

## **Appendix A: Discussion of Data Sources, Definitions, and Data Construction Methodology**

In this section, we discuss the sources and construction of data for each table.

A. Table 1 shows the CPI data for “property taxes and other special charges” by province, region, and for Canada as a whole. The special charges noted are largely provincial property taxes levied to fund education. Property transfer taxes appear in the “other expenditures on owner-occupied housing not elsewhere specified” category, and water and sewage costs have their own separate CPI. Statistics Canada does not publish regional data, so we calculate these numbers throughout the tables using yearly provincial weights (summed to one).

The annual data shown come directly from Statistics Canada, CANSIM Table 326-0021 Consumer Price Index: annual (2002=100) and the September 2017 monthly figure comes from Statistics Canada CANSIM Table 326=0020. Statistics Canada does not publish regional CPI information. So, for Table 1 we calculate the regional data by computing regional “weights” (all sum to one) by using the provincial ratios of the number of households living in owner-occupied homes. These data can be obtained from Statistics Canada CANSIM 203-0027 Survey of Household Spending (SHS), dwelling characteristics and household equipment at time of interview, Canada regions and provinces (for 2010-2015) and Statistics Canada CANSIM Table 203-0003 Survey of Household Spending (SHS) by shelter, by province and territory, archived (for 1997 to 2009).

B. Table 2 shows “real” property tax and other special charges CPI. The results in this table are generated by dividing the stated property tax CPI data from Table 1 by the respective total CPI numbers. If the resulting “real” indexes are greater than 100, this means that the real property tax CPI, since 2002, has been rising faster than the overall increase in cost of living, represented by the total CPI average. These data are important in determining whether property taxes are an important policy problem. For example, if one were to calculate the real electricity price CPI in Ontario over a span of recent years, one would find a real CPI figure significantly greater than 100. This would show that increases in electricity prices in Ontario have greatly outpaced the normal pace of inflation, thereby constituting a major energy policy problem for Ontario.

The source data are, first, the exact same “property tax” CPI in Table 1 above. Second, we obtained total CPI numbers from the same sources as in Table 1 above. We then divided the property tax CPI data by the total CPI numbers, times 100, to obtain “real” property tax CPI data. The associated regional CPI data were calculated using the same weights as in Table 1.

C. Table 3 uses the real property tax CPI data in Table 2 as an input to compute real property tax inflation rates from one decade to the next. This is an important set of data, since the most recent CPI index data do not tell us exactly when property tax increases have taken place.

The inflation data are based on the real property tax CPI data in Table 2. One calculates the inflation data in the standard way. First, difference the given real property tax data, then divide the result by the associated CPI data-point lagged one year, and multiply the result by 100. To obtain the decade results shown, sum the inflation data for the given decade and divide the result by 10.

D. Table 4 shows the average dollar amount, per household, paid as property taxes. For 2010 to 2015, these statistics come directly from Statistics Canada CANSIM Table 203-0021 Survey of Household Spending (SHS), household spending, Canada, regions and provinces, annual (dollars). For 1997 to 2009, the numbers are obtained from Statistics Canada CANSIM Table 203-0003 Survey of Household Spending (SHS) by shelter, by province and territory, archived. The regional data are calculated using the same weights as described in Table 1 above. The data are then averaged to obtain the results in Table 4.

E. Table 5 takes data from Table 4 and converts them into percentages of the Canada-wide average. A number below 100 says that average household property tax payments are less than the national average, and a number greater than 100 indicates that payments exceed the national average. We calculated the percentage shares by using data directly from Table 4 above. We divided each provincial number by the corresponding Canada number, then multiplied by 100.

F. Table 6 takes the dollar amounts from Table 4 and computes a percentage ratio, dividing the property tax amount by total out-of-pocket household expenditures on owner-occupied housing (e.g., utilities, insurance, property taxes, normal repair and maintenance, other costs not elsewhere specified). This table is useful, because it indicates whether or not property taxes are increasing with respect to total spending on a family's owner-occupied house.

We first use, as source data, the average per-household same property tax spending data shown in Table 4 above. We then collect, from the same Statistics Canada tables cited in Table 4 above, "total household spending on household maintenance". We then divide property tax payments by the corresponding total spending on household maintenance, and multiply the results by 100.

G. Table 7. We use data from annual reports of municipal statistics for New Brunswick (2002-2014) and unpublished data for 2015-2016 obtained directly from the New Brunswick Department of Environment and Local Government. These data are the combined general residential assessment for all New Brunswick municipalities and the average (effective) tax rate for all New Brunswick municipalities.

H. Table 8. We use data from annual reports of municipal statistics for New Brunswick (2002-2014) and unpublished data for 2015-2016 obtained directly from the New Brunswick Department of Environment and Local Government. These data are the combined expenditure costs for all New Brunswick municipalities.

