North Carolina Demography

Project Motivation

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Article 1, Section 2 of the United States Constitution contains a seemingly simple directive: every ten years, the people of the United States must be enumerated (counted).[[1]](#footnote-1) The Census Bureau carries out this responsibility by attempting to survey every person in the country, an estimated 330 million.[[2]](#footnote-2) While this data is useful—to academic institutions, corporations, individuals, and various levels of government—the legal purpose of the Census is to ensure equal and fair representation in the federal government. Knowing precisely where people live is important for this goal in two respects: first, it determines how many representatives each state is allocated, but secondly, it also divides states into relatively equal portions for those representatives. Therefore, much attention must be paid to the accuracy of the Census, as potential errors can introduce bias in how people are represented in government.

Understanding how Census counts are inaccurate is critical for several reasons. First, identifying errors and biased procedures allows for an improved process in future iterations of the Census. However, there are also direct implications for the present. As mentioned previously, the Census is not only used for apportionment. Population estimates help local and state governments direct resources and build more effective policies. Private enterprises also use Census data to drive decisions, such as identifying new locations for storefronts or headquarters, building factories, recruiting employees, and conducting market research.[[3]](#footnote-3) With so many decisions built on Census counts and estimates, it is easy to see that a pervasive bias or error in the counts could easily propagate and cause significant harm to undercounted persons and communities. By identifying routinely undercounted areas and/or groups of people, the Census can produce more accurate, equitable, and actionable revised estimates.

There has been a significant body of work on evaluating Census estimates, but the gap this project attempts to fill is that of the sub-state level. There are two methods by which the Census evaluates its estimates. The first is the Post-Enumeration Survey (PES), a representative sample of households surveyed in depth and then matched against records in the Census.[[4]](#footnote-4) From this method, net coverage error of the Census can be determined, as well as correctly-included people, incorrectly-included people, and wholly imputed records. The PES evaluates errors at the national and state level.

The other method used to evaluate the Census is the Demographic Analysis (DA).[[5]](#footnote-5) Unlike the PES, this method is not survey-based but based on birth, death, and migration data. In this way, DA estimates the number of people residing in the United States at the time of the Census. This has the advantage of not relying on survey participation but still requires a significant number of assumptions about the underlying data. DA is available only at the national level but has coverage estimates by specific demographic attributes (including race, sex, and age).

While both the PES and the DA provide helpful information about the quality of the Census, the granularity is not detailed enough to truly evaluate at a sub-state level. While the PES shows that there was not a significant under or overcount in North Carolina, it may very well be that specific counties and areas were overcounted, especially those with high minority populations.

**Project Goals**

For this project, we will work with the North Carolina Office of State Budget and Management (OSBM) to achieve the following:

1. Compare existing estimates of population and housing in North Carolina at various geographies (city, county, tract) to the 2020 Census counts to identify where undercounts and overcounts occur and if they correlate with various demographic attributes.
2. Utilize various datasets to develop population estimates independent of Census methods to develop unbiased estimates of undercounts and overcounts.
3. Suggest corrections to current population estimates based on research and findings.

This work will help the OSBM, as accurate and unbiased estimates are their core mission. Indirectly, this work will serve North Carolinians, whether they use population estimates or not. Less biased estimates will ensure equitable distribution of goods and services, both in the public and private sectors.

1. U. S. Const. Art. I, § 2. [↑](#footnote-ref-1)
2. Bureau, US Census. “2020 Census Apportionment Results Delivered to the President.” Census.gov. Accessed September 19, 2022. https://www.census.gov/newsroom/press-releases/2021/2020-census-apportionment- results.html. [↑](#footnote-ref-2)
3. Bureau, US Census. “Our Censuses.” Census.gov. Accessed September 19, 2022. https://www.census.gov/programs-surveys/censuses.html. [↑](#footnote-ref-3)
4. Bureau, US Census. “Post-Enumeration Surveys.” Census.gov. Accessed September 19, 2022. https://www.census.gov/programs-surveys/decennial-census/about/coverage-measurement/pes.html. [↑](#footnote-ref-4)
5. Bureau, US Census. “Demographic Analysis (DA).” Census.gov. Accessed September 19, 2022. https://www.census.gov/programs-surveys/decennial-census/about/coverage-measurement/da.html. [↑](#footnote-ref-5)