

Statistics Competition 2019

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 2019. 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

Students can participate in either of two categories.

Category A — Report

In this category, students are expected to answer a specific question with a 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.

Category B — Essay

In this category, students are free to write in any format they like, but they are restricted to write on a prespecified topic. The essay can be a historical account of the topic, it can be a technical report on specific statistical methods relevant to that topic, or it can be a discussion of a specific data set related to that topic. In any case, the content of the essay must be related to statistics in one way or another.

This year's topic: **Social media and statistics**

Keywords: social networks, degrees of separation, fake news, random graphs, spread of information

Keywords are only meant to provide participants with a starting point. It is not expected that all keywords are covered. Indeed, an essay focusing in depth on one or two aspects of the topic is preferred over an essay trying to cover all keywords but lacking in focus.

Age groups

In each of the categories, we distinguish two age groups. Participants will compete only with other participants from the same category in 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; Politechnics; IP Schools, Years 5–6; International Schools, Grades 11–12

Detailed rules

Each report or essay 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 or essay, participants are giving their consent to the department to publish their names on the departmental website for administrative purposes. Reports and essays 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. Each team can only participate in one category in a given year.

Reports and essays are to be submitted in PDF format. Each submission is expected to have one title page containing

- the title of the report or essay,
- 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 or essay is expected to be structured into meaningful sections. The main body of the text may comprise up to 1500 words, 4 figures and 2 tables. Each figure and each table is 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”.

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”](#), but take note that for Category B, you are free to choose the organisation of your essay.

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. Decisions made by the panel of judges will be final.

Prizes

The prize for each category and each age group of the competition is 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.

April 2019
Department of Statistics and Applied Probability
National University of Singapore