Heart Disease Prevention

“The Show”

Abstract

An overview of Heart Disease prevalence in the United States and what you can do to reduce your own risk of Heart Disease.

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Introduction

The Health/Fitness group decided to explore the details behind heart disease prevention. Heart disease is a deadly condition that can affect everyone and is preventable by making good life choices. “The show” will explain what heart disease is, why we should care about it, and what we can do about it. We used several studies that illustrate that there is a great deal we can do to reduce our chances of contracting heart disease. If we are aware and make sound decisions about what we do with and what we put into our bodies, then we can eliminate heart disease as the number one killer in the world.

Literature Review & Research Methods

The Health/Fitness group proposed a few potential topics before deciding that Heart Disease would be the focus of The Show. In order to determine which topic would be the best to use for the The Show, the team proposed a few topics in a shared Google document along with several resources for each topic. These topics and their subsequent resources were reviewed by all members, and Heart Disease won based on the sheer volume of data available as well as its relative importance. After deciding on a topic, the team worked to narrow down the scope from over 15 data sources to focus on Heart Disease prevalence and its behavior risk factors: smoking, alcohol consumption, diet and physical activity.

Production Methods

Visualizations

Leaning on techniques from Kirk’s “Data Visualization: A Handbook for Data Driven Design,” the Health/Fitness group designed a color palette and subsequent R theme that would be easily readable to the eye and optimize the data-to-ink ratio while aesthetically representing the colors naturally found in the heart - blue and shades of red.

A color palette was created using diverging shades of red that were pleasing to the eye with a contrasting nebulas blue. In order to remind the audience of the theme, heart disease, multiple shades of red are used throughout the presentation. To present a cohesive theme, all presentation font is nebulas blue. Additionally, Helvetica font was selected for its readability and a font size of 17 was chosen to ensure titles, legends and axes were easily readable. For the illustration graphics, similar colors were chosen to present a "medical" theme that contained earthy reds and blues. The team developed a style guide to help with coding a consistent theme between visualizations.

Various types of charts were selected for the final heart disease show. The chart type was carefully chosen using best practices in data visualization to communicate a clear message to the viewer. Bar plots were used to show comparisons of groups, percentages, and numbers. A custom timeline was created to demonstrate the effects of quitting smoking over time. A choropleth map was used to show variation in data across geographic regions – differences between states. A time series, line graph was used to show changes in heart disease deaths over a long period of time (1950-2016). The network analysis visualization was created in Gephi using data from *The human disease network*. Finally, infographics were used sparingly to compliment the data visualizations in the heart disease presentation.

Communication

The Health/Fitness group met regularly on Saturdays over BlueJeans to discuss progress towards major project milestones throughout the 10 weeks. Additionally, email communication was leveraged for intra-meeting communication to share progress, address questions and get agreement on any questions that came up throughout the progress of this project.

Software

The primary tool used to create the visualizations used in The Show was R, with most data sources being sourced from csv files. Some csv files were sourced as is from their corresponding website location and others were manually created based on values represented in journal articles. The Behavior Risk Factor Surveillance System slide used a SAS transport formatted data file and the R package “Hmisc” converted the data file into a data frame. The network analysis was created using Gephi and the visualization was developed using data from *The human disease network* from a gexf file. The slides were initially composed in Google Slides that could be easily downloaded as image files to compose The Show. Google Documents was also leveraged heavily throughout the process as a collaboration tool. Additionally, Github was used to store all csv data files, visualization output and R code used to generate the visualizations. This allowed us to work off of one anothers code as well as quickly spot differences in each others’ process.

Future Improvements

If the Health/Fitness group were to tackle this project again, the team would choose to become more familiar with CSS and HTML code from the beginning to be able to better consider that functionality more thoroughly and how it could contribute to the overall flow of the presentation. Additionally, the group would have considered expanding their research to consider data sources that could lend themselves to a broader variety of visualization types. Overall, the group worked wonderful together and respected the value that each individual brought to the project and would absolutely consider working together again.

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Text Resources

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