Statistics Competition 2020

The Department of Statistics and Applied Probability, NUS, is organising a yearly competition for pre-university students. The objective of the competition is to expose young people to concepts and methods used in statistics and data science.

Participation

Participation is open to all students of secondary schools, junior colleges, international schools and polytechnics in Singapore.

Deadline

31 July 2020. Late submissions will not be accepted except under special circumstances.

Contact for submissions and general questions

Ms. Melissa Thong (melissa.thong@nus.edu.sg)

Format of the competition — Report

Submissions have to be written in form of a report, in which students attempt to answer a well-specified question by means of specific data set. Students are free to choose a topic of their interest and they are free to choose a data set related to that topic. They are also free to formulate the specific questions they would like to answer with that data set. The report should address the following points:

- Give background information about the topic you have chosen, and explain why you are interested in it.
- Provide details about the data set, in particular where it comes from and what it describes.
- State the specific questions you are trying to answer with your chosen data set.
- Include *descriptive statistics* in forms of tables and figures, which highlight some interesting features of your data sets.
- If possible, include *inferential statistics* in forms of hypothesis tests.
- Explain how the descriptive and inferential statistics answer the questions you have posed.

Here is a list of websites where you can find interesting data sets:

- www.singstat.gov.sg
- www.kaggle.com
- www.opendatanetwork.com
- data.unicef.org
- www.google.com/publicdata/directory
- www.gapminder.org/data/

You are of course free to use data sets from any other source. Try not to be too ambitious — a good quality small data set may answer a specific question better than a large data set of dubious quality.

Age groups

We distinguish two age groups. Participants will compete only with other participants of the same age group. The two age groups are:

(1) Secondary Schools, Years 1–4; IP school, Years 1–4; International Schools, Grades 7–10
(2) JC Schools; Polytechnics; IP Schools, Years 5–6; International Schools, Grades 11–12

Detailed rules

Each report can be written by an individual or a team of students from the same school. Only submissions written in English and sent via email to Ms. Melissa Thong (melissa.thong@nus.edu.sg) are accepted. By submitting a report, participants are giving their consent to the department to publish their names on the departmental website for administrative purposes. Reports submitted for the competition are not allowed to have been submitted to any other inter-school competition organized by any other organization or been previously published in journal, magazine or any form of publication.

Reports are to be submitted in PDF format. Each submission is expected to have one title page containing
- the title of the report,
- the category in which students want to participate,
- the age group to which the students belong,
- name(s) of the student(s) along with the class and name of their school
- date of submission
- abstract of at most 200 words.

After the title page, the main body of the report is expected to be structured into meaningful sections. The main body of the text may comprise up to 9 pages (typeset in 11-pt Arial or other sans serif font), so that the whole document, including title page, is not allowed to be longer than 10 pages. Figures and tables are expected to have a clear label and an associated short and meaningful caption, such as "Figure 1: Histogram of the salary distribution of working adults in Singapore", or "Table 1: Median salaries by gender and age groups". A separate PDF without page restrictions may be submitted containing supplementary material, such as the complete data set, programming code used to analyse the data etc. However, this file will not be used for judging purposes.

Although they might look fun, avoid colourful pie charts, 3D histograms and 3D bar-plots. If you want to increase your chance of winning, stick to basic plots; see accompanying document "*How to write a scientific report*".

The organizers reserve the right to amend rules and regulations, replace or substitute prizes without prior notice.

Judging

Submissions will be evaluated by faculty members of the Department of Statistics and Applied Probability, NUS, according to the following criteria:

- Motivation of the analysis and relevance to society/research; originality of topic
- Organisation of report; readability and quality of language
- Quality of data collection; quality of tables and plots
- Appropriateness and correctness of statistical procedures
- Appropriateness of citations and bibliography

Decisions made by the panel of judges will be final.

Prizes

The prizes in each age group of the competition are as follows:
First Prize: $400 Cash
Second Prize: $300 Cash
Third Prize: $200 Cash

Certificates of participation will be awarded to all participants. All winning entries will be published on the departmental website. All prize-receiving teams will have the opportunity to submit a poster based on their reports to the International Poster Competition organised by *International Statistical Literacy Project* (iase-web.org/islp).

April 2020
Department of Statistics and Applied Probability
National University of Singapore