Introduction to Web Programming

Course Project – #2 Statistical portal

(Finnish Municipality Data Explorer)

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1. Introduction

The Finnish municipality data explorer is a web application that can be used to explore different datasets on a map and on a chart. The first page of the application consists of a map and some buttons that allow the user to change the map data based on different years. The data on the map will default to municipal elections on page load and the buttons can be used to change the map data based on years. The other data that can be viewed on the map is parliament election data. The data is displayed to the user with the use of pop-up windows on hover and click events. When hovering over the Finnish municipalities the user will be able to see the name of the municipality in a pop-up window. For more concrete data the user can click on a singular municipality which will display another pop-up window which displays the winning election party in that area and how many votes it gathered in the selected year and some other data that can be seen in figure 1.

Figure 1. Municipal data on a click event

The top right corner of the map which can be seen in figure 2 & 3 allows the user to toggle the election and parliament datasets with the use of checkboxes. There is also the option for the user to access his/her current geolocation or even change the tile layers of the map to make the map look different.

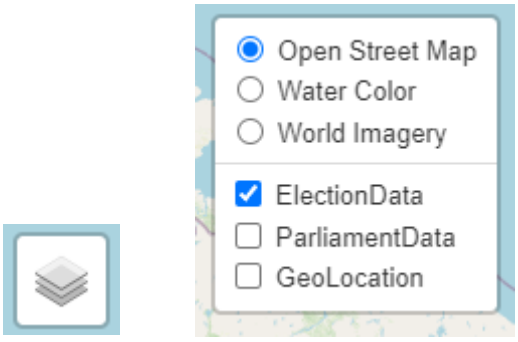

Figure 2 & 3. Map data handler – top right corner of the map

For the user to gain access to the chart data that was previously mentioned in the first paragraph, the user can click on the “Get additional data charts” on the municipal pop-up window which can be seen in figure 1. By clicking on this the user will be navigated to a second html page which displays more data on the specific municipality that was selected in the map view. On page load the chart will default to employment data between the years 2000 – 2021 however, the user can change the years which the data is searched for with the use of the two sliders. The left slider defines the starting year that the data is searched for, and the right slider defines the very last year. When the user is satisfied with the year range on the two sliders the search button must be pressed in order for the chart to update.

In addition to the sliders the user can drag’n’drop the three different card-like components above the chart to get access to different datasets. By dragging one of the components on top of the chart and releasing the hold on it will reload the chart with the new dataset. One thing to note with the drag’n’drop feature is that it only works on a desktop device. On mobile and tablet devices the drag feature doesn’t work as intended however, the elements can be touched and then after pressing the chart it will load the element’s dataset that was most recently touched. There is also the functionality for the user to export the data chart as an SVG or PNG image with the use of the two buttons below the chart. And lastly, the user can navigate back to the map page via the “Go Back” button.

2. Project Tools

This section depicts the different tools used for creating the course project.

Visual Studio Code – Coding environment

Live server – VsCode extension

Used coding languages: JavaScript, HTML, CSS

Leaflet – Open-source library (https://leafletjs.com/)

Frappe chart – Open-source library (https://frappe.io/charts)

HTML 2 Canvas – Open-source library

Google fonts – Open-source service provided by Google (https://fonts.google.com/)

3. Project points

Feature	Points
Well written PDF report	3
Application is responsive and be used on both desktop and mobile environments	4
Application works on Firefox, Safari, Edge, and Chrome	3
The application has clear directory structure, and everything is organized well	2
The application shows relevant data on a map and user has change to change the data	3
The application shows relevant data on a chart and user has a chance to change the data	3
By clicking the map user has an option to get additional charts covering that area	4
There are more than two items of data available – this means that there are two API calls made	4
Able to download chart visualization as a PNG or SVG image	2
Added CSS styling to website components	3
Drag'n'drop new data to chart	4
User can define the years that the chart data is shown for – With the use of two different sliders (Slider years change depending on data)	4

User can change the tile layer of the map to a different theme (top-right corner) – Doesn't default to Open Street Map when changing year	2
User can switch between different layers of data on map – One layer is for municipal election data and the other is for parliament data	2
The user can toggle the current geolocation on and off. (This can be tested in developer tools – Sensors - Location), so you don't need to go for a run.	2
Sum of points	**45**

Worthwhile mentions

The application is designed for mobile phones with the dimensions of at least 375 x 660. It can be used on smaller devices but there might be some vertical overflow which will lead to some components to be hid. However, these components can be reached by scrolling the screen.

For testing purposes, you will need to refresh the page for the drag'n'drop feature to work on mobile. This is if you switch the device from desktop to mobile/tablet during its current instance. Suggestion for testing is to test with one device first and afterwards start over again for the other device.