

# Effect on employment due to COVID-19

## ISM 6361 - Data Mining Analytics & Visualization By: Satadipa Sarkar



### Business Problem

A week ago, when I was listening to NPR, the news that caught my attention was during this pandemic unemployment rate is going high. How are the industries affected? Are the healthcare providers immune to the effect?. Through my vizzes I could actually tell that story about the impact of COVID-19.

### About the data set

- Dataset used for this project is publicly available from the URL <https://www.bls.gov/bls/unemployment.htm>
- Source – U.S. Bureau of Labor statistics, The cost of living data was collected from <https://worldpopulationreview.com/statistics/cost-of-living-index-by-state/>.
- The data was fairly clean but I had to remove few columns, without harming the integrity of the dataset. Few formatting was necessary. Also, I had to combine the data from multiple years.

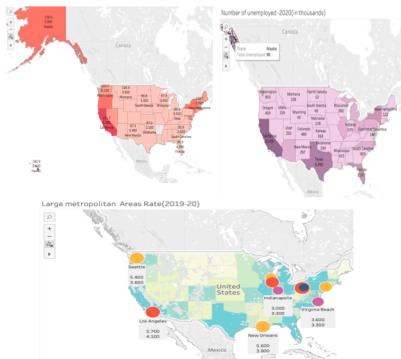
### Visualization Used

**Side by side bars-** used to display the unemployment rates of various states from 2015-2019.



**Horizontal bars** – To display the map in motion to demonstrate the increase in unemployment rate of U.S. from January 20-April 20.

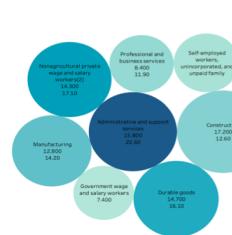
**Symbol Maps**- High cost of living Index numbers, unemployment numbers. The maps depicting HCL (High cost of living Index) with stepped colors and state name is perfect for understanding the impact. Likewise, for unemployment data. Map layers feature was used to highlight unemployment rate for large metropolitan areas using stepped color (population) by state.



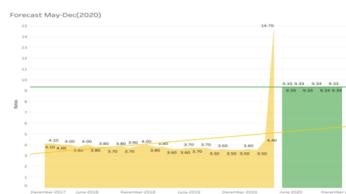
**Bubble charts**- Men-Women unemployment numbers, Unemployment by industry- Bubble charts show the industries affected by COVID-19 using stepped colors and different charts varying from low to high unemployment rate



Men-Women unemployment Rate

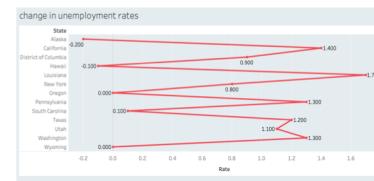


**Area Maps** was used to show the continuous monthly data from 2018-2020 and the spikes and lows in unemployment rate – **Forecasting**.



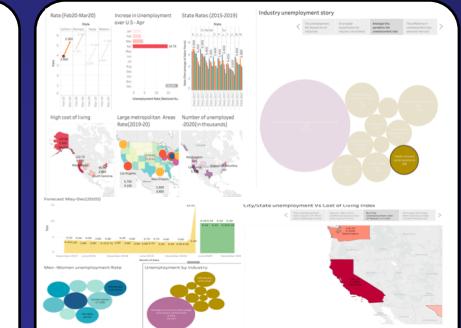
**Calculated field** helped to create new attributes like change in rates, percentages, deviations from standard national average .

**Creating Parameters** for change over month, change over the year, deviation from national average in one viz was helpful -it allows the user to see the important information about change in rates from multiple perspectives.



### Dashboard & stories

Current status of unemployment state-wise, rate of change, forecasts, industry-wise effect of COVID 19 on unemployment and showcase the majorly affected industries.



### Analysis

- The unemployment rate rose to **14.7%** in April 2020 due to the effects of COVID-19
- The difference in unemployment rate amongst men and women is more in **Wholesale and Retail**, followed by **Administrative and support**.
- Amongst this pandemic the unemployment rate of health-care professionals is still **higher** than 2019. This data was surprising because I assumed that healthcare professionals are immune and won't be impacted due to pandemic. Since they are the frontline workers now and in demand.
- Hawaii, New York, California** have a very high cost of living index.
- But the unemployment rate of Hawaii is in the **lower range** as compared to California whose unemployment rate in 2020 has increased to **5.3**
- Amongst the large Metropolitan areas (**Pittsburgh**) has highest unemployment rate.

### What went well

- Dashboards and Stories depicts the story of the present scenario and aligns with the raw data perfectly

### What did not go Well

- Forecasting unemployment rate for the rest of the year (May-Dec) 2020. Trend not satisfactory.
- Invested lot of time to determine the right factors which can be affected or correlated with the unemployment rate increase. Cleaning and formatting data took a considerable amount of time.

### What would you differently next time?

- Plot the correlation between high cost of living index (with various factors involving it grocery, Transport, medical, housing) separately and see how it impacts the high unemployment rate.