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CSPB 4122
Project Description

Project Title: Find My 14er

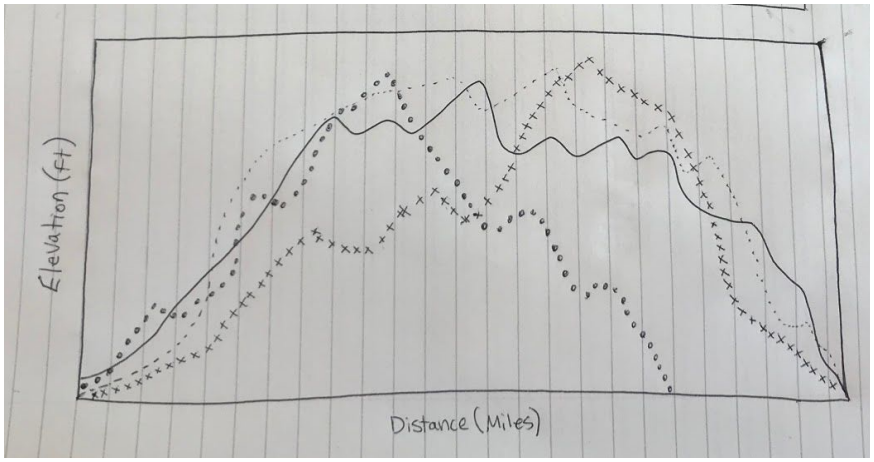
Domain: Hiking 14ers is a common hobby for residents (or travelers) of Colorado. A 14er is defined as a mountain peak that exceeds 14,000ft in elevation, and Colorado boasts 58 of them. In 2017, it was estimated by the Colorado Fourteeners Initiative that over 334,000 individuals had hiked 14ers during the busy season, which typically runs from June or July through September of each year. Hiking 14ers takes careful planning- you must carefully plan and study your route, prepare for the changing/inclement weather, choose a peak with an appropriate difficulty for your ability level, and ensure you are prepared with the right equipment and supplies. This visualization tool "Find My 14er" will help hiking enthusiasts select and prepare for treks to the peaks of Colorado 14ers.

Overview of Dataset: The core dataset for this project was obtained from https://www.kaggle.com/mikeshout/14erpeaks/version/4 . The dataset was downloaded as a CSV file containing 58 rows and 16 columns. This dataset includes data for each peak such as elevation, mountain range, latitude, longitude, standard route, distance, elevation gain, difficulty, traffic low, and traffic high. This core dataset will be extended to include data for mapping the locations of each peak, as well as adding the most common route for each peak to the map. The dataset will also be enriched to include weather data and sunrise/sunset data.

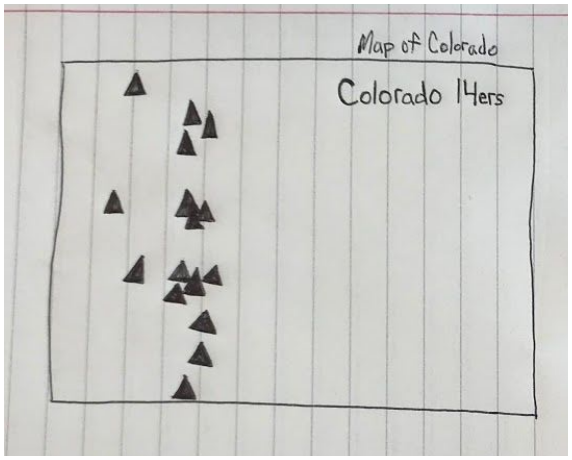
Task Descriptions: A user of "Find My 14er" could accomplish the following tasks:

- Browse - the user will have the ability to browse the visualization using certain desired characteristics such as a specific mountain range, difficulty, distance of hike, popularity, or elevation profile.
- Locate & Identify - the user will have the ability to first lookup a specific known target (example, Longs Peak) then identify the current weather for that known target, as well as view the standard route for the target.
- Compare - the user will have the ability to compare characteristics of different targets (peaks) such as elevation gain, current weather, foot traffic, difficulty, or distance.
- Summarize - the user will have the ability to obtain an overview of all of the 14ers in Colorado, color coded by mountain range, as a graphical display map. Each peak can be clicked on for more information about that peak.

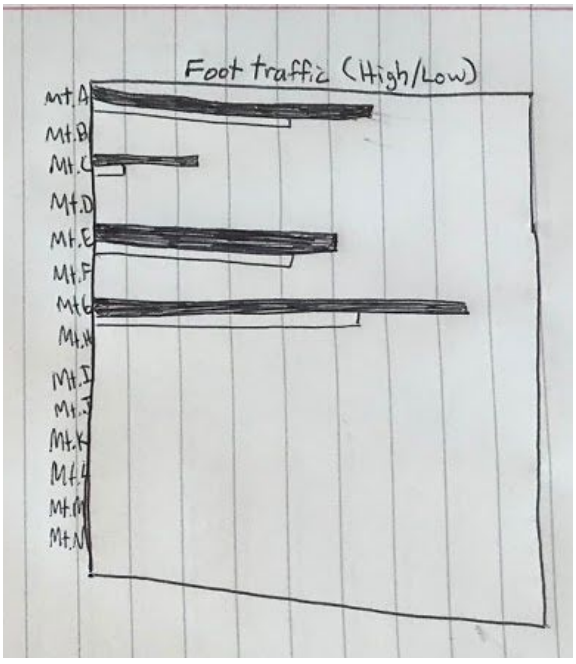
Visualization Design Ideas:



Elevation profiles:
Each 14er included in the dataset will be displayed via a scatterplot of elevation vs. distance.



Satellite/(Possibly) Topographic map of Colorado with data points for each peak:
The main explorable visual display will be a satellite map of colorado, with each peak identified with a triangle. The peaks will be color coded based on mountain range. Each peak can be hovered over/clicked on for more information.



Popularity (Traffic High/Traffic Low):
Each 14er will be displayed graphically with a bar chart that includes the low and high ranges of estimated foot traffic in 2017.

Usage Scenario: A target user for this visualization tool is a hiking enthusiast who is planning to hike a 14er. This tool will help them select a 14er that is an appropriate difficulty level for their ability, view the weather for each peak, compare different 14ers based on characteristics such as distance of hike, elevation gain, difficulty, and foot traffic. User task scenarios are summarized below:

A user wants to compare the different peaks within the Sawatch Range. The user also wishes to find a 14er with a roundtrip distance of less than 10 miles. The user would first locate the large colorado map visualization and would click on the “Sawatch Range” checkbox, which will be located near the map and is where filtering of the results will take place. This would change the visualization to only include mountains within the Sawatch Range. The user would then enter “10” in the max distance box, which would further filter the results to only include mountains within the Sawatch Range who’s roundtrip distance is less than 10 miles. Once the results are filtered, the user can further compare by selecting/deselecting checkboxes representing specific mountain peaks. As the user changes the selection of specific mountain ranges, peaks, distance filters, etc., the visualizations will update to reflect these selections. When the results are filtered to satisfy the desires of the user, the user may then click on specific mountain peaks on the map display to learn more about each peak as well as visualize the standard route on a zoomed in version of the map. This additional information will include a link to the 14ers.com website for that particular peak, weather information, difficulty, traffic/usage, and elevation profile. Using this filtered information, the user should be able to appropriately select a 14er to hike.