

Social Determinants of Health Impact on SARS-CoV-2 (COVID-19) and Respiratory Syncytial Virus (RSV) incidence and severity in Upstate South Carolina

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Background Information

Globally:

- > 700,000 children tested positive for SARS-CoV-2
- RSV infection could result in ~100,000 pediatric hospitalizations

Locally:

- > 5000 Coronavirus Cases in Greenville County
- >300 RSV cases at Greenville Memorial Hospital in 2018

Determinants of Health

- COVID-19 disproportionately affects racial and ethnic minority groups
- RSV: Hospitalization rate 2x in least resourced areas
- Crowding risk factor for RSV severity

Table 1. Risk for COVID-19 Infection, Hospitalization, Death by Race/Ethnicity in the U.S.

Rate Ratios Compared to White, Non-Hispanic Persons	American Indian or Alaska Native, Non-Hispanic Persons	Asian, Non-Hispanic Persons	Black or African American, Non-Hispanic Persons	Hispanic or Latino Persons
Cases	1.7x	0.7x	1.1x	1.9x
Hospitalization	3.4x	1.0x	2.8x	2.8x
Death	2.4x	1.0x	2.0x	2.3x

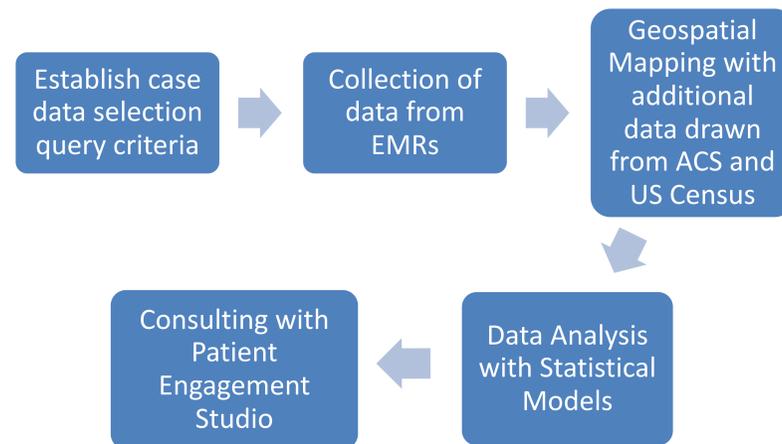
Greenville County : 21 residential zip codes with significant variability in socioeconomic status

- 17,000 Children Living in Poverty in Greenville

Table 2. Socioeconomic Variability across Greenville County, 2018

	Median Household Income	% High School Graduate	% Below Poverty Level
29681 (Simpsonville)	\$81,917	94.80%	4.70%
29615 (Wade Hampton)	\$57,208	96.00%	8.70%
29690 (Travelers Rest)	\$52,981	83.90%	13.10%
29609 (Greenville)	\$43,559	86.00%	17.80%
29611 (Parker)	\$32,073	70.20%	28.90%

Methods



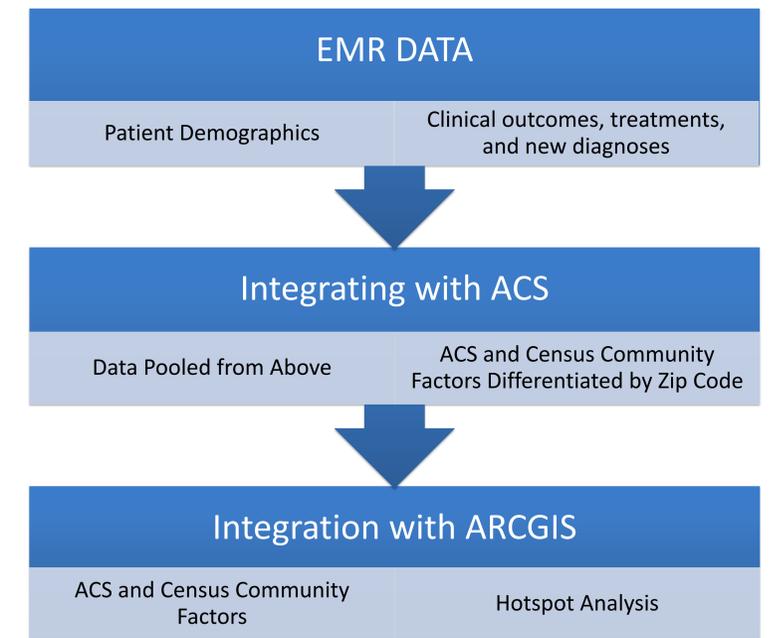
Query Criteria:

- Age <18, w/ positive PCR test for RSV/COVID-19
- Collection of data from Electronic Medical Records:
 - LOS, Highest Supplemental O2 Administered, Admitting Department, Vitals, Insurance Status, Demographic Data, Intubation, Medications, Readmission, MIS-C, Patient History

Geospatial Mapping:

- ArcGIS Software
- Data from American Community Survey (ACS) and US Census
 - Languages spoken, % Below Poverty Line, Average Education Level, Household Size, Racial Identities, Average Annual Income

Data Analysis



Future Directions

- Patient Engagement Studio will merge patient and provider insight in developing targeted interventions to address under resourced areas
- Identify at-risk communities to understand where interventions are most needed
- Equip Greenville County with resources and guidelines to combat future respiratory viruses
- Investigating the risks of coinfection
- Analyzing the impact of school policy on rates of COVID-19 infection

References

Centers for Disease Control and Prevention. (2021, July 16). *Risk for COVID-19 Infection, Hospitalization, and Death By Race/Ethnicity*. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html>.
Median Household Income in South Carolina by County. United States Census Bureau. (n.d.). <https://data.census.gov/cedsci/profile?g=0500000US45045>.
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