

The Effectiveness of Mask Mandates in Wisconsin

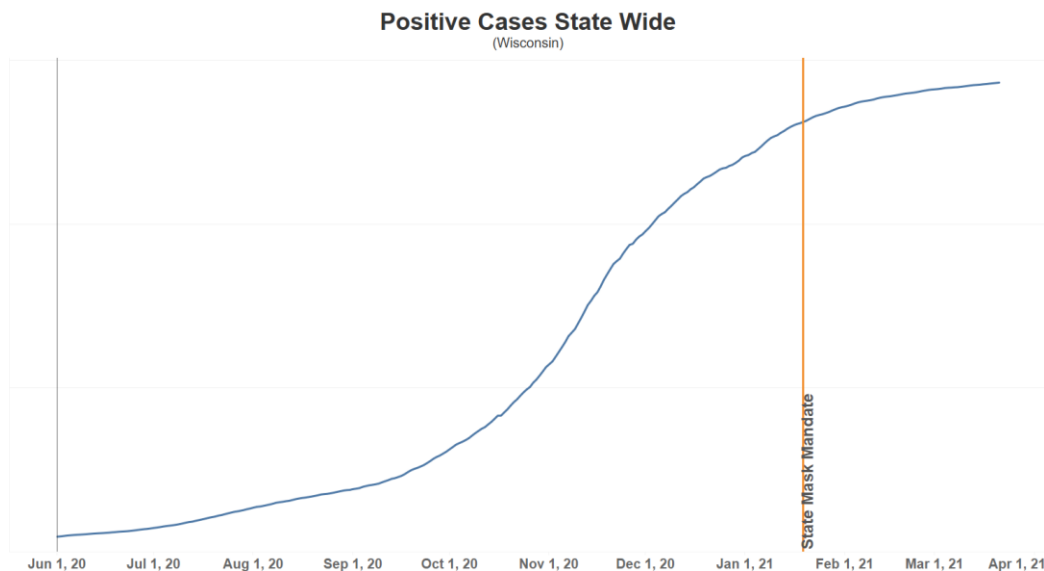
On January 19th, 2021, the Wisconsin governor enacted a state wide mask mandate to help control the spread of Covid-19. The issue of mask mandates is controversial, with some people believing that mandatory use is one of the only ways to control the spread of the virus. Others believe that mandating mask usage is an overstep in governmental power.

In the summer of 2020, several counties and cities within Wisconsin established mask mandates before the large increase in the second half of the year. These included:

County	City	Date
Dane	(All)	07/13/2020
Ashland	Ashland City	08/04/2020
Bayfield	Bayfield	07/15/2020
Brown	DePere	08/04/2020
	Green Bay	07/27/2020
Douglas	Superior	07/21/2020
Milwaukee	Milwaukee	07/16/2020
	Whitefish Bay	07/24/2020
Racine	Racine	07/27/2020

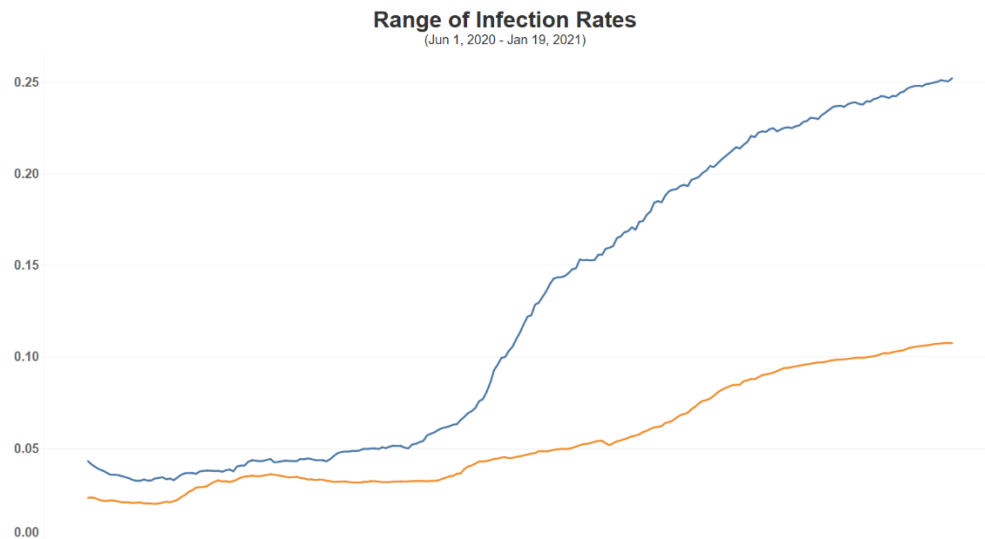
This allows us to make a comparison of covid incidents between the counties with a mask mandate, and those without. For the case where only city-wide mandates were in place, those counties are still identified since a city's population within a county would represent a large proportion of the overall county population.

For this comparison, we will compare the numbers from June 1st, 2020 until January 19th, 2021. This starts at a period before the various mask mandates were in effect, and before the infection rate started its rapid increase through the second half of 2020.

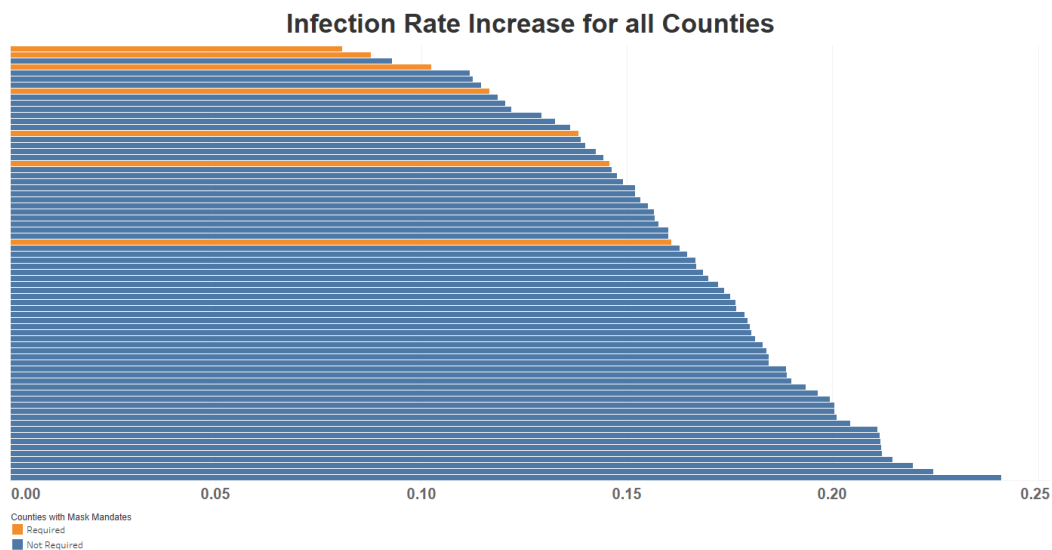


Graphing the number of positive infections demonstrates the rapid increase during the second half of 2020. Of note is the shape of the curve before and after the statewide mask mandate. While a decline occurred, it started before the mandate was in place. Additionally, the rate shows no dramatic change after the mandate.

Comparing the infection rates of the individual counties, we see how the county with the highest rate grew to have a rate of infection over twice that of the county with the lowest rate. This demonstrates the wide range in rates for the various counties across the state.



To see how each county fared during this period, we can look at how much the rate increased from its lowest value to its highest value. Isolating the counties with mask mandates demonstrates that they tended to have lower rate increases during this time.

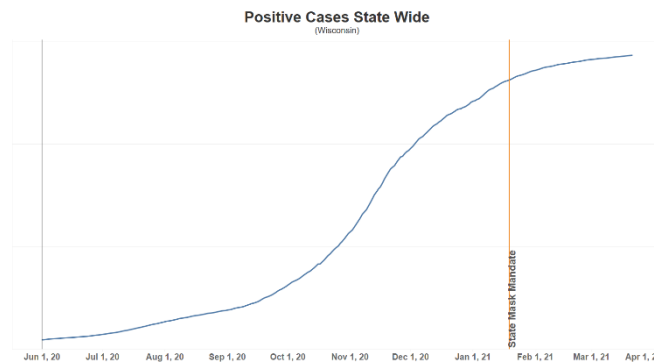


Although this appears to endorse mask mandates, there are other factors involved. For example, each county can also have any number of gathering, restaurant, and bar restrictions in place. There is also the question, as illustrated in the top graph, of whether the numbers would be significantly different without the mask mandates in place. It is likely that there were several factors which accounted to the lower increase for these counties, with masks being one of those.

Visualization Discussion:

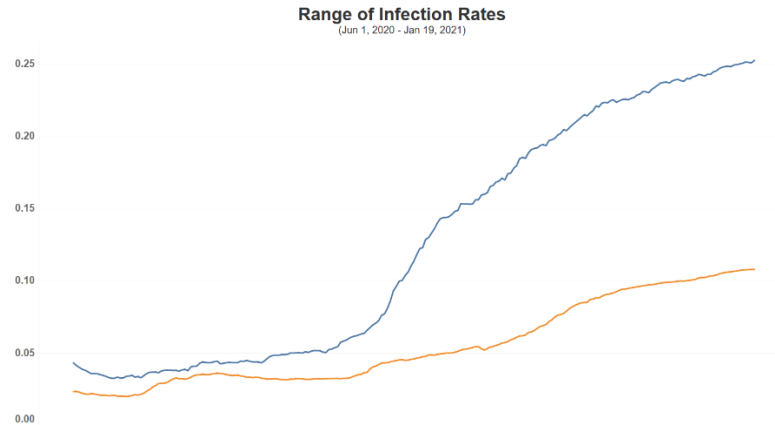
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The county summary is intended to provide viewers with a list of counties employing some type of mask mandate, as well as a time frame for when that mandate started. I tried to generate this in Tableau, but could not figure out how to generate this table without specifying some value for columns. Therefore, I mocked it up in Excel, and it is not found in the tableau data file.



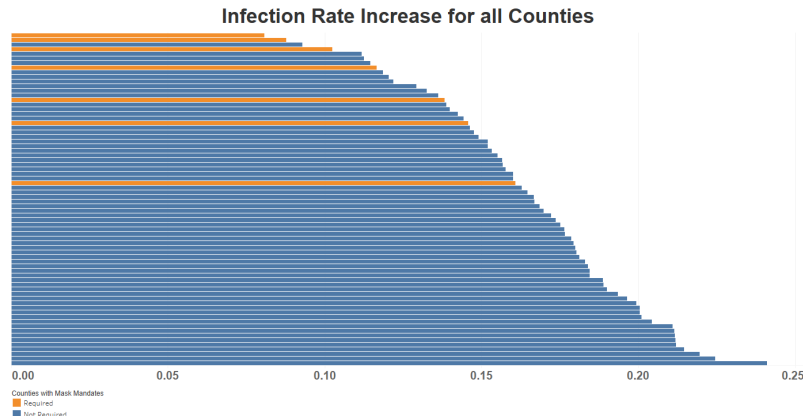
The Positive Cases visualization has two functions. The first is to illustrate the steep rise and general pattern for infection rates across the state. The second is to visually establish the time range used in the analysis. While I think it performs the first function well, the second is a little muddled. It's message of time frame is a little unclear, as even my eyes were drawn to the graph on either side of the mask mandate.

As far as ink to data ratio, I think this is sufficiently low. While it does show multiple dates at the bottom, they provide context with the time frame being discussed.



The Range of infection compares the lowest rate increase with the highest rate increase to visually display the range of rates for the different counties. The dates are removed from the bottom to reduce clutter. They are specified in the subtitle to provide time context. Since the mask mandate is highlighted on the previous chart, there is context for the date ranges between these two charts.

This does a good job of summarizing the range of rates across all counties with minimal clutter. However, adding label for the lines, such as “Lowest Rate” and “Highest Rate”, combined with a different title such as “Range of Infection Rates across all Counties” might have added some clarity.



The infection rate increase visualization is intended to show a comparison of counties with mask mandates to those without. This was a tricky visualization. It needed to display all counties with some type of ranking mechanism to show status. The key message was how mask mandate counties compared to non-mandate counties, so the actual county names were not critical. I left those off to reduce distraction from the main message. The rate values at the bottom also provide the reader with context since rates are displayed in the previous chart.

This chart has two short comings. First, the actual measure is complex. I tried to summarize about 7 months of data into a single number that reflected how a county fared during the third wave. However, I’m unsure if the casual viewer will understand the “rate increase” aspect.

The second short coming is the dislocation from the time frame of the earlier graphs. I originally tried to include a date reference, but that made the Y axis confusing as it could have represented a date or the counties. I chose to leave the date reference off so readers only had the phrase “across all Counties” to help them understand the Y axis. However, there was no easy way to reconnect the June 1st to January 19th time frame context to this chart.

Sources:

State and County level data:

<https://data.dhsgis.wi.gov/datasets/covid-19-historical-data-by-state/data?orderBy=GEOID>

<https://data.dhsgis.wi.gov/datasets/covid-19-historical-data-by-county/data?orderBy=DATE&orderByAsc=false>

County and City Mask Mandates:

<https://www.jsonline.com/story/news/2020/07/15/wisconsin-cities-and-counties-require-masks-public-spaces/5443242002/>

State Mask Mandate:

<https://evers.wi.gov/Documents/COVID19/EmO01-FaceCoverings.pdf>

Date County Mask Mandates:

<https://publichealthmdc.com/coronavirus/forward-dane/current-order>