COVID-19 Health Equity Informatics 2021

Office of Health Equity

Division of Social Epidemiology

VDH VIRGINIA DEPARTMENT OF HEALTH
Protecting You and Your Environment

Addressing Missing Race & Ethnicity Data in COVID-19 Cases

Bayesian algorithm – Missing Race & Ethnicity

p(r|s) - Calculate the probability of belonging to race or ethnicity r for a given surname s

q(g|r) - Calculate the proportion of the population of individuals in race or ethnicity r that lives in geographic area g

Apply Bayes' Theorem to calculate the likelihood that an individual with surname s living in geographic area g belongs to race or ethnicity r

$$\Pr(r|g,s) = \frac{p(r|s)q(g|r)}{\sum_{r \in R} p * q}$$

Example

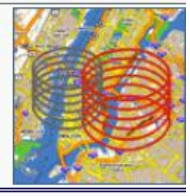
SURNAME	RANK	FREQUENCY (COUNT)	PROPORTION PER 100,000 POPULATION	CUMULATIVE PROPORTION	PERCENT NON-HISPANIC OR LATINO WHITE ALONE	PERCENT NON-HISPANIC OR LATINO BLACK OR AFRICAN AMERICAN ALONE	PERCENT NON-HISPANIC OR LATINO ASIAN AND NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER ALONE	PERCENT NON-HISPANIC OR LATINO AMERICAN INDIAN AND ALASKA NATIVE ALONE	PERCENT NON-HISPANIC OR LATINO TWO OR MORE RACES	PERCENT HISPANIC OR LATINO ORIGIN
SMITH	1	2,442,977	828.2	828.2	70.9	23.1	0.5	0.9	2.2	2.4
JOHNSON	2	1,932,812	655.2	1,483.4	59.0	34.6	0.5	0.9	2.6	2.4
WILLIAMS	3	1,625,252	551.0	2,034.4	45.8	47.7	0.5	0.8	2.8	2.5
BROWN	4	1,437,026	487.2	2,521.6	58.0	35.6	0.5	0.9	2.6	2.5
JONES	5	1,425,470	483.2	3,004.8	55.2	38.5	0.4	1.0	2.6	2.3
GARCIA	6	1,166,120	395.3	3,400.1	5.4	0.5	1.4	0.5	0.3	92.0
MILLER	7	1,161,437	393.7	3,793.9	84.1	10.8	0.5	0.7	1.8	2.2
DAVIS	8	1,116,357	378.5	4,172.3	62.2	31.6	0.5	0.8	2.5	2.4
RODRIGUEZ	9	1,094,924	371.2	4,543.5	4.8	0.5	0.6	0.2	0.2	93.8
MARTINEZ	10	1,060,159	359.4	4,902.9	5.3	0.5	0.6	0.5	0.2	92.9
HERNANDEZ	11	1,043,281	353.7	5,256.6	3.8	0.4	0.6	0.2	0.2	94.9

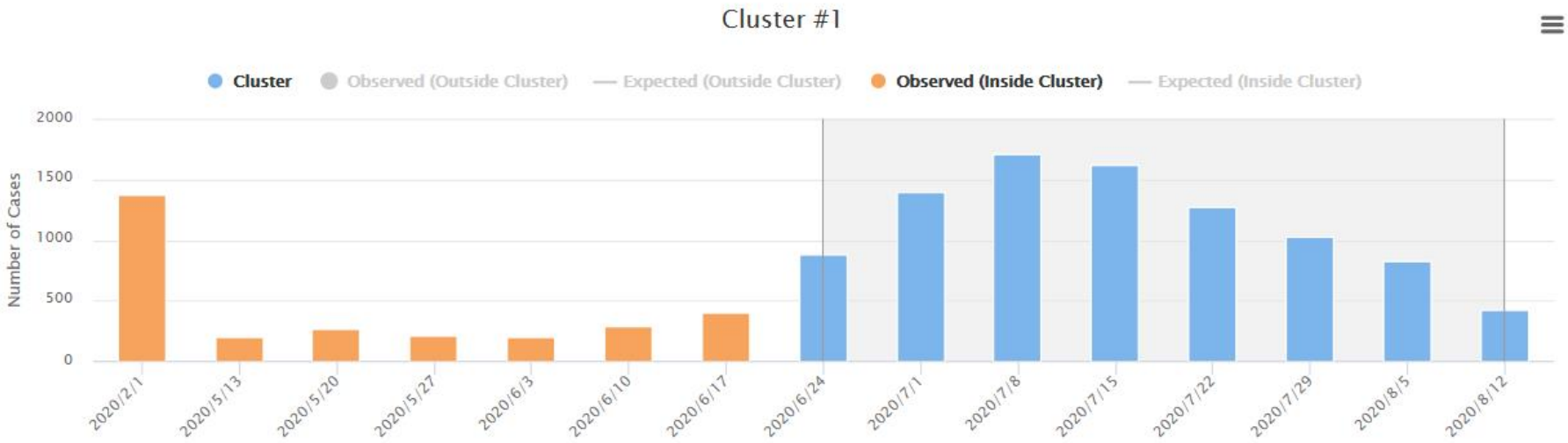
Surname: Hernandez

A	B	C	D	E	E/D	B*(E/D)	
Race/Ethnicity	Distribution	Race & Ethnicity	United States Pop	Virginia Pop	% US pop in Virginia		Final Prob (BISG)
White	0.0379	White	197,181,177	5,233,111	0.026539607	0.001005851	0.071244255
Black	0.0036	Black	39,715,917	1,582,421	0.039843497	0.000143437	0.010159588
Asian & Havaiian	0.006	Asian & Havaiian	17,892,271	531,713	0.029717469	0.000178305	0.012629298
American Indians	0.0019	American Indians	2,135,479	17,747	0.008310548	1.579E-05	0.001118406
Two or More	0.0016	Two or More	8,460,251	277,605	0.032812856	5.25006E-05	0.003718606
Hispanic	0.9489	Hispanic	57,517,935	771,177	0.013407592	0.012722464	0.901129848
					Sum Col F	0.014118347	

SaTScan™

Software for the spatial, temporal, and space-time scan statistics





Coordinates / radius..: (36.811269 N, 76.263758 W) / 15.97 km

Time frame.....: 2020/6/24 to 2020/8/18
Number of cases.....: 9,165
Expected cases.....: 4,987
Observed / expected...: 1.84
Test statistic.....: 1,485
P-value.....: < 0.00000000000000001

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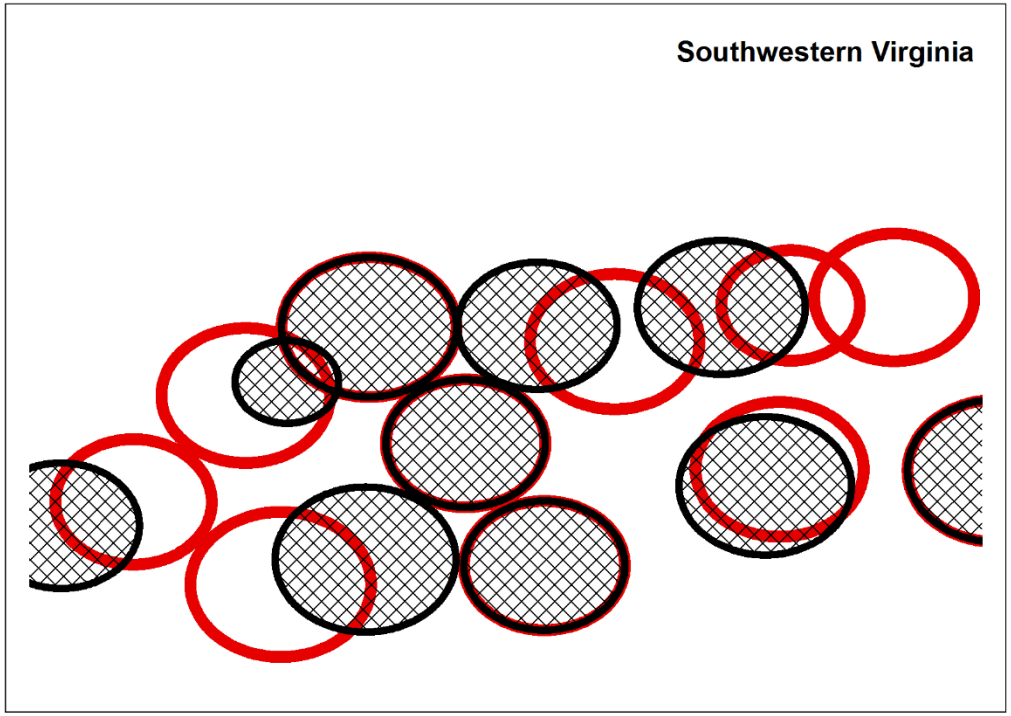


Virginia

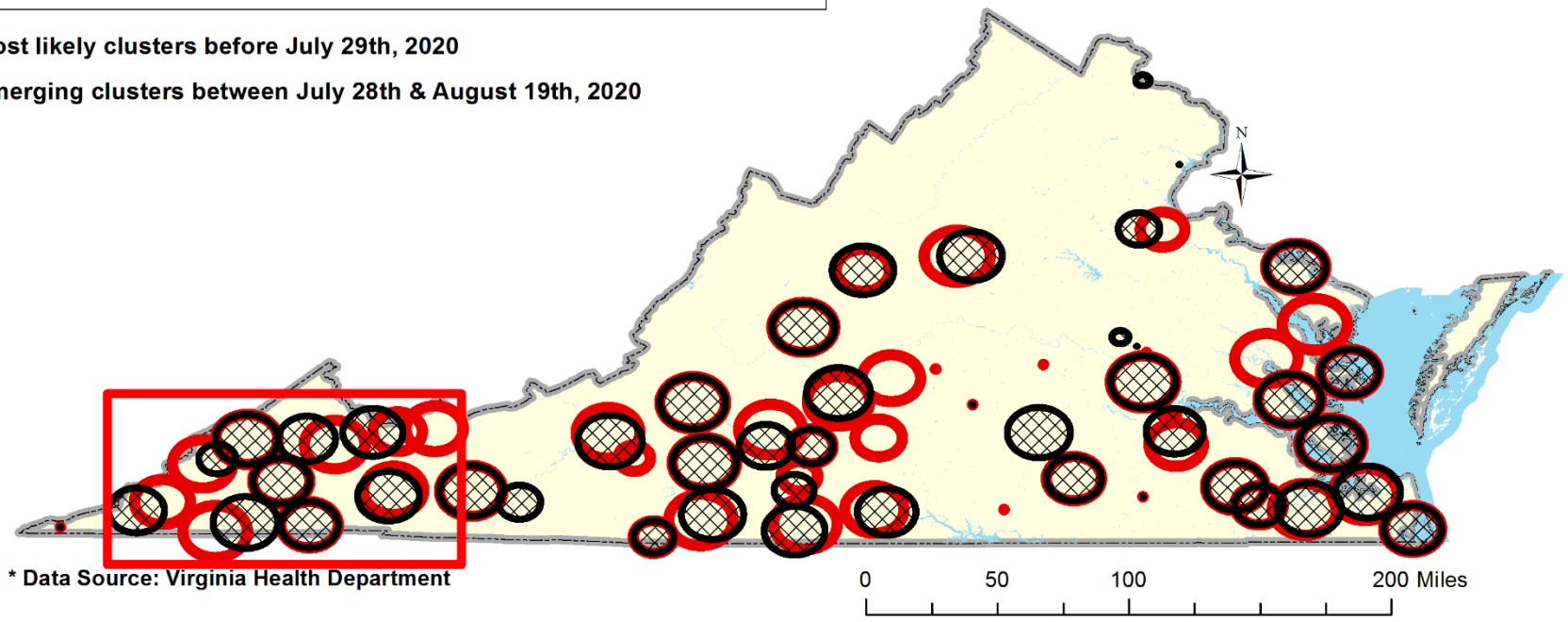
Detecting Emerging Clusters of COVID-19 *

Using Prospective Space-Time Scan Statistic

Between July 28th & August 19th, 2020

Most likely clusters before July 29th, 2020

Emerging clusters between July 28th & August 19th, 2020



* Data Source: Virginia Health Department

Who we are

With ELC CARES funding, the Office of Health Equity established a designated data & analytics team to strengthen pandemic surveillance systems.

Purpose: to have designated technical people thinking about how data systems are built and how we can improve health equity analytics for the current and future pandemics

Established: Late 2020 / early 2021

2021 Summary

There was a need for quality data on equity during pandemics. To provide it, OHE needed to build up its internal capacity in data analytics with expertise in COVID-19.

In 2021 OHE…

- Built an analytics team that is tied into central data systems for COVID-19
- Embedded analytics personnel in COVID-19 data processes
- Provided analytics products and data systems support for COVID-19 with a focus on equity

Looking ahead …

Influence thinking and policy around equity for future pandemic surveillance systems, while leveraging lessons learned from COVID-19

What we do

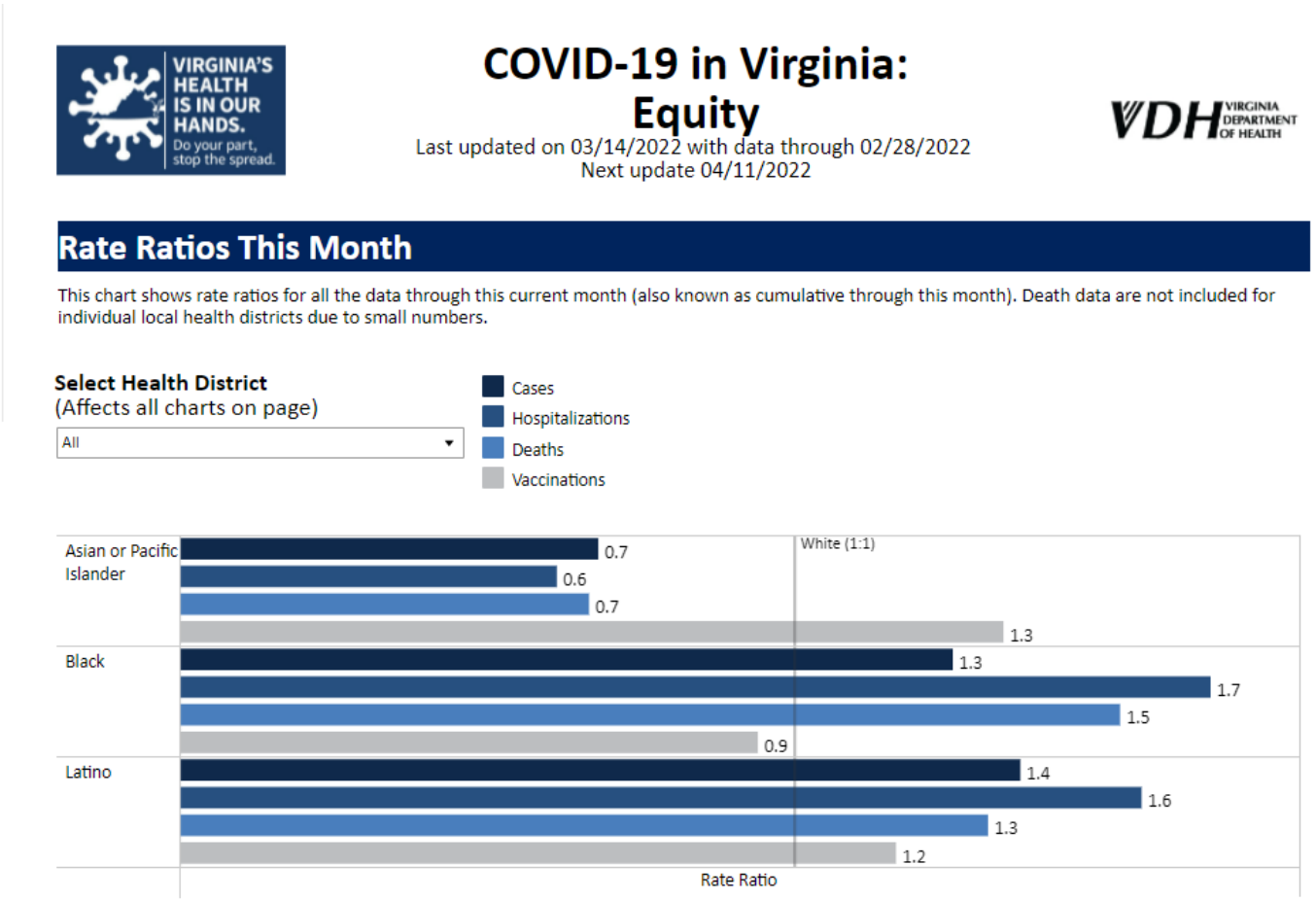
General support for health equity analytics

- Blog posts (COVID-19 disparities, vaccine effectiveness)
- Mapping unvaccinated people across the commonwealth for vaccine programs
- Ad hoc requests related to health equity analytics
- Guidance and resources for maintaining COVID-19 data related to social demographics and vulnerable populations

Projects:

- Improving COVID-19 surveillance for incarcerated people
- COVID-19 Model Performance Application
- COVID-19 Health Equity Dashboard
- Analysis of COVID-19 race and ethnicity reporting methods
- COVID-19 Hospitalization Outcomes Analysis

COVID-19 Health Equity Dashboard



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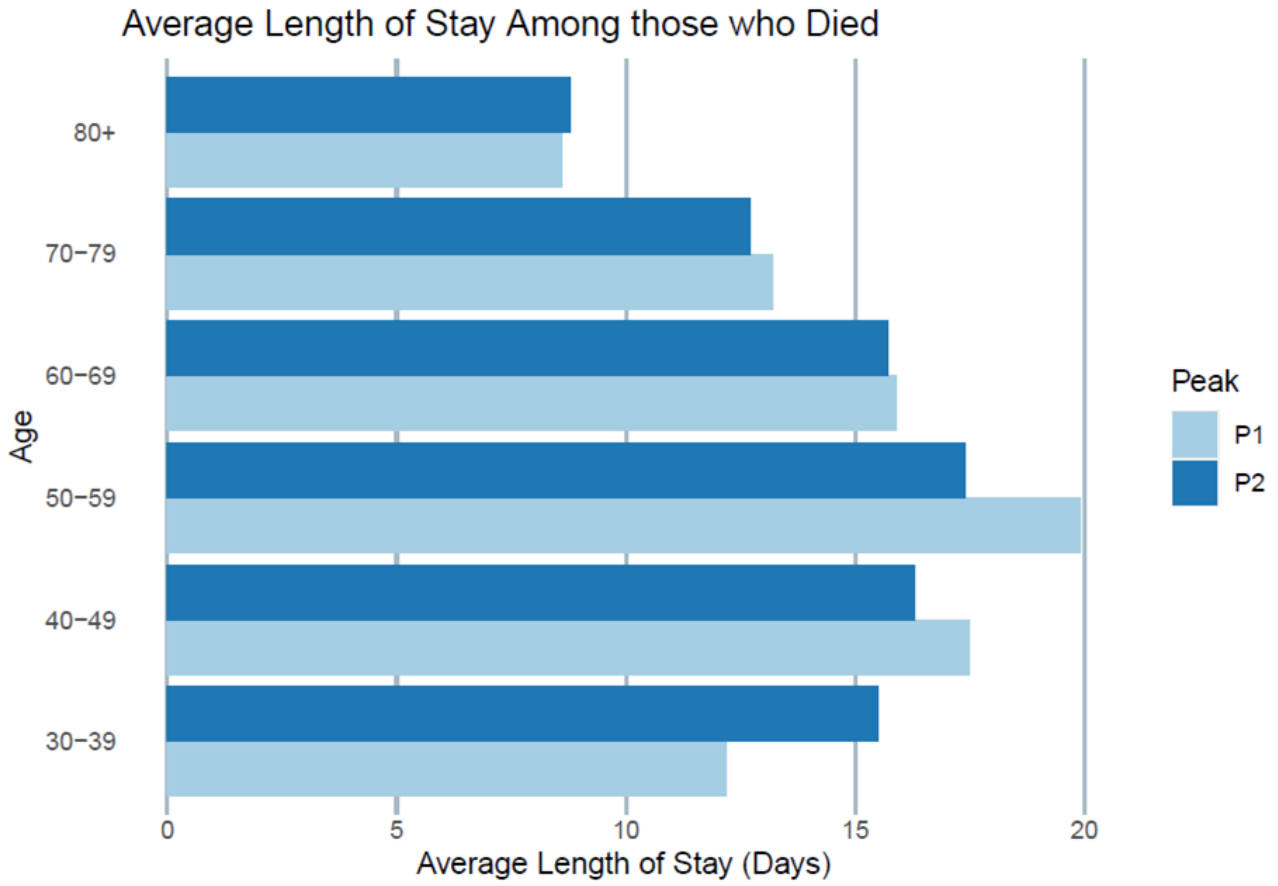
COVID-19 Hospitalization Outcomes Analysis

- Enhanced COVID-19 hospitalization data using EDCC* data
- Comparison of outcomes for different periods of the pandemic
- Automated analysis allows for switching between periods



*Emergency Department Care Coordination (EDCC) Program

Surveillance for Incarcerated People

Objective
A profile of COVID-19 health disparities among incarcerated people in Virginia.

Progress

- Building relationships with VA Department of Corrections, Board of Local and Regional Jails, Compensation Board, etc.
- Prepared view of incarcerated data from COVID19_DB
- MOU with OCME who will share death data to further validate our records
- Assessment of data readiness for analysis (tested SMR and other rates with publicly available population data)

Goal
To raise the profile of incarcerated people and support epidemiological analysis within VDH to improve the health of this group.

Next Steps
Develop a policy brief to advise on ways to improve surveillance of this group in future pandemics, using lessons learned from this pandemic by public health and correctional officials

Questions? Comments?