

Medicaid and CHIP Enrollment Rate Shiny App - Christopher Gottwaldt

[Shiny Application](#)

[R Script Link](#)

[Introduction]

Access to healthcare is a pressing concern for many Americans, especially during times of need such as emergencies or the COVID-19 Pandemic. Some are fortunate enough to have access to healthcare provided to them through their employer, but many do not have this privilege. The programs Medicaid and Children's Health Insurance Program (CHIP) provide free or low-cost health insurance to those in need. CHIP is specifically for covering children of families with too much income to qualify for Medicaid (although in some states it covers pregnant women as well), and Medicaid covers low-income families, the disabled, and the elderly (among others in some cases). More information can be found [here](#).

[Purpose]

This analysis explores the trends of US States and their inhabitants' changes in enrollments in Medicaid and CHIP to observe irregularities.

[Dataset Description]

This dataset was taken from Data.Medicaid.gov, and was found at the following link:

<https://data.medicaid.gov/dataset/6165f45b-ca93-5bb5-9d06-db29c692a360/data>

I obtained this dataset inside of my script by using a GET request at the following API URL:

"<https://data.medicaid.gov/api/1/metastore/schemas/dataset/items/6165f45b-ca93-5bb5-9d06-db29c692a360>"

This dataset contains 7812 rows and 26 columns, and I am mainly using the total Medicaid and child enrollment data contained within.

[Interesting Findings]

I was able to see when states had the highest changes in enrollments in these healthcare assistance programs, and I was quite surprised to find just how much variance occurs. It was also interesting to the “rubber banding” effect in that there would almost always be an increase in enrollments followed by a decrease. This makes sense of course, but it was fun to see in action. I also was surprised to see how the graph behaved around the COVID-19 pandemic; it has high variance around 2020, but I was not expecting a less turbulent trend in the years following the breakout. There's surprisingly the largest amount of turbulence in California near the end of 2023, which may be due to people losing their Medical coverage (according to this [article](#)). These mentioned trends can be seen in **Figure 1** below.

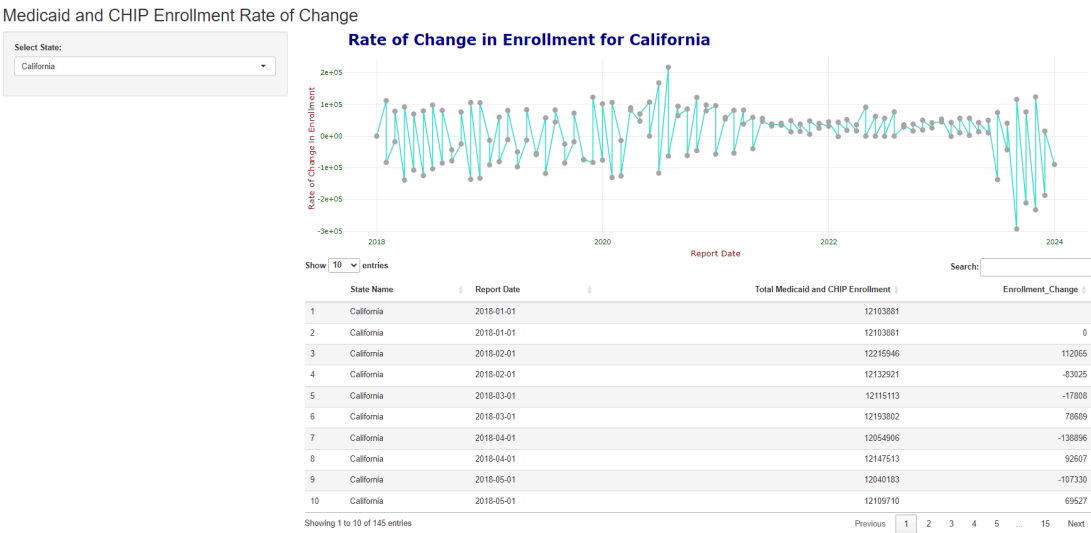


Figure 1: Top 10 Medicaid and CHIP Enrollment States

[Interface Design]

I designed the interface to be dense with information and easy to use; For the “Rate of Change in Enrollment for <State Name>” graph you can see the specific trend over time (about 2018 to about 2024) for a US State of your selection in the dropdown menu. This allows for some exploration, and I personally found it interesting to check each state’s enrollment data. This graph is displayed in Figure 2 below. I also included a table to display the data points for closer inspection, and you can adjust the number of entries, sort by any of the columns, and can click on the row to highlight it.

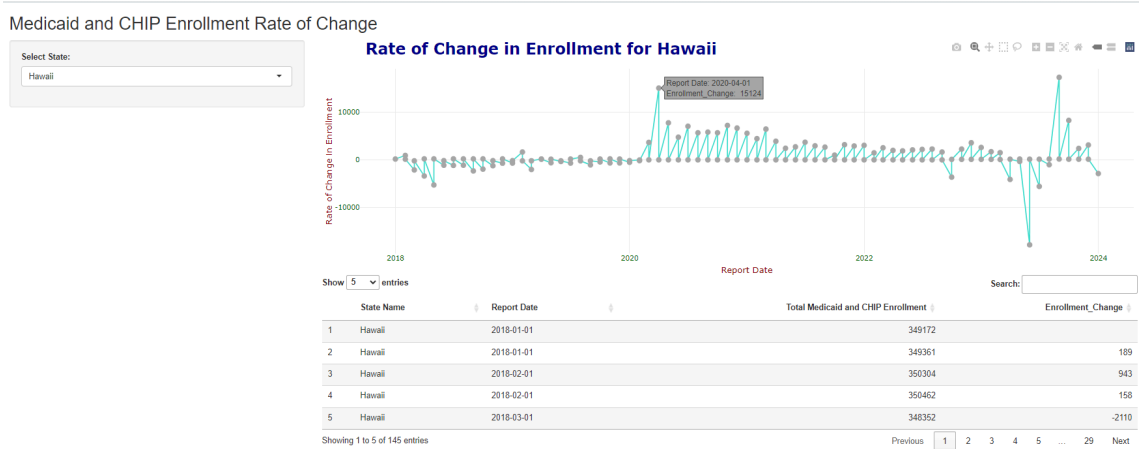


Figure 2: Rate of Change in Medicaid and CHIP Enrollment for Hawaii

[Data Preparation]

I obtained the data with the aforementioned GET API request, and then read the received data into a **Tibble** object using `read_csv()`. The data required a little bit of preprocessing, like changing the date information into a **lubridate** date vector, and then computing the lag on it to give us the rate of change. I then needed to filter it according to the dropdown selection to produce the graph shown in **Figure 2**.

[Reactive Component Structure]

My dashboard has multiple reactive components; In **Figure 2** you can see how your state selection in the dropdown menu renders a line graph of that state's enrollment trends, and information is displayed about the data points when they are hovered over with the mouse. The table can also be interacted with to change the quantity of entries, to sort the entries by any column ascending or descending, and via searching.

[Design Decisions]

I wanted to have a clean, minimalist aesthetic, so I made the graph using a color scheme that is accessible yet aesthetically pleasing. If I were to continue this, I would make the UI more aesthetically pleasing by maybe centering the state dropdown selector and improving the colors of the graph.