

Capstone 1 - Project Proposal

Emergency declarations in US states and characteristics of hurricanes

1. What is the problem you want to solve?
 - What attributes of hurricanes/tropical storms are typical for the dangerous ones, namely whose landfall resulted in emergency declaration in one or more states.
 - How dangerous for US are the hurricanes/tropical storms originated in Pacific compared to those formed in Atlantic?
 - Perform the exploratory analysis of the amount of time dangerous hurricanes/tropical storms spent above the ocean (both Atlantic and Pacific) before making a landfall.
 - Create a predictive model determining the number of states where the state of emergency can be declared based on the hurricane/tropical storm strength at landfall.
 - Determine the trends in the total number of emergency declarations for each year.
2. Who is your client and why do they care about this problem? In other words, what will your client DO or DECIDE based on your analysis that they wouldn't have otherwise?
 - Federal Emergency Management Agency (FEMA) can use the results of data analysis to gain the insight on how many states may need federal assistance depending on the hurricane/tropical storm strength and plan the corresponding costs accordingly.
 - Insurance companies may use the results to estimate the costs associated with hurricanes/tropical storms (albeit with caution because areas of the states as well as the portions of each state affected by disaster vary significantly).
3. What data are you going to use for this? How will you acquire this data?
 - The data will be downloaded from the following webpages:
 - <https://catalog.data.gov/dataset/historical-north-atlantic-tropical-cyclone-tracks-1851-2004-direct-download>

- <https://catalog.data.gov/dataset/historical-eastern-north-pacific-tropical-cyclone-tracks-1949-2004-direct-download>
 - <https://www.kaggle.com/fema/federal-disasters>
- The first two datasets, referred to as “track” datasets, were presented by US Geological Survey, Department of the Interior, while the last one, referred to as “emergencies” dataset, by the Federal Emergency Management Agency (FEMA).
 - I will be looking at all attributes in the “track” datasets related to the period between 1949 and 2004 years, and the data, state and hurricane/storm category attributes in the “emergencies” dataset.
4. In brief, outline your approach to solving this problem (knowing this might change later).
- I will explore both “track” dataset for trends.
 - I will determine if there is any correlation between the hurricane strength at landfall and time spent above oceanic surface.
 - I will single out the part related to hurricanes/tropical storms from “emergencies” dataset.
 - I will merge the “tracks” and “emergencies” datasets based on the correspondence of dates and states in each set.
 - And, towards the end, I will try to build a model that predicts the number of states that may be seriously affected by hurricanes/tropical storms depending on the strength at landfall and possibly other features.
5. What are your deliverables? Typically, this would include code, along with a paper and/or a slide deck.
- Code.
 - Analyses, visualizations, model in the form of a report.
 - Slide deck.