



North Carolina Demography

Project Motivation

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Background

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 The Census Bureau carries out this responsibility by attempting to survey every person in the country, an estimated 330 million.² While this data is incredibly useful—to academic institutions, corporations, individuals, and various levels of government—the legal purpose of the Census is to ensure equal and fair apportionment of representation in the federal government. Knowing exactly where people live is important for this goal in two respects: first, it is required to determine how many representatives should be allocated to each state, but secondly, it is also utilized to divide states into relatively equal portions for those representatives. Therefore, much attention needs to be paid to the accuracy of the Census, as potential errors can introduce bias in how people are represented in government.

Motivation

Understanding the ways in which 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 are used to help

¹ U. S. Const. Art. I, § 2.

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>.

local and state governments direct resources and build more effective policy. 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 With so many decisions built on Census counts and estimates, it's 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 areas and/or groups of people that are routinely undercounted, revised estimates can be produced that are more accurate, equitable, and actionable.

Existing Data and Research

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 own estimates. The first is the Post-Enumeration Survey (PES), which is a representative sample of households that are surveyed in depth, and then matched against records in the Census.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 error at the national and state level.

The other method used to evaluate the Census is the Demographic Analysis (DA).⁵ Unlike the PES, this method is not survey based, and is instead based on birth, death, and migration data. In this way, DA estimates the number of people that should be 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

³ Bureau, US Census. "Our Censuses." Census.gov. Accessed September 19, 2022.
<https://www.census.gov/programs-surveys/censuses.html>.

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>.

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>.

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 in order to develop unbiased estimates of undercounts and overcounts.
3. Suggest corrections to current population estimates based on research and findings.

This work will directly 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 sector.