SC Revenue and Fiscal Affairs

SC Integrated Data System: Supporting the COVID-19 Response
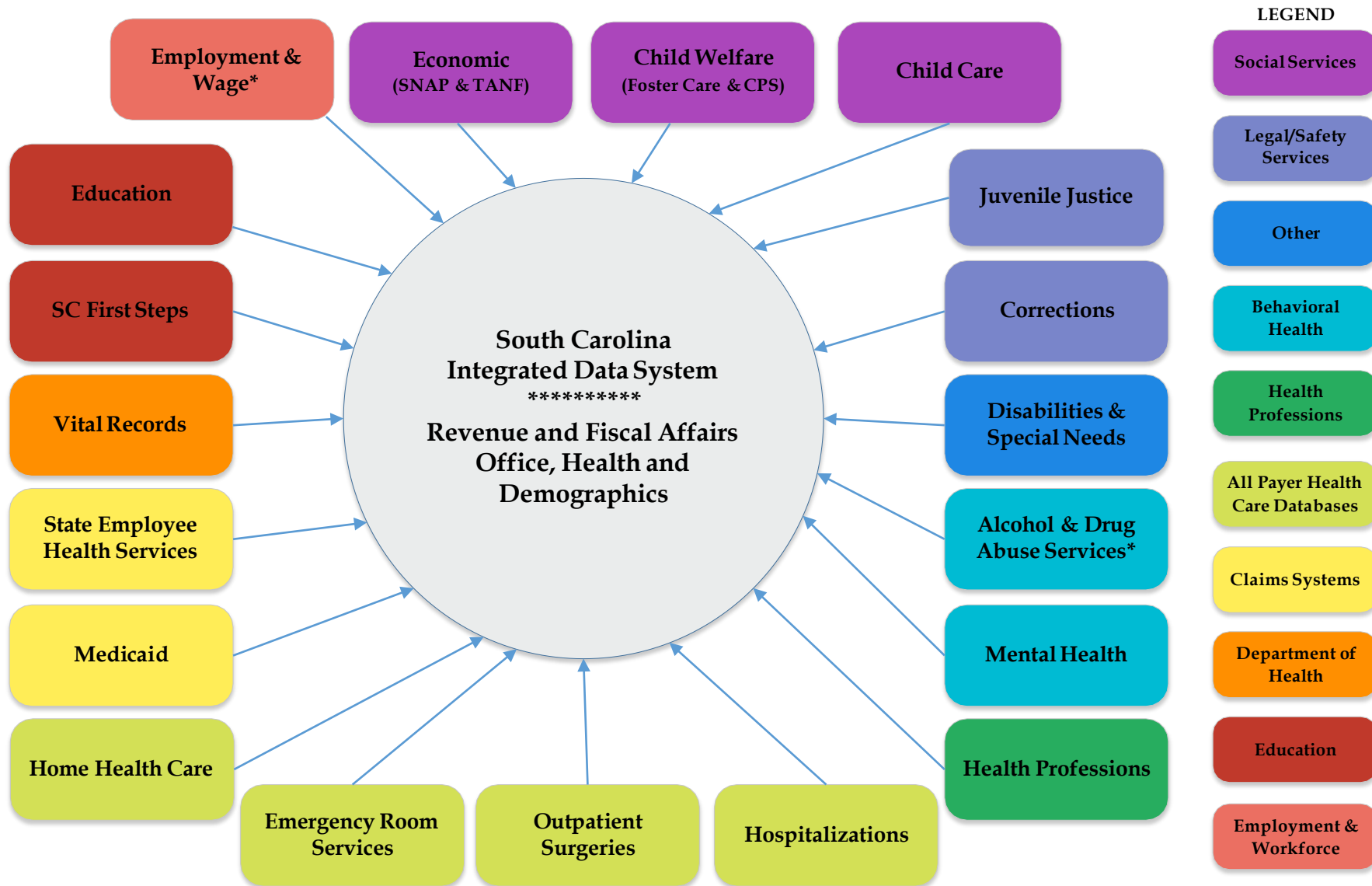
Active Intelligence for Social Policy
Philadelphia, PA
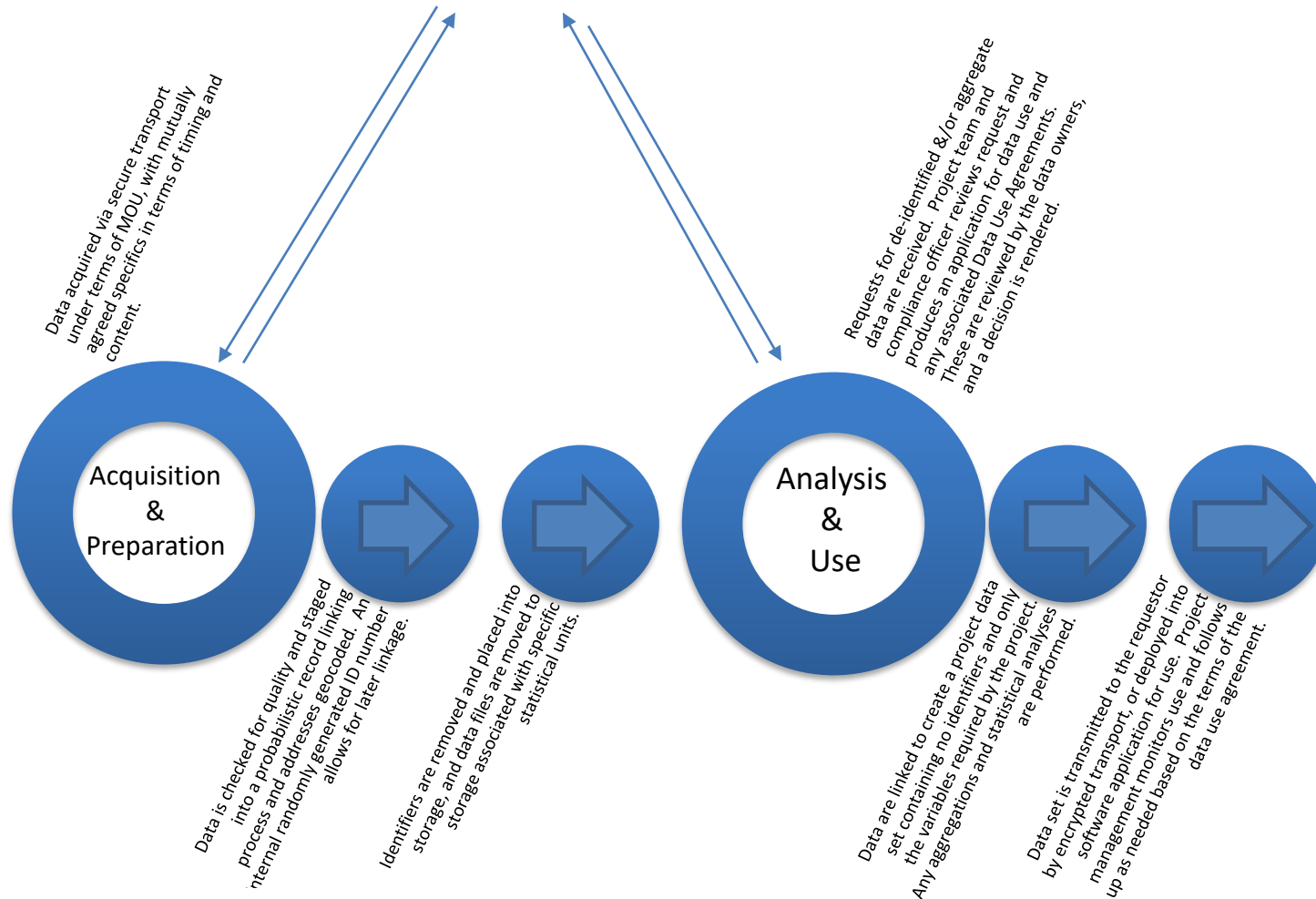**June 22, 2022**

Who are we?

- **Agency Mission:** To provide independent research, analysis, and resources to facilitate informed policy decisions and administration of services

- **Division Vision:** "It is the entire human experience that influences health and social well-being and should therefore be captured and analyzed through an integrated data system."

- **Staff:** 31 employees, 1/2 statisticians trained in either theoretical statistics or their substantive disciplines. The remaining staff are focused on supporting information/knowledge deployment skills such as software development, geo-spatial analysis and data base administration, as well as project management, and compliance.

South Carolina Integrated Data System
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Revenue and Fiscal Affairs Office, Health and Demographics

Employment & Wage*

Economic (SNAP & TANF)

Child Welfare (Foster Care & CPS)

Child Care

Education

SC First Steps

Vital Records

State Employee Health Services

Medicaid

Home Health Care

Emergency Room Services

Outpatient Surgeries

Hospitalizations

Juvenile Justice

Corrections

Disabilities & Special Needs

Alcohol & Drug Abuse Services*

Mental Health

Health Professions

LEGEND

- Social Services
- Legal/Safety Services
- Other
- Behavioral Health
- Health Professions
- All Payer Health Care Databases
- Claims Systems
- Department of Health
- Education
- Employment & Workforce

South Carolina Revenue and Fiscal Affairs Office

***Limited data available**

Process Overview

Data Owners and External Governance

Data acquired via secure transport under terms of MOU, with mutually agreed specifics in terms of timing and content.

Requests for de-identified &/or aggregate data are received. Project team and compliance officer reviews request and produces an application for data use and any associated Data Use Agreements. These are reviewed by the data owners, and a decision is rendered.

Acquisition & Preparation

Analysis & Use

Data is checked for quality and staged into a probabilistic record linking process and addresses geocoded. An internal randomly generated ID number allows for later linkage.

Identifiers are removed and placed into storage, and data files are moved to storage associated with specific statistical units.

Data are linked to create a project data set containing no identifiers and only the variables required by the project. Any aggregations and statistical analyses are performed.

Data set is transmitted to the requestor by encrypted transport, or deployed into software application for use. Project management monitors use and follows up as needed based on the terms of the data use agreement.

Information Products

Analytic Products

- Agency Collaboration
- Researcher Collaboration
  - Data linkage
  - De-identified datasets
  - GIS support
  - Analytic support
- Public Website (www.rfa.sc.gov)
  - Descriptive statistics
  - Ability to query data sources and generate ad-hoc report
  - On-line analytics

Application Partners

- ABC Tablet Application
- Community Long Term Care Application (Phoenix)
- Ages and Stages Questionnaire
- Dept. of Education Data Warehouse
- Purpose Built Screening and Referral Systems
- South Carolina Health Information Exchange (SCHIEx)
- Educational Credit for Exceptional Needs Children (ECENC) program

Health and Demographics

COVID-19 Analyses and Health Equity

AHRQ Chronic Prevention Quality Indicator Rate vs SC DHEC COVID RATE by Zip Codes Per 10k Population

CHRONIC RATE is defined as: Individuals identified in IP/ED all-payer data with AHRQ Chronic Prevention Quality Indicator in fiscal year 2018 or 2019 Per 10k Population

COVID REPORTED RATE is defined as: SC DHEC reported COVID-19 cases.

RATE PER 10K POPULATION

CHRONIC RATE

391 - 1,011

260 - 391

0 - 260

0 - 5   5 - 11   11 - 72

COVID RATE

South Carolina
Revenue and Fiscal Affairs Office
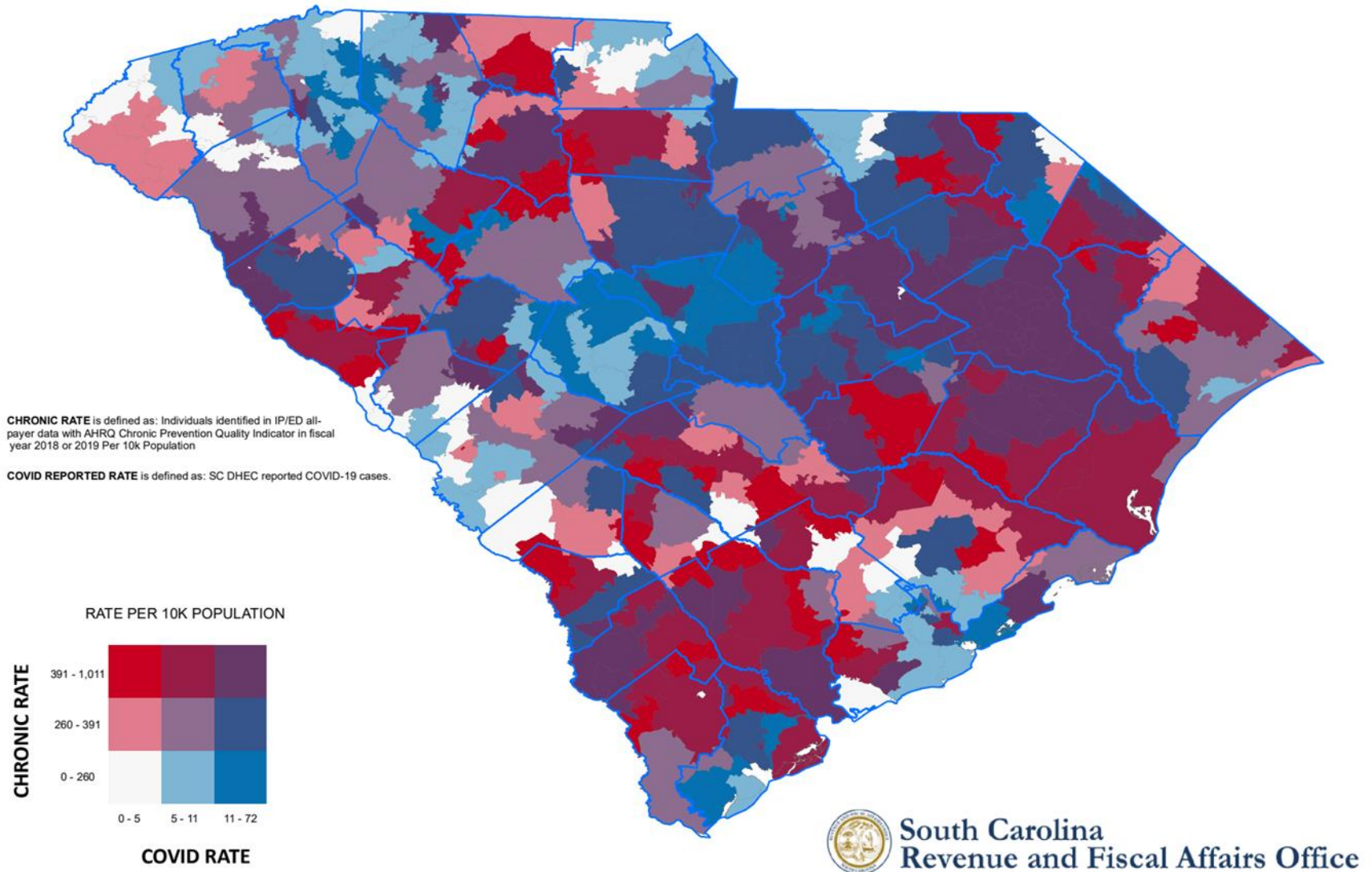
Big Data Driven Clinical Informatics & Surveillance (BDDCIS) for COVID19

NIH Grant # R01AI127203-4S1

- Partners: U of SC Big Data for Health Sciences Center, DHEC, RFA

- Innovations:
  - Breadth and variety of data sources (DHEC, Hospital (UB 92/04), Medicaid, DMH, DAODAS + others pending approval or submission)
  - Advanced techniques such as machine learning and predictive modeling

- RFA role:
  - Data intermediary and data supplier
  - Person level record linkage

Big Data Driven Clinical Informatics & Surveillance for COVID-19

- Aim 1: Create a de-identified linked database system for collating surveillance, clinical, multi-omics and geospatial data on both COVID-19 patients and health workers (HW) treating COVID-19 patients in South Carolina.

- Aim 2: Examine the natural history of COVID-19 including transmission dynamics, disease progression, and geospatial visualization.

- Aim 3: Identify important predictors of short- and long-term clinical outcomes of COVID-19 patients in South Carolina using machine learning algorithms.

Overview

- Statewide data from laboratory-confirmed COVID-19

- Feb 10, 2020–Jan 05, 2021

- Standardized CDC Case Report Form (CRF)

- Exploratory Analyses

Result Highlights

- 280,177 SC COVID-19

- Around 5.2% (14,451) were hospitalized

- 1.9% (5,308) died.

- Presenting symptoms: such as cough (31.8%), headache (27.1%), fever (20.4%), myalgia (24.7%), and loss of taste or smell (20.7%) most dominant symptoms

- Older patients, males, African Americans, Asians, rural residents had higher odds of hospitalization and/or mortality.
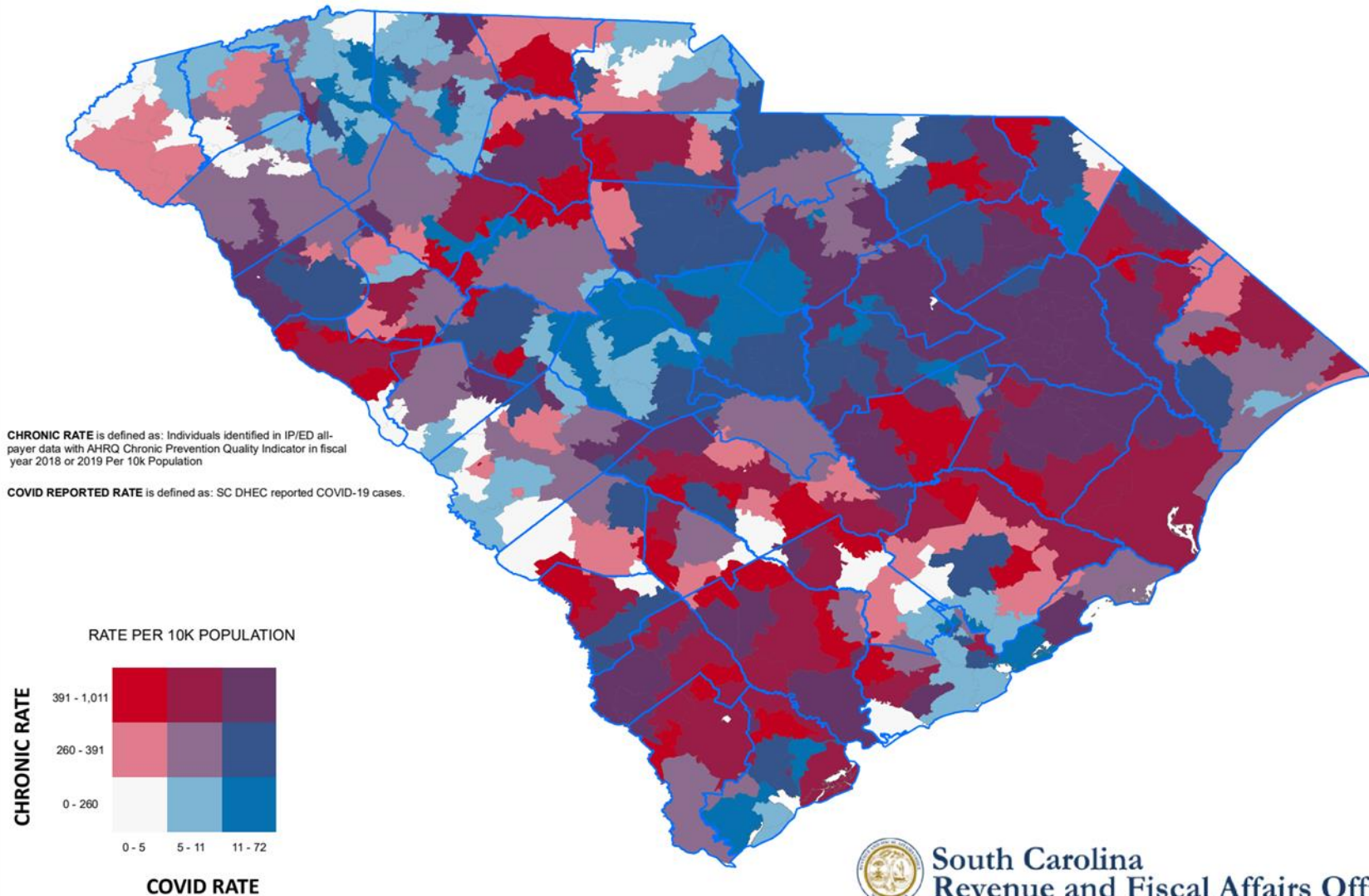
Distribution of Symptoms for SC COVID-19 Patients, Hospitalization and Mortality, SC COVID-19 Patients, Feb 2020 – Jan 2021
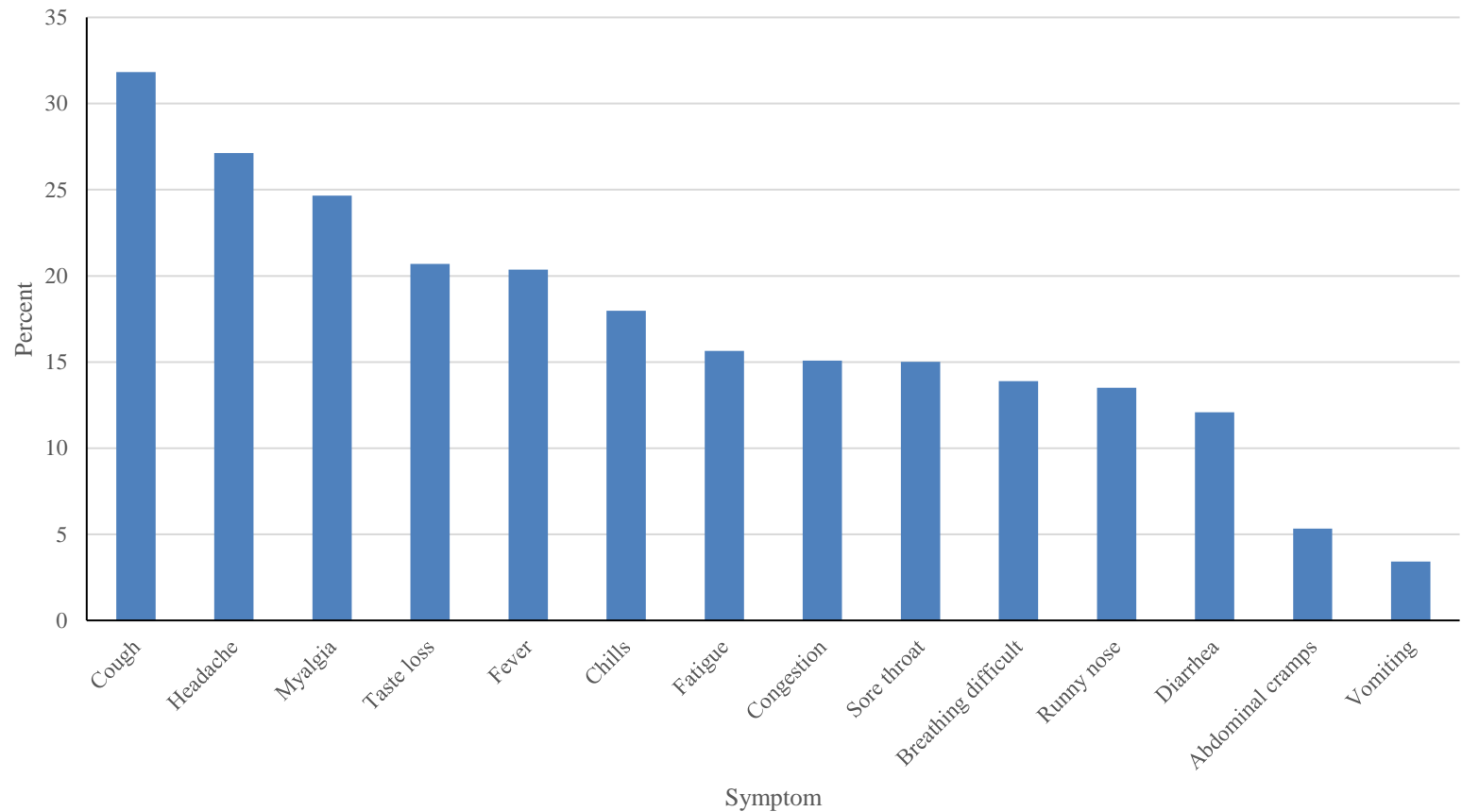
Odds for Multiple Indicators, SC COVID-19
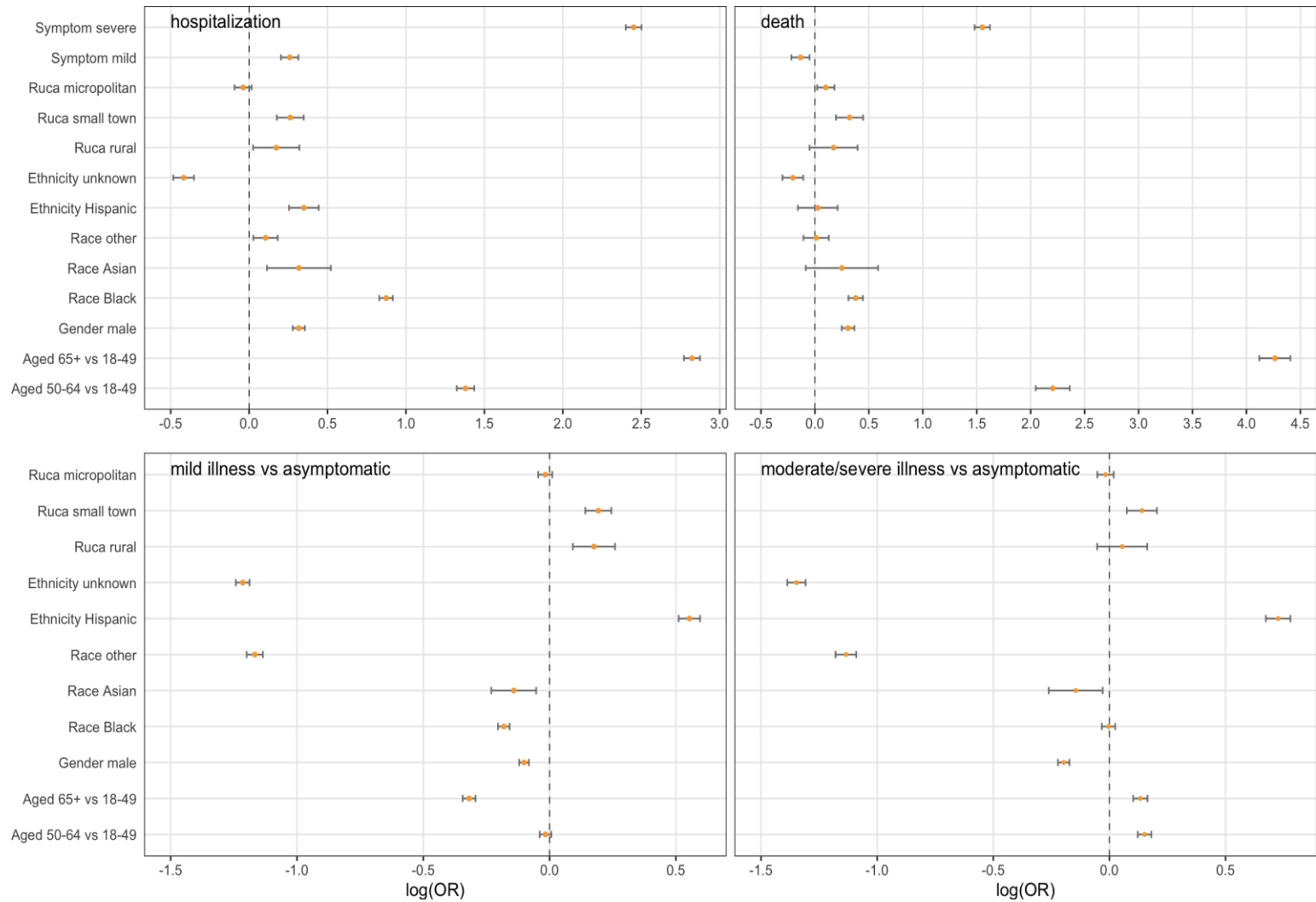
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COVID RATE

South Carolina
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For further information

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