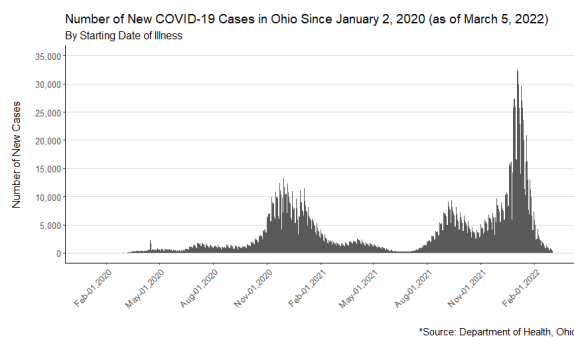


## Transmission of Covid-19 in Different Counties of Ohio by Demographics

Since the emergence of the Covid-19 virus in Ohio, the transmission rate was different over the period. The department of Health, State of Ohio provides a regular update regarding the situation. We would like to explore the transmission curve so that we can visualize the time of high transmission rate. Thus, we can be concerned people about their movements. In addition to this, we would like to know out of 88 counties of Ohio which counties have the greatest number of Covid-19 cases. Then we would like to explore how the Covid-19 cases are distributed over different demographic characteristics of these highly affected counties. Finally, we will focus on the weekly hospitalization trend in these counties. We have collected the data set from the website of the Department of Health.

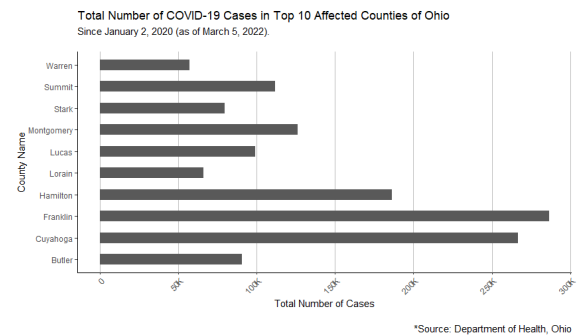
Graph 1:



The trend of the spreading of Covid-19 cases changes over time. Since the beginning we have seen from November 2020 to February 2021, the transmission was high. After this time, it decreases over time. However, again we have seen the increment in October 2021. The transmission rate was very high when the new variant of the Covid-19 virus, namely omicron started to spread.

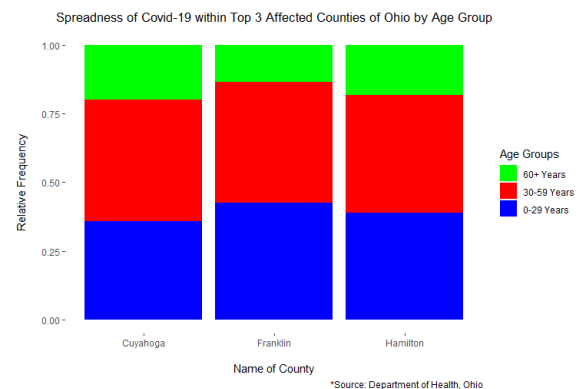
Out of 88 counties of Ohio, we have presented the top 10 counties that have the most number of Covid-19 patients. Franklin County has the most number of Covid-19 cases. The top 2<sup>nd</sup> and 3<sup>rd</sup> counties are Cuyahoga and Hamilton. Franklin and Cuyahoga have more than 250K cases.

Graph 2:



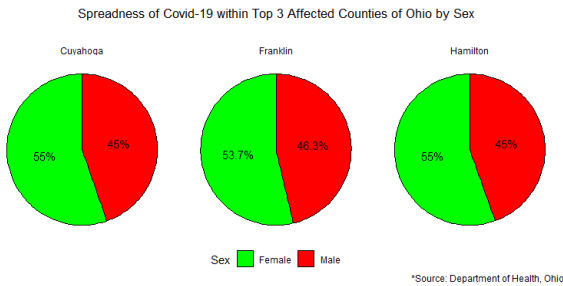
Age plays an important role in the transmission of the Covid-19 virus because older people have comparatively weaker immunization systems. Though Franklin has the most number of Covid-19 cases they have less number of older (60+ years) affected people than the other two affected counties. Approximately, the same proportion of people in the younger (0-29 years) age groups were affected in Hamilton and Cuyahoga.

Graph 3:



In all the three most affected counties, females are more affected than males. The difference is around 10 percent.

Graph 4:



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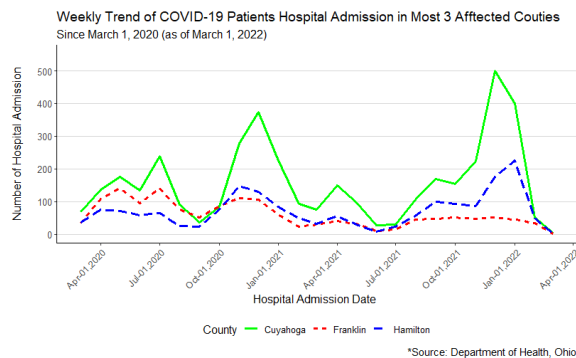
<https://doi.org/10.21105/joss.01686>

- Garrett Grolemund, Hadley Wickham (2011). Dates and Times Made Easy with lubridate. Journal of Statistical Software, 40(3), 1-25. URL <https://www.jstatsoft.org/v40/i03/>.

- Department of Health, State of Ohio, USA. URL <https://coronavirus.ohio.gov/dashboards/overview>.

The rate of hospitalization is one of the most important factors for the health department. The health department can take adequate precautions based on the trend.

Graph 5:



Here, we have observed that though Franklin has the highest number of affected people, Cuyahoga has more weekly hospitalized people. The number of hospitalizations in Cuyahoga is significantly higher than the other two top affected counties.

Finally, we can conclude that as the graphs suggest the rate of covid cases is not constant and it exhibits that after decreasing it again started to increase sharply, therefore we should be careful about the current situation and make ensure the vaccination.

#### References:

- Wickham et al., (2019). Welcome to the tidyverse. Journal of Open Source Software,