Final Project

Objective

Explore and report on a topic that is characterized by geographic locations, numeric data, and conceptual or public opinion. To get started, pick a topic for which you find sufficient data. Express your topic as a research question that is well-motivated and connected to data to which you have access. I expect you to access multiple data sources. Identify, collect, clean, organize, explore, and analyze your data. Produce a presentation and shiny application that report the results of your exploration and invites users to explore further through a website. Submit your work as a demonstration of your skills and knowledge of R. Your submission should include plots, maps, text analysis, and advanced exploration methods such as PCA or EFA (to reduce the dimensionality of you data), cluster, sentiment, and topic analysis.

Deliverables

Preliminary Document that describes the project you have planned. Each project must be unique and must be approved.

A Presentation that needs to be appropriate for live delivery and leave-behind. The presentation should be reproducible, which means that the slides have be done in markdown with sweave or knitr. If you cannot make a reproducible presentation, a reproducible report needs to be prepared in addition to the slides.

A Shiny Application that gives users the ability to explore the data to understand your conclusions.

Working Code that includes commentary and, at your option, a document that explains the work you did. The document is especially important if you have, for example, built a database to support your analysis.

Data

- News API
- Yelp
  Yelp developers
- reddit developers
- Programmableweb.com Extensive list of API sites.
- API for local data (limited)
- Computer World list of R packages to import public data
- List of electic vehicle charging stations - world wide
- NOAA Climate data online
- National Centers for Environmental Information Web Services
- Analyze Boston
- San Francisco Data

Examples

- Boston area micro-climates: Boston area residents often claim that they live in an area with a unique climate. Is there evidence to support this? Consider, for example downtown, the south shore, the north shore, Cape Cod, and Martha's Vineyard. Consider today and the development over the past 25 years. Climate data, weather data, newspaper articles.
- Restaurant comparison: Boston and San Francisco. Do restaurants cluster by type? How close do restaurants have to be to be in a cluster? In Boston, for example, Italian restaurants are associated with the North End. But, what if you distinguish between northern Italian food and Sicilian food? Are all the restaurants of a particular type equally good? Certainly not. But what else can you find out? When restaurants are clustered, do those with food violations hide in the crowd? How do Boston and San Francisco compare? Do they have the same kind of clusters? Use city data, Yelp,
- There has been prolific growth in the number of charging stations for electric cars. On the surface, it appears that electric car ownership should be more convenient with so many places to charge. But, is that true? How long does it take to charge a car? Are the charging stations in areas with restaurants and stores -- or at least a warm place to wait for the charge to complete? Are there areas in the US where the distance between charging stations make travel between those points problematic? How about other areas in the world?

Grading Rubric TK