Earthquake Preparation Tool

Data Farmers:
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Northridge Earthquake 1994

Timothy A. Clary/AFP/Getty Images

LA News Photo/File

- 6.7 magnitude Earthquake
- January 17, 1994
- San Fernando Valley, Los Angeles, CA
- $24-93 billion estimated damage (2021 US dollars)
- 125,000 residents were temporarily homeless

Problem: 'The city administration must prepare for future earthquakes to shelter the affected population and know the approximate damage costs'

Basic use cases

01 Shelter capacity

The city administration wants to know the city's **shelter capacity** (by zip code) so that a sufficient amount of residents affected by an earthquake can be temporarily housed

02 Insurance cost

The city administration wants to know the city's expected **insurance cost** from an earthquake so that the government can budget for the risk and insure the **bottom 10%** median income zip codes.

Our Solutions

01

Map earthquakes

Gather previous earthquakes data and map it

(assumption: earthquakes are likely to happen again where they have happened before)

02

Shelters

Map the city's shelter capacity per zip code

03

Analyze shelter's capacity

Compare shelter capacity to potential affected population

04

Calculate insurance cost

As a prescriptive measure of assessing and mitigating damage cost

Data sources

API (JSON)
1. https://earthquake.usgs.gov/fdsnws/event/1/
2. GEO-JSON file for zip code boundaries https://trailhead.salesforce.com/

Web Scraping

1. LA Almanac
- Median Income per zip code

2.United States Zip Codes
- Number of house units and median home value per zip code (restriction on the number of visits, so we web-scraped partial information and united the complete table in a CSV file)

CSV Files
1. Rapids (Risk assessment, planning, and incident decision support) – shelter list per zip code
2. World population review (population per zip code)
3. Number of house units and median home value per zip code (from US Zip Codes web scrape)
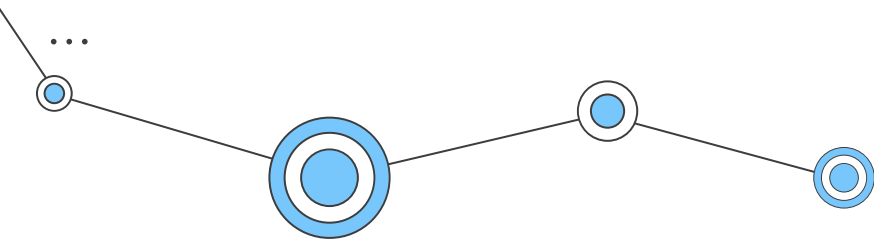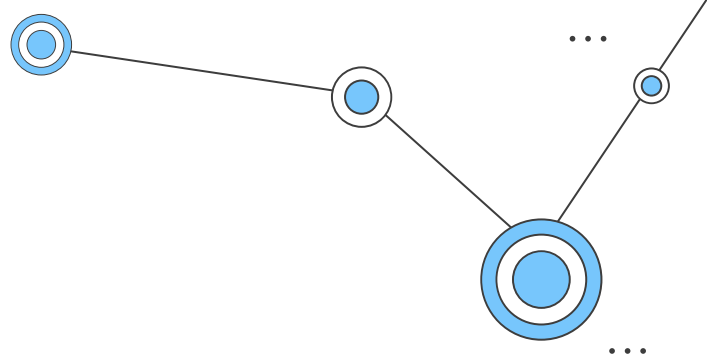
Libraries used

Learned in class

- Beautiful Soup
- Pandas
- Requests
- JSON
- Numpy
- OS

New libraries

- Folium
- Webbrowser
- Pretty_html_table

Demo

Resources

Bartholomew, D. (2017, August 28). *Northridge earthquake: 1994 quake still fresh in Los Angeles minds after 20 years*. Los Angeles Daily News. Retrieved October 8, 2022, from https://www.dailynews.com/2014/01/11/northridge-earthquake-1994-quake-still-fresh-in-los-angeles-minds-after-20-years/

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Thanks!