

## HealthCare Access 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' enrollments in Medicaid and CHIP to observe differences.

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

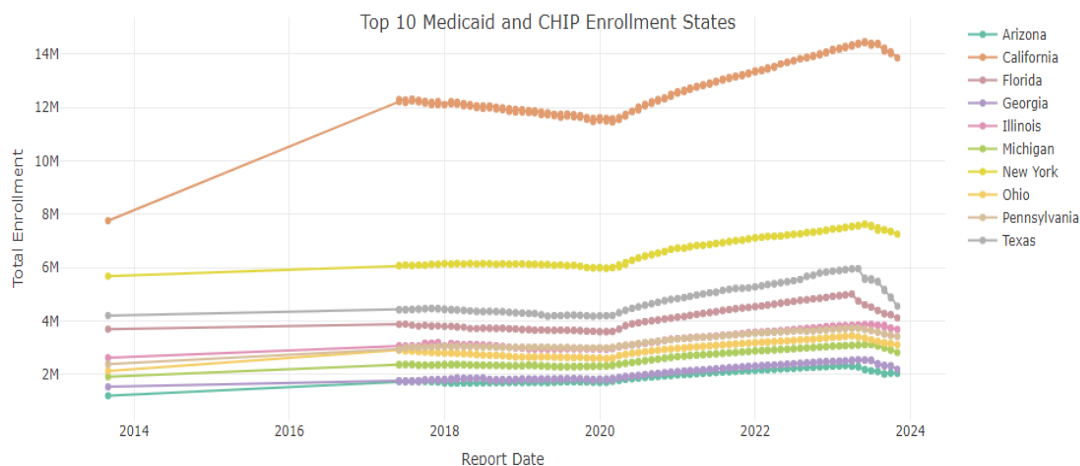
<https://data.medicaid.gov/dataset/6165f45b-ca93-5bb5-9d06-db29c692a360/data>

I obtained read 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.

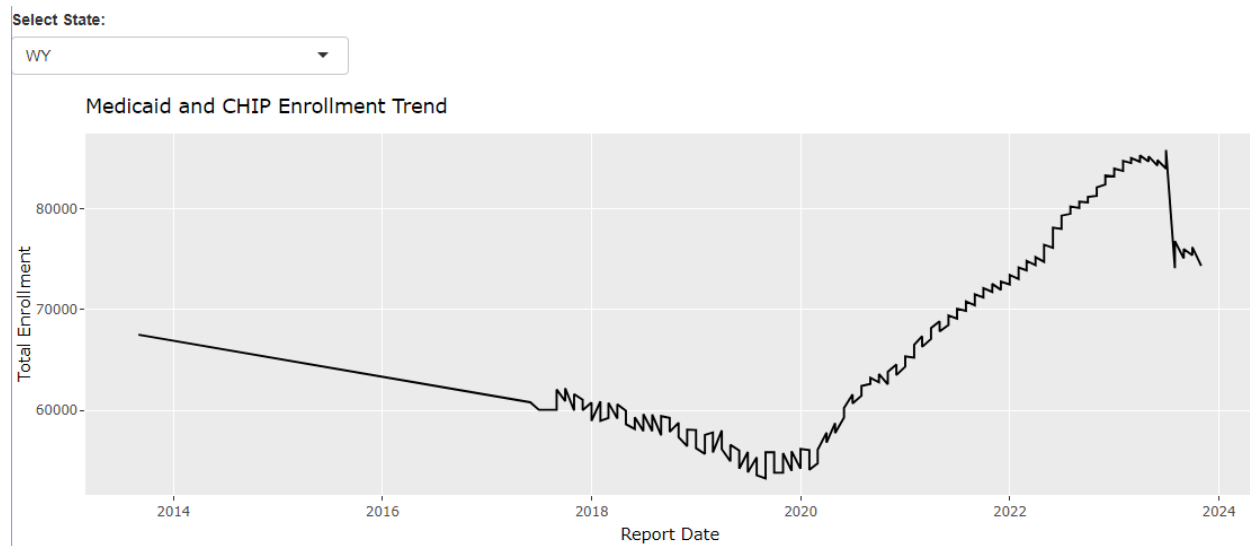
**Interesting Findings:** I was able to see which states had the highest enrollments in these healthcare assistance programs, and I was quite surprised to find that Texas was the 3rd highest state. I also was surprised to see just how many enrollments were taking place after the COVID-19 pandemic; I was expecting a spike around 2020, but I was not expecting a clear upward trend in the years following the breakout. These trends can be seen in [Figure 1](#) below.



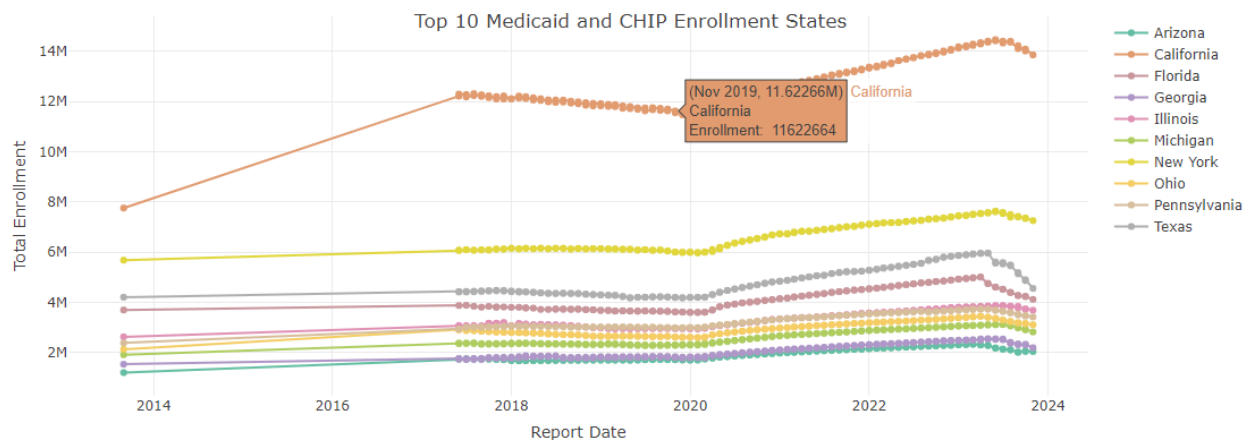
**Figure 1:** Top 10 Medicaid and CHIP Enrollment States

**Interface Design:** I designed the interface to be dense with information and easy to use; For the “Medicaid and CHIP Enrollment Trend” graph you can see the specific trend over time (about 2014 to about 2024) for a US State of your choice 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 wanted to show the Top 10 highest enrollment states, and this graph has the 10 states with the highest enrollment value listed, and color codes corresponding to which state the trend belongs to. Hover over a line to discover which state it belongs to, and to see some specific information about the data point. This is shown in Figure 3 below.



**Figure 2:** Medicaid and CHIP Enrollment Trend for Wyoming



**Figure 3:** Top 10 Medicaid and CHIP Enrollment States with Mouse Hovered over California

**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()`. I then needed to filter it according to the dropdown selection to produce the graph shown in Figure 2.

For the second graph, the data needed to be manipulated using some `dplyr` functions to find the maximum enrollment value for each state and to display the 10 highest states by their enrollments. These were then graphed, and the result can be seen in [Figure 1](#).

**Reactive Component Structure:** My `plotly` graphs each have 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.

In [Figure 3](#) you can see that hovering over a data point results in the display of information about that data point, and clicking on the legend off to the right toggles the trend line on and off from the graph for each state listed.

**Design Decisions:** I wanted to have a mix of a clean, minimalist aesthetic coupled with a vibrant, colorful aesthetic, so I made the first, exploratory graph in contrast to the second bright, results graph. I struggled a bit with the fine details, but overall I am pleased with the result. If I were to continue this, I would adjust the hover text to be less verbose, and I would make the UI more aesthetically pleasing.