The Pandemic within COVID-19: Assessing Misinformation Susceptibility

Project Proposal - Group 6

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https://github.com/summeryriddles/geopolymeric-tribbles

Description

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- This project focuses on individual susceptibility to misinformation regarding COVID-19. Possible predictors include:
  - How information was communicated
  - Reactions of governments to the pandemic
  - Attitudes and risk perceptions people had towards the virus
  - Trust in science and/or journalists
  - Political ideology
- Major questions to answer include:
  - How digital communications influenced people’s interpretation of the news
  - Did susceptibility to misinformation predict the responses to the new laws and mandates
  - Beliefs and concerns about COVID-19 versus other world issues
  - The similarity and trends among the different countries

Prior Work

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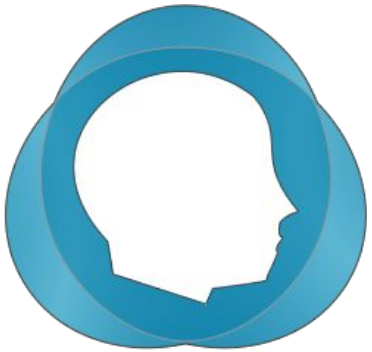
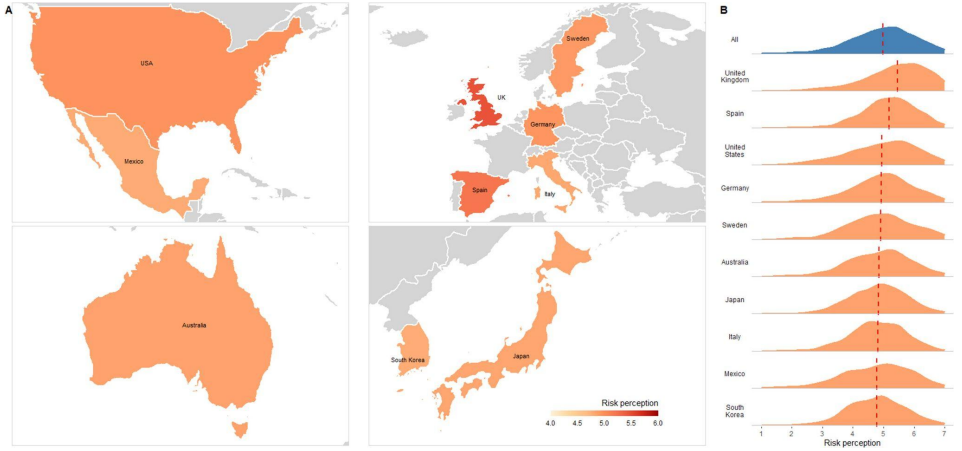
- Many COVID datasets and studies
  - This project will focus more on effects outside of cases/deaths/positive test rates
- Consolidation in a crisis: Patterns of international collaboration in early COVID-19 research.
  - Effect of catastrophic event (COVID-19) on global collaboration (esp. US/China)
- COVID 19 Ethics and Research
  - Ethically conducting clinical trials
  - Addressing future COVID19 ethical concerns
- Effects of COVID-19 on mental health
  - Impact of Event scale for psychological effects
    - Commonly used to diagnose PTSD
    - Classifying the responses under categories Intrusion, Avoidance, and Hyperarousal
- Documentation of survey results (our data set)
  - Susceptibility to misinformation (October 2020)
  - Risk perceptions as correlation to survey results (April 2020)





Datasets

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- Risk perception of COVID-19/Coronavirus:
  - Survey of ~10,000 individuals from 12 different countries.
    - 104 different questions
      - Demographic data (7 attributes)
      - Questions regarding perceptions of COVID-19 risks, preparedness, information sources, trust in society, political views (90 attributes)
        - Answers are on a scale of 1-7
      - Probability math questions (4 attributes)
  - Fifteen .csv files of survey data from 12 different countries (multiple files for the US and UK).
  - One additional file of longitudinal data from the UK
- Where to find:
  - The data is made available by the Center for Open Science
  - https://osf.io/vhnk7/
- Each member individually downloaded the data

	EndDate	DemGen	quota_age	Residency	GenSocTr
0	EndDate	DemGen	quota_age	Residency	GenSocTrust
1	End Date (GMT)	What is your gender?	What is your age?	List of Countries	Generally speaking, would
2	nan	What is your gender?	nan	In which country do you currently live?	Generally speaking, would
3	nan	1 = female, 2 = male, 3 = other, 4 = prefer n...	1 = 18-24, 2 = 25-34, 3 = 35-44, 4 = 45-54, 5 = 55-64, 6 = 65+		1 = Can't be too careful to
4	2020-03-28T19:15:47Z	2	5	SE	3
5	2020-03-28T19:16:46Z	2	4	SE	4
6	2020-03-28T19:19:49Z	1	1	SE	5
7	2020-03-28T19:23:04Z	2	3	SE	5
8	2020-03-28T19:24:15Z	2	2	SE	5
9	2020-03-28T19:25:46Z	2	2	SE	7

Proposed Work

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- Data cleaning
  - The data are all read into Python DataFrames as strings
    - str type is appropriate for some nominal data such as ‘Residency’
    - Numeric data will have to be converted to integers or floats where appropriate.
  - Look for participants who just clicked through the survey (e.g. all ‘1’s or all ‘7’s)
- Data preprocessing
  - Because the data is available in several different files, some attributes will have to be renamed for consistency.
  - The data was collected from a voluntarily survey;
  - There are null values in the dataset
    - Need to ensure consistent treatment of ‘null’ between csv files
    - Make decisions on how to treat each of these null values
      - Is an omitted survey answer data?
- Data integration
  - Each of the csv files will have to be appended into one dataset.
    - Consistent naming dealt with in preprocessing will facilitate this.
  - Column headers of some csv files are being read inconsistently
    - i.e., In some files, column header is the attribute name, such as “Trustingroups_1”, the next row is the exact question asked on the survey, “'How much do you trust each of the following? - People in your family'”, the next row is null, and the third row and beyond contain data. In other files, this order is different or there is no null row.

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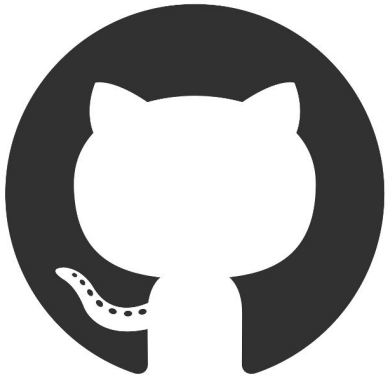
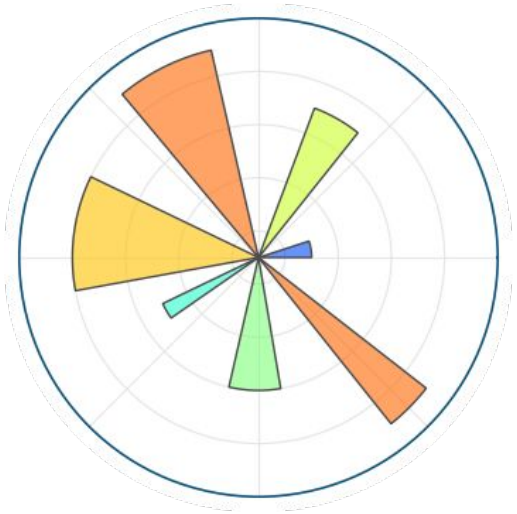
List of tools

- Python, including various libraries
  - NumPy - computations, array manipulation
  - Pandas - data manipulation
  - MatPlotLib - plotting and visualization
  - Tkinter - user interface
- Git/Github - group repository
- Overleaf - Latex integration and group access
- Google drive - group presentation, spreadsheet planner access





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Evaluation of Data

- Comparison of individual categories in survey results
  - Correlation, outlier analysis, null response interpretation/integration
  - Cluster analysis based on country, education level, survey answers, etc.
- Result visualization
  - Histograms for each category, clustered categories
  - Scatter plots to map clusters
- Will need to avoid repeating prior work
  - Risk perception study heavily detailed data collected, used multiple linear regression and ANOVA to produce results
  - Original misinformation study only worked with 5 countries, more direct reporting of results (minimal correlation work)
    - This project will include all 12 countries
    - Clustering had not been explored by the original authors
- Analyzing longitudinal results
  - Examine longitudinal dataset
  - Stretch Goal: Investigate known population responses by country
    - Potentially look at additional data