Using R to Co-Create an Inclusive Data Analysis Approach with the HBCU Health Equity Data Consortium

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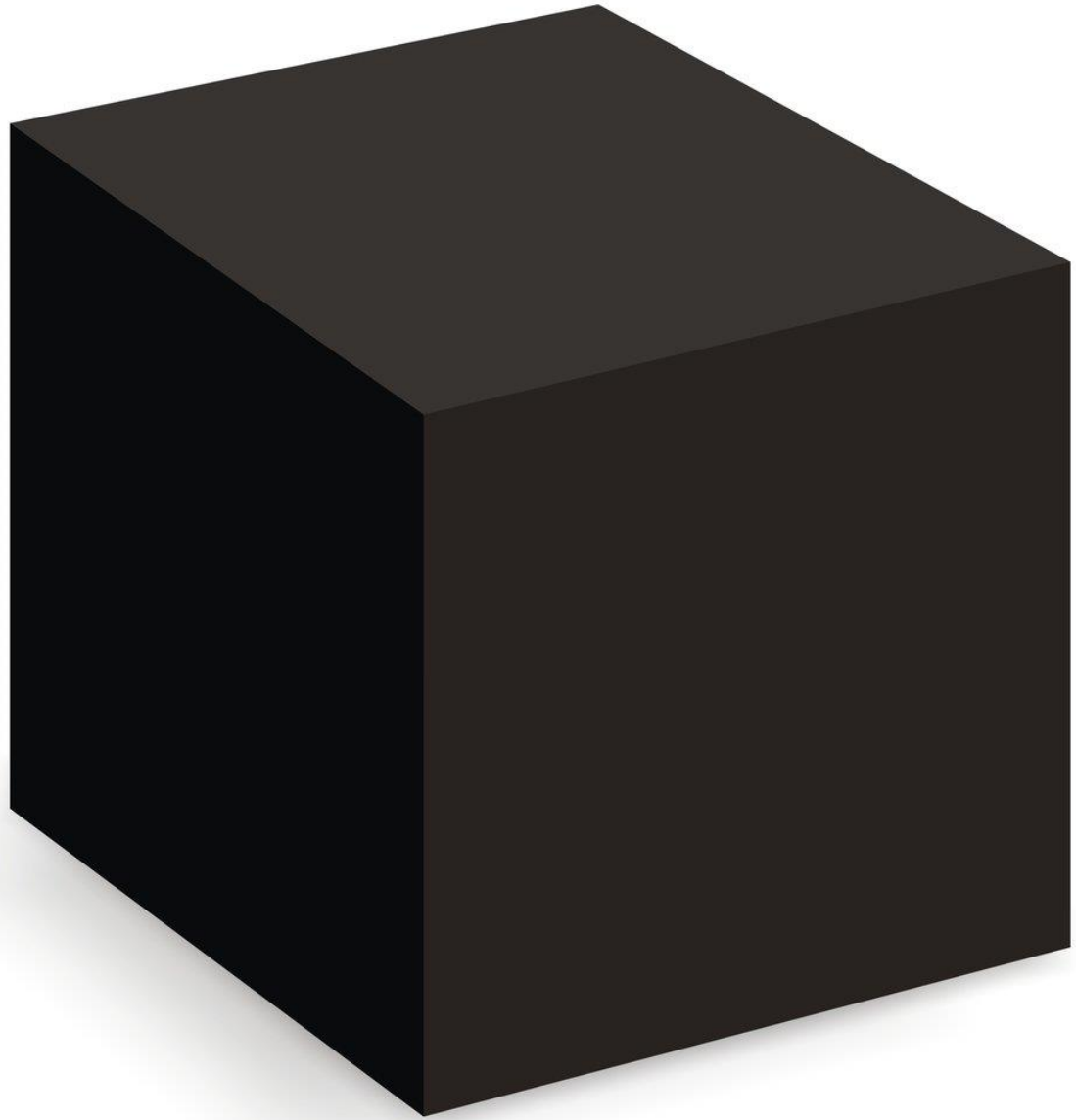
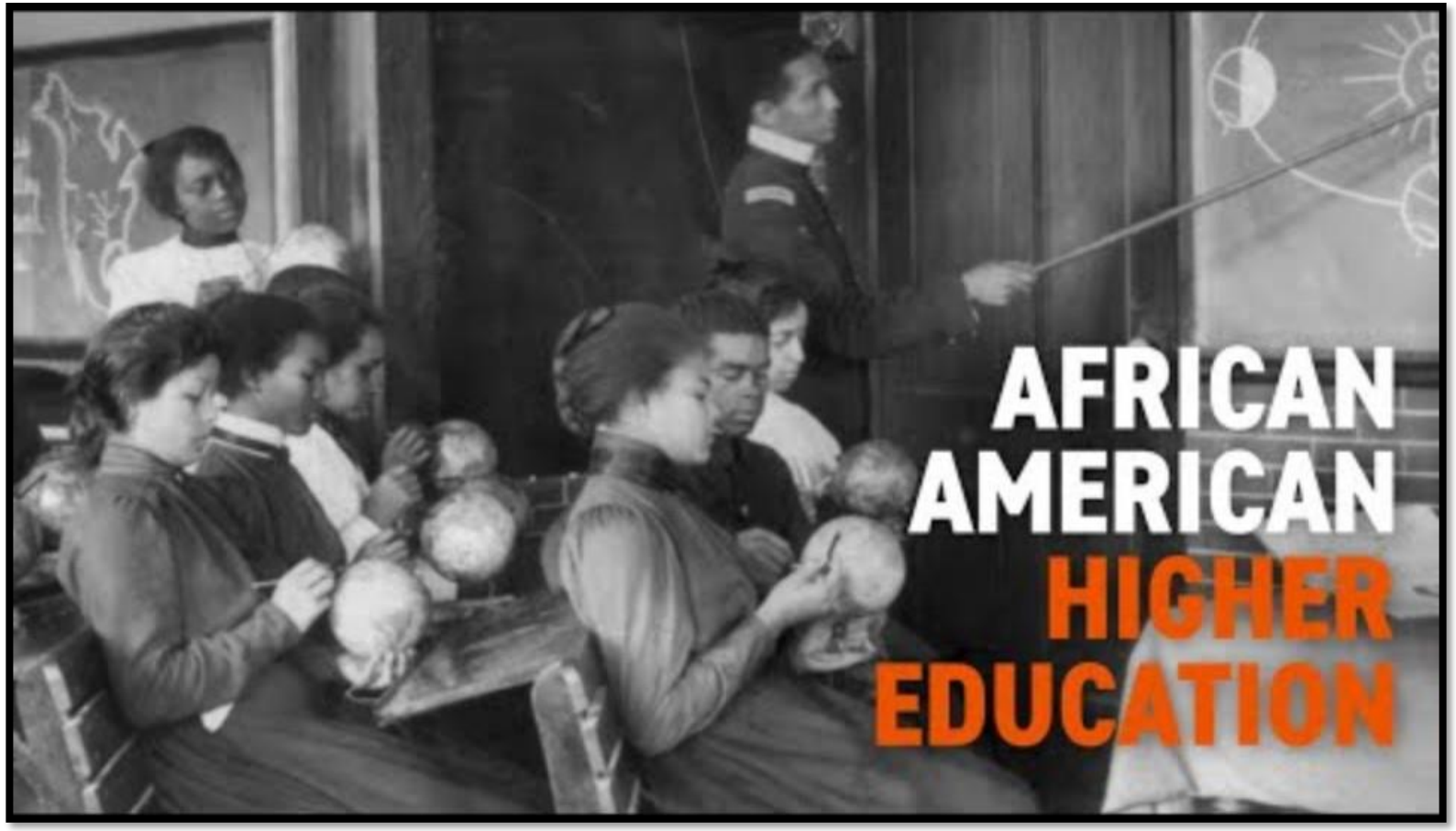
UNC | GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH
North Carolina Institute for Public Health



HBCU Health Equity Data Consortium

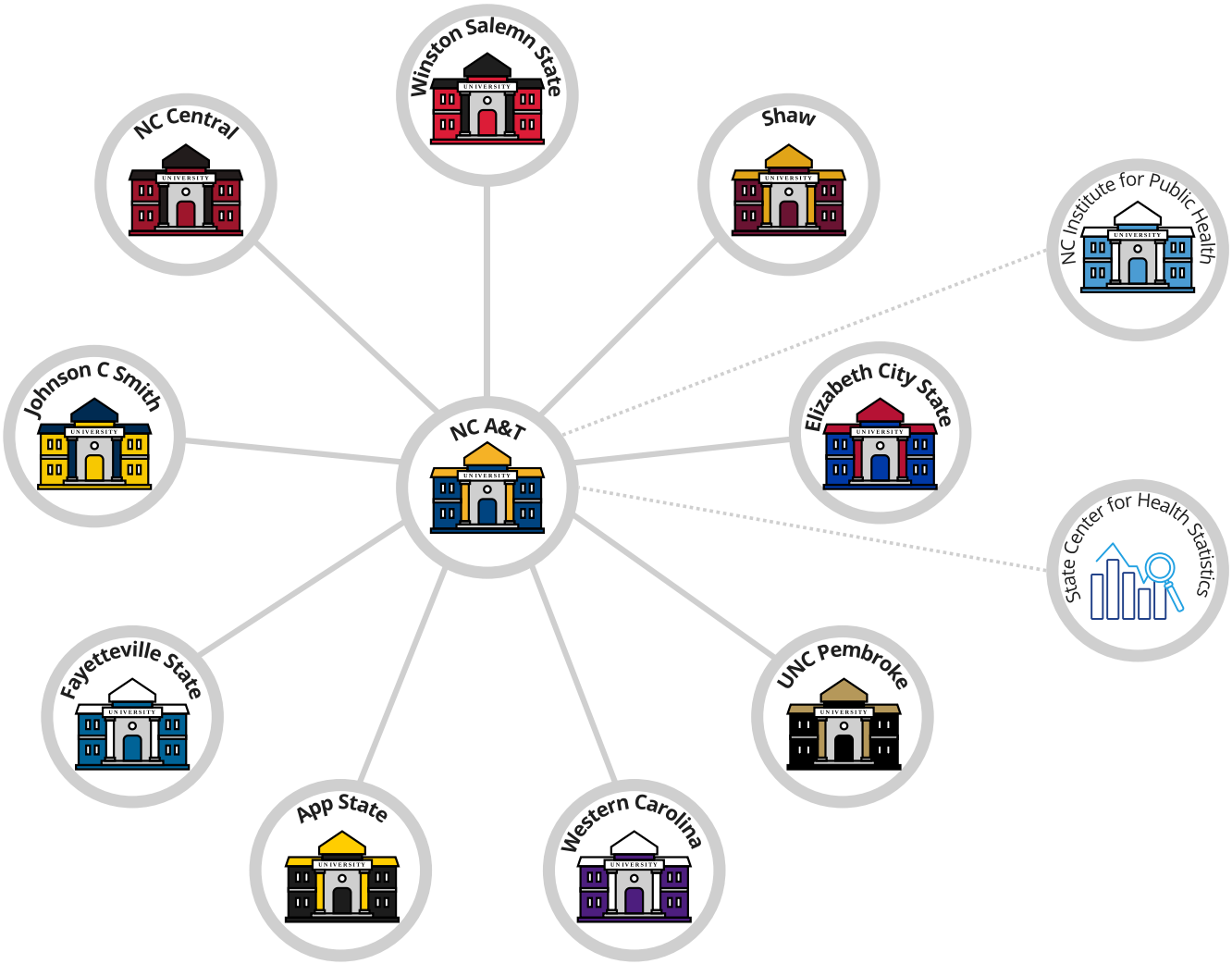
Historical Context



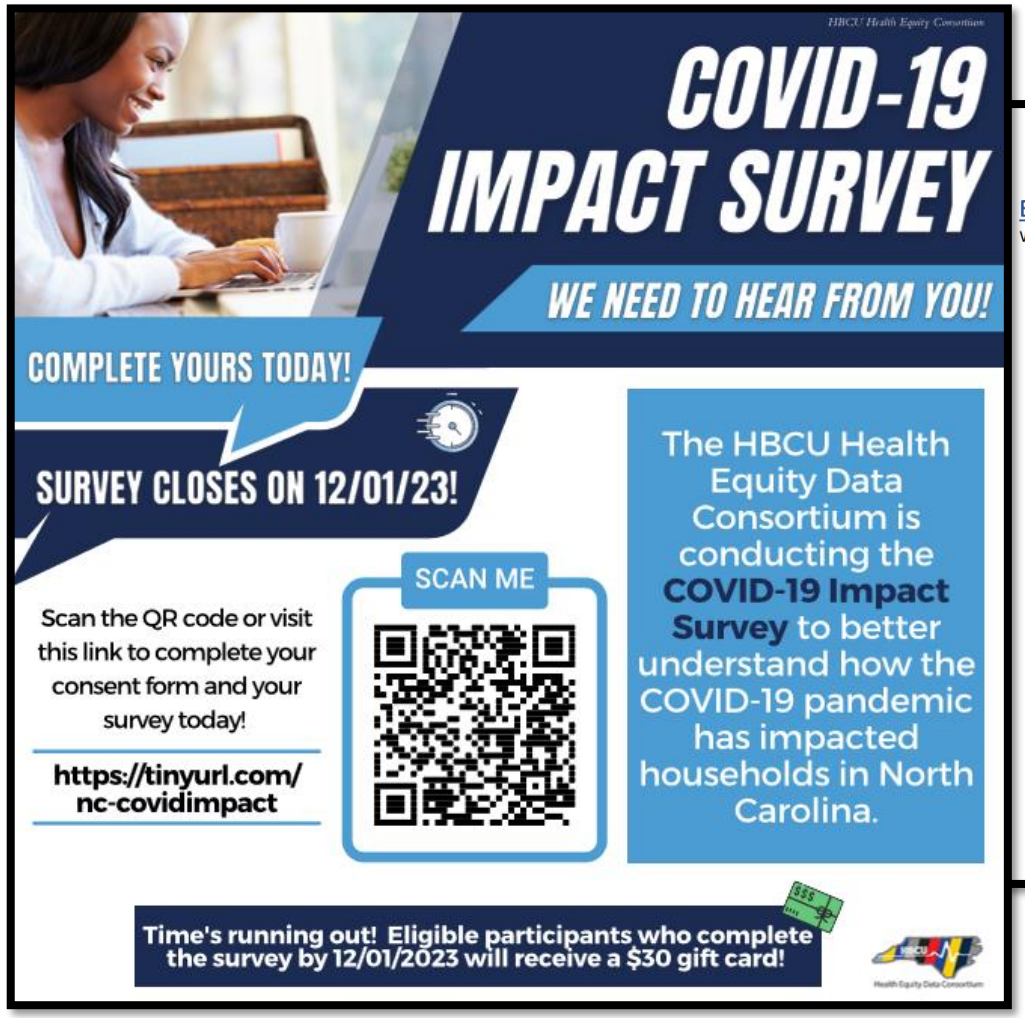
African American Higher Education by Black History in Two Minutes

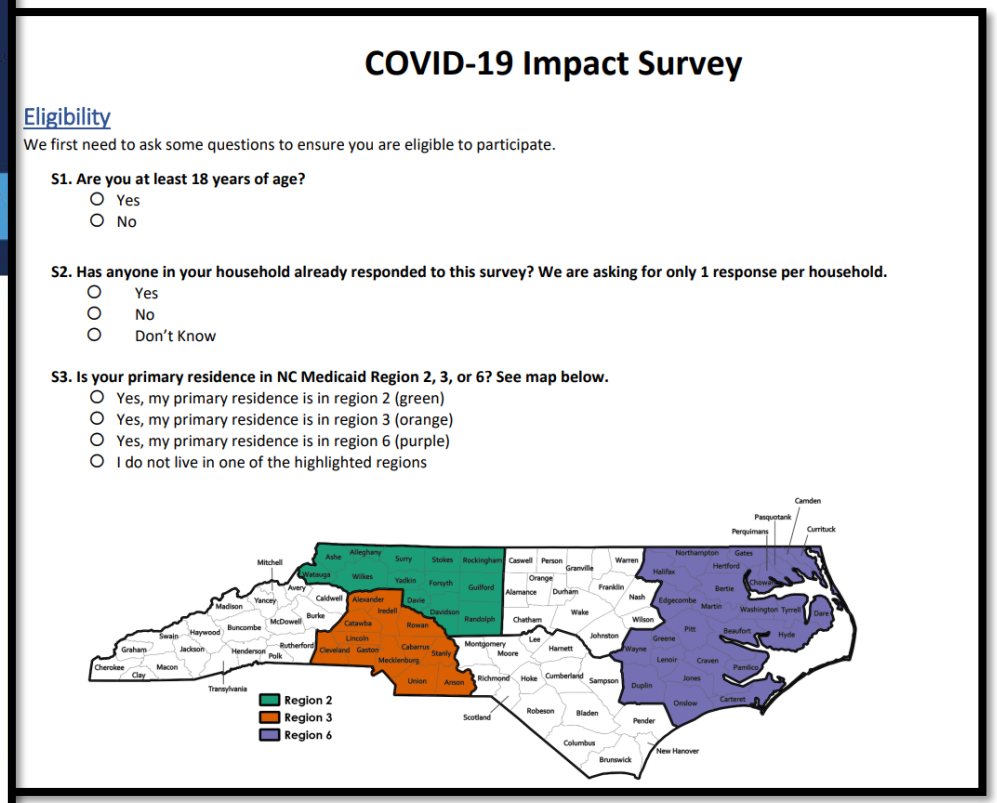
HBCU HEDC Background

- Formed in 2022
- Emphasizes equity approaches to:
  - community engagement
  - minority serving institution infrastructure development
  - reciprocal data literacy
  - health disparity research
  - data equity for historically marginalized populations



COVID-19 Impact Survey





COVID-19 Impact Survey

Eligibility

We first need to ask some questions to ensure you are eligible to participate.

S1. Are you at least 18 years of age?

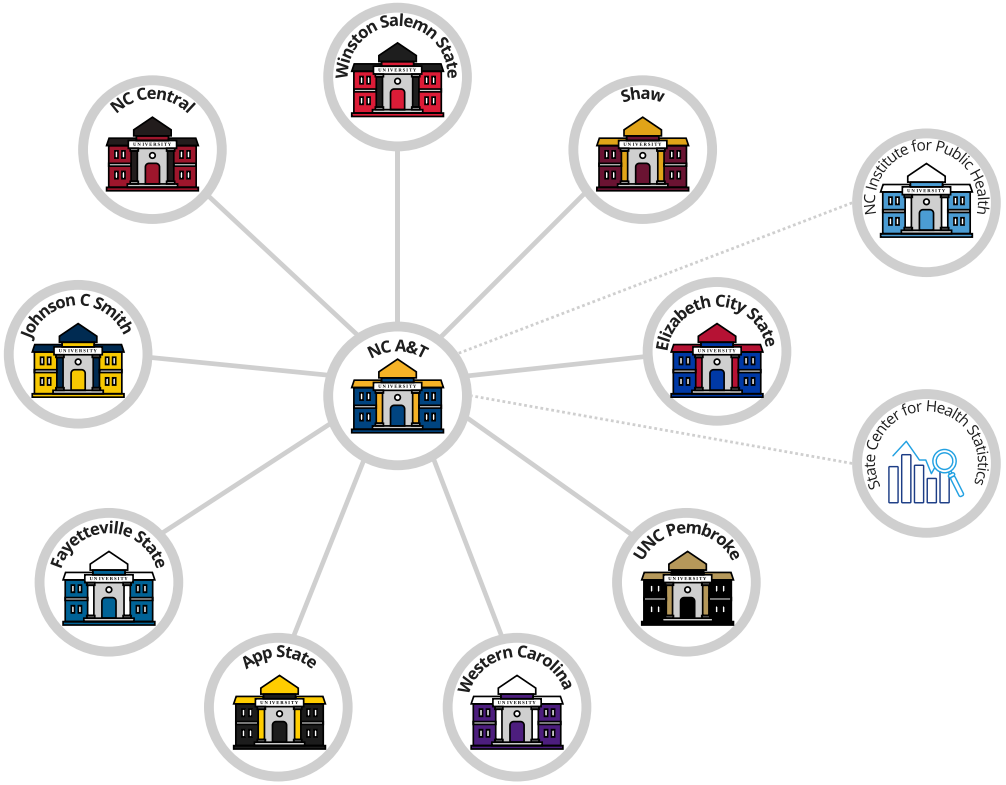
- ○ Yes
- ○ No

S2. Has anyone in your household already responded to this survey? We are asking for only 1 response per household.

- ○ Yes
- ○ No
- ○ Don't Know

S3. Is your primary residence in NC Medicaid Region 2, 3, or 6? See map below.

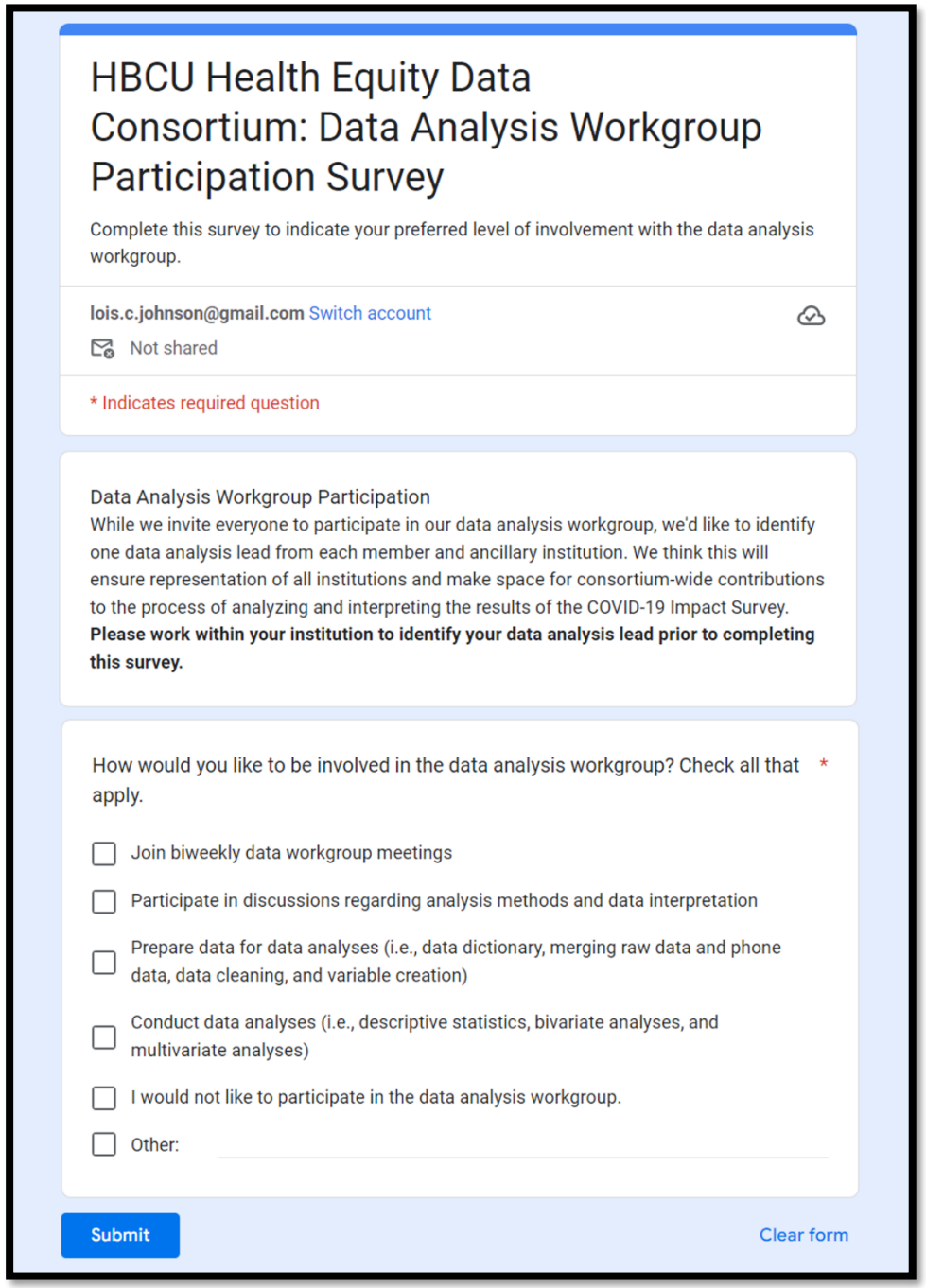
- ○ Yes, my primary residence is in region 2 (green)
- ○ Yes, my primary residence is in region 3 (orange)
- ○ Yes, my primary residence is in region 6 (purple)
- ○ I do not live in one of the highlighted regions



Data Analysis Workgroup

Workgroup Formation

- Developed brief participation survey to identify:
  - leads from **each** institution
  - how folks would like to engage
- Convened at biweekly meetings throughout the **entire** project



HBCU Health Equity Data Consortium: Data Analysis Workgroup Participation Survey

Complete this survey to indicate your preferred level of involvement with the data analysis workgroup.

lois.c.johnson@gmail.com Switch account

Not shared

* Indicates required question

Data Analysis Workgroup Participation

While we invite everyone to participate in our data analysis workgroup, we'd like to identify one data analysis lead from each member and ancillary institution. We think this will ensure representation of all institutions and make space for consortium-wide contributions to the process of analyzing and interpreting the results of the COVID-19 Impact Survey. **Please work within your institution to identify your data analysis lead prior to completing this survey.**

How would you like to be involved in the data analysis workgroup? Check all that apply. *

- [ ] Join biweekly data workgroup meetings
- [ ] Participate in discussions regarding analysis methods and data interpretation
- [ ] Prepare data for data analyses (i.e., data dictionary, merging raw data and phone data, data cleaning, and variable creation)
- [ ] Conduct data analyses (i.e., descriptive statistics, bivariate analyses, and multivariate analyses)
- [ ] I would not like to participate in the data analysis workgroup.
- [ ] Other:

Submit

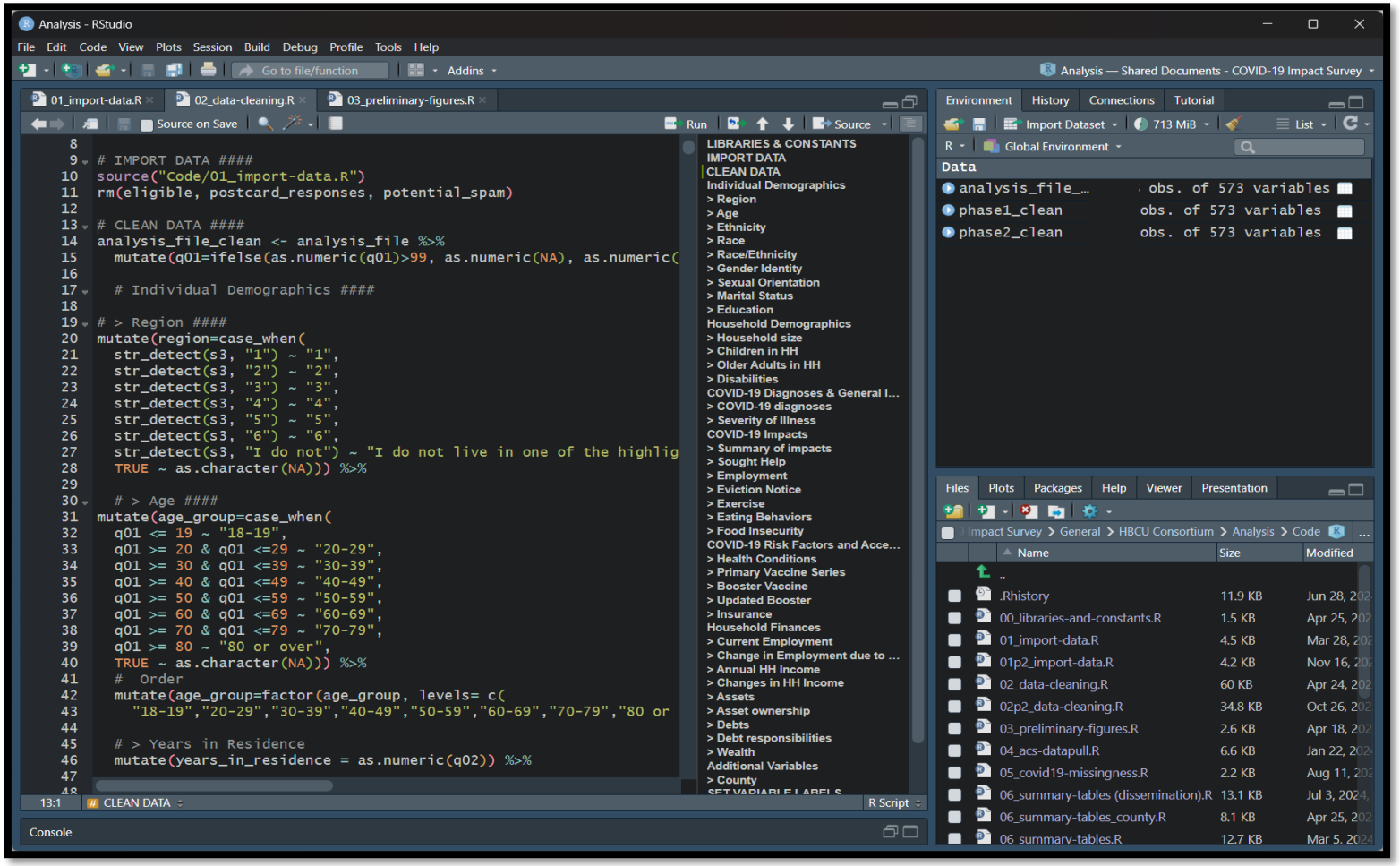
Clear form

Choosing & Using R

- Variety of preferred, mostly licensed programming languages among workgroup members
- Free and open-source!
- Literate programming
- Research reproducibility
- Volume of self-learning resources

Snippets of our work together

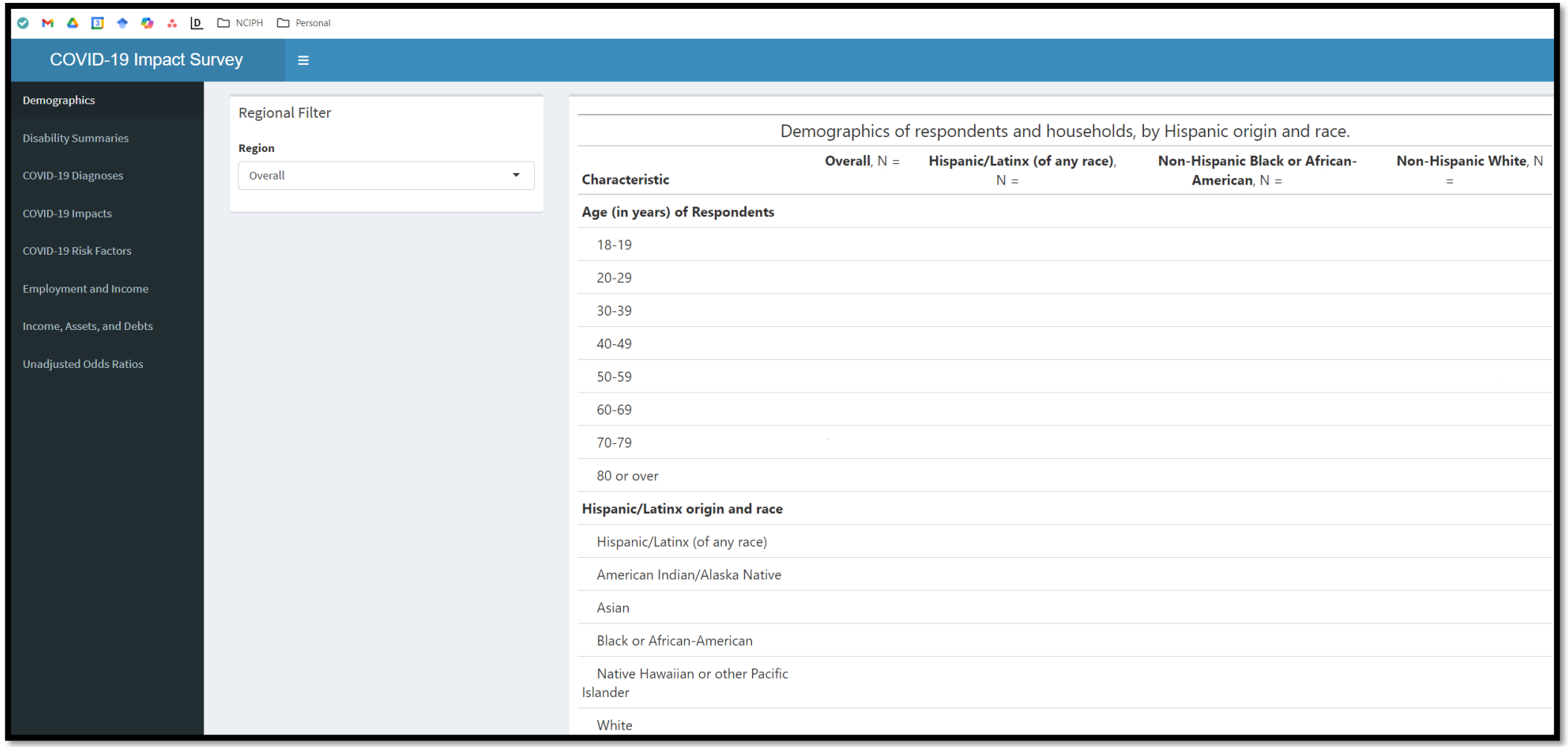
Developed Shared Code



R Workshops

Intro to R
Data Analysis with R
Reporting & Visualizing Data with R

Shiny Dashboard

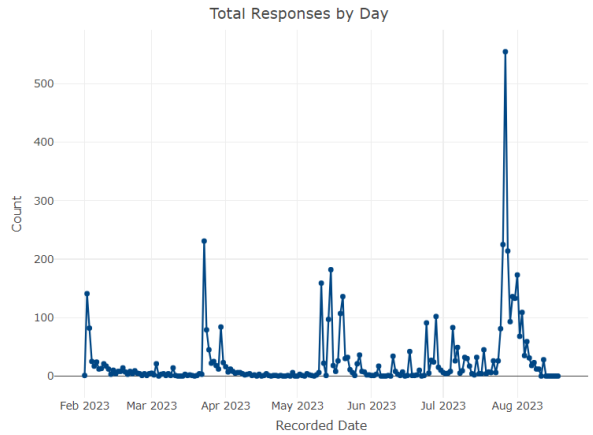


Markdown

- Responses by Day
- Cumulative Responses by Day
- Spam Exploration
- Regional Figures

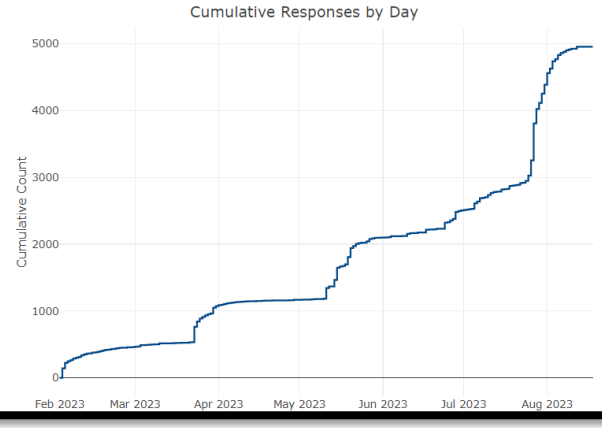
Responses by Day

Figure 1. Total responses by day.



Cumulative Responses by Day

Figure 2. Cumulative responses by day.



- Responses by Day
- Cumulative Responses by Day
- Spam Exploration
- Regional Figures

Figure 6. Spam Metrics - Recaptcha and Fraud Score, Potential Spam Responses Only, Checking Duplicate Score.

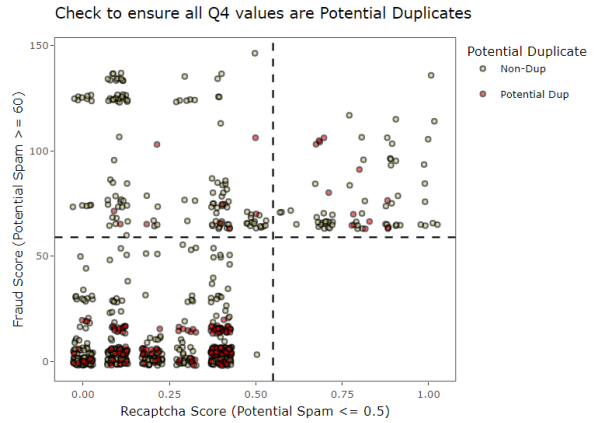


Figure 7. Spam Metrics - Recaptcha and Fraud Score, Non-Spam Responses Only.

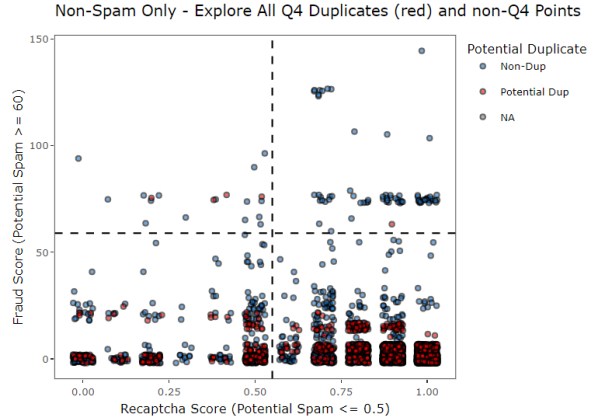
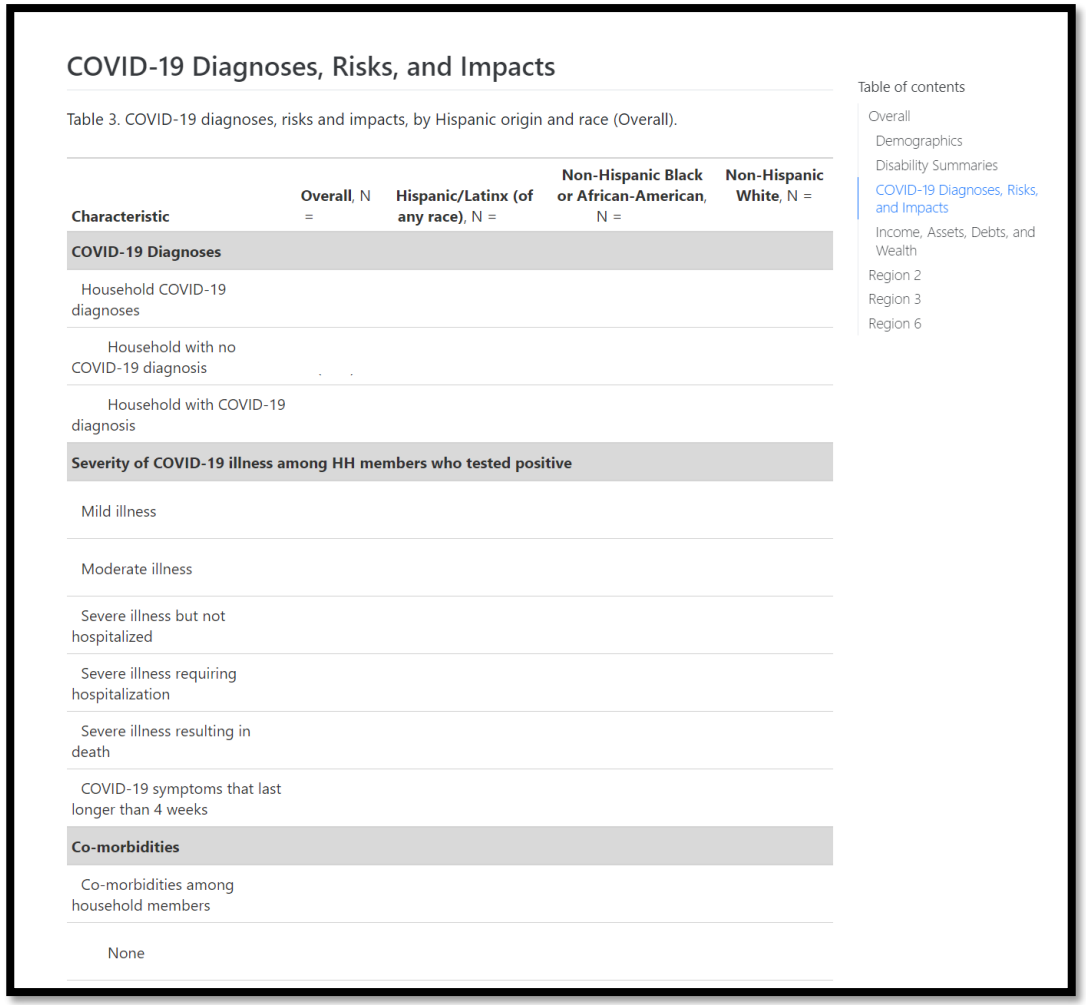


Figure 8. Spam Metrics - Recaptcha and Fraud Score, Non-Spam Responses Only.

Quarto



COVID-19 Diagnoses, Risks, and Impacts

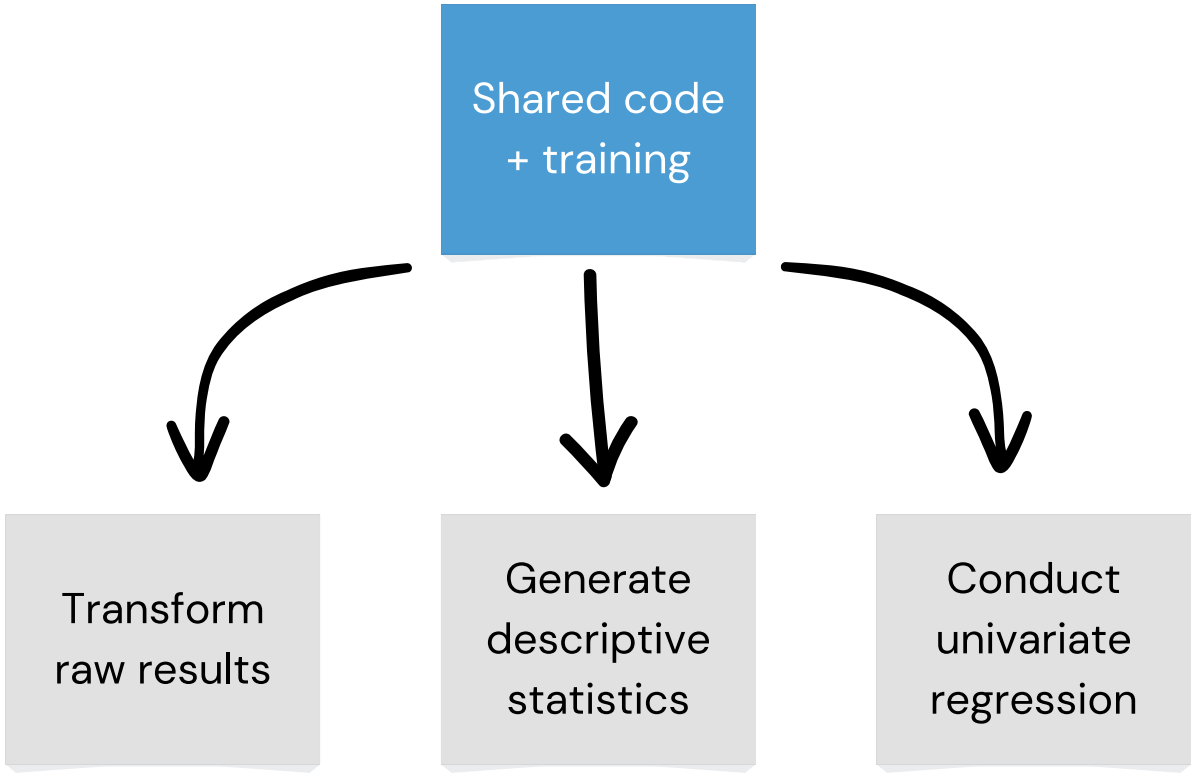
Table 3. COVID-19 diagnoses, risks and impacts, by Hispanic origin and race (Overall).

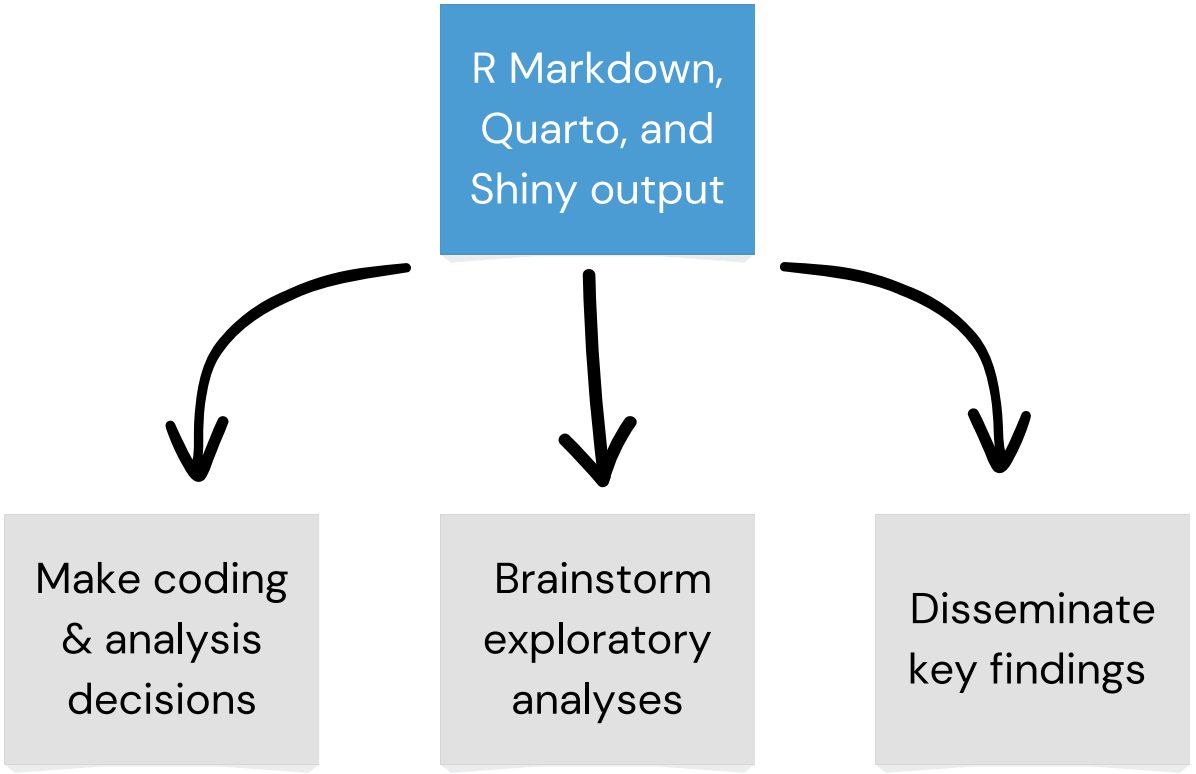
Characteristic	**Overall**, N =	**Hispanic/Latinx (of any race)**, N =	**Non-Hispanic Black or African-American**, N =	**Non-Hispanic White**, N =
COVID-19 Diagnoses				
Household COVID-19 diagnoses				
Household with no COVID-19 diagnosis				
Household with COVID-19 diagnosis				
Severity of COVID-19 illness among HH members who tested positive				
Mild illness				
Moderate illness				
Severe illness but not hospitalized				
Severe illness requiring hospitalization				
Severe illness resulting in death				
COVID-19 symptoms that last longer than 4 weeks				
Co-morbidities				
Co-morbidities among household members				
None				

Table of contents

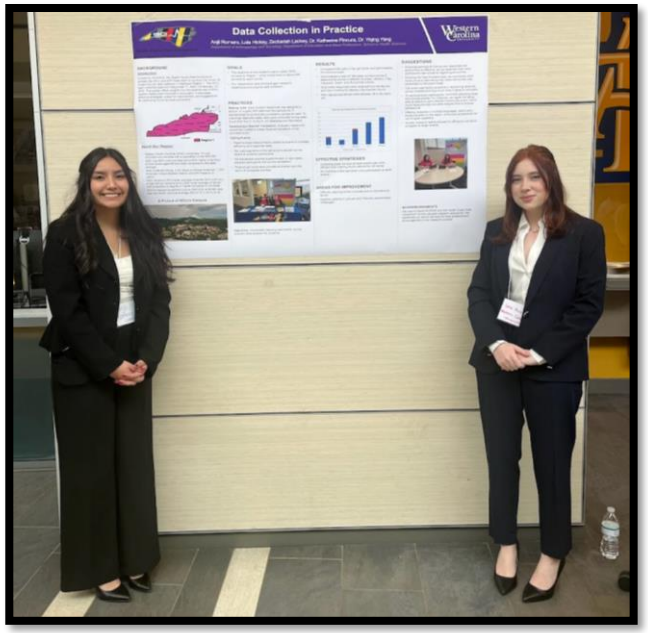
- Overall
  - Demographics
  - Disability Summaries
  - COVID-19 Diagnoses, Risks, and Impacts
  - Income, Assets, Debts, and Wealth
- Region 2
- Region 3
- Region 6

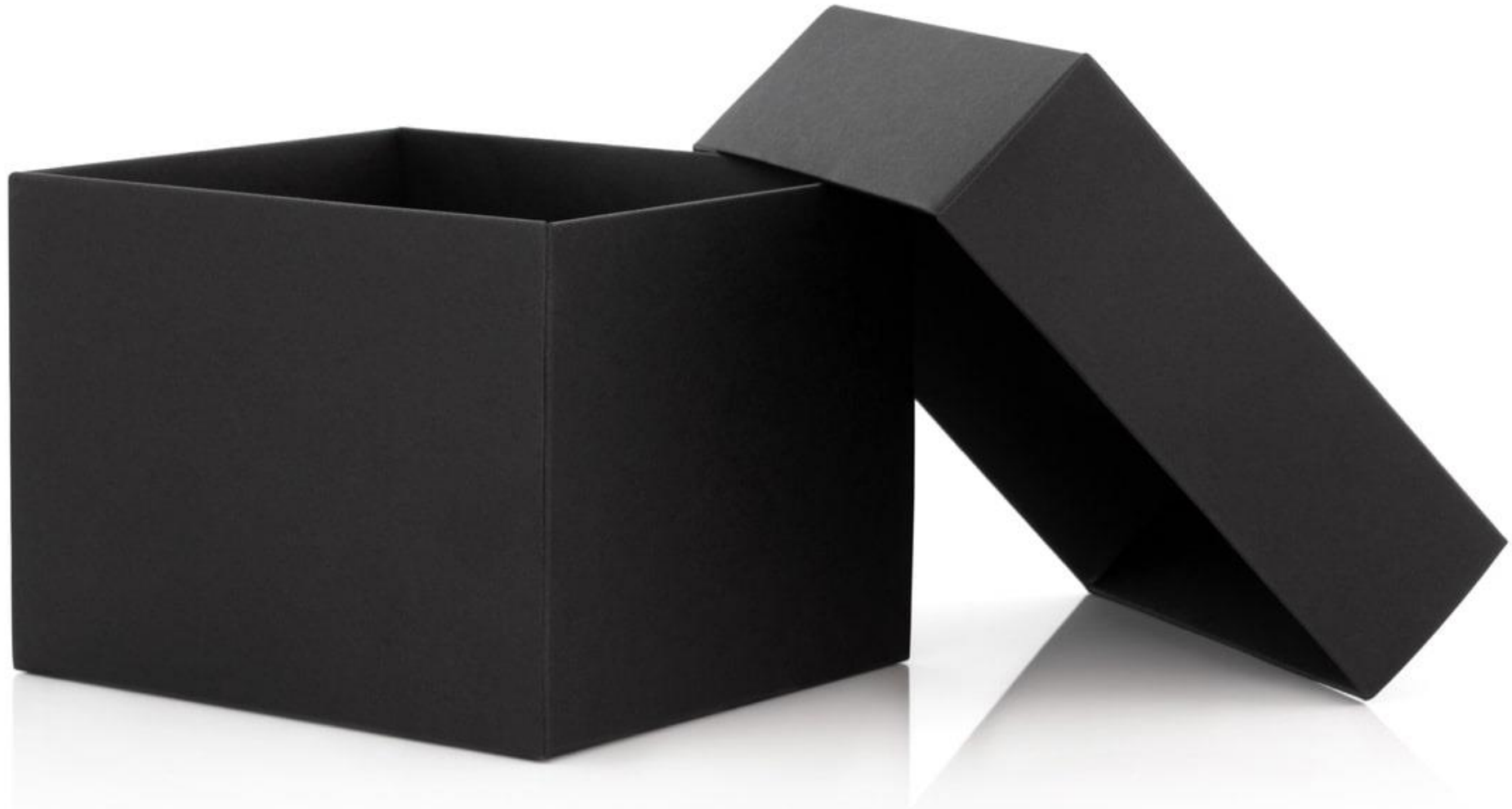
Impact and Recommendations


Shared code + training
Transform raw results
Generate descriptive statistics
Conduct univariate regression


R Markdown, Quarto, and Shiny output
Make coding & analysis decisions
Brainstorm exploratory analyses
Disseminate key findings

Student Event





Partnership

Recommendations

Break out of our silo

Demystify data science

Promote data democratization

Form data workgroups tailored to project context

Engage participants throughout the data lifecycle

Use R

Data Equity Resources

Acknowledgements

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Bold = Workgroup member

★ **= Workgroup Lead**

Health Equity Data Consortium

Thank You

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