**Think Like a Canadian Economist**

**Episode 12. The Long Form Census**

For decades, Canadians responded to the mandatory long form census. For the 2011 census cycle, the federal government replaced the mandatory long form census with the voluntary National Household Survey (NHS).

Why is the distinction between voluntary and mandatory important?

It is useful to consider an example.

Suppose that we are interested in knowing the value of mean income for the whole adult population of Canada. The most accurate way to proceed would be to get the incomes for every adult and then average them.

Mandatory censuses, which have been used in Canada and around the world, aim to get responses for everyone in the country.

But if it is too costly to survey everyone in the country, then we can get an estimate of adult mean income by surveying a sample of the population. The key issue is the conditions under which a given sample will provide an accurate, or unbiased, estimate of the population mean.

To continue with our example, suppose we selected two adults at random from the whole population. By basic laws of statistics, the average of their incomes would be an unbiased estimate of the true population mean. But for any specific sample, we would not expect the sample mean to be the same as the population mean. The difference between the sample and population mean, however, would not be systematically too high or too low.

If we drew many such samples and then took the average of the mean incomes for each of the two-person samples, that average would equal the mean income for the entire adult population. This, in fact, is the definition of an unbiased sample: one that delivers estimates that are not systematically off in one direction or the other.

Of course, in most surveys we sample many more than two people. The larger we make the sample size, the closer we expect the sample mean in any specific sample to be to the population mean. This is called the Law of Large Numbers, and it is what underlies the size of the long form census. With a sample of 20 percent of the Canadian population chosen at random, we can expect that the sample mean income will be very close to the true population mean.

What happens with a voluntary survey? A sizeable proportion of people do not answer such surveys. If people refuse to answer at random, then non-response would not cause a problem; we just would not get as large a sample.

If there is something systematic in non-response (if, say, poor people respond less than rich people), then there will be biases—the sample produced from the survey will not be representative of the Canadian population.

It is as if we are sampling from a different population; rather than sampling from the population of all adults in Canada, we are sampling from the population of adults who chose to respond to a survey. Increasing the sample size will not fix the fact that we are sampling from a systematically different population.

If there is systematic bias in the response rates across groups in Canadian society, then the claim that the accuracy of a voluntary survey is preserved by sampling more households is wrong.

The census is a vital, even pivotal component of our statistical infrastructure. Economists generally agree there are important benefits to reinstating the mandatory long form census.

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