Project Report

Preetika Shashidhar Sastry

Title: An Interactive Dashboard for the National Wool Museum's Sales

URL: https://preetika-sastry-wool-sales-dashboard.shinyapps.io/woolsales/
Dataset Source: https://data.gov.au/data/dataset/geelong-national-wool-museum-sales

Dataset Description: Contains 821,338 rows covering 10 years of sales data from 2005-2015, including item descriptions, locations, postcodes, dates, selling price, etc.

Data Processing: Most of the data processing code is contained in the app.R file and performed every time the app is run. However, I had to use API calls to geocode the postcode data and this processing took a very long time for this amount of data. For this reason I saved the geocoded data as csv files and am loading them directly into the app.R file from the app directory.

Overview: Acting as a volunteer Data Analyst for the National Wool Museum, I have created an Interactive Dashboard that can be used by their Sales Team to quickly obtain key information about the museum's sales performance. The dashboard is able to immediately answer key questions such as:

'What are our lifetime sales/revenue? Have they gone up or down in the past year?'
'Does most of our revenue come from tickets or shop sales?'
'What time of year do we see the most activity?'
'Which products in the shop are performing the best?'

The dashboard ultimately provides the Sales Team with a powerful tool to gain insights into the museum's product performance, reach, revenue trends and customer demographics. By understanding where most of the revenue comes from i.e. whether it's local visitors, international tourists, or shop sales, the museum can tailor its marketing and outreach efforts. The geographic distribution data can reveal potential new markets to target, while seasonal insights allow the museum to plan events, promotions, or exhibitions during peak periods. Additionally, the dashboard can help the museum optimize its inventory and ticket pricing by analyzing sales patterns.

Design Principles Considered:

Dashboard:

- The dashboard has been distilled to display only information that the sales team would find useful.
- Key metrics have been placed at the top and highlighted so the user's eye is drawn to them.
- Visuals related to sales categories have been grouped together and follow similar color schemes, and the same for the location related visuals.
- The entire dashboard is contained on a single page, eliminating the need to click between tabs or scroll.
- The colors of the dashboard have been chosen to be aesthetically pleasing whilst maintaining consistency across similar data. (eg: Shop Sales are always in red , local sales are always green)
- The sidebar and all plots have been made collapsible to allow the user to focus on information of interest.
- Global and graph-specific filters have been provided to make the dashboard highly interactive and able to answer a large amount of questions by changing a few settings.

Plots:

- Wherever possible, axis titles were removed if the labels made it obvious what kind of data was being shown
- Gridlines and borders were largely removed and informative data labels were provided instead. Axis lines were removed to further reduce clutter.
- Charts were sized based on the data they displayed. (Line chart was given more horizontal space to ensure that the user would not have to work with a small cluttered view of the chart)
- Effort was made to keep chart headings concise and informative
- **Bar Charts:** Vertical bar charts have been used when displaying 2-3 categories and horizontal bar charts when there are more categories. This is to ensure that labels don't overlap and vertical space can be conserved. Colors were assigned to bars based on categories and value weights.
- **Line Chart:** Plotly was used as opposed to ggplot2 to generate an interactive line chart. The user is able to drag and set the time period for the chart specifically and zoom in and out of time periods as they please. Colors were assigned to the lines based on sales type. Though the lines by themselves are not color-blind friendly, on hovering over them, a colorblind user can see detailed text data labels.
- **Map:** The map is set to already be zoomed in on Australia when the user selects Local Data to prevent the need to zoom in. It also automatically zooms out once the user selects International data. The chart is aimed at providing a rough view

of the geographical distribution of sales; however if the user wishes to get a more detailed idea of sales in a region, they can hover over any of the data points and details are shown. Geocoding the data took a lot of processing time and so I pre-processed this data and selected only a subset to display on the map. I made a note of this on the dashboard to ensure that the users would not be misled by this and would use the visual as just a rough guide of the regional distributions.

- **Data Cards:** The data cards at the top of the screen give the user a quick idea of the overall Sales and Revenue of the museum as well as the change over the past year. The color of the %change text changes to red if sales/revenue have gone down. Icons like the arrows, dollar signs and shopping carts have been provided to improve aesthetics without causing clutter.
- Pie Charts were avoided