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Georgians at Risk: Understanding Variations in 2020 U. S. Census Self-Response Rates

Robert E. Livingston

Despite the United States Census Bureau's efforts to get complete and accurate counts of all U.S. residents in its decennial censuses, researchers have repeatedly found that there remain "hard-to-count" populations that are underrepresented in the final numbers. These hard-to-count populations disproportionately include residents living in poverty, racial and ethnic minorities, and residents living in rural communities. In preparation for the 2020 Census, the U.S. Census Bureau introduced online responding as the preferred method of self-response to the census in order to improve response rates and decrease inequities in the final counts, while reducing the overall cost of administering the census. With the introduction of online responding, researchers and community activists raised concerns that unequal broadband coverage puts the traditionally hard-to-count populations at an even greater disadvantage for the census. This research study uses correlation analysis and simple regression analysis to determine if the historical patterns of underrepresentation of hard-to-count populations improved in 2020 with the changes in counting methods. The results of the analyses indicate that the changes failed to achieve their goals, especially for poor and rural Georgia residents.

Keywords: United States census 2020, Georgia census, census undercounts, internet self-response, hard-to-count

Introduction

Article I, Section 2 of the United States Constitution mandates that the federal government conduct a census every ten years to count all residents in the United States and U. S. territories. The total population numbers counted by the census are important for several reasons. First, they determine the apportionment of the 435 seats in the U.S. House of Representatives among the fifty states. Second, they help determine how political representation is divided up within each state. After every census year, state legislatures redraw their federal congressional districts and state legislative districts based on the census results. Finally, the census counts help determine how the federal government distributes approximately $1.5 trillion annually in funding to local communities for schools, roads, hospitals, and other public services (Mervis, 2020; United States Census Bureau, 2020). Anderson (2019) explains that "the combination of the census as mechanism to adjust power and resources each decade... made the census and the statistical system truly central to the functioning of the society and state" (p. 229). For these reasons, it is essential that the 2020 Census count is accurate.

The counting process for modern censuses begins with the U.S. Census Bureau working with state and local governments to develop a "Master Address File" of every known residence in the fifty states, Washington, D.C., and five U. S. territories (U. S. Government Accountability Office [GAO], 2019). This process is known as the Local Updates of Census Addresses (LUCA). Once the LUCA process is completed, one person from every residence is asked to complete the census questionnaire. From 1960-2010, the Census

Bureau utilized a self-response process where residents received and returned the census questionnaire by mail (Congressional Digest, 2018). Federal census workers known as "enumerators" were hired to do follow-up contacts by telephone or in person with residents who did not return their questionnaires. The problem with relying on the follow-up telephone and door-to-door enumerators to achieve accurate counts for the census is that it is very expensive. For example, the costs for Nonresponse Follow-up enumeration totaled more than $1 billion for the 2000 Census and $1.5 billion for the 2010 Census (Compton & Bentley, 2012). In preparation for the 2020 Census, the U.S. Census Bureau shifted the preferred self-response method from mail to the internet. The goal was to reduce the need for telephone and door-to-door follow up with nonrespondents by achieving higher self-response rates across communities. For the 2020 Census, an estimated 500,000 staff were hired for the follow-up phase of in-person counting. Edmondson (2019) explains that, while this represents "the largest mobilization of federal employees short of war," it is a 25% decrease from 2010 numbers (para. 1).

Literature Review

Although the plan for counting all residents in the United States and its territories seems straight-forward, past censuses have experienced problems with unequal response rates. Researchers have determined that the areas with low response rates are often poorer, rural, and with a high minority population. Tian, et al. (2020) performed a multiple variable regression analysis on 2010 Census response rates and concluded that race, housing arrangements, and poverty were strong predictors of communities' response rates. They also concluded that the response rates were impacted by whether the communities were urban, suburban, or rural. Gaston, et al. (2019) analyzed eight previous studies and concluded that the changes planned for the 2020 Census were not sufficient to reach "hard-to-count groups (e.g., undocumented or recent immigrants, racial/ethnic minorities)" (p. 1081). Citro (2019) reviewed the response rates for the past five decennial censuses and concluded that there were usually problems with constructing the Master Address File that raised concerns about "differential undercount of minorities." Byrum (2020) performed a digital risk analysis on the shift to internet self-response and found that "hard-to-count" demographics "align closely with the characteristics of digitally marginalized populations—those on the wrong side of the 'digital divide'" (p. 897). As a result, Byrum concluded that the shift to internet self-response would not help residents of these hard-to-count demographics.

When there are variations in census response rates, political representation and federal funding are likely to end up being unequally distributed, creating feedback loops that benefit some communities and harm others. Wealthier, whiter, and urban or suburban areas tend to have higher response rates than the state average, which means that they are relatively overrepresented by the census (United State Census Bureau, 2012). This overrepresentation has the effect of increasing the areas' political representation and access to federal funds. The increase in representation and funding then increases the wealth of the community, which is likely to improve the response rates for the next census, and the cycle starts over. The reverse is true for communities that are poorer, more rural, and with higher minority populations. Their lower response rates cause them to be underrepresented by the census, reducing their political representation and access to funds. This prevents them from receiving adequate resources to improve their wealth and causes them to be more likely to be underrepresented in the next census. Because of these feedback loops, Byrum (2020) argues that "the stakes could hardly be higher for the 2020 decennial census" (p. 884).

Implications for the Current Study

Numerous studies have been conducted to determine the relationship between response rates in past censuses and demographic characteristics, such as wealth, race, and population density. The current study expands on that research by focusing on self-response rates to the 2020 Census in the state of Georgia to see if these same patterns occurred. As of this writing, county-level data for 2020 self-response rates are finalized, but the final response rates that include telephone calls and door-to-door visits by census workers have not been. This is not a problem for the analysis

because the changes to the 2020 Census were intended to increase self-response rates and decrease the need for follow-up enumeration. The self-response rates can therefore be used to analyze the impacts of these changes.

This study focuses on data for only one state, but its results have national implications. At the time the study was performed, Georgia was in the midst of a highly-contested Presidential race and two U. S. Senate races. The Democratic candidates narrowly defeated the Republican incumbents in all three races, but Georgia Republicans maintained their majorities in the U. S. House and state legislative bodies. In such a closely divided state, any undercounts in the final 2020 Census numbers are likely to impact redistricting efforts and possibly even determine Georgia's national and statewide political representation between the two parties. In addition, analyses of Georgia's self-response rates to the 2020 Census provide important information relevant to other closely-divided states and communities in the United States.

The current study utilizes correlation analysis and regression analysis to find the statistical relationships between self-response rates and demographic characteristics of Georgia's 159 counties and to determine whether the relationships are statistically significant. These statistical analyses help answer the following questions:

- How do the 2020 self-response rates in Georgia's 159 counties compare to the 2010 self-response rates?
- How do demographics such as race, income, and population correlate with and predict 2020 self-response rates, since these demographics have been predictors of response rates in the past?
- How does broadband access in each county correlate with and predict 2020 self-response rates, since the preferred method of self-response shifted to the internet?
- How do the variables of race, income, population, and broadband access correlate with each other and potentially worsen the impacts on the 2020 self-response rates for some counties in Georgia?

By statistically analyzing the relationships between variables, this study helps identify what the main predictors of self-response rates for the 2020 Census were and how they compare to historical trends. It also gives insight into how residents across Georgia are likely to be affected by the 2020 Census with respect to political representation and federal funding of programs and services in their counties.

Methods

The data used in this study were all publicly available on government and industry websites. County-level data for the 2010 response rates and 2020 self-response rates were accessed on the state of Georgia's census website. In addition to the self-response rates, county level demographic data such as wealth, race, and population were gathered from federal and state governmental databases. Only the data for broadband access in Georgia's counties came from an industry website instead of a governmental source.

A requirement of both correlation analysis and regression analysis is that all the variables have to be numeric and linear. Two types of self-response rates were gathered for 2020: Internet Self-Response Rates, which indicate the percentage of residences that completed the census questionnaire by internet, and Total Self-Response Rates, which indicate the total percentage of residences that completed the census questionnaire by either mail or the internet. To measure wealth, data for Median Household Income by Georgia county was accessed from the United States Department of Agriculture (USDA) Economic Research Service. To measure racial characteristics, the percentage of the county population that is White/Non-Hispanic was accessed from 2016 Georgia Census estimates. To measure population characteristics, 2019 population estimates for each county were accessed from the state of Georgia's Census website. Finally, to measure internet availability, the percentage of each county that has access to 25 Mbps of Broadband service was used. This data was provided by the industry leader BroadbandNow website. The data gathered for each of these variables represent the most up-to-date and accurate estimates at the time of this report.

The statistical analyses for this study were performed in Google Sheets and IBM SPSS. The linear data for each variable were first entered into Google Sheets, and the relative changes from the 2010 Total Self-Response Rates to the 2020 Total Self-Response Rates for Georgia's 159 counties were calculated. Then, individual scatter plots that visually represent the relationships between the two self-response vari-

ables and the four demographic/broadband variables were created. Scatter plots that represent how the four demographic/broadband variables relate to each other were also created.

The data for all the variables were then imported into SPSS, and two types of statistical analyses were conducted. The first was correlation analysis that provided the Pearson correlation coefficients and significance levels. Pearson correlation coefficients range from -1 to 1 and measure the strength of the positive or negative correlation between two variables. The significance levels measure the probability that the correlation is only due to random chance. For this project, significance levels were set at 0.05 or below to conclude that the correlation is due to a real (non-random) relationship between the two variables. In total, 15 scatter plots and correlation analyses were created:

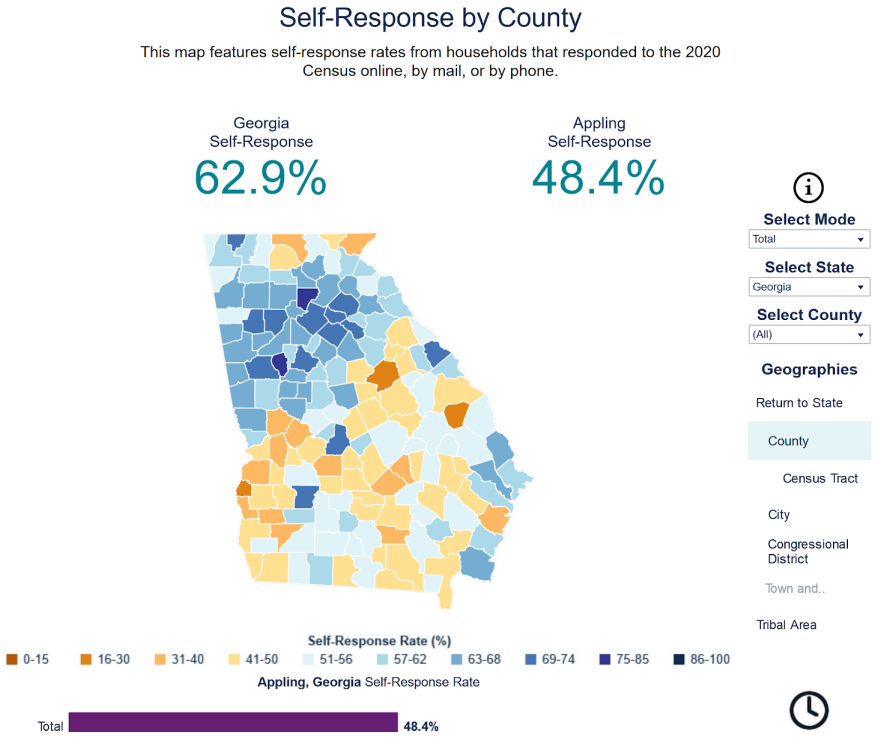
- A scatter plot and correlation between the 2010 Total Self-Response Rates and the 2020 Total Self-Response Rates
- Scatter plots and correlations between the 2020 Internet Self-Response Rates and each of the four demographic/broadband variables
- Scatter plots and correlations between the 2020 Total Self-Response Rates and each of the four demographic/broadband variables
- Scatter plots and correlations among all four demographic/broadband variables

The second type of statistical analysis performed was simple regression analysis that provided R^2 values for the relationships between the two self-response rates and the demographic/broadband variables. R^2 values range from 0 to 1 and measure the percentage of the total variance in the dependent variable that is accounted for or predicted by the independent variable. In total, 8 simple regression analyses were conducted:

- 2020 Internet Self-Response Rates as the dependent variable and each of the four demographic/broadband variables as the independent variable
- 2020 Total Self-Response Rates as the dependent variable and each of the four demographic/broadband variables as the independent variable

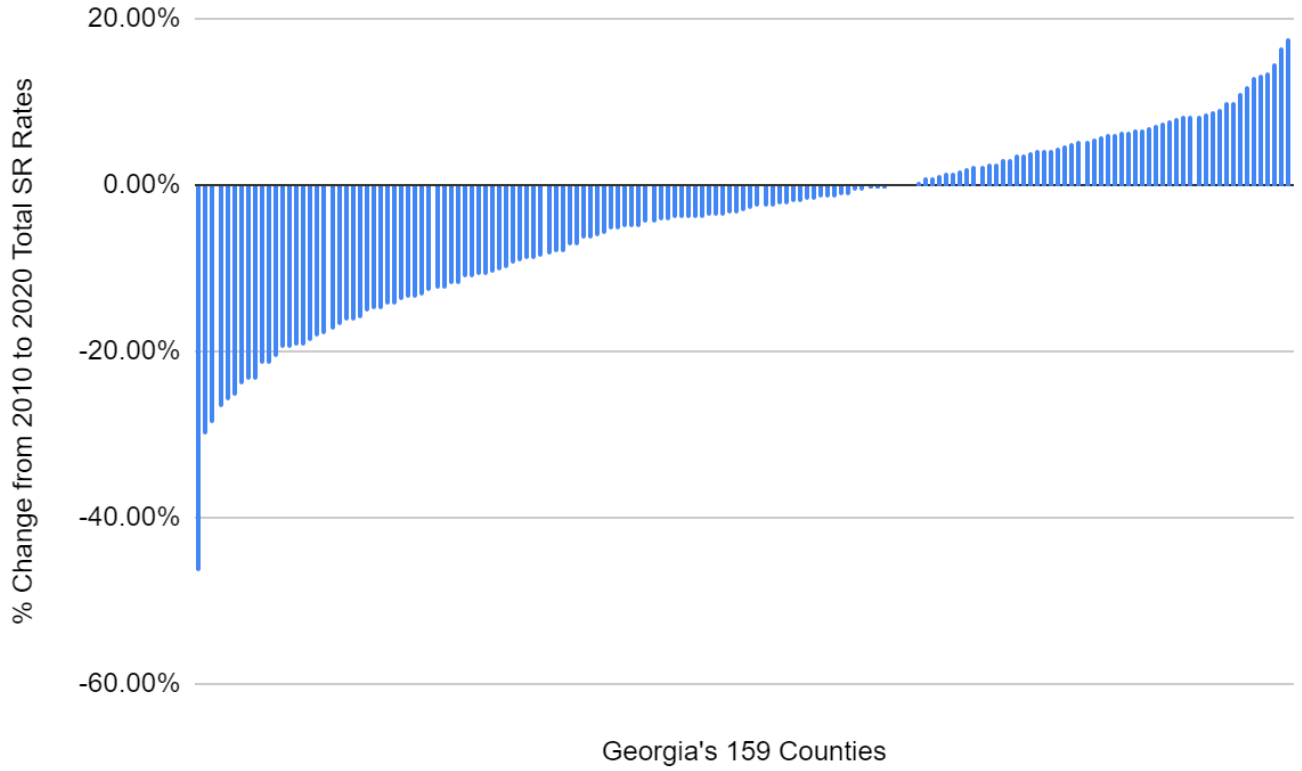
The statistical results were then compared to a map of the Total Self-Response Rates for Georgia's 159 counties from the Georgia Census 2020 website. This map, which is presented in Figure 1, shows that many of the counties with the highest Total Self-Response Rates are clustered around the Atlanta metropolitan area. The lowest Total Self-Response Rates can be seen in rural

Figure 1
2020 Census Total Self-Response Rates by Georgia Counties[1]



1 2020 Census Self-Response Rates. (2020). U. S. Census in Georgia. Retrieved January 2, 2021.

Figure 2.
Relative Changes in Total Self-Response Rate from 2010 to 2020 by Georgia County



counties along the Tennessee and North Carolina borders as well as in the southern part of the state.

Figure 1 provides a good visual image of the geographic variations in Total Self-Response Rates across Georgia, but it does not explain why the variations exist. The sections below provide results that better explain why some Georgia counties were overrepresented in their self-response rates and others were underrepresented.

Results

A primary goal of the changes to the 2020 Census was to increase census self-response rates by increasing outreach to hard-to-count communities and making it easier for people to respond through the internet. In this project, a comparison of 2010 and 2020 Total Self-Response Rates was conducted to determine the effectiveness of these changes for the state of Georgia. Figure 2 provides a histogram that charts the relative changes in Total Self-Response Rates from 2010 to 2020 by county. The equation used to compute this change is seen in (1).

((2020 Total SR Rate - 2010 Total SR Rate) / 2010 Total SR Rate)*100 (1)

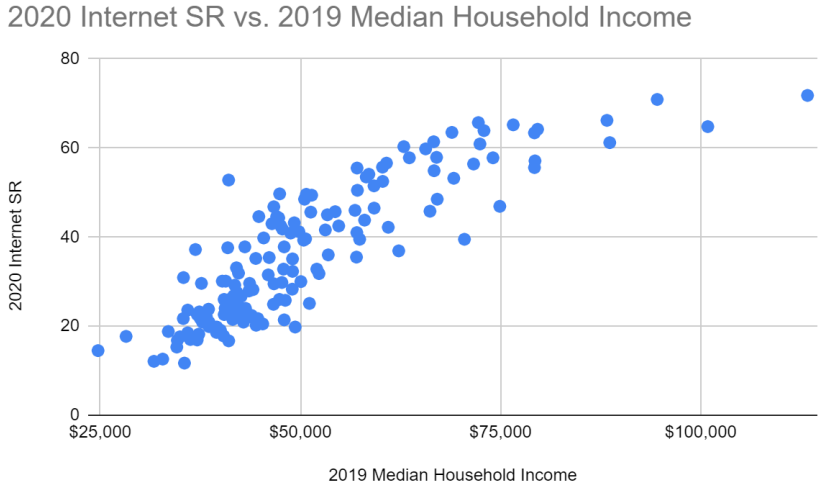
The Figure 2 histogram shows that, while some counties' Total Self-Response Rates did go up in 2020, the majority did not. Of the 159 counties in Georgia, 56 (35.2%) had a higher rate in 2020, 3 counties (1.9%) had the same rate, and 100 counties (62.8%) had a lower rate. In addition, many of the counties whose Total Self-Response Rates went down in 2020 had decreases that were larger than the increases in the 56 counties that went up. For example, Rabun County, in Northeast Georgia, had the highest relative increase in the state (27.4%). Eleven more counties had relative increases of more than 10 percent over their 2010 rates. In contrast, however, 45 counties experienced relative declines of more than 10 percent. The worst decline was in Jenkins County in rural eastern Georgia (-46.4%).

2020 Correlation Results

After measuring the relative changes between 2010 and 2020 Total Self-Response Rates, this study estimated how the 2020 Internet Self-Response Rates and

the 2020 Total Self-Response Rates correlated with each other; with demographic variables that have correlated with differential representation in past censuses; and with broadband access. The three tables below provide results from the correlation analyses, including the Pearson correlation coefficients and the significance levels. Table 1 provides results for the correlation analysis between Internet Self-Response Rates and Total Self-Response Rates.

Figure 3
Scatter Plot of Internet Self-Response Rates and Median Household Income



The Pearson correlation coefficient of 0.89 indicates that the Internet Self-Response Rates and the Total Self-Response Rates for Georgia's counties were highly correlated and that researchers can be more than 99% confident that the correlation is not due to random chance. This very high correlation confirms how important it was for counties to achieve high self-response rates through the internet in 2020. Counties that had low Internet Self-Response Rates were at high risk that they would also have low Total Self-Response Rates. Table 2 provides results for the correlations between the two self-response rates and the demographic/broadband variables.

Each of these correlations is positive, and all of the correlation coefficients have high significance levels. The correlations between the demographic and community variables, with the exception of the variable for White/Non-Hispanic, were higher for the Internet Self-Response Rates than for the Total Self-Response

Table 1
Pearson Correlation Coefficients for Internet and Total Self-Response Rates

	2020 Total Self-Response Rates
2020 Internet Self-Response Rates	0.89**

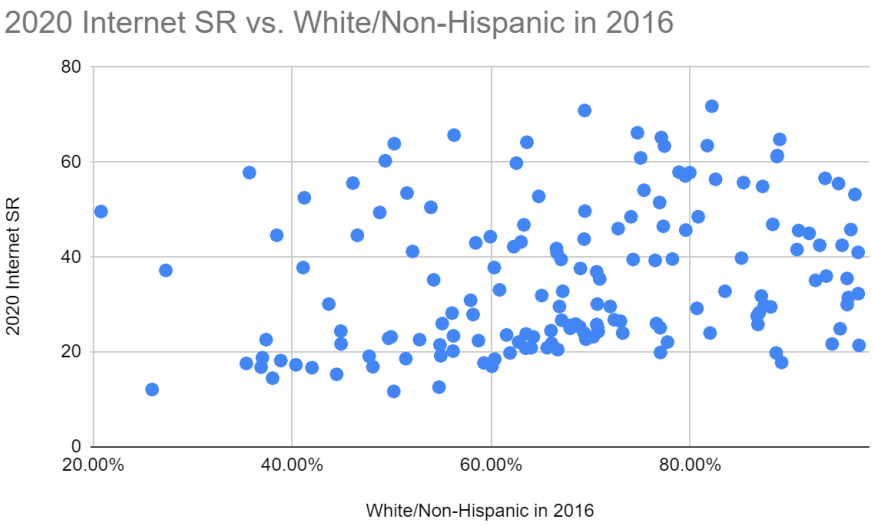
**Correlation is significant at the 0.01 level

Table 2
Pearson Correlation Coefficients for Self-Response Rates and Demographic/Broadband Variables

	Internet Self-Response Rates	Total Self-Response Rates
Median Household Income	0.863**	0.773**
White Non-Hispanic	0.261**	0.326**
Broadband	0.566**	0.439**
Population	0.501**	0.386**

**Correlation is significant at the 0.01 level

Figure 4
Scatter Plot of 2020 Internet Self-Response Rates and White/Non-Hispanic Percentages



Rates. The strongest correlation calculated was the one between Internet Self-Response Rates and Median Household Income (0.863). Figure 3 uses a scatter plot to show this strong correlation.

Although still positive and significant, the correlation between the percentage of White/Non-Hispanic residents in a county and the 2020 Internet Self-Response Rates is weaker (0.261). Figure 4 shows this weaker correlation.

Table 3 provides correlation results among the demographic and broadband variables.

All of the correlation estimates between the demographic and broadband variables meet the 0.05 significance level. All are positive, with the exception of the correlation between the county population and the percentage of White/Non-Hispanic residents. The strongest correlation is between the Median Household Income and Population (0.449), while the weakest is the negative correlation between White/Non-Hispanic and Population (-0.174).

2020 Simple Regression Results

Eight simple regression analyses were conducted to find how strong the independent variable was in predicting self-response rates to the 2020 Census in Georgia. For four of the analyses, Internet Self-Response Rates was the dependent variable. For the other four, Total-Self Response Rates was the dependent variable. Table 4 shows the results of the regression analyses.

The highest R^2 values were for Median Household Income. For Internet Self-Response Rates, Median Household Income had an R^2 value of 0.745, indicating that 74.5% of the variation in Internet Self-Response Rates can be explained by the variation in Median Household Income. For Total Self-Response Rates, Median Household Income had an R^2 value of

Table 3
Pearson Correlation Coefficients for Demographic and Broadband Variables

	Median Household Income	White / Non-Hispanic	Broadband	Population
Median Household Income	1	0.370**	0.415**	0.449**
White / Non-Hispanic		1	0.183*	-0.174*
Broadband			1	0.305**
Population				1

*Correlation is significant at the 0.05 level
**Correlation is significant at the 0.01 level

Table 4
R-squared Values for Simple Regression Analyses

	Internet Self-Response Rates	Total Self-Response Rates
Median Household Income	R2=0.745	R2=0.597
Broadband Access	R2=0.320	R2=0.192
Population	R2=0.251	R2=0.149
White/Non-Hispanic	R2=0.068	R2=0.107

0.597, indicating that 59.7% of the variation in Total Self-Response Rates can be explained by the variation in Median Household Income.

Analysis

One of the main goals of the Census Bureau for the 2020 Census was to decrease the total cost of administering the census by improving Total Self-Response Rates (Blumerman, 2016). It was planned that online self-responding would improve the Total Self-Response Rates, which would mean less need for door-to-door counting and, most importantly, more accurate final counts. The statistical results from this study show mixed outcomes for the success of the 2020 Census in increasing self-response rates. The cumulative Total Self-Response Rate for Georgia did increase by half a percentage point, from 62.4% in 2010 to 62.9% in 2020. However, by looking at the differences between the 2010 Total Self-Response Rates and the 2020 Total Self-Response Rates, it is evident that the 2020 changes benefited some counties, but a majority of counties' rates did not improve.

As Figure 1 in the Methods section showed, many counties that had high Total Self-Response Rates are clustered around Atlanta. Urban counties such as Fulton, DeKalb, and Clayton all saw increases in their Total Self-Response Rates for 2020. Suburban counties such as Cobb, Gwinnett, and Fayette also saw increases in their rates. In contrast, many rural counties failed to match their rates for 2010. The rural counties of Jenkins, Calhoun, and Hancock suffered the largest relative decreases in Total Self-Response Rates from 2010. This negative trend occurred in many other rural counties too. The Pearson correlation coefficients between the counties' Populations and Internet Self-Response Rates (0.501) and the counties' Populations and Total Self-Response Rates (0.386) provide a numerical estimate of the disadvantage experienced by rural, less populated counties in the 2020 Census. The negative trend in response rates is even more disturbing for poor counties in Georgia.

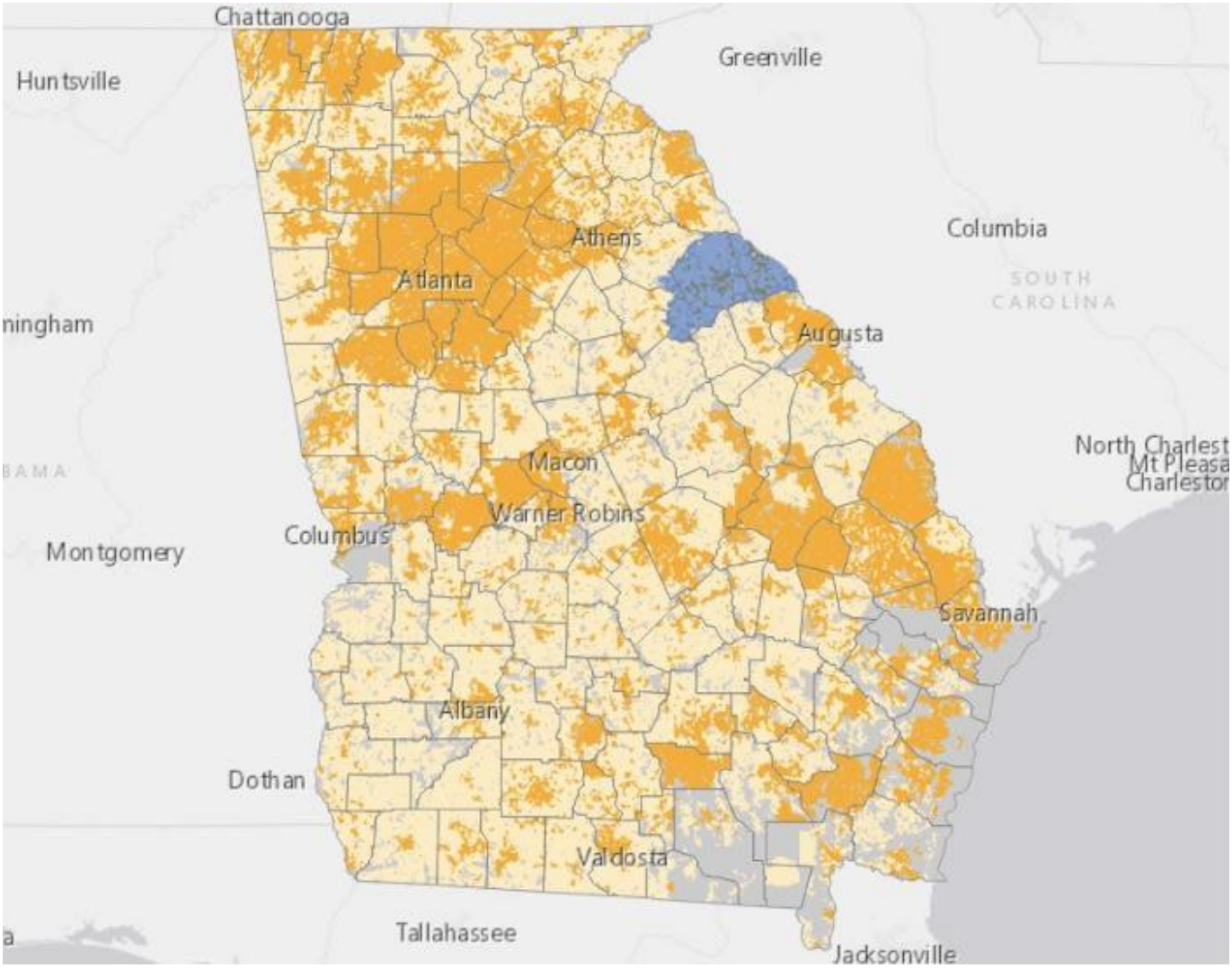
The correlation analyses between Total Self-Response Rates and the demographic variables show that a county's Median Household Income had the strongest relationship with Total Self-Response rates. The correlation coefficient of 0.773 is positive, linear, and strong. The R^2 value of 0.597 estimates that 59.7% of the variation in Total Self-Response Rates is explained by Median Household Income. The wealthiest counties in the state are congregated around the Atlanta metropolitan area, which is where the highest self-response rates are found. The correlation between Total Self-Response Rates and the percentage of the county that is White/Non-Hispanic (0.326) is also positive and significant. The R^2 value of 0.107 estimates that 10.7% of the variation in Total Self-Response Rates is explained by the variation in White/Non-Hispanic percentages in the county, which indicates that racial inequities continued to exist for the 2020 Census although they were not as strong as the inequities associated with poverty.

To better understand the complicated relationship between race and Total Self-Response Rates, however, it is useful to compare Fayette County to Fannin County. Fayette County, which is in the Atlanta metropolitan area, had the highest Total Self-Response Rate in the state at 78.0%. According to the population estimates provided by the U.S. Census in Georgia, Fayette County is 69.37% White/Non-Hispanic. Although this is a higher percentage than the

60.2% White/Non-Hispanic population for Georgia as a whole, it is well below Fannin County, which is 96.95% White/Non-Hispanic and had a Total Self-Response Rate of 39.3%. Therefore, Fannin County's White/Non-Hispanic percentage is 27.58% higher than Fayette County's, but its response rate is 38.7% lower.

Another important finding from this study is revealed by the correlation analyses between the demographic variables. While it is clear that Median Household Income has the strongest correlation with Total Self-Response Rates for the 2020 Census, the correlations between Median Household Income and Population (0.449) and White/Non-Hispanic percentage (0.370) indicate that when these variables are combined, the impact may be even higher. For example, a rural county with low wealth and a high minority percentage would be more likely to have a very low Total Self-Response Rate. Hancock County, in rural central Georgia, provides an example of this. Hancock County had a population of 8,457 in 2019, while the average population for Georgia counties was 66,776. Its population percentage of White/Non-Hispanic was 25.9%, while the average percentage for Georgia counties was 67.91%. And, its median household income was $31,715, while the average for Georgia counties was $50,209. The Total Self-Response Rate in 2020 for Hancock County was 27.6%, which is approximately half of the average for Georgia counties of 54.96%.

Figure 5
Broadband Access Across Georgia[1]



1 Georgia Department of Community Affairs (2020)

These correlations unfortunately align with what has happened in the past. However, one issue for the 2020 Census that the Census Bureau could not have foreseen was the COVID-19 pandemic. With the move to internet responding, counties had planned to use public services such as government buildings and public libraries to help get their citizens to self-respond to the census (Krumsee, 2020). However, the COVID-19 pandemic caused the closure of many of these facilities and greatly decreased the ability to gather in person. Because of this, good broadband access in a county was likely to have an even greater impact on a county's self-response rates. Figure 5 from the Georgia Department of Community Affairs website maps the quality of broadband access for Georgia's 159 counties. Comparing Figure 5 to Figure 1 in the Methods section shows the similar patterns between high Total Self-Response Rates and available broadband of 25 Mbps or more in Georgia.

The strongest broadband availability is found around the Atlanta metropolitan area, which is where counties typically saw high self-response rates. The correlation analyses between Broadband and Internet Self-Response Rates (0.566) and Broadband and Total Self-Response Rates (0.439) confirm the importance of good broadband access. Counties that lack good broadband coverage were less likely to benefit from the shift to internet responding for the 2020 Census.

The results from the regression analyses are consistent with the results from the correlation analyses. Median Household Income, percentage of White/Non-Hispanic residents, and access to Broadband were all positive predictors of Total Self-Response Rates in the 2020 Census in Georgia. This indicates that the U. S. Census Bureau's outreach to vulnerable communities and shift to the internet did not succeed in overcoming the disadvantages faced by groups who have historically been undercounted.

Conclusion

The most important change to the 2020 Census was shifting the preferred self-response method from mail to the internet. This change was intended to achieve higher Total Self-Response rates, lower costs, and decrease the unequal response rates between communities. Data analyses from this study demonstrate that, although the 2020 Census did increase the Total Self-Response Rate in Georgia by half a percentage point (from 62.4% to 62.9%), it failed to overcome the unequal self-response rates across Georgia's 159 counties. The correlation and regression analyses confirm that many of the historical patterns with underrepresentation from previous censuses continued in Georgia with the 2020 Census.

The Georgia counties that did well with self-response rates for the 2020 Census typically have demographic characteristics that aligned with high self-response rates in the past. The counties centered around Atlanta with the highest median household incomes and populations had the highest statewide self-response rates in 2020. This indicates that richer, urban and suburban communities did disproportionately well in this census, as they have in the past. In contrast, the Georgia counties that did worse with their self-response rates have characteristics that aligned with lower self-response rates in the past. These counties, centered in southwest and middle-eastern Georgia, are rural, far from Atlanta or other urban areas in the state, and have a lower median household income. It is important to note that racial demographics of a county did have a significant correlation with self-response rates, but this correlation was not as strong as income or population size. This suggests that poor rural counties struggled with the 2020 Census regardless of their racial makeup.

Rather than improving the equity of the 2020 Census, the shift to internet self-response may have worsened the historical patterns for some residents because of unequal access to broadband internet services among the counties. As the correlation analyses demonstrate, Georgia's urban and suburban, wealthier counties had greater access to broadband internet services, while the rural, poor communities had less access to broadband. This access was important for self-responding to the 2020 Census, especially because COVID-19 caused the closure of libraries and other governmental offices that rural residents without high-speed internet might have used to complete the census.

While this analysis provides important information about self-response rates, it does not analyze the final response rates after telephone and in-person enumeration was completed. County-level final response rates have not been released by the U.S. Census Bu-

reau at the time of this writing. Because of the planned decrease in door-to-door counting, and the difficulties of in-person data gathering due to COVID-19, the patterns in self-response rates are likely to be a good indicator of problems with final response rates for Georgia's counties. The inequities in census response rates run the risk of continuing or even worsening the negative feedback loops for struggling counties. Their lower Total Self-Response Rates indicate that they are more likely to be underrepresented in the final census count, which will then impact the drawing of new Congressional and state legislative districts, weakening their political representation in both the federal and state government. Underrepresented counties are also more likely to receive fewer resources from the federal and state governments, decreasing their opportunities to grow economically. This loss of representation, resources, and wealth then runs the risk of increasing the likelihood of these counties' underrepresentation in the 2030 Census as well.

The results of this study confirm what many other studies have concluded. There are no easy solutions for eliminating inequities in the census counting process. The U. S. Census Bureau must therefore continue to invest in outreach efforts with local communities that have been undercounted in past censuses. In addition to this outreach, increasing broadband access for all Georgians is essential. Overall, Georgia does relatively well with broadband access, ranking twelfth in the nation with 94.1% of all residents having "access to a wired connection of 25 Mbps download speeds or faster" ("Internet Access in Georgia," 2021). As Figure 5 illustrates, however, large areas of rural Georgia, totaling an estimated 484,000 residents, are currently unserved by broadband. Fortunately, there are reasons to be optimistic that improvements in broadband access are possible in the next ten years. Georgia's Governor, Brian Kemp, recently announced that he would "continue working with leaders across our state to increase broadband access and ensure a brighter future for all Georgians – no matter their zip code" (Governor Brian P. Kemp, Office of the Governor, 2021). Better broadband access will give residents in rural counties more opportunities to fill out the next census online, removing one obstacle to their being fully represented in the final census counts.

Another positive change in 2030 will, presumably, be the absence of COVID-19, which placed many restrictions on the availability of in-person gatherings across the state. Being able to gather in-person will allow libraries and government centers to provide help to Georgia residents who do not know how to fill out the census questionnaire on their own or do not have internet access in their homes. The increase in broadband access to all counties, and the availability of help centers, represent important efforts to increase future self-response rates among hard-to-reach communities. These steps, although not sufficient by themselves, are important steps toward breaking historical patterns of inequity and making sure that all Georgians are counted, regardless of their income, geographic location, or race.

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