Navigating Salaries and Rent Across Cities

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***Abstract*— The project plans to utilize rent and software engineer salary data from the US Bureau of Labor Statistics to create an interactive map that compares the average software engineer salary to rent ratio across different cities. Users will be able to assess the cost of living and financial advantages of one city over another. We plan to use various libraries from Python to analyze data and visualize the outcome through a website in React. The map will allow students and others to make informed decisions as they decide on the city they decide to work and live in.**

I. Objective

We aim to create an interactive choropleth map across cities in the United States that compares the cost of living to the starting and median software development salaries there. With this tool, users will be able to make a more informed decision about where to take their careers to get the most out of their paycheck.

II. Motivation

Choosing where to pursue one's career can be a daunting task, especially as the cost of living across the country outpaces income earned. Software developers have options for work almost everywhere in the US, making the choices seem overwhelming. As upcoming graduates soon to enter the workforce, this is a tool we also have an invested interest in creating. By analyzing both starting and median salaries, developers will know where to start and where to go once they have more work experience to their name. We aim to simplify this task greatly with an interactive tool that clearly highlights the best salary to cost of living ratios throughout the United States.

III. Data

Salary and Rent-price data across geographical locations will be obtained from the U.S. Bureau of Labor Statistics using their API. The Bureau of Labor Statistics provides data needed for salary, which includes average salary across regions, occupation, and metropolitan areas. For rent data we will use Zillow's research data meant for academic work. This is a huge database that provides rent and housing prices by zip code, metropolitan area, county, etc. We expect those data to be relatively clean since they're coming from an API and CSV files provided for academic use. Those data will be displayed in an interactive map for users to make comparisons with, and also used to calculate the rent to salary value for different regions. The geographic granularity in which we enable the user to make value comparisons will depend on the quality of data provided by Zillow and the Bureau of Labor Statistics. We will have to use the least granular data of the two.

IV. Team Responsibilities

1) Jacob Armiger – Creating web page in React
2) Zac Perry – Retrieving data from UBLS
3) Justin Bower – Creating tool for comparing the value of Salary vs Rent between locations
4) Dong Jun Woun – Styling website and researching best libraries to use for geodata

V. Milestones

There are a few milestones that we hope to achieve over the course of this semester. These milestones provide a clear path for the project and will help us stay organized as we work towards the final product. The first step is data collection and cleaning. We will need to get all of the data that we need regarding software engineering job salaries in different cities and different cities rent prices. Alongside this, we may also need to clean the data depending on its integrity. Next, we will need to analyze the data. This will involve some calculations, creating graphs, and drawing comparisons between the gathered data sets. Next is to create the interactive map and the website. This will be done using a variety of web technologies and will also involve embedding our data findings onto the map. Lastly, our final goal is to host the website. This step will involve possibly containerizing the application and hosting the container via some hosting service. After all of these milestones are completed, we will have a fully functioning website with an interactive map allowing users to view and interact with different cities and view the data regarding rent pricing and software engineering job salaries.

VI. Expected Outcome

The expected outcome of this project is to have a fully interactive website with a map that allows users to view different cities and look at the comparisons between software engineering job salaries and rent prices. Our hope is that this will provide an easy, accurate way for students and job seekers to view these comparisons and make more informed decisions when it comes to moving to new cities for new jobs. Through this project, we will all gain valuable experience using a wide range of technologies that will be marketable and valuable when applying to full time jobs.

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