**Description of Project**

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This report looks at the impact of COVID-19 bus schedule changes on Allegheny County communities. The first analysis looks at how bus density for the county was affected. This change of density shows where buses were cut most while the new bus schedules are in effect.

Note that much of the county does not have easy access to public transit. The changes in bus schedules has no effect on those portions of the counties that cannot easily access Port Authority buses or light rail services.

I defined access to public transit as a person living within a 10-minute walk of any bus stop. This is a very liberal definition—many analyses use a 5-minute buffer around stops. This also does not take into account the requirement of transfers, which greatly affect the ease of use for many people outside the urban core.

From this first analysis I found that much of the change in bus density occurs in the urban core. This is where bus volume was already the highest, so it does make sense that these were the areas where service was reduced the most.

The second analysis looks at the workers who most likely still need to utilize public transit—healthcare and service workers. Workers in these industries represent the few that still need to get to work during the shutdown, meaning the Port Authority should ensure that services cuts do not overly impact those workers.

This analysis centers around determining where healthcare and service workers respectively are relatively abundant. To do this the data utilizes ArcGIS’s hot spot analysis tool, which uses the Getis-Ord Gi\* statistic to determine areas of high and low values using the context of the surrounding areas. By highlighting areas with more essential workers, we can see where the analysis should further focus.

Third, this project takes in bus usage data from the time of the bus changes, 3-25-20, until 4-21-20, and compares that data to the change in bus frequency. For this analysis I’ve constructed a ratio that compares that change in use to the change in buses—values above 1 means use has decreased by less than the bus availability has decreased, or that use has actually increased and should receive scrutiny. Many stops with values above 1.0 saw less than one rider per day on average, so the analysis highlights stops that see more than 50 riders daily on average to bring to the Port Authority’s attention. The story map explaining the findings can be found at https://arcg.is/1q1XC4.