Tracing the History of Restaurant Menus

UIUC CS416 Data Visualization Final Project Essay

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Project Purpose

This project aims to create a narrative visualization implemented as an interactive web page, using the knowledge of visual communication and narrative structure learned in course CS416. The narrative visualization is built with scenes, annotations, parameters, and triggers. The only libraries used are d3 and d3-annotation, as a practice of D3 programming.

Data Source

The dataset we used is the NYPL-menus. It is a product of the project named "What's on the Menu" launched by NYPL (New York Public Library) in late April, 2011. The project aimed at scanning and transcribing all the 45,000 menus contained in the New York Public Library's menu collection dating from the 1840s to the present. Till now, a quarter of them have been digitized and collected in this database.

To prepare the dataset for the visualization, I used the data cleaning and provenance tools and techniques introduced in course CS513. The main tools used include OpenRefine, SQL, Python and YesWorkflow.

Messaging

The NYPL-menus contains great treasures regarding the specific information about dishes, prices, and all the stories these things tell us about the history of food and culture. However, because the dataset is huge and the data quality is "messy", it is quite hard for people to directly use it and get the information they are interested in. So, I am trying to use narrative visualization to tell the story of this dataset.

As a small attempt at using visuals to represent the data and information, this project did not attempt to visualize all the dimensions of the dataset. It only focuses on the 3 dimensions: (1) the age of the menus in the collection, (2) the restaurants which have the most menus being collected, and (3) the dishes that are most frequently appeared on the menus and their average prices.

Narrative Structure

The structure I used to design the narrative visualization is an interactive slide show. Like a story book, it contains the home page and the end page. Each web page uses the consistent background image, the header, and the navigation bar. The previous page arrows ("<<") and next page arrows (">>") are used on every web page to guide the viewers to walk through the slide show. The buttons on the top of each web page provide the viewers the opportunity to directly go to the page they are interested in.
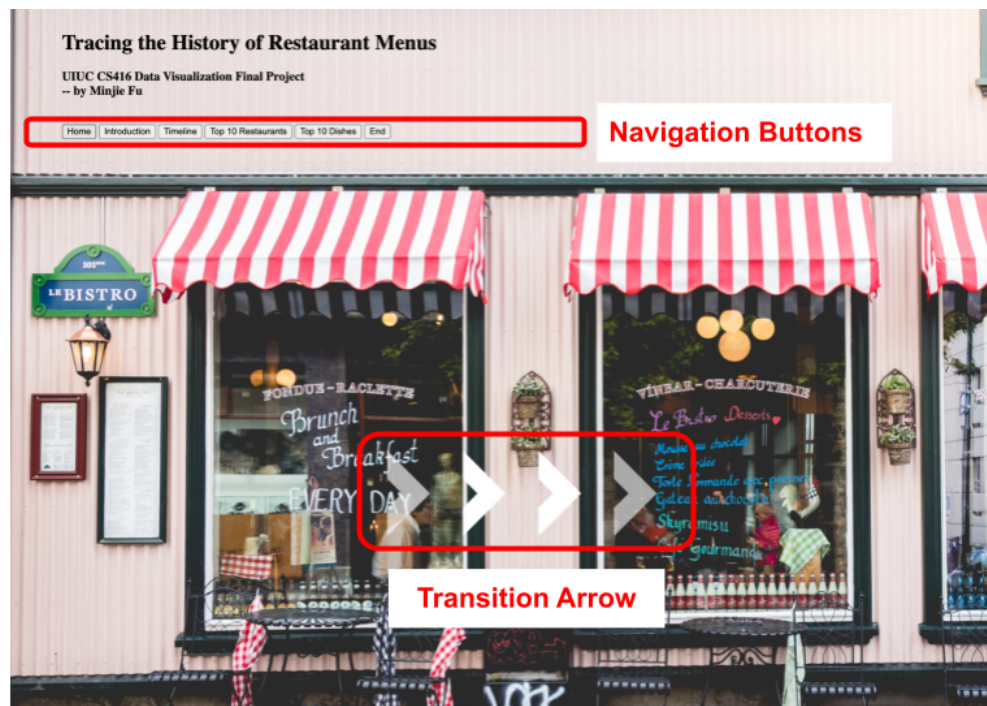
Visual Structure

The visual structure for each scene contains header, navigation buttons, scene title, chart, and transition arrows. The scene title and the labels ensure the viewers understand the data. Also, the annotations are used to highlight the important information each scene wants to convey. The transition arrows and the navigation bar buttons are all put at the obvious positions, which help the viewer transition to other scenes.
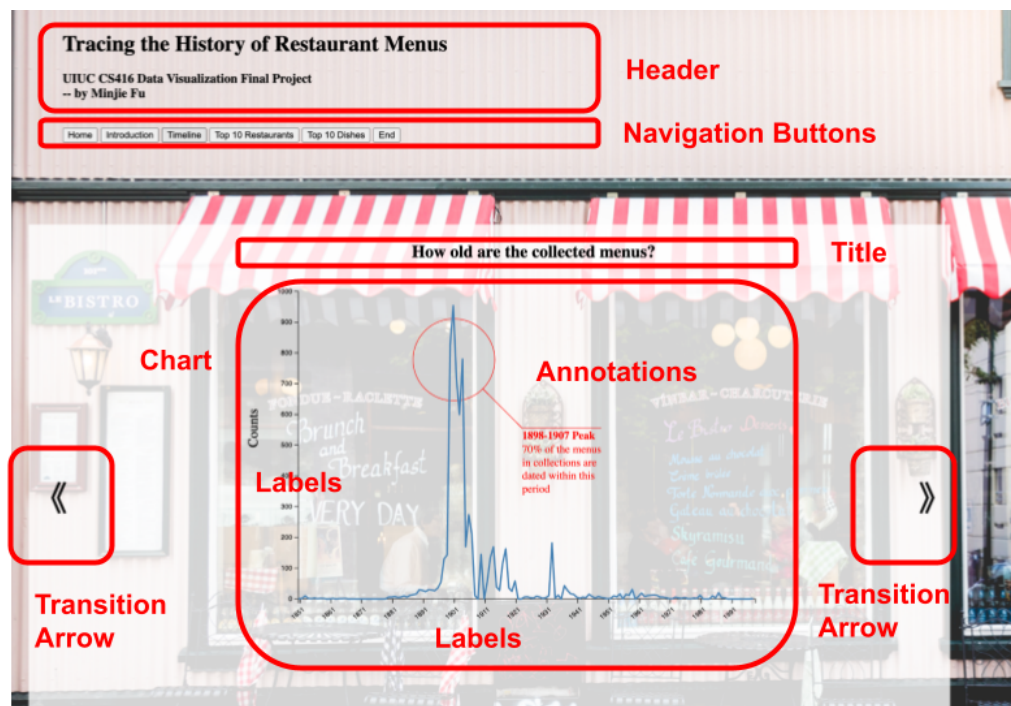

Scenes and Visual Ordering

The slide show contains 6 scenes. Besides the front cover and the end cover, it is ordered from general to specific, that is, from the introduction page to three chart pages.

The three chart pages are ordered from overview to details. It starts with an overall timeline of the menus in the collection using a line chart, and then goes deeper to the details of the restaurants and the dishes using the bar charts. The "Top 10 dishes" scene includes 2 dynamic visualizations, automatically updated every 1000ms.

Annotations

The project used the d3-annotation library as a template for all the annotations. The annotations in the narrative visualizations are effective and consistent. The important information is highlighted and conveyed to the viewers.
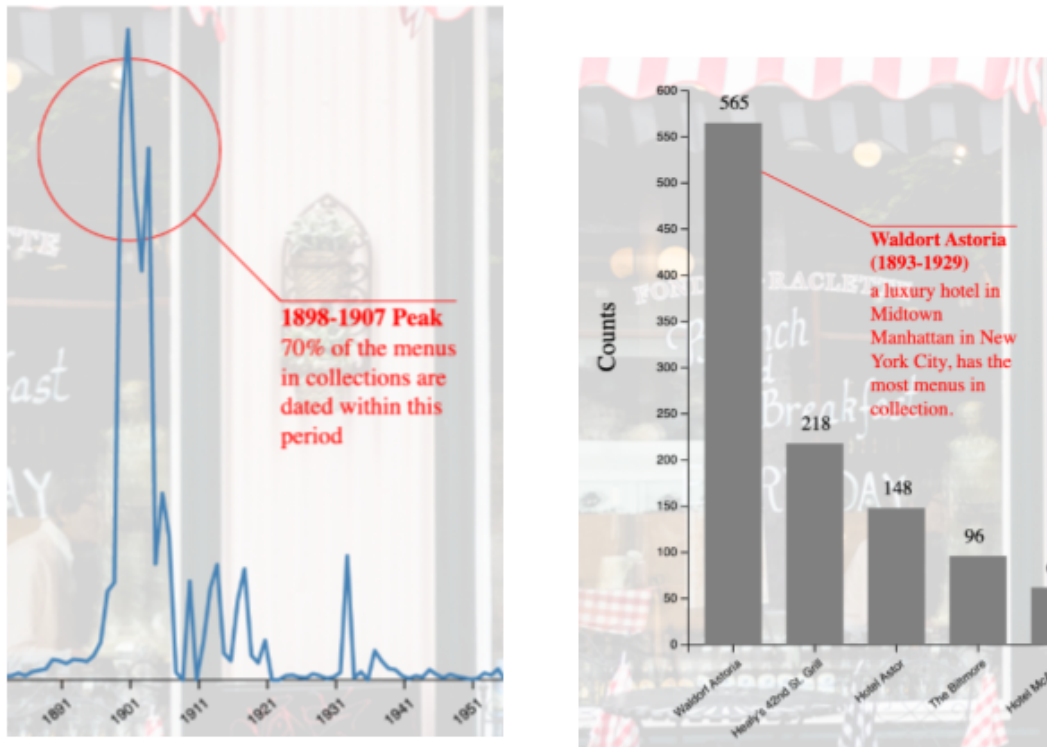
Parameters

In the "Top 10 Dishes" scene, a boolean flag variable is used as the parameter to set different visualization states. When the parameter value changes, the update function is triggered and the visualization is redrawn. When the flag value is true, the state shows "how many times the dishes appeared on the menu". When the flag value is false, the state shows their "average price". Because there are only two states, the parameter values are not bound to widgets such as time sliders or drop-down menus. Instead, it is automatically updated every 1000ms.
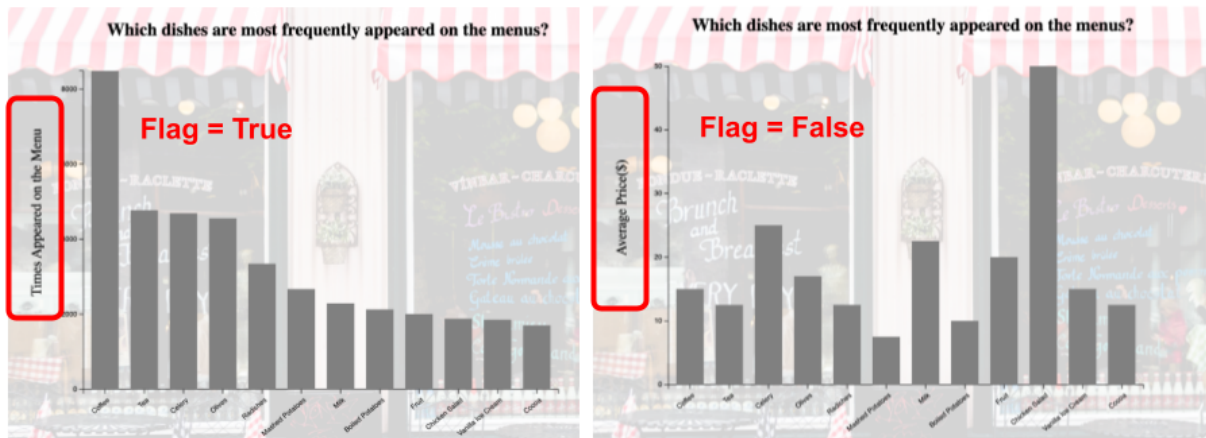
Triggers

This project uses the timer trigger and the event trigger. The timer trigger is bound to the time elapsed. After 1000ms elapsed, the timer trigger fires and causes the changes of parameter values, as well as the changes in states, The event trigger is bound to a mouse click event. When the viewers click the navigation buttons or transition arrows, a scene transition occurs. The trigger uses understandable icons and is put at the obvious positions, which are understandable to the users.

Conclusion

This project is a practice of the knowledge of narrative visualization we learned in course CS416. Thanks to this course, we learned not only the high-level concepts of the narrative structure (scenes, annotations, parameters, and triggers), but also the practice level of using tools such as tableau and d3 to realize the data visualization.