Chapter 8

Simple Random Samples

In this chapter we will discuss the following topic:

- How to select a Simple Random Sample (SRS) using the R-function **sample()**.

Simple Random Samples

A *simple random sample* (SRS) of size n consists of n individuals from the population chosen in such a way that every set of n individuals has an equal chance to be the sample actually selected. [1].

Problem. A small town has 1000 residential telephone numbers. An interviewer asks to speak with an adult member of the residential to ask a question for a statistical study. Use R to select a SRS of 70 residential phone numbers. Label all the residential phone numbers from 1 to 1000 and then randomly choose 70 of the numbers.

Solution. The R-code is as follows:

```
> population=c(1:1000)
> SRS=sample(population,70)
> SRS
 [1]  753  793  561  728  463  571  695  376  396  813  588   25  394  425  269
[16]  546  529  500  371  946  285  948  651  530  595  950   51   60  448  304
[31]   98  136  231  569  559  590   58   28  796  252  437  545  308  158  521
[46]  346  910  246  712  553  182  326   48   10  649  484  752 1000  457  931
[61]  143  841  826  535  117  809  894  783  214  247
```

Explanation. The code can be explained as follows:

- The command **sample(population,70)** randomly selects a sample of 70 *without replacement* from the members of **population**.

References

[1] D. S. Moore, W. I. Notz, M. A. Fligner, R. Scoot Linder. *The Basic Practice of Statistics.* W. F. Freeman and Company, New York, 2013.

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