Canadian Demographic Data®

January 2016
(June 2015 Release of Canada Wealth)

Product Guide
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January 2016
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Chapter 1: Canadian Demographic Data

Introduction

Pitney Bowes (PB) provides the most comprehensive and well-organized suite of demographic data products for Canada. The data are widely used and are available for the analytic purposes of businesses and organizations in both the private and public arenas. With the release of results from the 2011 Census and the National Household Survey (NHS), the PB data team took the opportunity to significantly expand its data suite to include Base Year Estimates (2011) and Current Year Estimates (in 2014). This document describes various aspects of the data build process for our annual Demographics Update, including the rationale and methodology for incorporating NHS data into the demographic Estimates & Projections (E&P) database. Note that separate documentation is available for data products based on 2011 Census “short form” -- PowerPack PP1 through PP4 -- and the “raw” or “as is” National Household Survey data. Please note that the “raw” or “as is” NHS data is only sold as part of a Base Year Estimates package or along with the full Estimates and Projections database.

The suite of demographic data products described in this document includes:

• Chapter 2: Canada Estimates and Projections (E&P)
  • Base Year Estimates
  • Current Year Estimates
  • Projections (3, 5, and 10-year)
  • Update Profile (mainly comprised of Current Year Estimate percentages)
• Chapter 3: Canada Expenditure Potential (CanEx)
• Chapter 4: Canada Food Expenditure Potential (CanFoodEx)
• Chapter 5: Canada Household Facilities and Equipment (CanHFE)
• Chapter 6: Daytime Population
• Chapter 7: Disposable and Discretionary Income (DDI)
• Chapter 8: Canada Wealth

Each database specification described in the following chapters includes a brief description of its subject contents and the following items: coverage area, number of variables, number of records by geographic level,
Census and National Household Survey Overview

Pitney Bowes significantly revised and updated its demographic data product offering for Canada starting with the 2014 annual update. However, Census Power Packs PP1 through PP4 containing short-form 100% data from the 2011 Census are not affected. Users will find those Power Packs essentially similar to those released following Census 2006, although some data items, such as Home Language data, now derive from short-form 100% questions whereas in 2006 they were captured in the census 20% sample questionnaire.

The biggest change for data consumers in this Census cycle was that the traditional census-based Power Packs PP5 through PP8 were not produced by PB because the 2011 Census did not include a mandatory long-form sample. In place of the mandatory long-form 20% sample, Statistics Canada fielded the voluntary National Household Survey (NHS). While there has been considerable debate within and around the data-user community with regard to the NHS, the Pitney Bowes data team completed an extensive review of the data. This note describes the results of that review and their implications for PB demographic data products.

Essentially, PB has packaged the National Household Survey data in two forms:

1. An “as is” version of the NHS Profile database – National Household Survey (2011 “as is” data) – organized in easily accessible database formats. This data maintains Statistics Canada’s standard area/cell suppression rules for confidentiality but contains data where response rates were higher than 50 percent. That is, data suppressed for “quality” reasons is found unsuppressed in the “as is” NHS data. This data is only available along with either the Base Year Estimates data or the full Estimates & Projections database.

2. An expanded set of Estimates & Projections (E&P) data bundles. These include: Base Year Estimates, Current Year Estimates, and Projections. This data is consistent with the undercount-adjusted census data as well as NHS-derived estimates data. That is, the Base Year Estimates data is “normalized” to undercount-adjusted census results so that trending is consistent from 2011 to 2016 and beyond. In addition, most of the Census and NHS-derived Base Year
Estimates are also available in the Current Year Estimates. Significantly, both base-year and current-year NHS-derived estimates benefit from a transparent imputation process for suppressed and "low quality" data that respects higher geo-level distributions. Users will find no "black box" methods that obscure the challenges of working with the voluntary or self-selected NHS sample.

Statistics Canada’s 2011 National Household Survey (NHS) presented special challenges to the PB data team. This note describes those challenges and the methods used by the data team to mitigate them. The objective here is to provide context and transparency around the PB data team’s approach to NHS-based data products.

Executed in 2011 along with the 100 percent short-form census enumeration, Statistics Canada’s National Household Survey replaced the traditional census long-form survey. The NHS was delivered to approximately three-in-ten Canadian households. While the 2011 NHS questionnaire was essentially the same as the 2006 long-form census questionnaire, the most significant and controversial aspect of the NHS methodology was its voluntary nature. While many surveys used by the market research community and others are voluntary in nature, consumers of census long-form data have traditionally relied on reasonably accurate survey-based estimates for small geographic units. Traditional, mandatory long-form census survey data provides estimates of population characteristics, such as educational attainment and workforce participation, and household characteristics such as household composition and income. The still-mandatory short-form census enumeration captures the counts or magnitudes of population and households for small areas and higher geographies as well as a limited set of characteristics.

Accuracy of the “characteristics” estimates from the NHS (as for any sample survey) is compromised by two broad types of error: sampling error and non-sampling error. Sampling error stems from the fact that the entire population was not interviewed. All sample surveys suffer from sampling error, and it is generally understood that the “grain of salt” applied to any survey result means that the estimate is good, plus or minus some small amount. If survey respondents are selected “randomly” and respond in sufficient numbers, sampling error can be accurately measured using basic statistics. Data users can know confidently how much salt to sprinkle on the estimate. However, if a survey design such as the NHS promotes randomness in respondent selection but response rates (a form of non-sampling error) are insufficient in some areas, measures of sampling error are compromised for those areas.

Non-sampling error also stems from factors unrelated to the sampling design, including such things as ill-formed questions, undelivered questionnaires, and complete or partial non-response. For example, the response rate of the NHS, nationally, was 68.6 percent. Since three-in-ten Canadian households were sampled, the effective sampling rate, nationally, was 21 percent of Canadians. That may sound like the one-in-five households sampled in the mandatory 2006 long-form census, but the relatively high non-response rates in the 2011 NHS makes comparisons suspect. For example, differences between a 2011 number and a 2006 number include real change plus an unknown amount of non-response bias in addition to any sampling error. On a positive note, Statistics Canada has published the non-response rates for all geographic units down to dissemination areas, allowing some measure of data quality assessment for end-users. Still, the general word of caution is to take care in drawing conclusions from comparisons between 2006 census data and 2011 NHS data.

Another source of non-sampling error should cause no concern with respect to the NHS – errors in processing the results. Statistics Canada, in keeping with its exceptionally high standards, describes in great detail how statisticians matched Census 2006 records with NHS records, conducted
additional surveys of non-respondents, compared NHS results with Census 2006 tabulations, and checked results with those of other Statistics Canada surveys and administrative records. The office of “edits and imputations” was able to correct many erroneous or inconsistent answers based on these analyses. Official NHS released data products reflect these efforts. Still, with respect to non-response, Statistics Canada has not officially released NHS results where non-response was higher than 50 percent. The Pitney Bowes data team used officially released NHS Profile data products as well as custom extracts of unreleased dissemination area data in order to make a full accounting of NHS results.

The Pitney Bowes data team has taken several extra steps to add value to NHS-based data products and provide end-users with a complete suite of data that should prove useful. As noted above, PB released two data products based on the NHS Profile data:

1. National Household Survey “raw” or “as is” Data with specific “value adds” provided by PB and described here:
   a. PB organized the data into standard database format for output to MapInfo TAB or MS Access formats. This process includes variable naming with long descriptions.
   b. All NHS Profile data from Statistics Canada contain geographic suppression for areas of fewer than 40 people to protect confidentiality. The PB “as is” NHS data product provides full geographic rosters – while respecting and maintaining Statistics Canada’s area/cell suppression for confidentiality – to enable proper digital mapping.
   c. Where the data are suppressed due to quality concerns, for example greater than 50 percent non-response, PB provides all the data along with quality suppression flags and global non-response rates (GNR) so that users can use those in their analysis.
   d. For partially suppressed data, the NHS “as is” data contains “zeros” and suppression flags in lieu of Statistics Canada’s “x” so that users can evaluate suppression with numeric formats.
   e. Nearly the entire NHS Profile database is provided in this “as is” data product except for several breakouts by male and female.
   f. This data is only available by request as part of a Base Year Estimates package or along with the full E&P database.

2. Base Year and Current Year Estimates: As described above, this data includes a selected set of NHS-derived data themes along with undercount-adjusted census results determined in advance to have high value for end-users. The following processes created a set of Base Year (2011) and Current Year (2016) Estimates from a combination of Census 2011 short-form data and National Household Survey data:
   a. NHS content is selected on the basis of tables that are valuable based on PB data team experience and input from customers.
   b. Suppressed and “low quality” data imputed reasonable data from higher level geographies in lieu of NHS data where quality concerns and/or standard Statistics Canada suppression exists. Confidentiality standards are not compromised because imputed data is essentially modeled not personal data.
   c. Normalize the selected short-form census data and NHS content to undercount-adjusted census results. That is, percent distributions are applied to adjusted totals. This step provides consistency for comparisons of characteristics and trends over time.
The Toronto-based PB data team at takes great pride in producing reliable and accurate demographic and other data sets for our clients. The PB data team fully acknowledges the challenges of the NHS data. However, we have every intention of working with our clients to understand the limitations of the data but also to derive appropriate value for business decisions. The team has a long history of using solid demographic and database technologies, statistical routines, and other methods to produce a steady stream of annually updated data products for Canada, the United States, the United Kingdom, and Australia. National statistical agencies, including Statistics Canada, provide the data sets that form the bedrock of the PB data products. However, only the PB data team is in a position to add value by extending currency, geographic detail, and derivative analyses to the data.

We welcome any and all comments or questions regarding our approach to demographic data in general and, specifically, the challenges posed by the National Household Survey.

### Number of Records by Geographic Layer

All databases contain eight layers of geography with the corresponding number of records by layer as indicated below.

<table>
<thead>
<tr>
<th>Code</th>
<th>Geographic Layer</th>
<th>Source / Vintage</th>
<th>Records</th>
</tr>
</thead>
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<tr>
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<td>Nation</td>
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<tr>
<td>PR</td>
<td>Province / Territory</td>
<td>Pitney Bowes, 2011</td>
<td>13</td>
</tr>
<tr>
<td>CMA</td>
<td>Census Metropolitan Area / Census Agglomeration</td>
<td>Pitney Bowes, 2011</td>
<td>147</td>
</tr>
<tr>
<td>CD</td>
<td>Census Division</td>
<td>Pitney Bowes, 2011</td>
<td>293</td>
</tr>
<tr>
<td>FSA</td>
<td>Forward Sortation Area</td>
<td>Pitney Bowes, September 2015</td>
<td>1,642</td>
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<td>CT</td>
<td>Census Tract</td>
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<td>Dissemination Area</td>
<td>Pitney Bowes, 2011</td>
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</tbody>
</table>

### Methodology Statements

The following sections describe the methods we used to create the Canadian Demographic Data databases.
Overview of Demographic Methods

This methodology statement describes the procedures used by Pitney Bowes to create the 2016 update to the Canadian demographic estimates and projections database. Pitney Bowes' 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. The Pitney Bowes Estimates and Projections database for Canada contains variables for eight layers of geography, including a national layer.

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 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.

Census 2011 Results and Adjustments for Undercount

In the development of the estimates and projections, the base 2011 census population and household counts were adjusted using the latest Statistics Canada post-censal estimates of net under-coverage. In doing so, Pitney Bowes made adjustments to the 2011 Census population (base) to account for the likely distribution of the population missed in the 2011 Census.

These undercount-adjusted base variables are the bedrock of the new Base Year Estimates database. All Base Year Estimates variables, including both short-form census variables and the NHS-based estimates, are normalized to adjusted population and households. This process provides for proper trending and comparability with the updated Current Year Estimates data as well as the Projections data.

Imputation Strategy for National Household Survey Estimates

Perhaps the biggest challenge of developing reasonable estimates based on “raw” National Household Survey data is dealing with the issue of non-response. As indicated above, for Canada nationally the NHS response rate was 68.6 percent. That level, of course, suggests that nearly one-in-three Canadians, when presented with the NHS survey questionnaire, did not respond. The reasons are likely quite varied, but the result is increased uncertainty in the tabulated findings. For small geographic areas, such as Dissemination Areas, Global Non-Response (GNR) can vary widely. By province, DA level non-response ranged from a high of 41 percent average GNR across all DA’s in PEI to a low of 15 percent average GNR across all DA’s in Northwest Territories.

Statistics Canada has publication standards for data deemed unreliable. For example, after the 2006 Census results from the long-form sample data were suppressed if non-response was greater than 25 percent. That standard “decreased” with the National Household Survey such that results were...
suppressed only if the non-response was greater than 50 percent. That standard allowed Statistics Canada to note that 89.2 percent of the population was covered by "reasonable" data in areas with non-response less than 50 percent.

Essentially, the problem for data developers and data users is twofold:

1. There is more variability in the response rates to the NHS across Canada, compared to the variability in 2006 data. Therefore, NHS results are not strictly comparable to the results of the 2006 Census long-form data, and

2. A strategy is needed to produce reasonable estimates based on the data available. The strategy chosen by the PB data team is one of "imputation" for unreliable and/or suppressed data.

Imputation involved substituting a reasonable number for an unreasonable or missing number in the data. Some imputation routines can be quite complicated; for example, one method called "multiple imputation" involves substituting an entire distribution of data such that the error in the data can be calculated and the uncertainty quantified. Another method may involve "balancing" the sample such that know indicators like age and sex distributions match up to the sample. A third method is the "nearest neighbour" method whereby adjacent DA's with better data are used as "donors" of data for DA's with unreliable results. The problem with that approach, with regard to NHS data, is that high non-response rates tend to cluster over large areas and regions. Nearest neighbours with good data are not so near.

The PB data team rejected these methods in favor a more transparent use of "higher level" data from geographic units that contain the DA with unreliable data. The method is essentially a "substitution of the mean" approach in that the higher level distributions can be interpreted as the mean across its component smaller geographic units. One benefit of this approach is that the imputed data does not distort the higher level data when rolled up. The disadvantage of this approach is that small area differences, from neighbourhood to neighbourhood, can be muted somewhat. Details of the implementation of this method are proprietary; however, based on extensive analysis of the results, reasonable data has been produced for areas that suffered high levels of non-response or data suppression for confidentiality reasons. The case of household income data is somewhat distinct and is discussed below in the methodology section for income.

The key caveat for data users is to use care in drawing conclusions from comparisons between NHS-based data and results from the 2006 long-form data. The voluntary nature of the NHS is a substantive methodological difference that needs to be taken into account.

**Top-Down and Bottom-Up**

In general, apart from using NHS inputs as described above, the set of demographic techniques used to develop the E&P data remains unchanged with this update. 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 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
Methodology Statements

Statistics Canada and Canada Post data into the Pitney Bowes demographic update process. The 2011 census information is used as the benchmark for the population and household 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 2011 Census.

Pitney Bowes 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 reconfigured all relevant historical demographic data at the 2006 DA level onto the 2011 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. While marital status is a census short-form derived estimate, the other variables are part of the NHS-derived estimates. See the full variable list for the additional NHS-derived population estimates.

Household Characteristics

Several additional household and housing unit characteristics have been added to the database in the Base Year Estimates and the Current Year Estimates. Nevertheless, 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 model 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.

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. Pitney Bowes 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 has made adjustments to the Census 2011 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’ current year estimates in order to derive population growth rates. However, the particular advantage of the new Base Year Estimates database is that the implied trending from the base year to current year and beyond is reasonable.

A similar caution should be exercised when comparing age structures – percent of the population in each age group – before and after the census. The Pitney Bowes 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 (base year) to current year average annual change is more stable than year-over-year change.

Table Structures

See CanadianDemographicData_variables2016.xls in the docs\ folder on this CD for a complete list of the variables in this data product. Please note the addition of the spreadsheets with the variable listings for the Base Year Estimates and the Update Profile data bundle, which are new to the Canadian Demographic Data suite. This file is a Microsoft Excel workbook. If you do not have Microsoft Excel, then you can download the Excel Viewer from http://office.microsoft.com.
Chapter 2: Canada Estimates and Projections (E&P)

The Pitney Bowes demographic Estimates and Projections (E&P) database contains 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 Base Year values to their Current Year and Projection values, 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.

Product Specifications

Number of Variables

1,318

Plus 169 variables contained in Update Profile data bundle.

Coverage Area

This database covers the entire area of Canada’s 13 provinces and territories.

Reference Dates

Chapter 3: Canada Expenditure Potential (CanEx)

The Pitney Bowes Expenditure Potential database provides dollar estimates of the amount of money spent annually, in aggregate, on detailed categories of consumer expenditures. The estimates are based on coefficients developed from the linkage of Statistics Canada’s Survey of Household Spending with Pitney Bowes’ PSYTE HD Canada segmentation system.

Product Specifications

Number of Variables
362

Coverage Area
This database covers the entire area of Canada’s 13 provinces and territories.

Reference Date
July 1, 2016.

Methodology Statements

These statements supplement the ones described in Methodology Statements on page 9.

The Canada Expenditure Potential database is developed using Statistics Canada’s Survey of Household Spending (SHS) and Pitney Bowes’ PSYTE HD Canada cluster system. The survey respondents are geocoded by Statistics Canada to their dissemination area (DA) of residence. Then, while maintaining strict confidentiality and data suppression standard, Statistics Canada aggregates and tabulates all SHS data by PSYTE HD Canada cluster. Coefficients are derived by Pitney Bowes such that, when
Methodology Statements

applied against an independently derived estimate of aggregate household expenditures at the DA level, an estimate of detailed consumer expenditures is generated. Careful attention is paid to statistical reliability due to sample size, and in some cases imputations and substitutions are made to maintain reliability and consistency within the database.

Respondents to Statistics Canada’s SHS questionnaire recall amounts spent on several hundred consumer goods and services, during the previous calendar year. Several features of the survey assist the respondents in recalling their expenditures. Statistics Canada summarizes expenditure data of approximately 14,000 full-year households by PSYTE HD Canada cluster for detailed consumer expenditure variables based on reference material that Pitney Bowes has provided. Pitney Bowes analyzes these data to discern patterns and correlates to estimate missing values using a range of statistical methods. Expenditure estimates are modeled for small areas based on national Canada Expenditure Potential average household expenditure data (proportions) by PSYTE HD Canada cluster, and Pitney Bowes’ current household, income and expenditure estimates.

Caveat: Pitney Bowes fully supports the use of the Canada Expenditure Potential data for ranking geographic areas. These data effectively score the expected expenditure of very small to large markets in terms of the expenditure potential of their residents. A secondary use of these data is to generate expected total expenditures for specific goods and services deriving from the residents of the areas/regions. These data can be used as a reference tool in conjunction with a firm’s own sales to derive first approximation estimates of market share. However, when using Canada Expenditure Potential for these purposes, it should be noted that estimates at market or national levels may differ from actual or estimated absolute dollar totals from alternative data sources.
Chapter 4: Canada Food Expenditure Potential (CanFoodEx)

The Pitney Bowes Canada Food Expenditure Potential database provides dollar estimates of the amount of money spent annually, in aggregate, on detailed categories of food products, including restaurant spending and food consumed away from home. The estimates are based on coefficients developed from the linkage of Statistics Canada’s Food Expenditure Survey (FoodEx) with Pitney Bowes’ PSYTE Canada Advantage segmentation system.

Product Specifications

Number of Variables

274

Coverage Area

This database covers the entire area of Canada’s 13 provinces and territories.

Reference Date

July 1, 2016.

Methodology Statements

These statements supplement the ones described in Methodology Statements on page 9.

The Canada Food Expenditure Potential estimates database is developed in manner similar to the Canada Expenditure Potential database. Respondents to Statistics Canada’s Food Expenditure Survey are asked to maintain a daily record of all food expenditures (excluding those while on a trip overnight or longer) using two one-week diaries. For meals and snacks in restaurants, respondents are asked to record the total cost of meals/
Methodology Statements

snacks. Statistics Canada summarizes food expenditure data of the 5,999 households by PSYTE Canada Advantage cluster for the detailed food expenditure variables, based on reference material provided by Pitney Bowes. Pitney Bowes analyzes these data to discern patterns and correlates to estimate missing values using a range of statistical methods. Canada Food Expenditure Potential estimates are modeled for small areas based on national average household food expenditure data (proportions) by PSYTE Canada Advantage cluster (which were subsequently walked over to PSYTE HD clusters), and Pitney Bowes’ current household, income and expenditure estimates.

Caveat: Pitney Bowes fully supports the use of the Canada Food Expenditure Potential (CanFoodEx) data for ranking geographic areas. These data effectively score the expected expenditure of very small to large markets in terms of the food spending potential of their residents. A secondary use of these data is to generate expected food expenditures for specific food categories as a "demand estimate" for the residents of the areas/regions. These data can be used as a reference tool in conjunction with a firm's own sales to derive first approximation estimates of market share. However, when using CanFoodEx for these purposes, it should be noted that estimates at market or national levels may differ from actual or estimated absolute dollar totals from alternative data sources.
Chapter 5: Canada Household Facilities and Equipment (CanHFE)

The Pitney Bowes database of Canada Household Facilities and Equipment contains estimates of dwelling characteristics and selected household equipment based on the relevant portion of Statistics Canada’s Survey of Household Spending (SHS). The estimates are based on coefficients developed from the linkage of the SHS respondents with Pitney Bowes’ PSYTE HD Canada segmentation system.

Product Specifications

Number of Variables
107

Coverage Area
This database covers the entire area of Canada’s 13 provinces and territories.

Reference Date
July 1, 2016.

Methodology Statements
These statements supplement the ones described in Methodology Statements on page 9.

Respondents to Statistics Canada’s SHS Survey are asked for information on dwelling characteristics and selected household items by interviewers. This type of information was collected as of December 31st of the reference year (2007), from approximately 14,000 full year and part year households. Statistics Canada summarizes dwelling characteristics and household equipment data by PSYTE HD Canada cluster based on reference material that Pitney Bowes has provided. Pitney Bowes analyzes
Methodology Statements

these data to discern patterns and correlates to estimate missing values using a range of statistical methods. Household estimates are modeled for small areas based on national Canada Household Facilities and Equipment proportional rates matrix by PSYTE HD Canada cluster, and Pitney Bowes' current household estimates.

Caveat: Pitney Bowes fully supports the use of the Canada Household Facilities and Equipment data for ranking geographic areas. These data effectively score the expected number of households in very small to large markets in terms of their dwellings potentially having certain characteristics or having certain household items. It should be noted that estimates at market or national levels may not reflect actual or estimated absolute total counts from alternative data sources.
Chapter 6: Daytime Population

Daytime Population estimates are based on compiled business data which includes counts of employees who work, presumably during the day, at the business location within a given dissemination area. These statistics are aggregated for each DA to arrive at estimates of the number of daytime employees. Daytime Employees are then added to the at-home residential population – whether retired, in school, or simply not in the labour force – to arrive at total Daytime Population. These estimates are useful for businesses interested in attracting customers, for example, at their daytime location as opposed to the night-time, residential location. See the Methodology Statement on Daytime Population for more technical information. See also the list of variables for Daytime Population.

Product Specifications

**Number of Variables**

6

**Coverage Area**

This database covers the entire area of Canada’s 13 provinces and territories.

**Reference Date**

July 1, 2016.

**Methodology Statements**

These statements supplement the ones described in Methodology Statements on page 9.
Methodology Statements

To develop estimates of Daytime Population, a “component method” was employed which used the following DA-level components: (1) the at-home population by age group (under 15 years, 15 to 64 years, and 65+ years) based on the current-year Pitney Bowes demographic Estimates and Projections, and (2) Daytime Employees who work in the DA from business data geocoded to each DA. The sum of the at-home population and the at-work population (Daytime Employees) equals the Daytime Population. Unemployed persons are assumed to search for work in various locations outside their DA of residence and so they are not assigned to any daytime population geography. Constraints include the reconciling of at-work population with employed labour force within CMAs and provinces.
Chapter 7: Disposable and Discretionary Income (DDI)

Disposable income is essentially "after-tax" income. Estimates of federal and provincial taxes are subtracted from aggregate "before-tax" income, which is identical to aggregate or total household income in Pitney Bowes’ databases. Disposable income in this database is controlled to provincial estimates of after-tax income derived in part from the National Household Survey.

Discretionary income is a more subjective concept than disposable income. Discretionary income is the money that remains for spending or saving after households pay their taxes and purchase necessities including food, housing, transportation, apparel, and out-of-pocket health care.

Product Specifications

Number of Variables
7

Coverage Area
This database covers the entire area of Canada’s 13 provinces and territories.

Reference Date
July 1, 2016.

Methodology Statements

These statements supplement the ones described in Methodology Statements on page 9.
A preliminary estimate of disposable income was derived by taking Pitney Bowes’ 2016 estimate of total or aggregate household income at the dissemination area (DA) level and subtracting estimates of federal and provincial taxes paid. The preliminary estimates of "after-tax" income were then controlled to provincial estimates of "after-tax" income based in part on the National Household Survey.

The estimate of discretionary income begins with the estimates of disposable income as described above. From disposable income are subtracted estimates of household spending on "necessities." Necessities include all food spending, all spending on primary accommodation or housing, spending on clothing and jewelry, all out-of-pocket health care spending, and transportation spending less airfares. The estimates of household expenditures come from Pitney Bowes’ Canada Expenditure Potential (CanEx) database of household spending by detailed categories. These estimates are in turn derived from a linkage between Statistics Canada's Survey of Household Spending with Pitney Bowes’ PSYTE HD Canada segmentation system. Survey respondents were geocoded by Statistics Canada (thoroughly maintaining the confidentiality of all respondents via a rigorous set of suppression rules) and spending coefficients derived for each PSYTE cluster on each of 362 spending categories. The final step involved multiplying the provisional estimate of discretionary income by an adjustment factor of 0.85 or 85 percent. This adjustment, in effect, takes into account the fact that spending in certain categories not explicitly subtracted as a "necessity" are in fact necessities for some households. For example, a carpenter may purchase "tools of the trade" that would be considered necessary for work. Likewise, an information worker may need a computer which is "absolutely essential" for the performance of her duties. In order to account for these types of items which every family could name, the final estimate of discretionary income is 15 percent less, across the board, than the provisional estimate. This adjustment yields a conservative estimate of discretionary income that should prove realistic for most applications.
Chapter 8: Canada Wealth

The Canada Wealth database contains current estimates of the components of household wealth, such as specific assets and liabilities, as well as summary variables indicating net worth.

Net worth or wealth represents the net of assets minus liabilities and is provided in aggregate and average form. This database, beginning with the 2004 data, is informed in part by the analysis of Toronto-based consulting and research firm Investor Economics Inc. with respect to national and provincial summaries of wealth components for detailed assets and liabilities.

Product Specifications

Number of Variables
83

Coverage Area
This database covers the entire area of Canada’s 13 provinces and territories.

Reference Date
June 30, 2015.

The Canada Wealth database represents estimates of the components of household wealth as of June 30th for the lastest year for which Investor Economics, Inc. has published its Household Balance Sheet®. That is, the Canada Wealth data product is produced annually following the "close of books" for the June vintage of the Household Balance Sheet.
Product Specifications

Methodology Statement

This unique database models the relationship between several demographic variables and the likelihood that a given household will "own" a particular type of financial asset (incidence rate), and if so, the likely average value of the asset. The modeled results are provided for all Dissemination Areas (DA's) in Canada. From this information, PB analysts applied updated demographic variables from the Estimates & Projections database to roll out the values for every Dissemination Area. The initial rolled-out values were then "controlled", as in prior years, to provincial aggregates provided by Toronto-based research and consulting firm Investor Economics, Inc. – the established Canadian leader in providing detailed, high-level estimates of the components of household wealth on both the asset and liability side.

The structure of the Canada Wealth database takes advantage of the small area estimation methodology. As in previous updates, there are aggregate variables and average variables. The aggregate variables estimate the total dollar volumes for each asset and each liability per dissemination area. There are two flavours of averages: the "overall average" uses all DA households as its denominator, whilst the "owner average" uses only those households who "own" the asset as the denominator. Users should note, for example, in cases where the asset ownership incidence rate is low, that the difference between these two averages can be substantial. However, in cases where the asset ownership rate is near 100 percent, the differences between the averages among asset owners versus all households, are smaller. The overall average is best used to compare or rank markets across the country. The "owner average" is best used to evaluate a given market in more depth by comparing average values against information from one's own customer database.

The estimation process for aggregate value of primary residence begins with values of the primary residence of householders at the DA level based on historical census data and PB modifications / imputations of the National Household Survey (NHS) 2011. Also used in modeling residential value are variables derived from updated financial data from a national data source using average mortgage balance and average balances on home equity loans. The concept of residential value stems from the survey question: If you were to sell this dwelling now, for how much would you expect to sell it? Imputation routines for suppressed data in the NHS are applied where needed. PB analysts also take into account the reported annual percentage change in residential property values based on the latest annual report from the Canadian Real Estate Association (CREA). Models of the relationship between age, income, homeownership, home value, and province are used to estimate the value of "other real estate" based in part on the Statistics Canada 2005 Survey of Financial Security. Results were applied at the DA level using updated statistics from PB's demographic Estimates and Projections (E&P).

For the liability side of household wealth (net worth), there are several components in the database. Residential mortgages and home equity loan amounts are estimated from models built from the postal code level financial data. Note that the source/ input financial data is composed entirely of aggregate data at the postal code level for which no individual level data are available. The personal loan variables (also modeled from the financial data) include credit card debt, installment loan debt (e.g. auto loans), and other revolving credit (e.g. unsecured line of credit). All results from the components of household liabilities were controlled to the corresponding higher-level aggregates in the Investor Economics data.

Household net worth or wealth is broadly defined as total assets minus total liabilities at the dissemination area level. The concept as applied in this database explicitly does not include unmeasured components such as the value of household contents, automobiles, the cash value of
life insurance, or the net value of farms or small businesses. Household wealth is an estimated measure that can be usefully applied in geographically referenced market analysis. It should be interpreted as any “average” where individual households within the area may fall above or below the estimate.

The methodology described here is based on the best available information and the most rigorous techniques available for estimating values for small geographic areas. As with any exercise of this nature, differences from year to year are affected by the availability of new information, as well as by the application of improved techniques. In general, users should apply the standard caveats in their interpretations of any and all year-to-year changes as those “differences” will involve a combination of real change as well as improved inputs and methodologies.

This update to the PB Canada Wealth data product is published on the 2011-based geographic grid, and reflects the Census 2011 enumeration as well as is informed by the 2011 National Household Survey.
## Glossary of Terms for Wealth Components*

**Liquid (Financial) Assets**
Assets that are either “cash” or can be converted to cash on short notice, and easily. They are mainly financial type assets.

<table>
<thead>
<tr>
<th>Interest-Bearing Investments</th>
<th>Fixed income instruments such as chequing accounts, deposits, bonds, and various investment certificates (e.g. GICs). They can be grouped into four categories:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. currency and deposits – these refer to all deposits at various financial institutions;</td>
</tr>
<tr>
<td></td>
<td>2. short-term papers – these are Treasury Bills and marketable short-term notes issued by a variety of financial and non-financial institutions;</td>
</tr>
<tr>
<td></td>
<td>3. bonds and savings certificates – these include all bonds issued by all levels of government, institutions, and corporations;</td>
</tr>
<tr>
<td></td>
<td>4. other financial investments – these include a range of items such as mortgages, interest annuities, and accrued interest on bank deposits.</td>
</tr>
</tbody>
</table>

| Equity Investments | Financial holdings as mutual funds and stocks. Mutual funds include balanced, Canadian and foreign equity, bond, dividend, money market, and mortgage funds. |

| Non-Liquid Assets | Hard or tangible assets that can be sold to raise cash or can be used as security to borrow money. Beginning in the 2005 Wealth update, the value of the primary residence, as well as other real estate holdings, is presented as an estimated non-liquid asset. Other non-liquid assets, such as autos and household contents, are not taken into account. |

| Residential Real Estate | The estimated market value of private residences/homes owned by individuals. Primary residences are those of owner occupied households. Other real estate holdings may include such investments as second homes. |

| Liabilities | Outstanding debts held by households and, generally speaking, this variable quantifies what is owed on residential mortgages and personal loans. |
| **Residential Mortgage** | The amount of money owing on the principal of primary residences/homes. There are two sets of variables that include residential mortgages, one representing mortgages on primary residences only and the other representing mortgages on primary residences plus other real estate holdings. |
| **Personal Loans** | Cover a variety of consumer debts, including credit cards and loans for such purposes as vehicle purchase, investment, and unsecured consumer credit. Specifically, three personal loan variables are included: credit card debt, installment loan debt, and revolving credit debt. |
| **Total Net Worth or Wealth** | Is broadly defined as total assets less total liabilities. Assets as discussed here include financial investments such as chequing accounts, term deposits, bonds, stocks, and mutual funds as well as tangible assets including primary residence and other real estate holdings. Liabilities consist of consumer debts, mainly residential mortgages and personal loans. The difference represents an estimate of household net worth. While useful for many applications of financial market analysis, it does not explicitly include the “unmeasured components” such as other non-liquid assets – autos, household contents, cash values of life insurance, etc. |

* See the complete variable list for more information on the content of the Canada Wealth database.