Mini-project 1: Hurricanes and himmicanes

S520

Upload your draft through the Assignments tab on Canvas by 2:30 pm, Thursday 2nd February.

Questions

- **Specific question:** Is there a meaningful difference between the distribution of damage caused by hurricanes with female names and the distribution of damage caused by hurricanes with male names? For this question, use the binary variable "Gender_MF" and the quantitative variable "NDAM," and no other explanatory variables.
- **Open question:** Are there any meaningful differences between hurricanes with female names and hurricanes with male names?

Background

A 2014 paper published in PNAS was titled "Female hurricanes are deadlier than male hurricanes." The abstract:

> Do people judge hurricane risks in the context of gender-based expectations? We use more than six decades of death rates from US hurricanes to show that feminine-named hurricanes cause significantly more deaths than do masculine-named hurricanes. Laboratory experiments indicate that this is because hurricane names lead to gender-based expectations about severity and this, in turn, guides respondents' preparedness to take protective action. This finding indicates an unfortunate and unintended consequence of the gendered naming of hurricanes, with important implications for policymakers, media practitioners, and the general public concerning hurricane communication and preparedness.

The paper is here:
`http://www.pnas.org/content/111/24/8782.full`

Data

The data can be downloaded here:
`http://www.pnas.org/lookup/suppl/doi:10.1073/pnas.1402786111/-/DCSupplemental/pnas.1402786111.sd01.xlsx`

The relevant data is in the "Archival Study" sheet; ignore the experimental results. To get this data into R, save it as a .csv file, then use `read.csv()`.

The data consists of observations of 92 hurricanes that made landfall in the U.S. from 1950 to 2012. Two key variables are:

- `Gender_MF`: 1 if the hurricane's name is considered "feminine," 0 if the hurricane's name is consider "masculine."
- `NDAM`: the normalized damage caused by the hurricane, adjusted for inflation, wealth, and population.

Various other variables are included in the data set; see the paper for discussion of these.

Directions

Work in groups of three or four. One person per group should submit a set of answers (making sure that everybody's name is on the submission.) The submission should include a PDF, your code, and your full data set if you have used any data not in the linked spreadsheet.

For the open question, do anything you want except find P-values.

The maximum length of your write-up, *including graphs*, is four pages. Your write-up should aim to convince someone with reasonable knowledge of statistics of your main points.

Grading

You'll be graded on four criteria:

- **Answer to the specific question.**
- **Answer to the open question.**
- **Presentation.** This include clarity and correctness of the graphs and clarity and correctness of the writing. Spelling and grammar will be a small but non-zero proportion of the grade.
- **Reproducibility.** Jake will attempt to reproduce all your graphs and numerical results from the materials you provide. If he can, you get all the points for this; if he can't, you get no points.

We will grade your initial submission and tell you how you can improve it, then you will have a week to resubmit it.