

## Introduction

My Project attempted to use python to analyze sets of data with the field of economics in mind, which is my minor. Sets of data included unemployment statistics from both Buffalo and Rochester. Then data of positive COVID cases from Erie and Monroe County were also included. The data spans from September of 2021 to February of 2022.

The first time COVID-19 impacted the world, businesses shut down, and millions of people were left without jobs or fortunately forced into remote work. Subsequently since then COVID-19 outbreaks have sent certain locations into shutdown again causing unemployment or remote work. However, with the widespread use of vaccinations and preparations against COVID-19 will current and future outbreaks cause a rise in unemployment? How do the cities of Buffalo and Rochester compare?

## Goals

The goal of the project is to utilize python's data analytic capabilities to do a comparative analysis comparing Buffalo and Rochester. As we map out the data from both Buffalo and Rochester displays will be made to give a viewer a more comprehensive view of the data and trends that may follow the data.

As the data is being pulled from the files, descriptive statistics will be provided. This will provide a viewer a better background in viewing the displays. With the data provided a viewer can then see what affect COVID-19 has on unemployment in a post-COVID world if any at all. A user will be able to make an inference of the effect that home test kits, masks, vaccines and other preventative measures might have on the data displayed.

## A Study on Unemployment During the COVID Pandemic with Python

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## Future Work

The code written is considered very short and basic in a coding point of view. It is a process that has taken me awhile to put together and was a great learning experience. It allowed me to learn more about python coding and research a topic I was curious to understand.

The code can be expanded on by creating a structure that can analyze multiple sets of code interchangeably. This will allow the code to be functional with many different sets of data and could be used in multiple environments. From business, governments to scientific research institutions. From there an expanded list of descriptive statistics can be found to be put on display. This will provide an even more comprehensive view of the data frames. The code could then provide a comparison of the descriptive statistics and add columns to the data frame listing the information.

It is something that can be thought about and will deepen my desire to learn more about the computer coding process. This could also broaden my viewpoints on how to solve work-related problems in the future.

## Design and Development

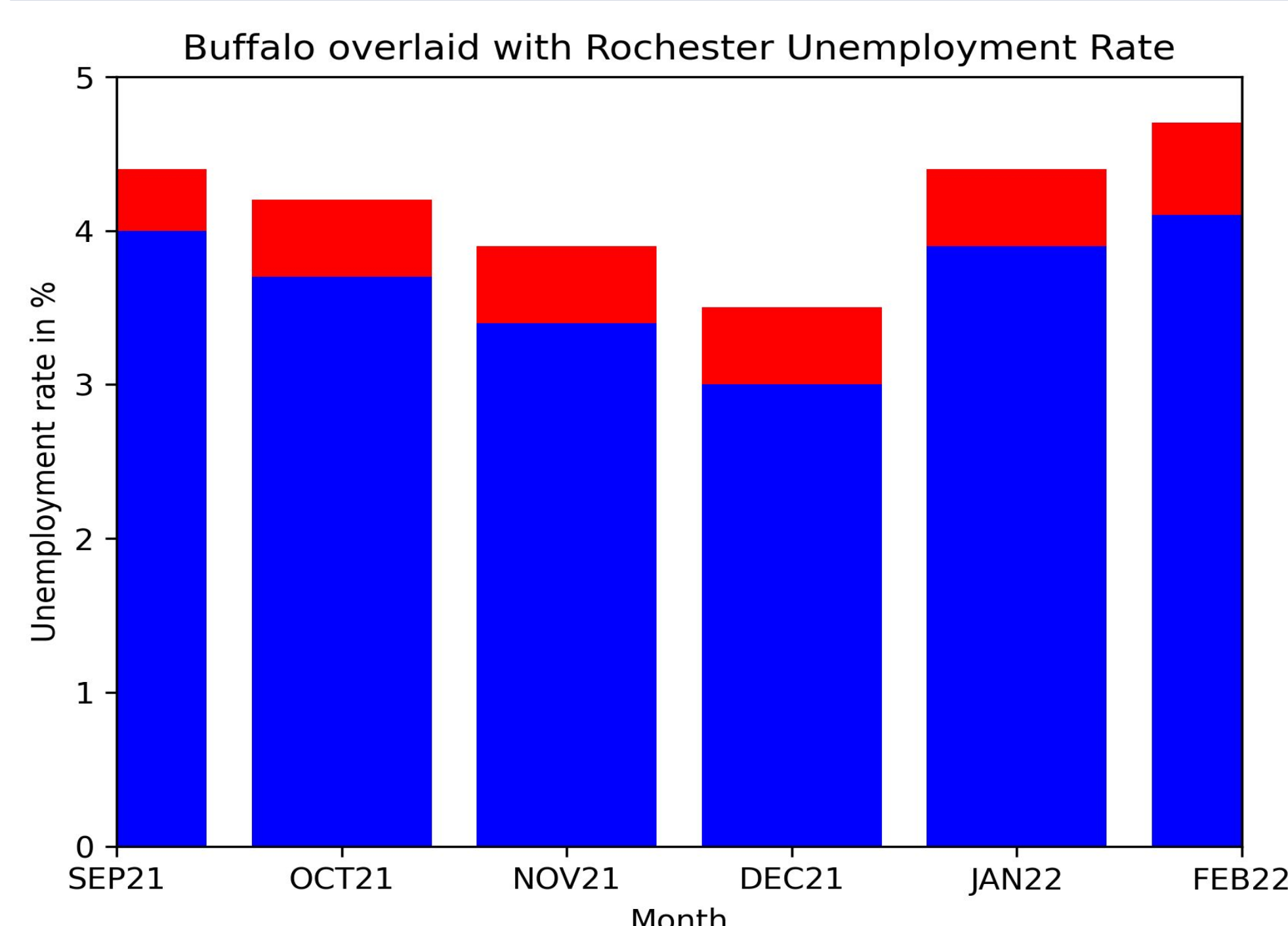
The design of the code begins with taking multiple csv files and putting them in data frames. This provides the user with better viewed data and is able to give the user an understanding of the background of the multiple points of information. The next step is taking the data and deriving statistics after converting the data to either float or integers. This provides the user with a quick summary of the data and introduces the user to the displays that will be generated.

After viewing the descriptive statistics of the data, it is then plotted in bar graphs to show each data frame and then show it again in comparison to the other data in the similar category. This allows the user to reinforce their information gained from the previous provided statistics. Both numerical display and numerical graphic display will give the user a more enhance understanding of the data provided. Hopefully given more time and understanding the code can be furthered to be neater, more comprehensive, and more efficient in analyzing data sets.

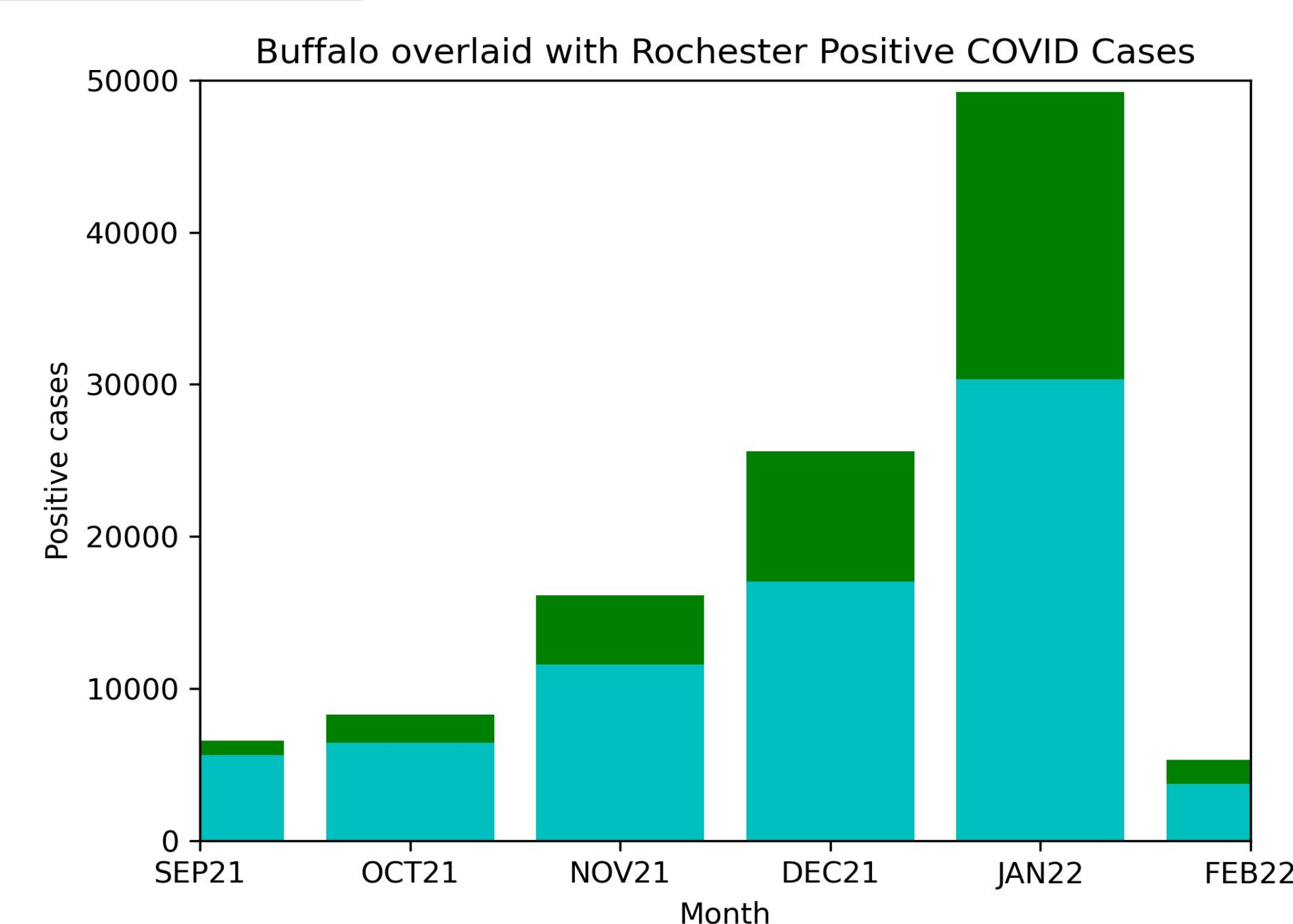
## Analysis

Python was used to gather informative statistics of the data collected. From the data analysis, the user can see a general trend of Buffalo being greater in both areas of collected data. COVID cases are larger in Buffalo due to the larger population but Buffalo also has a greater unemployment rate.

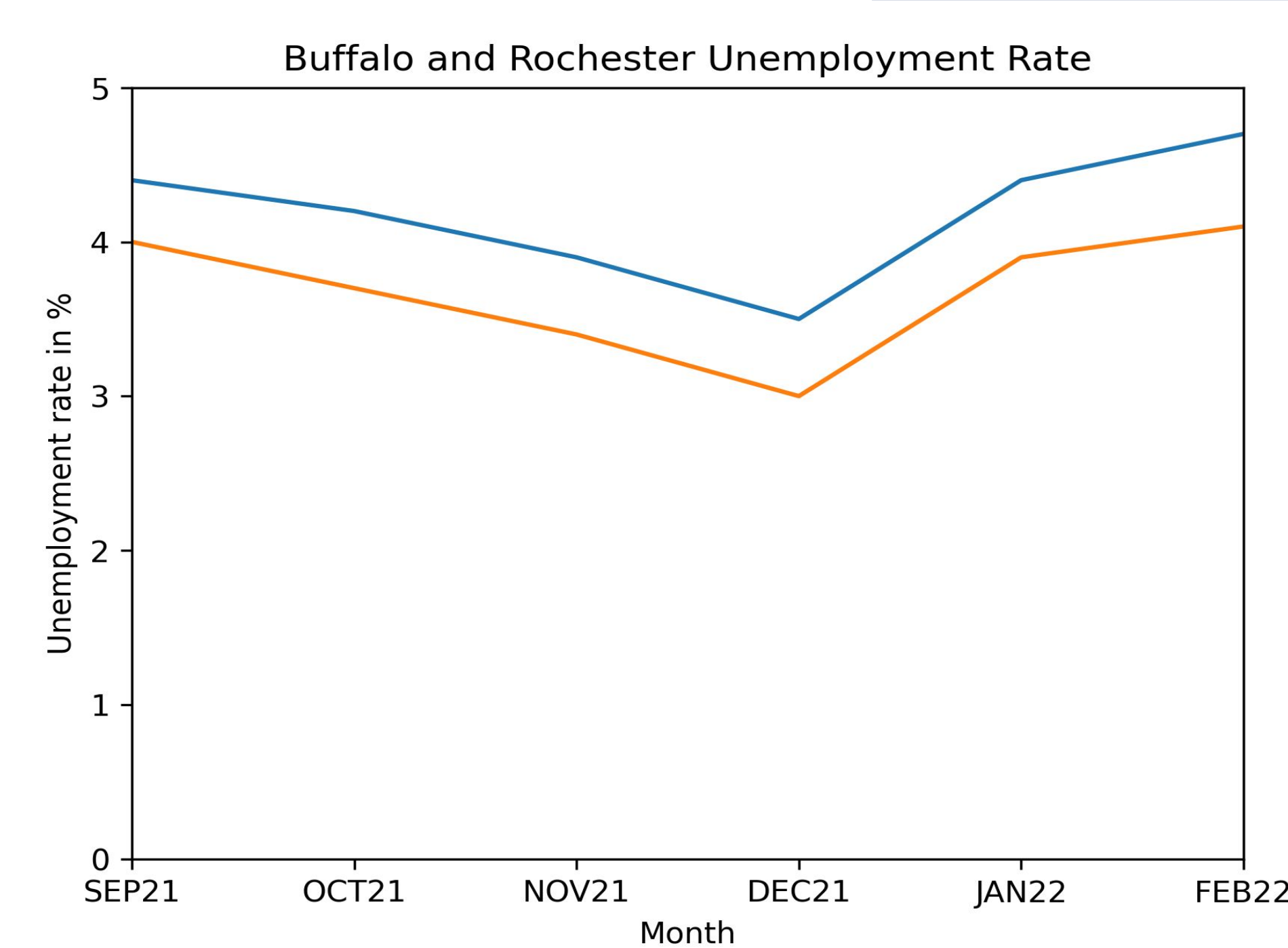
However, both cities follow the same trend in both COVID and unemployment. A steady decrease until December and then sharper increase in unemployment by January and onwards. For COVID cases both counties have a sharp increase as the holiday season progresses with a sharp decrease by February 2022. A possible explanation of this is laxation of COVID testing with At-Home kits being widely available.



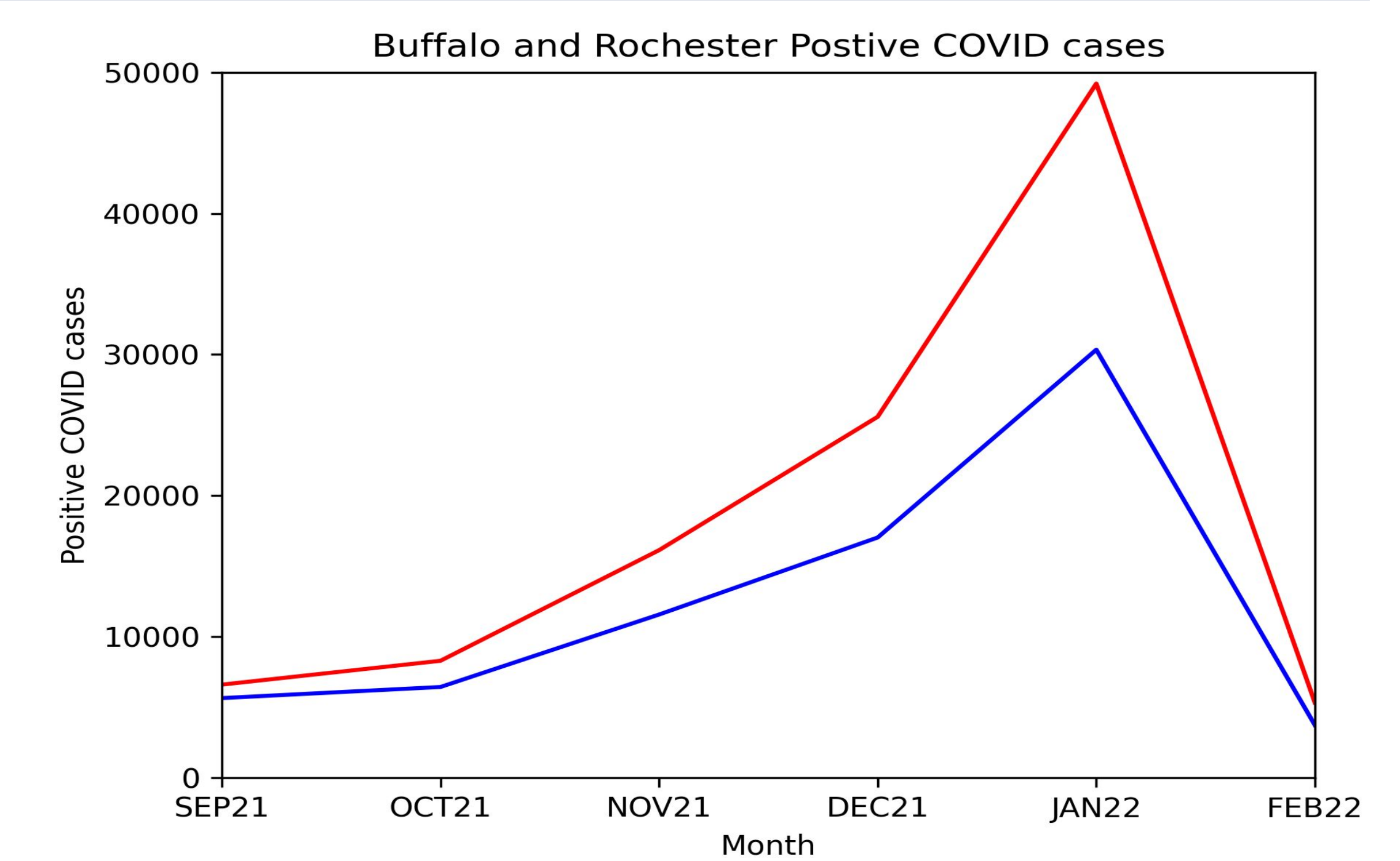
Buffalo overlaid with Rochester Unemployment Rate: The graph displays the month on the x-axis and the unemployment rate on the y-axis. Buffalo unemployment is in red while Rochester is blue. Can see that both Rochester and Buffalo follow same pattern for unemployment rate.



Buffalo overlaid with Rochester Positive COVID cases: The graph displays the month on the x-axis and the amount of positive COVID cases on the y-axis. The trend is the same for both Buffalo and Rochester. However, it is much more severe in Buffalo, given the population difference.



Buffalo and Rochester Unemployment Rate: The graph displays the Unemployment rate on the y-axis and the months on the x-axis. Buffalo is in blue and Rochester in orange. As seen in the bar graph both cities have similar unemployment rates.



Buffalo and Rochester Positive COVID Cases: The graph displays the month on the x-axis and the amount of Positive COVID Cases on the y-axis. Buffalo COVID cases is in red while Rochester is in blue. We can see that Buffalo has a greater amount of cases however both places are close in February.