**Exercises**

1.Suppose we want to estimate the proportion of recipes in the Better Homes & Gardens New Cook Book that do not involve animal products. We plan to take an SRS of the N=1251 test kitchen-tested recipes, and want to use a 95% CI with margin of error 0.03. What is the required sample size?

N0 = 1067

**Sample Size = 576**

2. A SRS is chosen from a population of 1000 households. Results are shown below. Estimate mean income and total income and construct a 95% confidence interval for each.

|  |  |
| --- | --- |
| income |  |
|  |  |
| Mean | 60199.95 |
| Standard Error | 6671.014 |
| Median | 47526.5 |
| Standard Deviation | 42191.2 |
| Minimum | 0 |
| Maximum | 215448 |
| Sum | 2407998 |
| Size | 40 |

[**47124.76**, **73725.14**]

Total = [47124.76 \* 1000, 73725.14 \* 1000]

3. Suppose you wanted to redo the survey above to achieve a moe (margin of error) of $8000. How large a sample size would be needed, if the population from which this sample came has 1000 members?

**96.5**

4.

a. Describe the difference between coverage error and sampling error in survey statistics.

Coverage error results from mismatch of the target population and frame, due to undercoverage of the frame and/or ineligibles. It exists before the sample is drawn and thus is not a problem arising because we execute a sample. Sampling error is the difference between value of a statistic and parameter value. Deliberately introduced and is a result of using a sample rather than a census for estimation.

b. How can sampling error be reduced?

Sampling error can be reduced by stratifying, sample size larger

c. How can response error be reduced?

Clear questions, response windows that are more universal, etc.

d. What is a probability sample? What is its advantage over a non-probability sample? Give an example of a non-probability sample.

Calculate the probability of selection, advantage probability. Probability samples allow us to use probability-based statistical procedures, such as CIs and Hypothesis tests in drawing inferences about population from which sample was drawn.

Volunteer sample, judgment sample