

Project – Data Visualization in RShiny

IE 6600 Visualization and Computation for Analytics

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Overview

The purpose of the project is to apply the knowledge learned in the class to real-world problems. Projects will help students gain working experience in data visualization, data processing, data exploration, and development of a web app, here we use R and RShiny to approach such goals.

Plagiarism will be considered if project documentation with a very high degree of similarity with other teams' work or other resources. Such academic dishonesty will be handled by university policies.

Group Arrangement

One project for R with RShiny in 4 students. You may drop a discussion on Campuswire to seek out other group members. There will be one team sign-up announcement posted on Campuswire. Each team only needs to reply to the announcement once with your team members' full names. After the due, you will receive a team number in the same announcement.

Project Proposal

Each team only needs to submit one proposal (**1 page**) as a **.pdf** file to the Canvas.

The proposal structure should be as follow:

1. **Title:** your project title
2. **Team members:** All team members' full names
3. **Overview (1-2 paragraphs):** Briefly describe the problem, the background of your dataset, and your goal.
4. **Methods (1-2 paragraphs):** The details of your methods/techniques for solving this problem. These methods/techniques may include tidying data, creating function/algorithm, data processing, and data visualization. You may also include data analysis or machine learning (e.g. data mining, NLP, deep learning, etc.) techniques.

Project and Presentation (project files and slides)

Project

The entire project is to develop a data visualization web app by using RShiny. Criteria of the RShiny app implementations as follows:

(NOTE: RShiny App is supposed to run successfully and reach out to your goal)

Import Data	Use appropriate data processing skills/functions we have learned in the class so far if it's necessary.
Tidy Data	
Data Transformation	

Data Wrangle	
Relational Data	
Algorithm/function	At least two functions are implemented in the app. You may recycle the functions you created in the homework. You are also encouraged to create new functions/algorithms by needs.
Interactive Widgets/Front End	The app should include a functional front end with interactive widgets.
Data Visualization	Include data visualization features in your app which should be useful to approach your goal.
Models (optional)	Statistical models, machine learning, NLP, data mining, etc. you may apply to your data to reveal some trends or patterns.
Other Novel Functions, Hover Interaction, etc. (optional)	You are encouraged to build up any interesting additional features by using materials we covered in the class or from other public sites (be sure to acknowledge the authors and cite the resources)
Project Complexity	Project complexity should be appropriate to the 6000-level class and the materials covered in the class

Presentation

Each team will present an in-class presentation during the last two weeks. Each team member is expected to speak during the presentation. The criteria for the presentation as follow:

Introduction	What is the problem?
	Why is it worth further research?
	How could you solve this problem?
Data Set	Introduce the background, and structure of your data set
Method	Select and introduce two interesting implementations from your app
Results	Present the results which approach your goal/s

Run your Shiny app demo	Shiny app is expected to run successfully; the showcase of the app demo should be presented clearly and able to approach your results.
Conclusions/Discussion	Discussion and conclusions should be rational and useful
Team Collaboration	All the team members are supposed to involve in and contribute to the project
Slides: Materials and Figures	The contents and figures included in the slides should be well-designed and clear for the audience to understand.

Project Files and Slides

Once the project is completed, you need to compress all your files and slides into a **.zip** file. In the **.zip** file (**project-RShiny-yourTeamName.zip**), it should contain the following components:

1. **Slides** as a pdf, ppt/pptx, or keynote file (you don't have to use RMarkdown to make slides)
2. **RShiny app folders** (included .R files, miscellaneous folders, www, etc.)

Each team please submit your **.zip** file on Campuswire as a note with the title **project-RShiny-yourTeamName**. Also include: (1) the title of your project (2) the link/file of your dataset (3) The conclusion on your project results.

Dataset

Feel free to select a dataset only from the following database:

- Census Bureau <https://data.census.gov/cedsci/>
- U.S. census data and stats <https://www.usa.gov/statistics>
- FDA(openFDA project launched by FDA) <https://open.fda.gov/data/downloads/>
- Stanford Network Dataset <https://snap.stanford.edu/data/>
- UCI Machine Learning dataset <https://archive.ics.uci.edu/ml/index.php>
- CDC <https://www.cdc.gov/datastatistics/index.html>
- WHO <https://www.who.int/data>
- World Bank <https://data.worldbank.org/>

Peer Review

Each team project presentation will also be graded by your peers in the class. The rubric will be posted on Canvas, Peer Review – Assignment.

Team Members Evaluation

A survey will also published on Canvas for team-wise peers. Each team member will have the chance to evaluate your team members' performance and contribution to the project. The rubric will be posted on Canvas, Team Members Evaluation – Assignment.