Case Study 1

Evaluation of the average download speed of a broadband service provider

The Experiment[1]

According to Brazilian regulation agency ANATEL, the average download speed can be considered in conformity with the contracted value as long as it is superior to 60% of the nominal value. In this case study, we wish to investigate whether a given provider is fulfilling this condition in a 10MBps residential connection.

Twenty measurements of download speed were collected using SpeedTest under homogeneous usage conditions (same computer, same browser, automatic update services disabled, no other software being used besides the browser). The collected data is available in our GitHub repo.

Activities

Your task is to analyze this experimental data in order to answer the following question:

Is the actual average download speed in accordance with the regulations?

Your analysis should include:

- Definition of the test hypotheses;
- Test of the hypotheses;
- Estimation of the effect size and confidence interval on the relevant value;
- Verification of the assumptions of the test;
- Drawing of conclusions and recommendations.

Remember that your conclusions should always be placed in the context of the original technical/scientific question.

Report

You must deliver a short report detailing your analysis and the results obtained. Instructions for writing your report depend on the course you're taking, and are given below:

1) For graduate (PPGEE) Students

Your report will be evaluated according to:

- Compliance with the required format (see below);
- Reproducibility of results;
- Technical correctness;
- Structure of argumentation;
- Correct use of language (grammar, orthography, etc.);

The report **must** be produced using R Markdown, and should contain the reproducible analysis code embedded as code blocks within the document. Please send me only the **.Rmd** file (the analysis should assume that the data file is in the same directory as the report file). Reports written in either Portuguese, English, or Spanish will be accepted.

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[1] Adapted from R.F.O. Costa's course project for the Design and Analysis of Experiments Course, PPGEE-UFMG, June 2012. The data used in this case study is not the original one.

For undergrad (Systems Engineering) Students

Your report will be evaluated according to:

- Technical correctness;
- Correct use of language (grammar, orthography, etc.);

The report has no particular template. R Markdown is suggested, but not mandatory. Please send me the **.pdf** file (**NO** .doc, .odt, or other exotic formats please) and the **.R** analysis file.