Victoria Fire Emergency Dashboard

Project in R & Shiny

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1   Introduction

The "Victoria Fire Emergency" combines various historical and live data to present a single-stop dashboard where a user can learn about the history of bushfires in Australia, specifically in Victoria. The dashboard displays maps for different emergency facilities in Victoria. It also accumulates and shows live incident reports and fire warnings currently issued by the state of Victoria. This dashboard will be helpful to people in case of emergencies and for analyzing various trends related to bushfires in Australia.

2   Design Summary

The dashboard has several menu items on the left side of the page that can navigate toward different maps and charts. Some menu items like "Australia Bushfire Statistics" and "Emergency Facilities" have sub-menu items that expand upon clicking. Few menu items offer filter functionality which will be displayed conditionally on the sidebar based on the navigation of the menu items. Filters on the sidebar apply to all the charts in the view. Maps have the "locate me" feature on the top-right side, to locate the current location of the user and also a "search" feature to search locations on the map.

3   Appendix

1. **50 years of bushfires in Victoria:** The bushfire history polygon shape-file was downloaded and converted into raster in ArcGIS Pro software to reduce load on dashboard and then leaflet library was used to display the raster data after aggregating the points further [2].

2. **Bushfires in Victoria - Data:** The table data was scraped from Wikipedia using the rvest library and then displayed in shiny using the DT library [7].

3. **Major Bushfires in Australia:** The bushfires in Australia data was acquired from open API using the jsonlite package and then plotted on the user interface using the ggplot and plotly package [6].

4. **2019-2020 bushfires in Australia:** The statistics were acquired from open API and column names and date column were formatted. It was then plotted on the user interface using the ggplot and plotly package [6].

5. **Temperature & Rainfall Statistics:** The data was obtained from an open API and then year column was formatted as for filtering and then plotted on time series chart using ggplot and plotly [6].

6. **CFA District Boundaries and Locations:** The CFA district boundaries data shape-file was downloaded and then plotted on the map using the leaflet map [1]. Then locations of fire stations were downloaded as multi-point data and then converted to point data using the sf library [3]. Then it was plotted on the same map.

7. **Neighbourhood Safer Places Map:** The data was downloaded as a PDF file from Fire & Rescue Victoria website and converted into excel format. The locations of the places were then geo-coded in bulk and then the CSV file was used to plot markers on the map using the leaflet library [4].

8. **Hospitals in Victoria Map:** The data was downloaded as multi-point file and then converted to point data and the markers were plotted on the map while distinguishing different types of hospitals [3].

9. **Live incidents in Victoria:** The data was taken from open API which has all the information and the coordinates of the incidents. The incident markers were then plotted on the map using the leaflet library [5].

10. **RSS Feeds of Fire Burns & Danger Ratings:** The RSS data was taken from the RSS link and converted into data frame using the tidyRSS package. It was then displayed as text on the user interface [5].

References

[1] Country Fire Authority (CFA) District Boundaries - Vicmap Admin - Victorian Government Data Directory — discover.data.vic.gov.au. `https://discover.data.vic.gov.au/dataset/country-fire-authority-cfa-district-boundaries-vicmap-admin`. [Accessed 25-Sep-2022].

[2] Fire history overlay of most recent fires - victorian government data directory. `https://discover.data.vic.gov.au/dataset/fire-history-overlay-of-most-recent-fires`.

[3] FOI - Point - Vicmap Features of Interest - Victorian Government Data Directory — discover.data.vic.gov.au. `https://discover.data.vic.gov.au/dataset/foi-point-vicmap-features-of-interest`. [Accessed 25-Sep-2022].

[4] Neighbourhood Safer Places — cfa.vic.gov.au. `https://www.cfa.vic.gov.au/plan-prepare/your-local-area-info-and-advice/neighbourhood-safer-places`. [Accessed 25-Sep-2022].

[5] RSS Feeds — cfa.vic.gov.au. `https://www.cfa.vic.gov.au/rss-feeds`. [Accessed 25-Sep-2022].

[6] Visualizing Australian Fires — australia-fire-api-dashboard.herokuapp.com. `https://australia-fire-api-dashboard.herokuapp.com/api/v1.0/docs`. [Accessed 25-Sep-2022].

[7] WIKIPEDIA CONTRIBUTORS. List of major bushfires in australia — Wikipedia, the free encyclopedia. `https://en.wikipedia.org/w/index.php?title=List_of_major_bushfires_in_Australia&oldid=1109820864`, 2022.