NC Collaboratory Dashboard Review

December 15, 2020

Executive Summary

The COVID-19 pandemic has significantly impacted daily life across North Carolina and around the world. As communities attempt to navigate the uncharted terrain created by COVID, leaders must consider a variety of nuanced factors when making decisions about how to best serve, support and protect their constituents, employees and the general public.

The North Carolina Policy Collaboratory was established by the North Carolina General Assembly in 2016 to utilize and disseminate the research expertise across the University of North Carolina System for practical use by state and local government.[1] Shortly following the onset of the pandemic, the Collaboratory received federal funds to distribute to schools and organizations within the University of North Carolina system to support projects examining COVID-19. Funds were allocated to a variety of groups, including 40 teams working on smaller projects as part of a working group. Of those, five have produced dashboards, or dashboard prototypes, aggregating and presenting COVID data.

While all of the dashboards were designed to inform users about the statewide impacts of COVID-19, they each examine the topic through a different lens. The purpose of this report is to provide general summaries of each dashboard, identify target audiences and make recommendations of how the research teams might facilitate a more intuitive, holistic user experience by forging links between their dashboards.

[1] Description taken from the North Carolina Policy Collaboratory website.

Economic Growth Initiative: Seven Forces Reshaping the Economy Amid and Beyond COVID-19

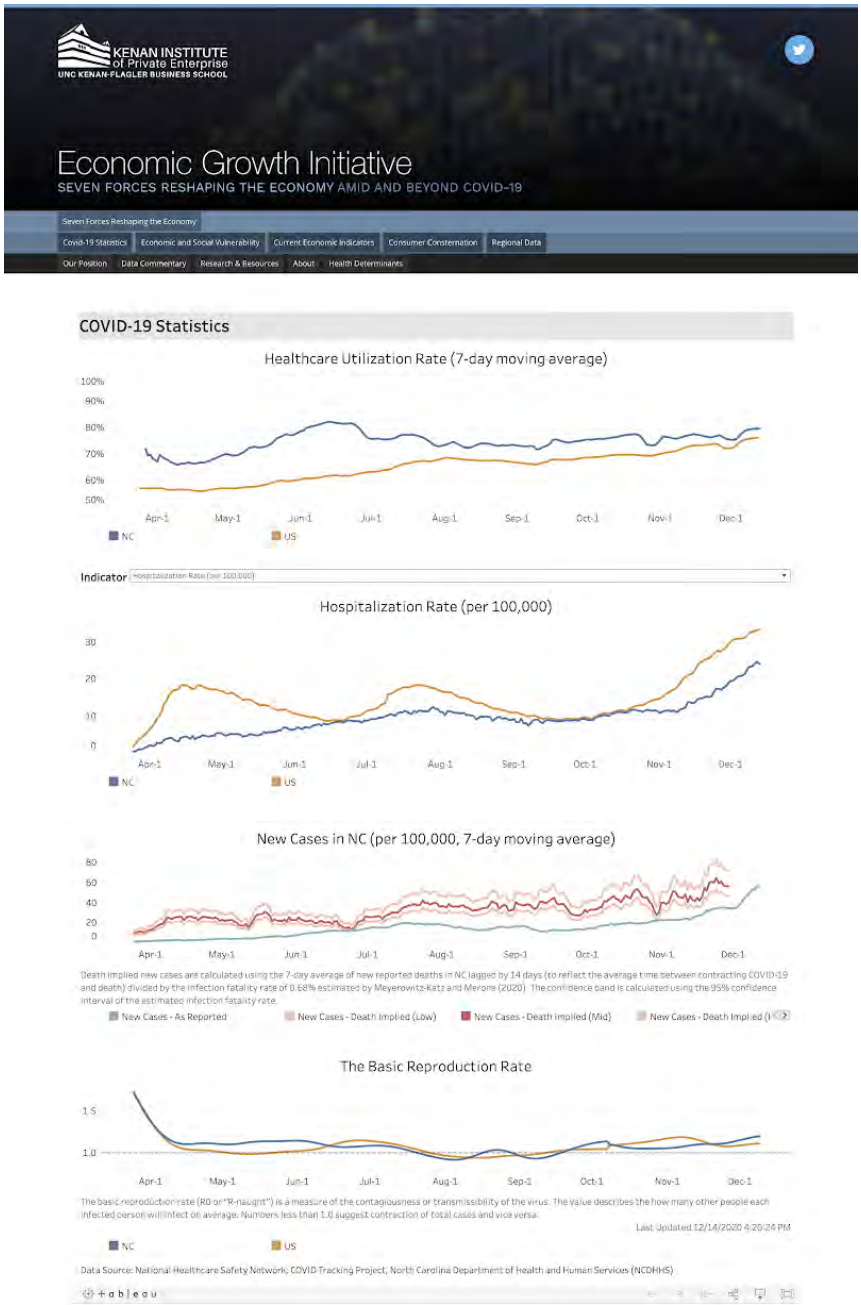
URL: https://kenaninstitute.unc.edu/dashboard/reopening-amid-covid-19/?kipage=6

Project lead: Kenan Institute of Private Enterprise

Tagline: Supporting informed risk-taking by exploring the impacts of COVID-19 on physical and mental health as well as the economy, while also considering the disproportional weight of impact felt by underserved and marginalized communities.

Of the five dashboards mentioned in this review, the Economic Growth Initiative focused the most on mental health and highlighting the disparity of impact on different demographics beyond age, such as race and gender. The dashboard utilizes Tableau for its data visualizations, pulling in data from a variety of governmental and non-traditional sources.

Data sources: National Healthcare Safety Network, Health Data, NCDHHS, COVID Tracking Project, U.S. Census Bureau, Covid Act Now


KENAN INSTITUTE
of Private Enterprise
UNC KENAN-FLAGLER BUSINESS SCHOOL
Economic Growth Initiative
SEVEN FORCES RESHAPING THE ECONOMY AMID AND BEYOND COVID-19
Seven Forces Reshaping the Economy
Covid-19 Statistics
Economic and Social Vulnerability
Current Economic Indicators
Consumer Consternation
Regional Data
Our Position
Data Commentary
Research & Resources
About
Health Determinants
COVID-19 Statistics
Healthcare Utilization Rate (7-day moving average)
100%
90%
80%
70%
60%
50%
Apr-1
May-1
Jun-1
Jul-1
Aug-1
Sep-1
Oct-1
Nov-1
Dec-1
NC
US
Indicator
Hospitalization Rate (per 100,000)
Hospitalization Rate (per 100,000)
30
20
10
0
Apr-1
May-1
Jun-1
Jul-1
Aug-1
Sep-1
Oct-1
Nov-1
Dec-1
NC
US
New Cases in NC (per 100,000, 7-day moving average)
80
60
40
20
0
Apr-1
May-1
Jun-1
Jul-1
Aug-1
Sep-1
Oct-1
Nov-1
Dec-1
Death implied new cases are calculated using the 7-day average of new reported deaths in NC lagged by 14 days (to reflect the average time between contracting COVID-19 and death) divided by the infection fatality rate of 0.68% estimated by Meyerowitz-Katz and Merone (2020). The confidence band is calculated using the 95% confidence interval of the estimated infection fatality rate.
New Cases - As Reported
New Cases - Death Implied (Low)
New Cases - Death Implied (Mid)
New Cases - Death Implied (H
The Basic Reproduction Rate
1.5
1.0
Apr-1
May-1
Jun-1
Jul-1
Aug-1
Sep-1
Oct-1
Nov-1
Dec-1
The basic reproduction rate (R0 or "R-naught") is a measure of the contagiousness or transmissibility of the virus. The value describes the how many other people each infected person will infect on average. Numbers less than 1.0 suggest contraction of total cases and vice versa.
Last Updated 12/14/2020 4:20:24 PM
NC
US
Data Source: National Healthcare Safety Network; COVID Tracking Project; North Carolina Department of Health and Human Services (NCDHHS)
+ a b l e a u
Data Documentation
Kenan Institute of Private Enterprise
Established in 1985 by Frank Hawkins Kenan, the Kenan Institute of Private Enterprise is a nonpartisan business policy think tank affiliated with the UNC Kenan-Flagler Business School. The nonprofit institute and its affiliated centers convene leaders from business, academia and government to better understand how the private sector can work for the public good. The institute leverages best-in-class research to develop market-based solutions to today's most complex economic challenges. In doing so, the institute aims to support businesses and policies that better the lives of people in North Carolina, across the country and around the world.

North Carolina Regional Data

These graphs provide a snapshot view of consumer spending and healthcare utilization rates for different regions in North Carolina. The region definitions are derived from those reported by NC-DHHS. We combine the regions covered by the Duke Healthcare Preparedness Coalition (DHPC), the Capital Regional Advisory Committee (CapRAC) and the Mid-Carolina Regional Healthcare Coalition (MCRHC) into a new region we call Central Carolina Healthcare Region (CCHC) because the underlying regions are not contiguous. Data for healthcare utilization rates are currently only available for July and August though we will backfill early dates if data become available.

Click on a region:

CCHC - Central Carolina Healthcare Region
EHPC - Eastern Healthcare Preparedness Coalition
MAHPC - Mountain Area Healthcare Preparedness Coalition
MHPC - Metrolina Healthcare Preparedness Coalition
SHPR - Southeastern Healthcare Preparedness

Indicator:

- (•) % ICU Bed in Use
- ( ) % Ventilator in Use
- ( ) New Cases
- ( ) New Cases (7 day moving average)
- ( ) Total Cases

Last Updated 12/11/2020 6:15:59 PM

Data Source: Opportunity Insights; North Carolina Department of Health and Human Services (NCDHHS)

tableau

Data Documentation

Kenan Institute of Private Enterprise

Established in 1985 by Frank Hawkins Kenan, the Kenan Institute of Private Enterprise is a nonpartisan business policy think tank affiliated with the UNC Kenan-Flagler Business School. The nonprofit institute and its affiliated centers convene leaders from business, academia and government to better understand how the private sector can work for the public good. The institute leverages best-in-class research to develop market-based solutions to today's most complex economic challenges. In doing so, the institute aims to support businesses and policies that better the lives of people in North Carolina, across the country and around the world.

Topics

- **COVID-19 Statistics**
  - Healthcare utilization rate (7-day moving average)
    - Indicators: N.C. vs. U.S.
  - Hospitalization rate (per 100,000)
  - New cases in NC (per 100,000 7-day moving average)
    - New cases - as reported vs.
    - New cases - death implied (low) vs.
    - New cases - death implied (mid) vs.
    - New cases - death implied (high) vs.
  - The Basic Reproduction Rate
    - Indicators: N.C. vs. U.S.
      - Definition: The basic reproduction rate (R0 or "R-naught") is a measure of the contagiousness or transmissibility of the virus. The value describes how many other people each infected person will infect on average. Numbers less than 1.0 suggest contraction of total cases and vice versa.
  - *Data Source: National Healthcare Safety Network; COVID tracking project; North Carolina Department of Health and Human Services (NCDHHS)*

- **Economic and Social Vulnerability**
  - Socioeconomic adversity
    - Indicators: age, children, education, gender, income, marital status, race/ethnicity
      - Definition: Socioeconomic adversity is a composite measure of how likely individuals are to be experiencing moderate or high levels of mental adversity (anxiety, worry, and depression), healthcare adversity (delayed or unavailable healthcare), and food insecurity (sometimes or often not having enough to eat.
        - *Data source: Census Bureau's Household Pulse Survey*
  - Economic vulnerability
    - Employment ratio by income (NC vs. US)
      - Comparing low/mid/high income levels
      - Percent change from January for:
        - Low income education outcomes
        - Low income household earnings
          - *Data source: Opportunity Insights*
  - Other health statistics
    - Indicators: N.C. vs. U.S.
      - % of population delaying healthcare
      - % of population experiencing anxiety or depression
        - *Data source: Census Bureau's Household Pulse Survey*

- **Current economic indicators**
  - Indicators:
    - Consumer spending - Total (percent change from January)
    - Unemployment rate (Insured, not seasonally adjusted)
    - Small business activity (percent change from January)
    - Consumer spending - Apparel and general merchandise (Percent change from January)
    - Consumer spending - Entertainment (Percent change from January)
    - Consumer spending - Grocery (Percent change from January)
    - Consumer spending - Health Care (Percent change from January)
    - Consumer spending - Restaurants (Percent change from January)
    - Consumer spending - Transportation (Percent change from January)
      - *Data Source: Opportunity Insights; Fed St. Louis*

- **Consumer Consternation (N.C. vs. U.S.)**
    - Definition: The Consumer Consternation Index measures the reluctance or inability of individuals to conduct non-essential activities away from home. The index as a composite of consumer spending at entertainment, recreation, apparel, and general merchandise stores (from Affinity Solutions), geo-location data at retail and recreation locations (from Google), foot-traffic at non-essential businesses (from SafeGraph) and consumer confidence (from Morning Consult). The index is standardized to zero on February 15, 2020 for both the US and North Carolina. The magnitude of the index is arbitrary so inference should be conducted by comparing historical values. For example, recent values near 2.5 suggest Consumer Consternation is about half the level of the peak in mid-April. Note that access to tracked locations varies over time based on local and state-level policies that cannot be easily accounted for, and thus the index measures the ability to conduct non-essential activities as well as consumer willingness to do so.
        - *Data Source: SafeGraph; Morning Consult; Opportunity Insights*

- **North Carolina Regional Data**
    - Regions:
        - CCHC - Central Carolina Healthcare Region
        - EHPC - Eastern Healthcare Preparedness Coalition
        - MAHPC - Mountain Area Healthcare Preparedness Coalition
        - MHPC - Metrolina Healthcare Preparedness Coalition
        - SHPR - Southeastern Healthcare Preparedness Region
        - Triad Healthcare Preparedness Coalition
    - Indicators:
        - % ICU Bed in Use
        - % Ventilator in Use
        - New Cases
        - New Cases (7-day moving average)
        - Total Cases
    - *Data Source: Opportunity Insights; North Carolina Department of Health and Human Services*

Audience

By reading the Our Position document provided by the team, it is clear that this dashboard is specifically aimed at business leaders and policy makers. The visualizations encourage a multi-faceted approach to decision-making by aggregating data on a variety of economic- and health-related topics, suggesting the need to consider that nexus rather than one area or the other.

Unique insights and features

As mentioned in the short summary, this is the only dashboard spotlighting the impact of the COVID-19 pandemic on mental health. Both in the position document and in the economic and social vulnerability page, the team intentionally draws focus to how different communities and demographics have been disproportionately impacted by the pandemic, calling on decision makers to take this into account when deciding how and when to facilitate reopening. This specific differentiation between income levels, gender, race and ethnicity, education levels and more provides crucial context for the intended audience. It is also unique in the fact that it

discusses the impact that delaying medical care and elective procedures might have on communities long-term. Finally, the data documentation throughout the site is thorough and commendable, including data sources and calculations.

Recommendations for interoperability

- Connect to North Carolina COVID-19 timeline for added context, more granular data on number of cases by zip code to complement regional data.
- Connect to Carolina Tracker for granular county data about unemployment, mass layoffs, and labor force participation to complement current economic indicators and economic vulnerability.
- Connect to UNC Gillings COVID dashboard to provide links to county- and university-specific dashboards, and decision tools.
- Connect to Community Confidence Simulator to provide community leaders with a way to simulate how different recommendations might alter community support of various implementation strategies.

Recommendations for UX enhancement

- The navigation menu might be worth revisiting. It suggests three levels of navigation, but does not indicate the reasoning behind the hierarchy. It might be better to have the bottom navigation, which mainly contains general background information, at the top along with the Seven Forces link, so users can first acquaint themselves with the purpose of the dashboard before diving into the data visualization.
- It is not completely obvious how one might share individual pages or graphics, so it might be worth highlighting the fact that users can share specific visualizations through the embedded Tableau widgets.
- The initial landing page is blank. It would be best to link to one of the other pages providing background information—for example, the Seven Forces report page—to promote a clearer user journey.

Carolina Tracker: A Resource for Recovery

URL: https://carolinatracker.unc.edu/

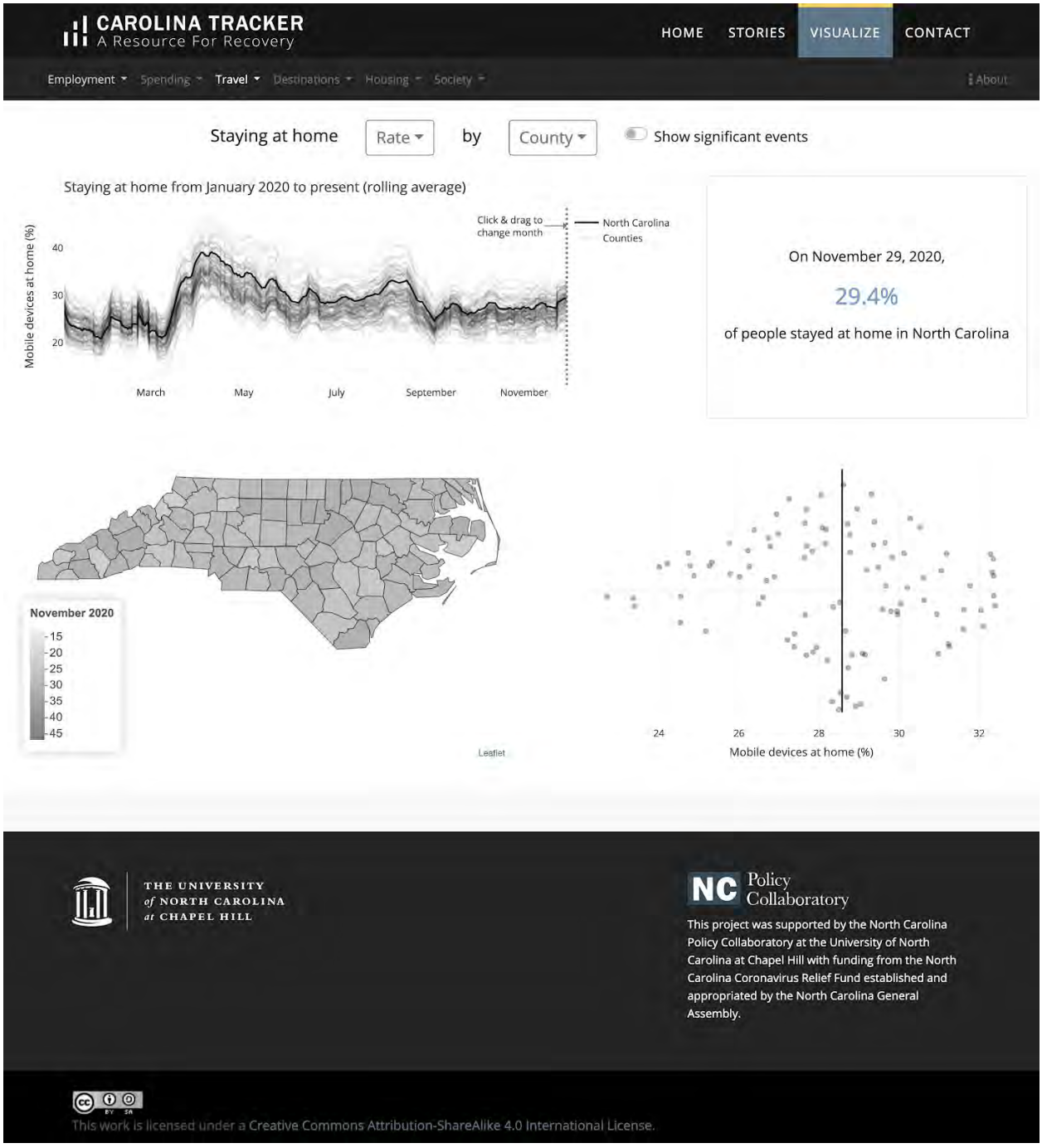
Project lead: UNC-Chapel Hill Department of City and Regional Planning

Tagline: Providing a one-stop-shop for examining the effects of COVID-19 on a wide range of economic health topics including employment, spending, travel, housing and more, while contextualizing the data in easily digestible analytical stories.

The City and Regional Planning dashboard explores 30 economic health indicators through a set of uniform variables, creating an easy and intuitive user experience. Visualizations are presented through a standardized layout, adding to the interface's ease of use. The team used Leaflet to embed visualizations using big data collected through cell phones, credit bureaus, and satellite imagery.[2]

Data sources:
Employment: NC Department of Commerce, US Department of Labor), WARN (Worker Adjustment and Retraining Notification, US Bureau of Labor Statistics
Spending: ncIMPACT Initiative, Opportunity Insights, CoStar Suites
Travel: Safegraph, Streetlight Data, Descartes Labs), NC Department of Transportation, IHS Analytics
Destinations: Safegraph
Housing: NC Administrative Office of the Courts, US Census Bureau, Redfin, Craigslist
Society: NC Department of Health and Human Services, Purple Air, NC State Bureau of Investigation

[2] Taken from project proposal.



Topics

- **Employment**
  - Healthcare utilization rate (7-day moving average)
    - Unemployment insurance claimants
    - Mass layoffs/closures

        - Labor force participation

- **Spending**
    - Sales and use tax
    - Small business revenue
    - Small businesses open
    - Vacant office space

- **Travel**
    - Staying at home
    - Vehicle miles traveled
    - Median distance of longest trips
    - Traffic crashes
    - Gas prices

- **Destinations**
    - Grocery stores
    - Health care facilities
    - Offices/businesses
    - Parks
    - Recreational facilities
    - Restaurants and bars

- **Housing**
    - Eviction filings
    - Foreclosure filings
    - New building permits
    - House sales
    - Rental listings
- **Society**
    - Childcare enrollment
    - Air Quality Index (PM 2.5)
    - Police stops

Each indicator can be compared through the following variables:

- **Rate/change/total vs. county/central and outlying counties/prior unemployment/prior median income/geographic regions**
- Each page includes a total statewide statistic for a common day, as well as a scatterplot, a county map comparison, and a line graph. The user can also toggle a switch to add lines indicating significant events to the line graph (ex. When each of the phases started and ended)

Audience

According to the project proposal, the audience for the Carolina Tracker website is policymakers tasked with monitoring and facilitating the state's economic reopening. However, this would also be a useful tool for any researchers interested in studying the economic impacts of the pandemic at a state and county level. Additionally, the analytical stories provided make the topics even more accessible for the general public, regardless of familiarity with policy or formal research practices.

Unique insights and features

The real strength of this dashboard is its intuitive design and standardized approach to data exploration. This allows users to cross-reference and compare impacts across different indicators with incredible ease. The variety of visualizations and interactivity features help ensure all users can identify the data and presentation that resonates with them most, and the .png download of each graphic facilitates easy sharing. In addition, the sheer number of data sources that have been assembled is astounding.

Recommendations for interoperability

- Connect to North Carolina COVID-19 timeline for added context about significant national events and to complement the existing page on childcare with more information on school districts.
- Connect to Kenan Institute dashboard for more contextualization on a national scale, information on socioeconomic adversity and how it impacts demographics in different ways, and more detail about how economic vulnerability affects individuals differently based on income level.
- Connect to UNC Gillings COVID dashboard to provide links to county- and university-specific dashboards, and decision tools.
- Connect to Community Confidence Simulator to provide community leaders with a way to simulate how different recommendations might alter community support of various implementation strategies, and potentially to get their counties added.

Recommendations for UX enhancement

- Particularly for the map visualizations, consider exploring color palettes with more contrast, to increase digital accessibility.
- While being able to download and share specific graphics as .png files is extremely useful, if possible, it would be helpful to also create an easier way to share landing pages.

Community Confidence Dashboard (Commerce with Confidence Simulator)

URL: https://dashboard.communityconfidence.org/

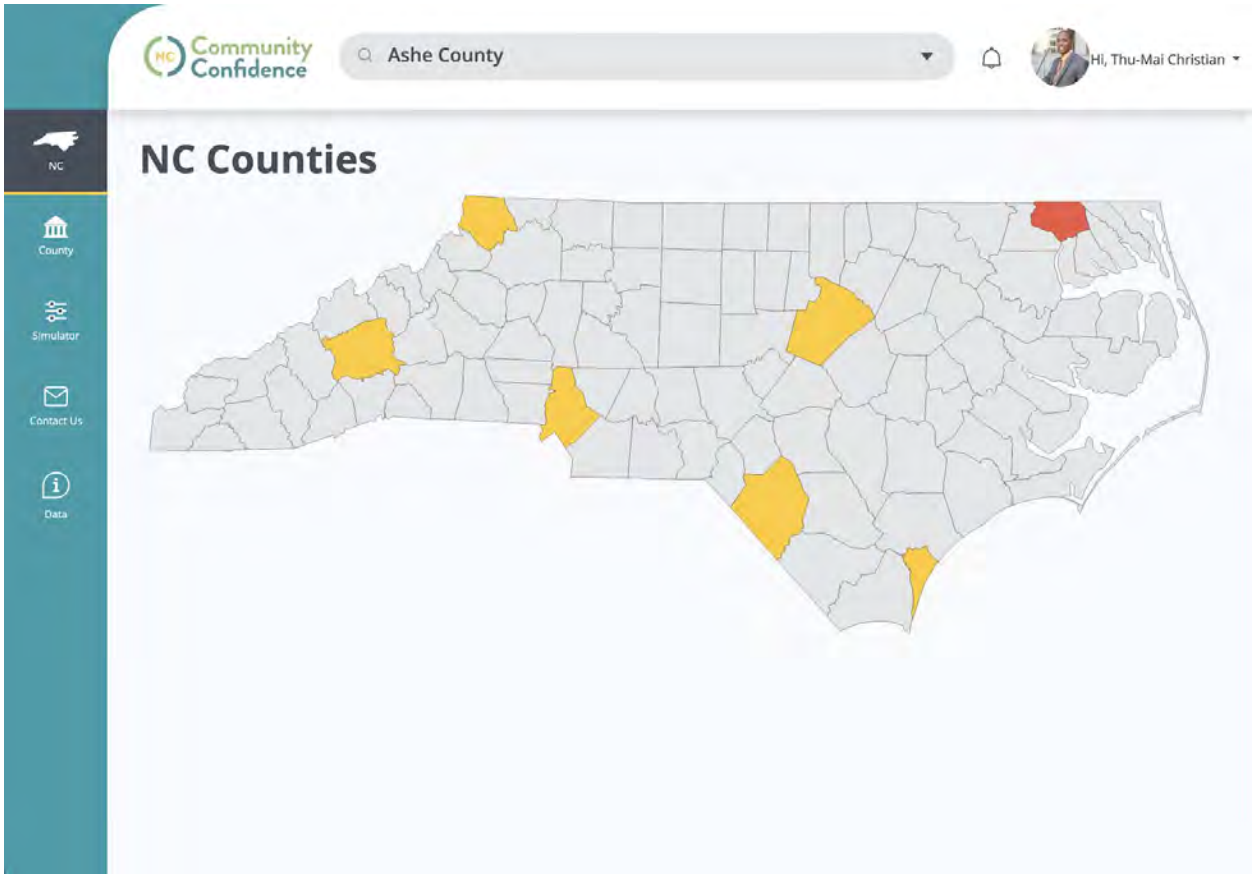
Project Leads: Digital Health Institute for Transformation (DHIT), Institute for Convergent Sciences, and Innovate Carolina at the University of North Carolina at Chapel Hill

Tagline: Reopen and Stay Open With Confidence! Reducing Uncertainty and Balancing Risk During COVID-19

Description: "Community Confidence is a decision support tool for Government and Business leaders to use when making important decisions that will impact their communities during the pandemic or other significant health challenges. Our platform combines actionable scientific data with community preferences to enable informed decision making that will restore confidence."

The Community Confidence Dashboard brings together various datasets including health, economic, environmental, and behavioral data to calculate a "community confidence" score using a multi-dimensional analytical model that can determine likely outcomes from varying individual behaviors, business activity, and health conditions. This community confidence score is meant to inform communities' plans for reopening, taking into account various risk factors as physical health and economic health of communities are at stake.

Data Sources: North Carolina Health and Human Services, US Census Bureau, ClimaCell, SafeGraph




Community Confidence
Wake County
Hi, Thu-Mai Christian
NC
County
Simulator
Contact Us
Data
Wake County
Last Updated: December 9, 2020
Help
Overall County Score
Health
51
Sentiment
65
Confidence Score
7 Scores
30 Scores
90 Scores
180 Scores
100
80
60
40
20
0
9 Nov
11 Nov
13 Nov
15 Nov
17 Nov
19 Nov
21 Nov
23 Nov
25 Nov
27 Nov
29 Nov
1 Dec
3 Dec
5 Dec
7 Dec
79
Behavioral Index
40
Economic Index
82
Capacity of Care Index
48
Community Health Index
40
Environmental Index
House of Worship Activity
60
Social Distancing
90
Large Gathering Activity
75
Mask Usage
90

Topics

- **Health Score**: the average of 5 indices (behavioral, economic, capacity of care, community health, environmental)
    - **Behavioral Index**
        - House of worship activity
        - Social distancing
        - Large gathering activity
        - Mask usage
    - **Economic Index**
        - Nonessential retail activity
        - Entertainment activity
        - Unemployment
        - Educational activity
        - Office and factory activity
    - **Capacity of Care Index**
        - COVID test availability
        - Hospital capacity
        - PPE supply
    - **Community Health Index**
        - COVID deaths
        - COVID cases
        - COVID cases with comorbidity

    - **Environmental Index**
        - Population density
        - Weather

- **Sentiment Score**: Measure of how favorably the community rates current conditions within the county, weighing economic factors such as restaurant activity against the threat of COVID-19

- **Restaurant Activity**

Audience

According to the proposal, the intended users of the Community Confidence Dashboard are business and community leaders seeking support for their decision-making as they make plans for reopening.

Unique insights and features

The interactive simulator function offers the opportunity to select from a list of reopening strategies (e.g., limit the size of gatherings to 10 people indoors and 50 people outdoors) to see how their implementation would change the overall county score as well as the scores of affected indices.

Recommendations for interoperability

Provide raw data to allow for the possibility of joining datasets across platforms.

Recommendations for UX enhancement

Many of the recommendations for UX enhancement of the Community Confidence Dashboard are related to transparency and reproducibility. While the tool displays well-organized scores for several factors important for making decisions regarding strategies for reopening business during the COVID pandemic, little information is offered on how scores are calculated or how values are assigned to recommendations. A “Data” web page describes, in general terms, the approach used by the Dashboard to calculate confidence scores, which includes a list of “knowledge sources” of research organizations and data resources that informed the confidence scoring and simulation model, but does not provide formal citations or links to any literature that would explain and/or provide support for the approach.

- Allow for download of datasets to enable confirmation of indices and scores, as well as re-use of data for secondary analysis and verification
- Provide definitions for each score/index
- In the simulator, offer more information on how values are assigned to each of the recommendations.
- Cite the literature that justifies use of the specific analytical models used to calculate scores.
- The counties included are color-coded in yellow and red, but no legend is provided to explain the distinction between the colors.

- In the Simulator, the user must be careful to click specifically on the checkmark under the Simulate column, which is not obvious.
- Assigned avatar choice is a stock photo (see screenshots). Assuming this will change in the future.
- Add a prominent link to the Dashboard tool on other website pages
- The tool does not interpret the scores (which may be intentional). Are there score thresholds that indicate unreasonable risk?

It is important to note that this tool is still in beta mode, so the data are placeholders at the moment and there is only a limited number of counties covered. There is also filler text in the information links.

North Carolina COVID-19

URL: https://nc-covid.org/

Project leads: Paul Delamater, Rachel Woodul and Julie Swann

Tagline: Providing up-to-date estimates and future forecasts of SARS-CoV-2 infections, COVID-19 cases and COVID-19-related hospitalizations and deaths in North Carolina.[3]

This dashboard is unique in that it includes modeling, estimations and predictions for the future. Except for the Community Confidence dashboard, all of the other dashboards on this list simply allow for data exploration of existing datasets. This project does an excellent job of explaining the science and rationale behind the models and examines unique topics such as social distancing and event risk.

Data sources: NC Department of health and Human Services

[3] Taken from dashboard about page.

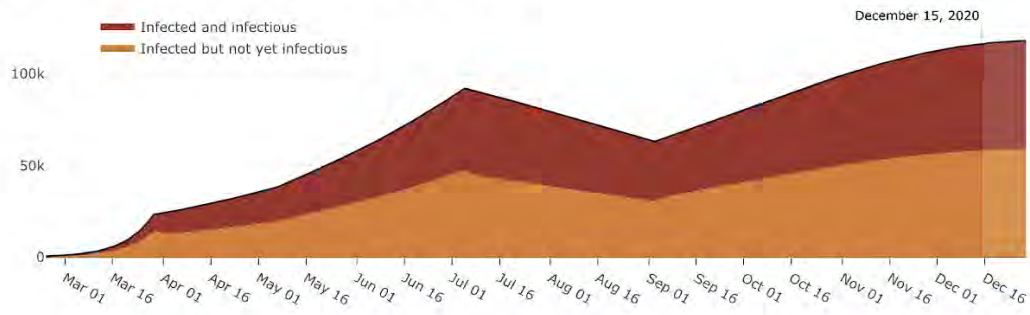
North Carolina COVID-19

This website provides up-to-date estimates and future forecasts of SARS-CoV-2 infections, COVID-19 cases, and (coming soon) COVID-19-related hospitalizations and deaths in North Carolina. The models were developed and are maintained by researchers at UNC Chapel Hill and North Carolina State using data from North Carolina Department of Health and Human Services (NCDHHS) curated by The Raleigh News & Observer, WRAL News, and the Duke-Margolis Center for Health Policy.

	Estimate on December 15, 2020	Forecast for December 29, 2020
People actively infected:	116,429	118,101
People actively infected and infectious:	58,139	59,205
New people infected on this day:	9,812	9,829
Lab confirmed cases from this day:	4,572	4,616
New people infected in prior 7 days:	68,476	68,873
People infected (cumulative):	1,687,535	1,824,408

We are attempting to update our estimates every day and are always working to improve our models. As new data are released, we integrate it into our current estimates and future forecasts; the most recent update used data from **December 15, 2020**.[1] The table shows a summary of our most current estimates and 2-week forecasts, and the graph below shows our daily model estimates of the number of North Carolina residents actively infected with SARS-CoV-2 (split by people who are infectious and not infectious).[2] Visit our SEIR model, Hospitalization model, Summary, and Timeline pages for more information.

Number of people actively infected with SARS-CoV-2 (model estimates)



1. *Please note that all values presented are subject to uncertainty and the assumptions in our model. They are likely to change as we incorporate more data and improve our model. For more information on process for updating our model, please see our SEIR and Hospitalization modeling details pages.*

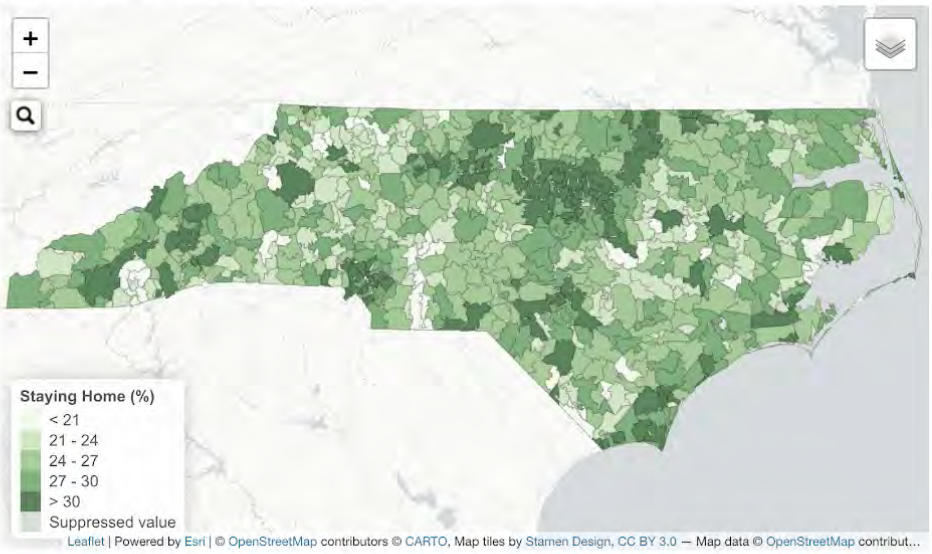
2. *People who are infected with SARS-CoV-2 are not immediately infectious (able to transmit the virus). An infected person goes through an incubation period where they cannot transmit the virus to another person. However, after the incubation period, an infected person can transit the virus. It is important to note that the infectious period can begin prior to a person showing symptoms (this is why people who look and feel healthy are able to spread the virus). See NPR Goats and Soda's "Essential Vocab For COVID-19: From Asymptomatic To Zoonotic" to learn even more!*

For questions, email us at nc-covid@unc.edu

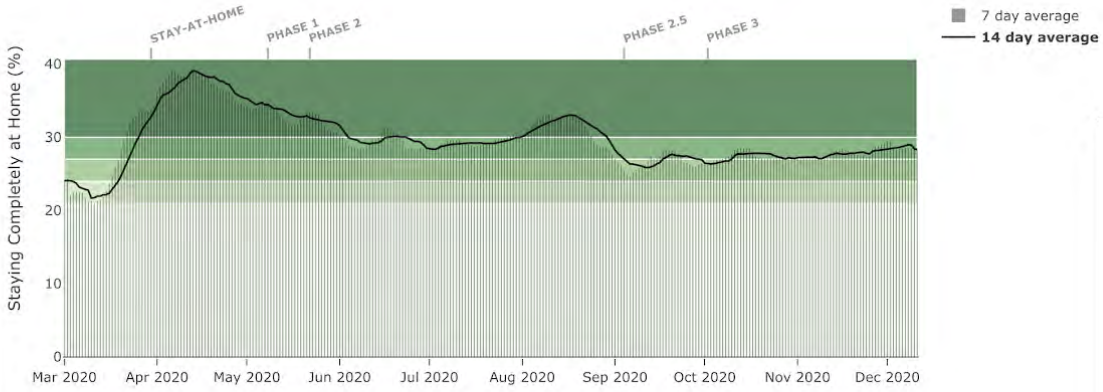
NC COVID-19 Zip Code Social Distancing Map

Below is a Zip Code-level map of the percent of the population that stays completely at home each day, averaged over the past two weeks (updated using data from **November 28, 2020** to **December 11, 2020**). The data were acquired from Safegraph, which generated it from a panel of GPS pings from anonymous mobile devices; read more about it here. We aggregated the data from census block groups to Zip Codes. This map provides an estimate of the magnitude of social distancing occurring in each region. We will continue to update this map as new data become available.

Percent of population staying completely at home, November 28, 2020 - December 11, 2020.
Click on a Zip Code for more information. To search for an address, city, or zip code, click on the magnifying glass on the top left. Click on the stack symbol (top right) to turn on/off a Roads layer.



Statewide percent of population staying completely at home, March 1, 2020 - December 11, 2020.



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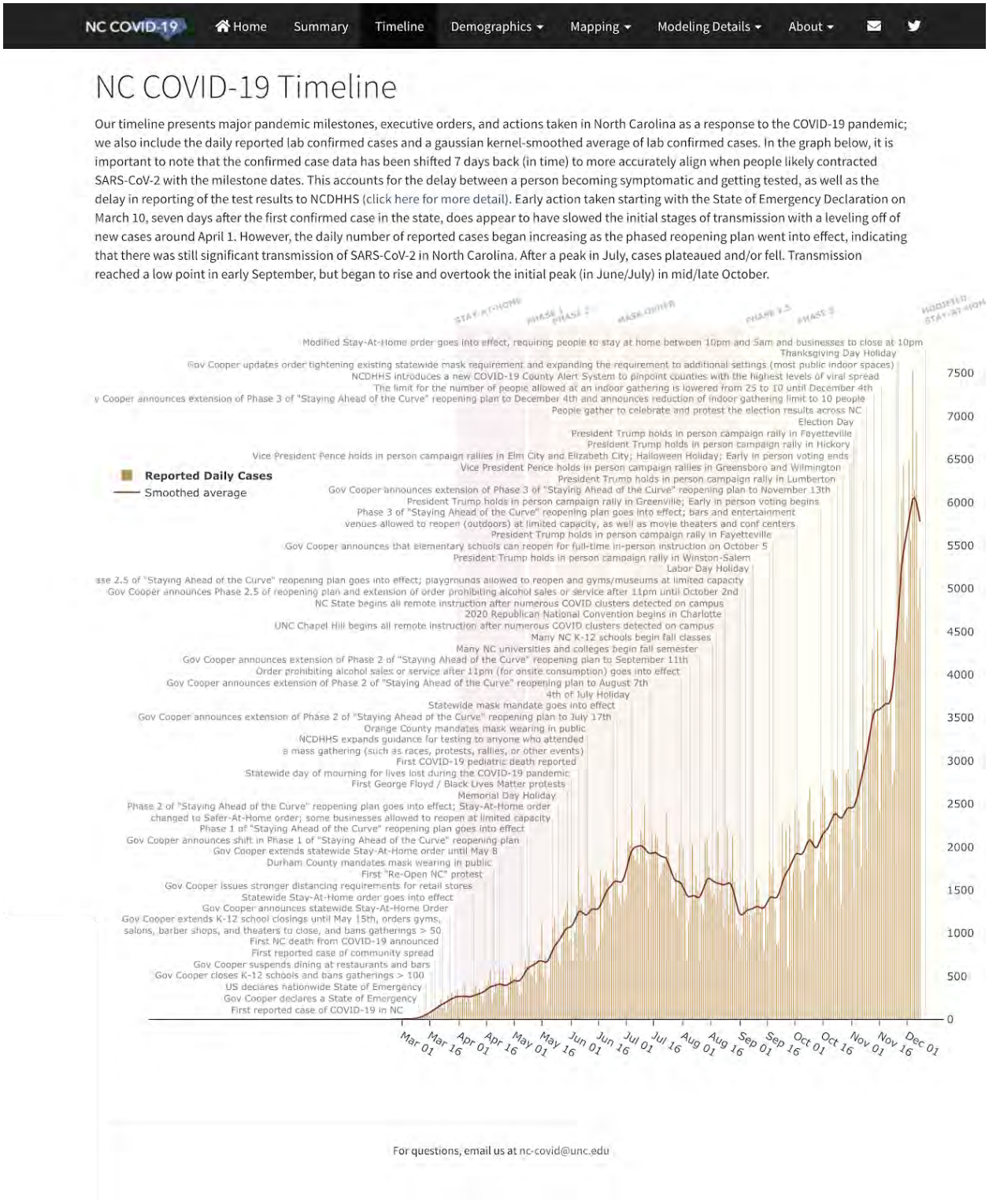


Topics

- **NC COVID-19 Summary**

    - Current Snapshot
        - Summary of current North Carolina metrics, including effective reproduction number, estimations of the number of people infected and the number of those who are currently infectious, with an explanation of why their numbers differ from those provided by NCDHHS.
    - Reopening Metrics
        - COVID-like Illness (sustained leveling or decreased trajectory in COVID-like illness [CLI] surveillance over 14 days)
        - Lab-confirmed cases (sustained leveling or decreased trajectory of lab-confirmed cases over 14 days)
        - Positive test percentage (sustained leveling or decreased trajectory in the percentage of tests returning positive over 14 days)
        - People hospitalized (sustained leveling or decreased trajectory in number of people hospitalized over 14 days)
    - Looking Forward
        - Model estimations for how many new people will become infected over the next two weeks

- **Timeline**
    - Timeline aligning number of lab confirmed cases over time with major pandemic milestones, such as executive orders, holidays, and North Carolina actions taken in response to the pandemic.

- **Demographics**
    - Each of the following is presented in terms of these age groups: 0-17, 18-24, 25-49, 50-64, 65-74, 75+
        - Lab confirmed cases by age group
        - Percentage of daily cases by age group
        - 7 day case rate per 1000 people
        - Daily deaths by age group
        - Percent of daily deaths by age group
        - 7 day death rate per 100,000 people

- **Mapping**
    - By zip codes
        - Cases (past week)
        - Cases (past 2 weeks)
        - Cases, 2 week trend
        - Event risk (10 people)
        - Event risk (25 people)
        - 1 in ___ Currently infected
        - 1 in ___ Cases (past week)
        - Social Distancing
    - By school districts
        - Cases (past week)
        - Cases (past 2 weeks)

Audience

The North Carolina COVID-19 Dashboard was developed by researchers, and would be of particular use to researchers. The modeling details would certainly be of interest to individuals already familiar with statistical analysis, although it does make such processes accessible even

for those with no prior knowledge of them. The estimations and predictions could be very useful for policy makers and government entities hoping to get a glimpse of COVID trajectories before making decisions.

Unique insights and features

Clearly the modeling is a very unique and exciting component of this dashboard, made even more appealing by the in-depth explanation of their approach and transparency over data sources. In addition, this dashboard breaks certain indicators down by zip code, which provides a different, even more granular view of the data than does county-by-county comparisons, as there are only 100 counties in North Carolina but roughly 1080 zip codes. Finally, the timeline and the estimations regarding social distancing and event risk are completely unique and would undoubtedly be useful to a wide variety of users.

Recommendations for interoperability

- Consider connecting to Carolina Tracker for additional context about topics related to economic health and consumer behavior, if providing a more holistic view of the pandemic is desired.
- Connect to Kenan Institute dashboard for more contextualization on a national scale and data on mental health, to complement the extensive information provided about physical health.
- Connect to UNC Gillings COVID dashboard to provide links to county- and university-specific dashboards, and decision tools.
- Connect to Community Confidence Simulator to provide community leaders with a way to simulate how different recommendations might alter community support of various implementation strategies, and potentially to get their counties added.

Recommendations for UX enhancement

- Consider using more contrast and differentiation in headings, particularly on the modeling details page. While the information is needed and useful, it is a lot of text to read, particularly for today's consumers. Creating more visual distinction between sections and topics might make the information appear more digestible and encourage more visitors to dive into it.

The Gillings Epidemiology Dashboard for North Carolina Policymakers

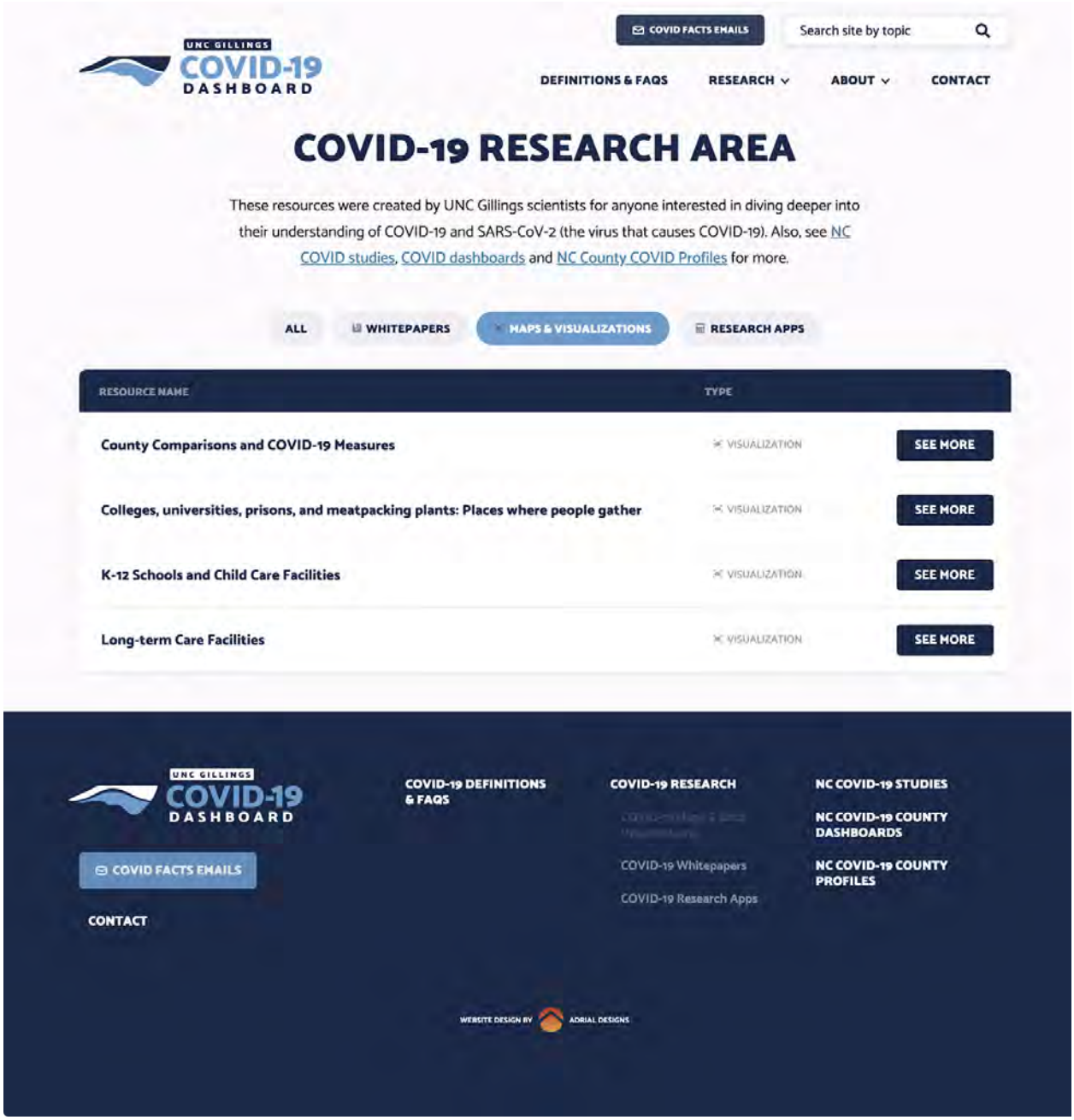
URL: This dashboard is still in the production stage and will launch December 18, 2020, at https://gillingscovid19.unc.edu/

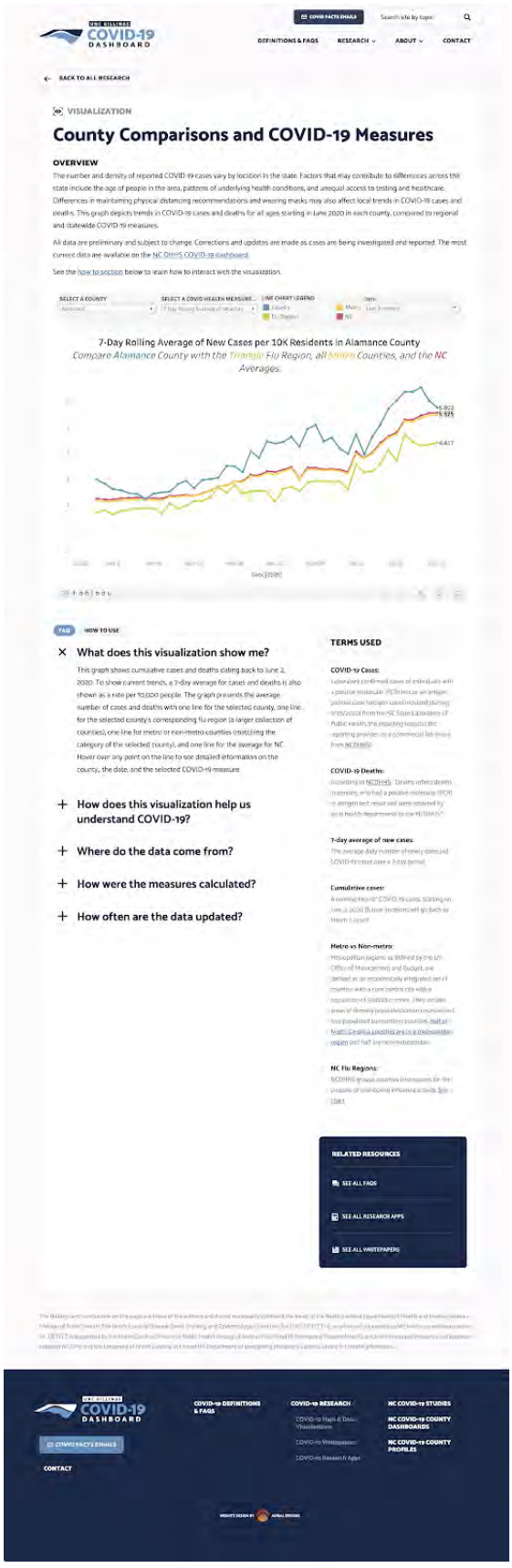
Project lead: UNC Gillings School of Public Health

Tagline: Connecting the public, researchers and policymakers in North Carolina with robust local data and research.

Gillings has created a dashboard that is already doing a great job of aggregating other resources, including dashboards from individual counties and colleges and decision tools, then taking it a step further to actually include scientific whitepapers, studies and COVID-19 web applications. The website has been specifically designed by Adrial Designs, and boasts a pleasant, modern aesthetic.

Data Sources: New York Times, NC Office of State Budget and Management, WRAL, NC Department of Health and Human Services, NC Division of Child Development and Early Education, National Center for Education Statistics Common Core of Data, NC Division of Non-Public Education, National Center for Education Statistics Integrated Postsecondary Education Data Systems (IPEDS), NC Department of Agriculture, USDA, NC Department of Safety, NC Division of Health Service Regulation


UNC GILLINGS
COVID-19
DASHBOARD
COVID FACTS EMAILS
Search site by topic
DEFINITIONS & FAQS
RESEARCH
ABOUT
CONTACT
COVID-19 RESEARCH AREA
These resources were created by UNC Gillings scientists for anyone interested in diving deeper into their understanding of COVID-19 and SARS-CoV-2 (the virus that causes COVID-19). Also, see NC COVID studies, COVID dashboards and NC County COVID Profiles for more.
ALL
WHITEPAPERS
MAPS & VISUALIZATIONS
RESEARCH APPS
RESOURCE NAME
TYPE
County Comparisons and COVID-19 Measures
VISUALIZATION
SEE MORE
Colleges, universities, prisons, and meatpacking plants: Places where people gather
VISUALIZATION
SEE MORE
K-12 Schools and Child Care Facilities
VISUALIZATION
SEE MORE
Long-term Care Facilities
VISUALIZATION
SEE MORE
UNC GILLINGS
COVID-19
DASHBOARD
COVID FACTS EMAILS
CONTACT
COVID-19 DEFINITIONS & FAQS
COVID-19 RESEARCH
COVID-19 Whitepapers
COVID-19 Research Apps
NC COVID-19 STUDIES
NC COVID-19 COUNTY DASHBOARDS
NC COVID-19 COUNTY PROFILES
WEBSITE DESIGN BY
ADRIAL DESIGNS


COVID-19 DASHBOARD
COVID FACTS EMAILS
Search site by topic
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RESEARCH
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BACK TO ALL RESEARCH
VISUALIZATION
County Comparisons and COVID-19 Measures
OVERVIEW
The number and density of reported COVID-19 cases vary by location in the state. Factors that may contribute to differences across the state include the age of people in the area, patterns of underlying health conditions, and unequal access to testing and healthcare. Differences in maintaining physical distancing recommendations and wearing masks may also affect local trends in COVID-19 cases and deaths. This graph depicts trends in COVID-19 cases and deaths for all ages starting in June 2020 in each county, compared to regional and statewide COVID-19 measures.
All data are preliminary and subject to change. Corrections and updates are made as cases are being investigated and reported. The most current data are available on the NC DHHS COVID-19 dashboard.
See the how to section below to learn how to interact with the visualization.
SELECT A COUNTY
SELECT A COVID HEALTH MEASURE...
LINE CHART LEGEND
Date
7-Day Rolling Average of New Cases per 10K Residents in Alamance County
Compare Alamance County with the Triangle Flu Region, all Metro Counties, and the NC Averages.
6,922
6,525
6,417
Date (2020)
FAQ
HOW TO USE
What does this visualization show me?
This graph shows cumulative cases and deaths dating back to June 2, 2020. To show current trends, a 7-day average for cases and deaths is also shown as a rate per 10,000 people. The graph presents the average number of cases and deaths with one line for the selected county, one line for the selected county's corresponding flu region (a larger collection of counties), one line for metro or non-metro counties (matching the category of the selected county), and one line for the average for NC. Hover any point on the line to see detailed information on the county, the date, and the selected COVID-19 measure.
How does this visualization help us understand COVID-19?
Where do the data come from?
How were the measures calculated?
How often are the data updated?
TERMS USED
COVID-19 Cases:
COVID-19 Deaths:
7-day average of new cases:
Cumulative cases:
Metro vs Non-metro:
NC Flu Regions:
RELATED RESOURCES
SEE ALL FAQS
SEE ALL RESEARCH APPS
SEE ALL WHITEPAPERS
COVID-19 DASHBOARD
COVID FACTS EMAILS
CONTACT
COVID-19 DEFINITIONS & FAQS
COVID-19 RESEARCH
COVID-19 Maps & Data Visualizations
COVID-19 Whitepapers
COVID-19 Research Apps
NC COVID-19 STUDIES
NC COVID-19 COUNTY DASHBOARDS
NC COVID-19 COUNTY PROFILES

Topics

- **Definitions and FAQs**
    - COVID-19 definitions
    - Frequently asked questions about COVID-19

- **Research**
    - Scientific whitepapers
    - Maps & data visualizations
        - County Comparisons and COVID-19 Measures
        - Colleges, universities, prisons and meatpacking plants: Places where people gather
        - K-12 Schools and Child Care Facilities
        - Long-term Care Facilities

- **Demographics**
    - Each of the following is presented in terms of these age groups: 0-17, 18-24, 25-49, 50-64, 65-74, 75+
        - Lab confirmed cases by age group
        - Percentage of daily cases by age group
        - 7 day case rate per 1000 people
        - Daily deaths by age group
        - Percent of daily deaths by age group
        - 7 day death rate per 100,000 people
    - Research apps
    - N.C. COVID-19 Studies
    - N.C. COVID-19 Dashboards
    - N.C. County Profiles

Audience

As the homepage blurb states, this dashboard is aimed at the general public, researchers, and policymakers in North Carolina. The navigation and content hierarchy is extremely intuitive, and the designers have clearly put a lot of effort into editing the language throughout so it can be easily understood by any visitor, no matter their level of expertise in public health research.

Unique insights and features

As mentioned in the summary, this site does a great job of collecting and presenting a wide variety of COVID-related resources, from datasets to research studies to county- and school-specific dashboards. The visualizations use Tableau, which provide some interactivity with the data and creates a clean aesthetic. A unique aspect of these visualizations is the FAQ/How to Use menus attached to each, and the related definitions listed on the right-hand side of each page below the graphics. These small touches make a huge difference when it comes to usability and ensuring this dashboard can be used by anyone.

Recommendations for interoperability

- This dashboard already lists the Economic Growth Initiative, NC COVID-19, and Community Confidence dashboards in its Decision Tools list, the Carolina Tracker dashboard would be a great addition.

Final Takeaways

There are three main factors that were considering during this review process:

1. Content: What content and features were included in each dashboard.
2. Usability: Whether the user experience was intuitive and enjoyable.
3. Transparency: Whether data sources were clearly listed and easy to access.

The following final considerations are applicable to all projects:

1. Test the dashboard for digital accessibility. The UNC Digital Accessibility Office provides many great resources on this topic, including accessibility reviews (when availability allows).
2. Make sure all data sources are clearly identified. If it is an option, make datasets downloadable.
3. Test dashboards on multiple browsers and screen sizes. Mobile users are a huge part of every audience segment now, so mobile experience needs to be prioritized as much as possible.
4. Indicate when data was last updated and when it will be updated next if that information is not clearly stated already.
5. Test dashboards on slower internet speeds. Explore options for optimized alternatives if available.
6. To ensure longevity of your data, review your data management practices. The Odum Institute research data information systems unit and Data Archive can assist with data storage, curation and long-term data management.

In conclusion

At first glance there may seem to be some redundancy between dashboards. However, this in-depth review has revealed that while they focus on similar topics and research questions, their approaches, data and variables are very different. The inclusion of so many different data sources and approaches allows policymakers, government officials and the general public to access a much broader, more robust knowledge base. This provides more evidence for decision-making and the opportunity to gain a more holistic, nuanced understanding of the COVID-19 pandemic and its impacts on our communities.