# Group 8: Advanced Visual Tools

Awad Ahmed
Hunter College
Queens, New York
awad.ahmed94@myhunter.cuny.edu

Nishat Tarannum
Hunter College
Queens, New York
nishat.tarannum55@myhunter.cuny.edu

Edmund Adewu
Hunter College
Bronx, New York
edmund.adewu39@myhunter.cuny.edu

ChengDong Ruan
Hunter College
Brooklyn, New York
chengdong.ruan81@myhunter.cuny.edu

## ABSTRACT

The coronavirus disease (COVID-19) pandemic has created not only a public health crisis but also an economic crisis throughout the whole world, and especially the United States. The pandemic has disrupted many lives, challenged the hospital system to its capacity, and created a global economic slowdown. The COVID-19 public health crisis, the economic shock triggered by the pandemic, and public policy, business, as well as individual responses to the pandemic together have incited the sharpest and fastest economic downturn throughout the United States of America. A few months after the shutdown started, numerous areas of the economy remained entirely shuttered, while others were struggling to open by the fall, and still, others are operating at sharply reduced levels. At a depth of the downturn, the U.S. economy experienced its greatest job losses since the Great Depression, with the unemployment rate and unemployment filings rising faster than they ever have in such a short period of time, which might end up taking a decade to recover from.

## 1 INTRODUCTION

This project consists of research about COVID-19. We are trying to determine how the country was affected by COVID-19 during a dangerous time. We want to take a look at which states were impacted the most and how this led to unemployment, we will do this by looking into the number of people infected as well as the number of people who have died between each state. Another thing we would like to see is the pneumonia and influenza death rate. This paper will include the employment and unemployment rate as well as the average age for people that lost their jobs, like which age group of people were affected the most to Covid. We also will compare the data and take a look at which state has been impacted the most, like if some states have good prevention methods, they should not have that many people who are infected. We are also going to talk about some general ideas about the COVID-19, like how well the U.S reacted in its prevention.

## 2 U.S DEATH RATE

Prior to March of 2020 most cases of COVID-19 haven't been recorded in the United States. The following graphs presented are data during and post march of 2020 to show where COVID was most prevalent as well as where it wasn't. We will then use this data to understand which states have been impacted severely and which states have not. The data in question is the death rate of the states in the U.S, but what my team analyzed was the death rate not only from COVID-19 during 2020 but also from Pneumonia and Influenza. Although this research should primarily focus on COVID-19 the solution we are looking for isn't biased so showing both sides would not be an issue as well as be helpful to our research.

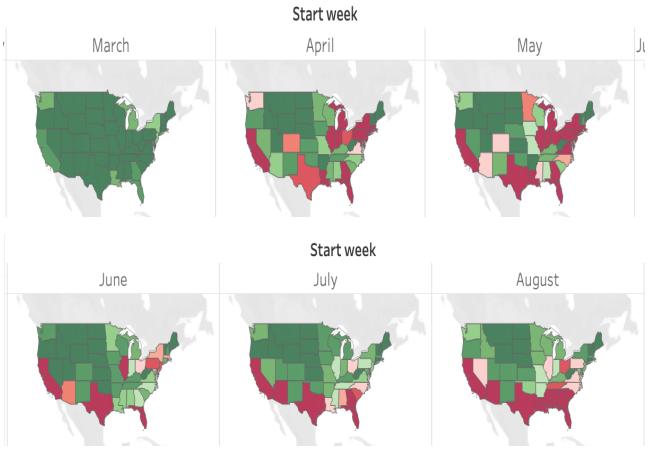


**Figure 1: Amount of deaths due to Covid-19 in the U.S. (March 2020-August 2020)**

### 2.1 Covid Deaths

Let's first analyze the deaths caused by COVID-19 in the first months of March through April. The picture above shows the number of deaths in the start week of every month. The states colored in green consist of states with the least amount of deaths and red is more than 1,000. As we can see the states on the edges seem to have a gradual effect by COVID with New York, California and Washington having above 150 in March. This number went up expeditiously for New York, Texas, California, Pennsylvania, Georgia and Ohio. All reaching above the thousands and some reaching up to 2,000. This shows that the least amount of deaths being Utah, Kansas, Nebraska and Oregon all staying below 500.

### 2.2 Covid analysis

However, when we analyze the next couple of months, we can see that the states that were mentioned to have the least amount of

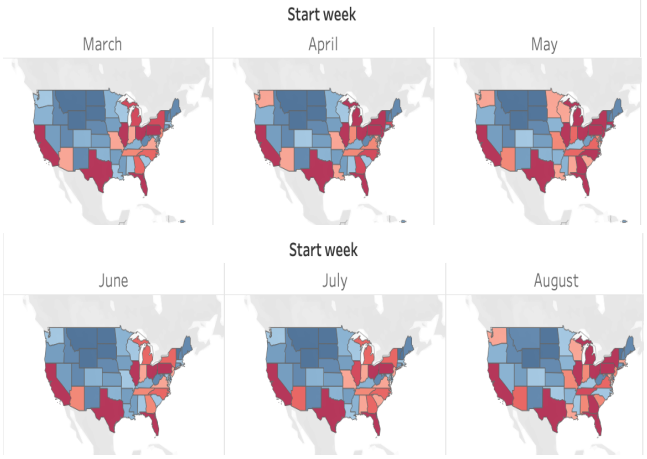


**Figure 2: Amount of deaths due to Influenza, Covid-19 and Pneumonia in the U.S. (March 2020-August 2020)**

deaths still prove to have the least amount. While the states around Texas and on the lower half of the U.S show a dramatic increase to the death rate during the month of August. The states with the most amount of deaths even reach up to 4,000 (California) and higher. This could possibly lead to an area of employment being higher since deaths have risen to 4,000 or places like Florida or Texas where the deaths surpass 5,500.

### 2.3 Total Deaths

Now we can see that COVID isn't the only issue for states such as Texas, California, New York and Florida. Not only do they have the highest death rates from COVID-19 but also very prone to have deaths in Pneumonia and Influenza. The states affected the most by these diseases are Florida, California and Texas with a whopping +15,000 deaths during the time between March and May. This shows that these states were not prepared the slightest for diseases such as COVID or Covid-19 related. This can also show which states that were most unprepared and would have more open opportunities due to the amount of people who have passed. This is shown in greater details in the months after.

### 2.4 Total Analysis

The final representation of death cases caused by Influenza, Pneumonia and COVID prove that not only the bottom portion of the United States of America seem to have the most death rates, but it is also very prevalent towards the East. States such as Virginia, Tennessee, South and North Carolina show that their death rates have soared tremendously. With each of these states individually having greater than 5,000 people passing away from these diseases.

### 2.5 Making Connections

Understanding the United States graph on the amount of deaths during the current year of 2020 is crucial to understanding which jobs would be most open. An easy correlation we can make is that places with the dark red on the maps above for the most amount of time would be best predicted to have the most job opportunities

## 3 EMPLOYMENT AND UNEMPLOYMENT

The COVID-19 pandemic has affected the unemployment rates for every state, industry, and major demographic group. In the early stages of the the pandemic, unemployment rates increased disproportionately in industries delivering in-person services. The variation in economic damage was due to a number of factors which includes the proportion of jobs in sectors that happens to provide non-essential services to in-person customers, individual fears of contracting COVID-19 and the implementation of stay-at-home orders and business closure policies.

### 3.1 Comparison of unemployment rates from March to August

To start with, if we are to compare the unemployment rates from March to August throughout the whole USA, the unemployment rate happens to be at the lowest in the month of March and the highest in the month of April. In the month of April, the employment rate is a little more than three times as much as the unemployment rate in March. In the months of March through August, the highest unemployment rate can be seen in the state of California, followed by Texas as the second and Florida as the third. North Dakota has the lowest unemployment rate among all states in March. Wyoming has the lowest unemployment rate among all states in April, May, June, and July, and it keeps on decreasing along the way; moreover, the land area of Wyoming is significant as compared to other states whose area is small but still has a lot more unemployment rate. In the month of August, Vermont holds the lowest unemployment rate among all states. In Texas, there is a sudden decline in the unemployment rate in June as compared to May. This shows that maybe they have adopted certain measures from the top-rated states to increase the employment rate.

### 3.2 States with major unemployment rates due to COVID-19

California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania and Texas are the states that has been hit with the hardest unemployment rate due to the COVID-19 pandemic.

### 3.3 Impact of COVID-19 in different U.S. states

When we compare all months in the data-set, we come across a state, West Virginia, whose unemployment rate is not that high, but when compared with the states with larger land areas. On the map of USA, West Virginia covers a small portion of landmass due to which the unemployment rate is really hazardous when compared with the states of the almost same size, as we look at the data of further months after March there is very less change in the unemployment rate which shows the situation is really worse out there in West Virginia. According to data, the same situation is seen in the state of Ohio and Maryland, and when we take a closer look at the map, boundaries of all these three states are joined together. In the month of April, it is observed that New Mexico has high unemployment, then it gets decreased every month but again due to some reason it gets an increment in its unemployment in the month of June that is even greater than April. It infers that maybe the count in this state is not done carefully in April and May. Florida

**Figure 3: U.S. states with high unemployment rates due to COVID-19 pandemic are California, Florida, Illinois, Michigan, New York, Ohio, Pennsylvania and Texas.**

managed corona well, due to which the unemployment does not rise as much as other states and keeps constant throughout the pandemic months with some gradual increments that are negligible when compared to the other big states that cover a wider area on the map of the USA like Alaska and Montana.

### 3.4 Downfall of unemployment rate

We can infer that the unemployment rate began to increase from March to April, and after these two months, the employment rate rose, and job gains in May were the fastest on record in almost every state and this rate keeps on increasing gradually as every business and office started opening up. The employment rate bounced up in May after a sharp downturn in April.

## 4 EMPLOYMENT AND UNEMPLOYMENT BY AGE

The COVID-19 pandemic has profoundly impacted numerous aspects of society. One such aspect would be employment and unemployment. One of our group's objectives is to discover how different demographics have been impacted by the pandemic. As age is perhaps the most critical factor in a person's employment prospects, it shall be the key subject of this study. Below are graphs indicating overall employment and unemployment figures, separate and combined, for the United States from March 2020 to August 2020. To be specific, they display the different age ranges for employed and unemployed people. All graphs below measure in the thousands (i.e. 114 = 114,000).

### 4.1 Comparison of employment levels across age groups

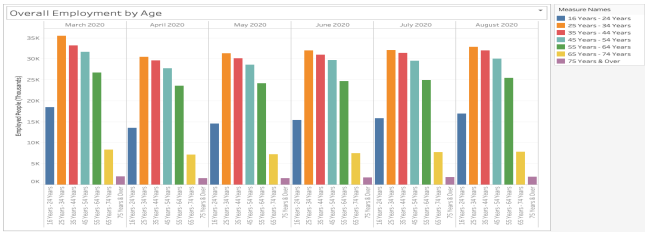


**Figure 4: Amount of employed individuals in the U.S. (March 2020-August 2020)**

The first chart shows the overall number of individuals in the US that were employed from March to August of 2020. As one can see, employment for every age group decreased to an extent between March and April, a trend which corresponds with the implementation of lockdown orders across the country. After that point, with some exceptions, it begins to rebound. Employment amongst elderly individuals is relatively linear compared to the other age groups, especially with individuals 75 or older. In addition, individuals 75 or older make up the group with the lowest number of employed people, with barely 1.9 million working in March, the highest number of employed individuals for that age. 25-34 year olds experienced the steepest decline in employment. In March, roughly 35.5 million people were employed. That number went down to roughly 30.4 million in April, yielding a difference of at least 5 million people. Still, that age group makes up the group with the greatest number of employed individuals, consistently hovering above 30 million individuals at any given point in time. At that point in life, one would have, barring exceptional circumstances, completed some form of post-high school education and/or acquired a few years of workforce experience. 16-24 year olds, although showing the third lowest employment levels in the country, appear to have experienced the second sharpest drop in employment, having gone from

18.4 million employed in March to 13.5 million in April, a difference of 4.9 million people. Said age group usually consists of high school and college students, many of whom are reliant upon internships and/or part-time jobs to earn any meaningful income. Due to the drastic overhaul of business practices and the nationwide closure of schools and campuses, many resources geared towards advancing one's career have been cut back. Depending on the individual's career path and level of education, employment can fall anywhere between being readily available and being nigh-unobtainable.

## 4.2 Comparison of unemployment levels across age groups

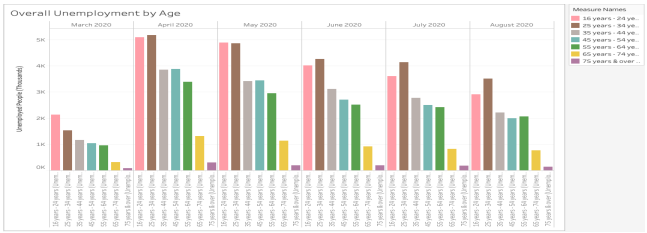


**Figure 5: Amount of unemployed individuals in the U.S. (March 2020-August 2020)**

The second chart shows the overall employment in the US from March to August. Unemployment numbers increase from oldest to youngest. The spike in unemployment from March to April is indicative of the nationwide implementation of pandemic protocols. Again, people 75 and older were barely working to begin with, hence the low amount of unemployed individuals. A point of interest in this chart is that 16-24 year olds and 25-34 year olds contain the highest amounts of unemployed individuals in April, both reporting over 5 million people during that time. In addition, they overlap very closely, an odd detail considering the large gaps between employment ranges for the two age groups.

## 4.3 Implications

The chart above displays the combined employment and unemployment levels per age group from March to August. Red bars indicate employed individuals while blue indicates unemployed individuals. Most groups experienced a surge in unemployment between March and April, the severity increasing as the groups got younger. Employment-wise, it would seem that people 16-34 years of age have been affected the most by the coronavirus pandemic while people 75 or older were affected the least. In addition to the standard retirement age falling between 60 and 70 years of age in the US, individuals at least 75 years of age lack the physical and/or mental capabilities necessary to perform most forms of labor, hence the low overall employment. As for people between 16 and 34, that combined demographic consists of high school students, college students and others who have just started their careers. The lack of career-related resources and experience in the workforce jeopardizes their income, explaining the high unemployment amongst the groups.

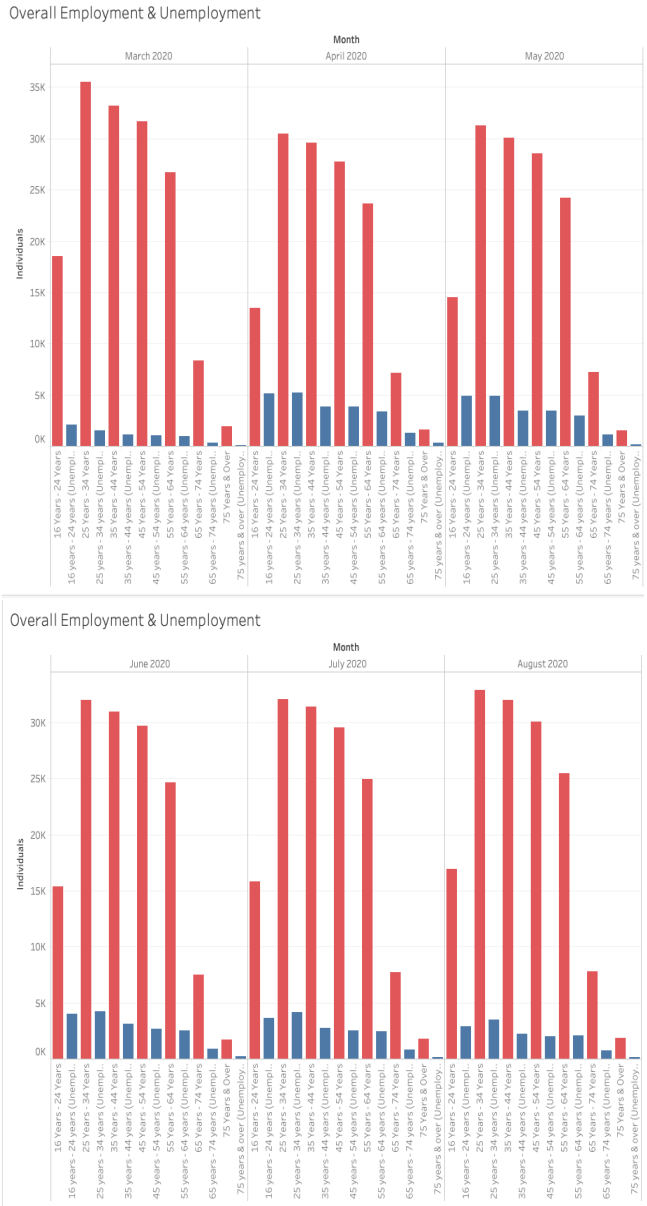


**Figure 6: Side-by-side comparison of unemployment and employment amongst different age groups (Red = employment, blue = unemployment).**

## 5 CONCLUSION

In conclusion, between March and May, the infection rate and the death rate are at their highest during these times, at the beginning the death number it has around 150, and increase to 500 when the more people get infect it has around 15,000 as total, many state total number is more than 5000, that's a lot the age range of people who are unemployed as well as people who are unemployed range from 16-35. This shows that most companies that close consist of their workers being from this age range. Also when companies hire

new employees, they hire in that age range. And the people 75 or older were affected the least but this could be because they were the amount of people with the least amount of jobs or who took up a small portion of jobs. We can also make a connection that the places like Texas, California, Florida and New York have been affected the most by Covid-19 and have the highest unemployment numbers as well as numbers of people who have passed due to Covid. We can see that these places are the least prepared and most to be affected because of this.