietary resources.

Methodology

Census 2006 Results and Adjustments for Undercount

In the development of the estimates and projections, the base 2006 census population and household counts were adjusted using the Statistics Canada "post-censal" estimates of net under-coverage from the 2001 Census coverage evaluation survey. Although total population and household counts from the 2006 Census were available at the time of the development of the estimates and projections for the 2009 series, official estimates of net census undercount were not yet available. In doing so, Pitney Bowes MapInfo made adjustments to the 2006 census population (base) to account for the population missed in the 2006 Census. The 2006 update reflects further revisions to undercount-adjusted census 2001 counts based on the latest available amendments provided by Statistics Canada. Two variables are included in the database – 2006 "adjusted" population and 2006 "adjusted" households – which show the effects of the undercount adjustment. In fact, these two variables provide the most appropriate base for making assessments of the underlying demographic trend for any geographic area.

Top-Down and Bottom-Up

For the most part, the data are created at the smallest geographic level – Dissemination Area – then rolled up to all higher geographic levels via a set of correspondence tables. However, in order to assure consistency of small area estimates with higher level provincial and national estimates, Pitney Bowes MapInfo employs a top-down / bottom-up methodology.

The estimation and projection methodology involves a combination of top-down methods (national to census subdivision), using traditional demographic techniques, and bottom-up methods (dissemination area to census subdivision) using demographic techniques along with proprietary spatial modeling techniques. Significant efforts are applied to the task of integrating the latest Statistics Canada data into the Pitney Bowes MapInfo demographic update process. The 2006 census information is used as the benchmark for all of the estimates and projections in this release.

Control totals (top-down estimates and projections) based on an economic-demographic model are provided annually by **Strategic Projections Inc.(SPI)** for total population at the census subdivision (CSD) level and for age and sex distributions at the census division (CD) level. These controls are consistent with the adjustments for undercount in the 2001 Census.

Pitney Bowes MapInfo produced all current and projected variables at the dissemination area (DA) geographic level and aggregated results to all higher levels of geography. For this purpose, Pitney Bowes MapInfo reconfigured all relevant historical demographic data at the 2001 DA level onto the new 2006 dissemination area cartography. Differential growth trends across all geographies are captured by taking into account patterns of historical growth, local population density, adjacency to growth areas, type of housing, and recent housing start development trends. The bottom-up variables were made consistent with the top- down “control totals” through a process of iterative proportional fitting, which ensures both horizontal and vertical consistency across all geographic layers.

Population Characteristics

The principal population characteristics in the Estimates and Projections database are age and sex. These characteristics are derived through a cohort component method that takes into account the aging of the population, mortality rates by age and sex, fertility rates, and differential migration by age and sex. Other variables with a population base are labour force variables, occupation, marital status, and educational attainment. See the section on Census Update Variables for a description of the methodological considerations in the development of these variables.

Household Characteristics

The principal household characteristics in the Estimates and Projections database are age of household maintainer and household income. The distribution of households by age of maintainer is derived from the cohort component model results and the probabilities associated with a person in a given age group being the primary maintainer of a household as defined by Statistics Canada. Household Income is derived from an economic-demographic model developed in part by Strategic Projections, Inc. for higher levels of geography. For smaller geographic layers, including Dissemination Areas, income trends based on census information are combined with regional income trends in order to estimate and project household income. The distribution of households by income is derived from a process which advances census-based income distributions in a manner consistent with the trend in average income for a DA. All income figures are given in current year dollars for each year of the series. Note that this presentation does not involve the use of an income deflator to take into account inflation.

Census Update Variables

The set of variables referred to here as "Census Update Variables" is derived from the 2006 Census and applied to the current year estimates of the population by selected age groups. These variables include: Educational Attainment, Families, Home Language, Labour Force, Marital Status, and Occupation. In essence, the percent distribution of the population, as it was at the dissemination area level in 2006, is applied to the new, current year base population. While this is a so-called "straight line" projection method, users should realize that the distributions will shift as they are rolled up to all higher geographies. The distributions shift, for example, at the CSD level according to the differential population growth of the component DA's. If, for example, higher educational attainment areas grew faster than lower educational attainment areas, then a municipality may show a higher pattern of educational attainment.

Note on Data Sprinkling

Any set of data that involves summations within and across geographic units, as well as within and across demographic categories necessarily involves numerical rounding due to ratio adjustments such as those used in iterative proportional fitting. MapInfo has developed procedures to eliminate differences in summations due to rounding by systematically "sprinkling" the differences across subcategories within a data series in a manner that preserves the data distribution while simultaneously providing exact demographic and geographic summations.

General Caveats and Conclusion

It is particularly important for users to use caution when comparing estimates and projections with census data in the years immediately following a census. Pitney Bowes MapInfo has made adjustments to the Census 2006 counts in order to maintain time series consistent with Statistics Canada's estimates and projections programs, particularly the post-censal estimates program and the population projections program. In practical terms this means that after adjustments for undercount, the implied growth rates for the total population are somewhat slower than growth rates when compared to raw census counts. Users are cautioned not to compare "raw" census counts with Pitney Bowes MapInfo current year estimates in order to derive population growth rates.

A similar caution should be exercised when comparing age structures – percent of the population in each age group – before and after the census. The MapInfo estimates and projections take into account the latest census counts by age as well as the most reliable information on components of population change by age – fertility, mortality, and net migration (both internal and international).

In general, data are suppressed when no data are available for the census base year. However, imputations are made in some cases in order to enhance the overall consistency of the data.

Data are best estimates of how observed trends and regional projections might roll out at a small spatial scale. They are not based on anecdotal data and should be used in addition to local area knowledge that analysts may have. Due to updates in the source data, improvements made to methodologies, and geographic changes, users are urged to use caution when making year-over-year comparisons. In general, census year to current year average annual change is more stable than year-over-year change.

Geographic Availability

Estimates & Projections are available for all levels of geography, including FSAs