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BAKER V. CARR, THE CENSUS, AND THE POLITICAL AND STATISTICAL GEOGRAPHY OF THE UNITED STATES: THE ORIGIN AND IMPACT OF PUBLIC LAW 94-171

Margo Anderson[†]

An absurd but fundamental incongruence exists in most states between census geography and political electoral geography. That is, the Bureau of Census requires that census tracts, enumeration districts, and blocks all follow “easily recognizable” boundaries such as roads, rivers, and perhaps transmission lines and aqueducts, but not “invisible” property and political lines.

Richard Morrill, 1981¹

As we approach the fiftieth anniversary of *Baker v. Carr*,² it is hard to overestimate the impact of the decision. Ending as it did fifty years of massive malapportionment in legislative assemblies throughout the United States, it led to a raft of successor decisions and a domino effect of unanticipated political changes, which were in turn amplified by the passage of the Voting Rights Act³ three years later in 1965.

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¹ RICHARD L. MORRILL, *POLITICAL REDISTRICTING AND GEOGRAPHIC THEORY* 33 (1981).

² *Baker v. Carr*, 369 U.S. 186 (1962).

³ 42 U.S.C. §§ 1973–1973aa–6 (2006).

My task here, as historian and longtime observer of the federal statistical system, is twofold. First I give some historical context on the numerical issues implicit in the mandate of Article 1, section 2, paragraph 3 of the federal Constitution⁴ and the “one person, one vote” standard.⁵ Second, I examine the impact of the new standard on the federal statistical system, particularly the decennial census used to apportion and redistrict legislative seats each decade.

I. IT’S ALL ABOUT NUMBERS

A. Constitutional Origins of the Census

In the summer of 1787, slightly more than a decade after the thirteen colonies had declared their independence from Great Britain, several dozen men met at Philadelphia to try to improve the existing American national government structure.⁶ War had ended in 1783 and the infant nation had returned to peace. Yet severe political and economic problems plagued the country. The Articles of Confederation, finally ratified in 1781 as the framework for the national government, had not been functioning well for a number of years. By the late 1780s, the states were willing to send delegates to discuss amendments. There were many different proposals about what to do, and although these men had the common experience of the Revolutionary Era to unite them, they also had sectional, political, religious, and local interests to divide them.

The men who gathered in Philadelphia thus faced a delicate and complex set of political questions. On the one hand, they had to empower a national government to deal with recurring problems arising from the unique historical development of the United States. The governments of the individual colonies had few connections with one another prior to independence; they did not easily merge into a United States, and in fact often looked jealously upon one another. One set of issues revolved around replacing the functions the British had served during the Colonial Era: i.e., national defense, diplomacy, trade policy, taxation, the opening of new land or the creation of new colonies. On the other hand, the national government had to respect the autonomy of the individual states, recognize and mediate differences among the states and their citizens, and develop

⁴ U.S. CONST. art. I, § 2, para. 3.

⁵ *Cf.* *Gray v. Sanders*, 372 U.S. 368, 381 (1962) (“The conception of political equality . . . can mean only one thing—one person, one vote.”).

⁶ MARGO ANDERSON, *THE AMERICAN CENSUS: A SOCIAL HISTORY* 7–20 (1988) [hereinafter *ANDERSON, AMERICAN CENSUS*].

mechanisms to apportion power and tax burdens among the constituent elements of the United States. Revising the national government or devising a new one would be no easy matter. Several prior efforts had failed. Contemporaries might well have expected the men to disband with little accomplished at the end of the summer.

We know now that did not happen; their deliberations resulted in a fundamentally new and breathtakingly radical governmental structure, which we have lived with ever since. Unlike the Articles, which mandated a one house Congress and no executive branch, the Constitution created three branches of government: executive, legislative and judicial. The legislature was bicameral, with the lower house apportioned among the states according to population and elected by the people, the upper house apportioned among the states and elected by the state legislatures. The executive branch was headed by a President elected by the people through the mechanism of the Electoral College. The new system increased the power of the national government considerably, yet it was also full of checks and balances to guarantee the powers of the states and citizens and to protect against the kind of tyranny the Crown had exercised.

The complex and relatively explicit structures, the detailed enumeration and delegation of powers, and the system of checks and balances were all mechanisms intended to foster both “a more perfect union” (national unification) and the rights of the individual states. So also was the institution of a decennial census to measure the relative strength of the various elements of the population and periodically readjust the relative power of the states and local areas in the national government. Article 1, section 2 of the Constitution created the House of Representatives, and defined its membership and capacities.⁷ Paragraph three of section 2 specified that the representatives and direct taxes were to be “apportioned among the several States which may be included within this Union, according to their respective numbers.”⁸

This simple language provided the solution to one of the fundamental political controversies of the revolutionary era: namely how to allocate representation fairly in legislative assemblies. Before the Revolution, the colonists had protested their lack of representation in the British Parliament. The newly united thirteen colonies also struggled over the problem of the equitable distribution of the burdens and resources of the national government among large and small states. Critics had charged that the Articles of Confederation were an

⁷ U.S. CONST. art. I, § 2.

⁸ U.S. CONST. art. I, § 2, para. 3.

unsatisfactory grounding for a national government precisely because states voted as units, regardless of their disparate wealth or populations.

The 1787 Constitution allocated representation in the House according to population and in the Senate by state. Since direct taxes were also to be allocated according to population, the large states would gain House representation but incur a higher potential tax burden to the federal government. The strength of each state in the Electoral College would be determined by summing the state's Senate and House members. Finally, the census was to be taken every ten years since the framers were well aware that populations—especially the American population—grew and shifted over time.

The logic of the census system flowed from the experience and conceptions of the framers. The Founding Fathers debated other methods of allocating political power and tax capacity during the Philadelphia Convention. They discussed apportionments based upon land assessments, other measures of wealth, and population. They agreed that, theoretically, political power should be allocated on the basis of population and that tax capacity derived from wealth. Everyone agreed, however, that population was much easier to measure than wealth and that wealth was highly correlated with population. So, population would be the apportionment measure. The new census and apportionment mechanisms of the federal constitution were thus a crucial piece of the Great Compromise among the large and small states which made a national government possible. The periodic changes that had to take place to account for population growth and change were assigned to an automatic decennial routine, separated from the cycles of more frequent elections for House, Senate, and the Presidency, which were also designed to shift power among the constituent elements of the population.

But there was one fly in the ointment that would come back to haunt the Framers in future years and that is of particular relevance. That was the question of defining exactly who was part of the “population” deserving the right to political participation in the society and owing responsibility to pay taxes to the state. The fundamental thrust of the discussion in the Constitutional Convention was to use the most expansive rule possible, including, for example, women, children, and the poor in the count, though they neither voted nor were necessarily responsible as individuals for taxes. The rub came when the Framers considered how to treat slaves and Indians. Should the southern states, for example, be granted political representation for their slaves? At the time southerners considered

slaves “property” for purposes of tax assessments but did not count slaves when they apportioned their state legislatures. The double rule of using the same measure for representation and taxation broke down logically for slaves. Further, should Indians, who were generally considered outside the purview of the American polity and as members of foreign states, be counted for representation and taxation?

The solution to these dilemmas was to hedge the universal rule of counting the population for apportionment with two provisos. The census clause in Article I, section 2, paragraph 3, continued: the “respective Numbers [of the population] . . . shall be determined by adding to the whole Number of free Persons, including those bound to Service for a term of Years, and excluding Indians not taxed, three fifths of all other Persons.”⁹ The Three-Fifths Compromise required the census to count slaves separately so that the slave population could be discounted to three-fifths of the value of the free population for apportionment allocations. The second proviso eliminated “Indians not taxed” from the census altogether. Only people who came to be called “civilized Indians” were to be included in the decennial census count, and hence the apportionment totals.¹⁰

Two points should be made about these constitutional provisions. First, the Framers recognized that the numeric decision of the three-fifths rules was arbitrary and only justified as a compromise necessary to move the overall constitutional revision process forward. Second, and relatedly, the Framers defined the population to be included or excluded, counted as whole people or as three-fifths of a person, according to the person’s civil status. To avoid ambiguity, the Constitution even clarified that unfree indentured servants, that is, “those bound to Service for a term of Years,” were to be included in the “free Persons.”¹¹ Nowhere did the Constitution mention a racial classification, and, in fact, the Framers used the ambiguous “other persons” to define “slave.”¹² But as the census was implemented, and in popular discourse, Americans translated the variable names listed on the census form to the racial attributes of “white,” “black,” “colored,” and “Indian” and ultimately replaced the civil statuses of free, slave, and “Indians not taxed.”

⁹ U.S. CONST. art. I, § 2, para. 3.

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

B. Demographic History

Today, the principle of representative democracy is a generally accepted one, and nations around the world take periodic censuses. A census seems a fairly obvious tool to use to apportion political power among a set of constituencies. Yet the United States was the first nation in the world to institute a regular population count to apportion political power. The principles that political power was a function of population and that population could be measured were truly innovative in the eighteenth century and only proved to be lasting as they were implemented in the nineteenth and twentieth centuries.

Moreover, the census might well have been a rather minor constitutional innovation were it not for the extraordinary demographic character of the American population.¹³ The United States has had one of the most heterogeneous and demographically dynamic populations in the history of the world. In the past three centuries, the colonies and the United States have seen rapid population growth, major migrations, and sharp demographic transitions—all in the context of a racially and ethnically heterogeneous population. In 1700, about 250,000 people lived in the colonies. By the time of the Revolution the population was over two million. The first census counted 3.9 million people. The current population is roughly 310 million. The current land area of the country is four times the size of the nation in 1790; the population is almost eighty times larger. In 1850, the country was 85 percent rural; now it is 80 percent urban. From 1700 to the Civil War, the American population grew at the rate of 30-35 percent per decade. From 1860-1910 it grew about 24 percent per decade; since then it has grown about 10-13 percent per decade. The median age of the population has increased greatly. In the early nineteenth century, it was around sixteen, reflecting the high birth rates and shorter expectation of life of the times. Now it is around thirty-seven. In the early nineteenth century, a child could expect to live about to the age of forty; now, a child will live for about seventy-eight years.

The United States' population was and remains racially and ethnically diverse. At the first census about a fifth of the population were African or African-American and primarily slaves. The larger majority was free and "white"—primarily from the British Isles. Although slavery ended during the tumultuous Civil War of the mid-nineteenth century, racial distinctions continue to be major social

¹³ MARGO J. ANDERSON & STEPHEN E. FIENBERG, WHO COUNTS? THE POLITICS OF CENSUS—TAKING IN CONTEMPORARY AMERICA 14–17 (2001) [hereinafter ANDERSON & FIENBERG, WHO COUNTS?].

markers in American society. Currently about 12 percent of the population is black; 16 percent is Hispanic/Latino. The non-Hispanic white population is slated to decline to 45 percent by 2050.¹⁴

Between 1820 and 1980, fifty million immigrants came to the United States in search of jobs and a new life. During the years of the major European migrations of the late nineteenth and early twentieth century, 13-15 percent of the population was foreign born. This proportion fell to 5 percent by 1970, and with the surge in immigration in the past generation has risen again to 12 percent foreign-born. Finally, the American population was and is regionally heterogeneous. For example, currently 80 percent of the population is urban. However, in eighteen states over 80 percent of the population is urban; in another four states the population is over 50 percent rural. Seven states (all in the South) are more than one-fifth black; in nineteen states, the black population is less than 5 percent.

These dramatic patterns make the decennial census and its apportionments major social, political, and intellectual events. Americans are accustomed to major demographic changes each decade and look to the census for their evidence. Census-based apportionments are supposed to take some very difficult questions about the distribution of political power and economic resources off the immediate legislative agenda and consign them to predetermined allocations. Yet, because so much is at stake, the census and the decennial process of reapportionment and redistricting is subject to massive political maneuvering to maintain or advance political power within the context of the constitutional framework. The census numbers themselves are subject to incredible scrutiny and analysis, as each decade Congress, state legislatures, and other governmental bodies redistribute legislative seats, tax revenue, and grants-in-aid on the basis of the population-based apportionment formulas. By definition for every gainer in the reapportionment game, there must be a loser and thus the process, though necessary, is politically delicate and painful to the losers. Americans have not always agreed on whether the demographic changes in the population are good or bad, implying “progress” and “manifest destiny” or “degradation” and “race suicide.” Accordingly, the development of the census itself as a more elaborate and more scientific count each decade and the development of the art and science of redistricting are intimately bound up with the political and social history of the nation.

¹⁴ This material draws largely from *ENCYCLOPEDIA OF THE U.S. CENSUS: FROM THE CONSTITUTION TO THE AMERICAN COMMUNITY SURVEY (ACS)* (Margo J. Anderson, Constance F. Citro & Joseph J. Salvo eds., Sage CQ Press 2d ed. 2012).

C. Implementing the Constitutional Provisions

I have written extensively elsewhere about the history of the implementation of the Census Clause and reapportionment and redistricting process.¹⁵ For our purposes today, suffice it to say that the Framers recognized very early that the constitutional language was only a starting point for clarifying how to make the decennial process function. A few examples should suffice to illustrate the point.

The constitutional language did not prescribe how Congress was actually supposed to calculate the apportionment “according to their respective numbers.”¹⁶ Congress recognized by 1792 that there were many possible legitimate formulas for the calculation and that different formulas produced different political outcomes. That fact led Washington to use the presidential veto for the first time to settle the dispute after the 1790 census.

State government officials recognized that they could construct legislative districts for their party’s political advantage by the 1810 Census, and the term “gerrymander” was coined by the *Boston Gazette* to name this new political innovation.

As new states were admitted to the union, the rapid population growth and westward expansion of the population in the nineteenth century prompted Congress to increase the size of the House of Representatives. As the House size expanded, the states formed from the original thirteen colonies lost the capacity to control the House of Representatives or the votes in the Electoral College. Most importantly, the greater differential population growth in the North threatened the future of the slave economy of the Southern states. As one commentator put it, “the laws of population are themselves abolitionists.”¹⁷ That the Southern states seceded from the union weeks after the 1860 census results and the allocations for the next congressional reapportionment were published is not an accident.

After the Civil War, urbanization and industrialization, particularly in northern and midwestern states, shifted political power to the cities, home to what rural Protestant Americans saw as the nation’s concentration of immigrants, social disorder, Catholics, and corrupt urban political bosses. These “people,” rural Americans claimed, should not be represented in Congress or permitted to become citizens and vote. When the results of the 1920 Census were published,

¹⁵ See, e.g., ANDERSON, *AMERICAN CENSUS*, *supra* note 6; ANDERSON & FIENBERG, *WHO COUNTS?*, *supra* note 13.

¹⁶ U.S. CONST. art I, § 2, para. 3.

¹⁷ ANDERSON, *AMERICAN CENSUS*, *supra* note 6, at 57.

Congress found, for the only time in the history of the republic, that it could not muster a majority to pass a reapportionment bill.

In other words, population counting, reapportionment, and redistricting have never been simple, automatic, non-political processes. Rather they have always been intimately tied up with the larger political and social controversies of the day and have sometimes served to resolve, and sometimes served to exacerbate, those controversies.

D. The Corrupt Bargain of the 1920s

For our purposes, the roots of the *Baker v. Carr* decision and the Reapportionment Revolution of the past half century lie in the apportionment controversies of the 1920s.¹⁸ Congress faced several dilemmas at the time, which raised again the ambiguities in the original constitutional apportionment mandate. First, Congress decided in 1910 to stop the growth in the size of the House. Thus, the 1920 reapportionment would have to be a true zero-sum game; one state's gain would be another state's loss. Second, several mathematicians produced competing apportionment methodologies, which had the effect of producing different allocations for key states. Third, the demographic trends evident in the 1920 Census results were not to the liking of the Republican majority in Congress. The census results showed major shifts in population to the cities, to the far west, to places in the country populated by immigrants. The census, critics held, had to be wrong. So leaders proposed and failed to pass bill after bill until, by the late 1920s, key Congressional leaders proposed an automatic mechanism to go into place after the 1930 Census. This bill passed in June 1929. To secure passage, Congress removed the mandate—in every apportionment bill since 1840—that required Congressional districts to be compact and contiguous and equally sized as nearly as possible within states. Congress, in other words, reapportioned power among the states, but quietly acquiesced to rural malapportionment within states. States with growing urban populations would gain seats, but those seats would not necessarily be allocated to urban districts.

The Census Bureau reported the 1930 Census results in December. The numbers were indeed stark. Twenty-one states would lose twenty-seven seats in the House; eleven other states would gain them. California's delegation grew from eleven to twenty; Michigan's from thirteen to seventeen. Texas gained three seats; New York, New

¹⁸ ANDERSON, AMERICAN CENSUS, *supra* note 6, at 149–58.

Jersey and Ohio, two each. After twenty years, Congress was reapportioned.

But the last word was not quite in. In 1932, Stewart Broom of Mississippi sued the state for violating the usual districting requirements of equality of size, and contiguity and compactness of territory in its redistricting after the 1930 Census. Broom claimed that the state had not followed the Congressional guidelines in laying out the new districts. The Court searched the legislative history of the reapportionment law and concluded that “[i]t was manifestly the intention of the Congress not to reenact the provision as to compactness, contiguity, and equality in population with respect to the districts to be created pursuant to the reapportionment under the Act of 1929.”¹⁹ It was, in short, perfectly legal to create gerrymandered and malapportioned Congressional districts.

By the early 1930s, former U.S. Census official Walter Willcox pointed out, the size of New York's Congressional districts varied by a factor of 7.8. The largest district contained 799,407 people; the smallest 90,671. Congress had found a conservative backward-looking solution to the “problem” of the rise of new constituencies of the urban industrial society. They changed the rules of the apportionment game to preserve rural and small-town dominance of legislative halls for another generation. “These actions eventually precipitated another reapportionment crisis, the ‘reapportionment revolution’ of the 1960s.”²⁰ Between the late 1920s and the 1960s, despite increasingly obvious malapportionment of Congress and state legislatures, reapportionment was not a burning political issue. Several factors drove it from the public agenda. First, and most obviously, the onset of the Great Depression in 1929–1930 raised a new and frightening set of questions about the viability of the modern American economy which pushed many of the pressing issues of the 1920s off the legislative agenda. Immigration restriction seemed unnecessary if a depressed economy no longer attracted migrants. Prohibition appeared to be a foolish crusade. Government policy makers, like the population generally, struggled to cope with mass unemployment and the collapse of the locally based social welfare system, a farm crisis, and the collapse of the most prosperous sectors of industry. In the face of the Depression, malapportioned legislatures were simply not important.

Second, numerical apportionment mechanisms are supposed to depoliticize the periodic allocation and transfer of power and

¹⁹ Wood v. Broom, 287 U.S. 1, 7 (1932).

²⁰ ANDERSON, AMERICAN CENSUS, *supra* note 6, at 157.

resources among the elements of the population—in this case among the states. They are designed to take these questions off the current policy agenda and consign them to “automatic” allocations. This is not to say that such apportionment mechanisms are “fair” or politically “neutral.” It is to reiterate the conclusions that the Framers drew from their experience in developing original constitutional provisions, particularly the Three-Fifths Compromise: an imperfect but workable apportionment rule is better than no rule at all.

II. THE REAPPORTIONMENT REVOLUTION AND THE CENSUS

My second task is to examine what happened when federal and state officials in charge of reapportionment and redistricting, and officials in the Census Bureau, confronted the data demands of the reapportionment decisions.

In 1962, the Supreme Court ruled that malapportioned state legislatures were unconstitutional and opened the way for the decade of lawsuits that led to the “Reapportionment Revolution” of the sixties. For forty years the federal courts, and particularly the Supreme Court, had refused to rule on apportionment cases. The courts had argued that legislative apportionment was strictly a legislative matter. In 1962, the Supreme Court changed its position and ruled, in *Baker v. Carr*, that the Tennessee legislature had to be reapportioned. A series of cases followed which overthrew apportionments in other legislatures and in Congress. By 1964 the phrase “one person, one vote”²¹ had entered the nation’s political vocabulary to define the new principle of legislative apportionment.

Relatedly, the Voting Rights Act of 1965²² enforced the mandate in the Fifteenth Amendment to the Constitution requiring that the “right . . . to vote shall not be denied or abridged by the United States or by any State on account of race, color, or previous condition of servitude.”²³ Congress created clear numerical tests of compliance with the constitutional goals of voting rights. As written in the original 1965 provision, for example, if a state used a literacy test for voter registration, and if voter registration or turnout was less than fifty percent of the voting age population of a jurisdiction, then the law presumed a violation of the Fifteenth Amendment. In such a case, the literacy tests were suspended, and the Justice Department could send federal registrars and election observers to monitor elections.

²¹ *Cf. Gray*, 372 U.S. at 381 (“The conception of political equality . . . can mean only one thing—one person, one vote.”).

²² 42 U.S.C. §§ 1973–1973aa–6 (2006).

²³ U.S. CONST. amend. XV, § 1.

Such jurisdictions also had to “preclear” any new voting qualifications with the Attorney General of the United States. At the time, six southern states came under these rules; counties in several other states were also affected.

The Court’s decisions and the language of the Voting Rights left much of the implementation of the electoral changes to be worked out in practice. There were myriad issues to be resolved from the sweeping mandates of the 1960s. And one of those issues was a new requirement for good quality census data.

A. The Census in the Limelight

It is fairly clear that in the 1960s, neither Congress nor the courts had spent much time considering the data issues of implementation of the reapportionment decisions. At the time, census data seemed to be as reliable as an old shoe, simply there for use, an uncontroversial and ordinary resource for all parties to use. In fact, however, census data are themselves the products of enormous administrative, scientific, and political decision making. Neither the leadership in the Census Bureau, nor their existing data tabulation programs, were prepared to address the data requirements of the reapportionment revolution. They were unprepared precisely because for the previous forty years, malapportionment of legislative districts was seen as normal, and thus the Bureau put very little effort into producing and delivering data for political use. Instead, the agency had addressed data production for other pressing social and economic issues, and was proud of its accomplishments.

From the 1930s through the early 1960s, the Census Bureau pioneered in the development of new methods and new data to measure the capacities of a modern industrial economy.²⁴ In so doing, the agency recruited a cadre of professional statisticians who became increasingly important in the federal statistical system. For much of the period, monitoring, analyzing and providing data to address the dislocations of the Great Depression was the major challenge. The 1930 census was taken less than six months after the stock market crash. As the Depression tightened its grip on the nation, the Census Bureau found itself drawn into a contentious debate about the scope and character of unemployment, and thus the causes of the economy’s slide. The Bureau leadership was sympathetic with then President Herbert Hoover’s stance toward unemployment, and thus the Bureau figures from the 1930 Census and a special 1931 Census of

²⁴ ANDERSON, *AMERICAN CENSUS*, *supra* note 6, at 159–90.

unemployment put the best face on what clearly was a dramatic rise in unemployment nationally. Democratic claims that the Depression was deepening were overstated, Census officials claimed. Unemployment always existed, especially during the winter and early spring months when the census was historically taken. As it turned out, Herbert Hoover's evaluation of the depth of the Depression and the appropriate way to cope with it was soundly rejected by the voters in 1932. In the spring of 1933, Franklin Roosevelt's New Dealers came to town intent on remaking American government and society and ending the Depression. The Census Bureau came in for particular scrutiny, as one of Hoover's favorite agencies, and—with the exception of the Wilson years—as a longtime Republican stronghold.²⁵

Revitalizing the Census Bureau in the mid-1930s was no easy task. Throughout the 1930s, committees of statisticians, economists, and other academics—most notably the Committee on Government Statistics and Information Services (COGSIS)—investigated Bureau practices and found them wanting. Officials from Roosevelt's alphabet agencies called upon the Bureau to provide data on the socioeconomic situation of the population. Congress built the grant-in-aid system to allocate tax money from the federal to state and local governments, and they sought population data on poverty, income distributions, migration. Yet the Census Bureau of the early 1930s had yet to devise a credible measure of unemployment, had no data on income and did not measure poverty. The New Dealers persevered, and by the end of the decade, proposed the introduction of sample surveys to measure unemployment, reorganized the agency's bureaucratic structure, increased the statistical training of employees, built a research unit and analyzed and revamped classification systems. Many of these innovations became part of the 1940 Census. The Sixteenth Census of 1940 included a probability sample for the first time, a housing census and evaluation studies to measure systematically the level of accuracy of the enumeration, the tabulation and coding procedures, coding bias, and sampling error.

²⁵ For example, an examination of the leadership of the agency reveals the political dynamics. In 1933, Director William Mott Steuart resigned and was replaced by William Lane Austin. Assistant Director Joseph Hill, then in his seventies, who had first worked on the census in 1900, was transferred to a newly created "research" position. American Statistical Association President Stuart A. Rice replaced Hill as Assistant Director. Rice, then a sociology professor at the University of Pennsylvania, intended to stay in government for a year or so. "He ultimately remained as a major figure in the federal statistical system until 1954—at the Census Bureau, then on the Central Statistical Board and finally in the Division of Statistical Standards in the Bureau of the Budget (now Office of Management and Budget)." ANDERSON & FIENBERG, WHO COUNTS?, *supra* note 13, at 28.

During the World War II years, the research work measuring unemployment produced the ongoing Current Population Survey. Computerization and data automation followed with UNIVAC and FOSDIC in the 1950s and 1960s. Between 1960 and 1970, the Bureau began the mail census, replacing the time-honored method of using in-person enumerators for the decennial count. In conjunction with local jurisdictions, mostly large cities, the Bureau instituted programs in producing “small area data,” initially census tracts and, in some areas, using “blocks” or the new “zip code” as tabulation areas.

B. Data Needs for Redistricting

Nevertheless, the apportionment decisions presented challenges that the innovations of the previous forty years did not address. The first problem was geographic. Many states had simply stopped redistricting altogether, or used existing civil divisions as geographic building blocks, regardless of population size and change. Meanwhile, the Census Bureau advanced its geography program primarily to serve the administration of the census. From the Bureau’s perspective, definitions were required for two different types of geography, what came to be called enumeration or collection geography and tabulation geography. Enumeration geography was defined to facilitate the census count. Enumeration districts were districts where an enumerator could walk from house to house and were roughly defined to be of sufficiently equal size to facilitate the enumeration. Until the 1980s, the Census Bureau also recreated the entire geographic mapping process each decade, using prior geography as a guide.

Tabulation geography is quite a different system. This is the spatial definition of reporting places, e.g., the regions, states, counties, town, cities, minor civil divisions and so on, for which the Census Bureau tabulates the results of the census. Some, such as state boundaries, are fairly fixed. But most tabulation geography can change, as local jurisdictions annex, consolidate, split, or generally refigure their jurisdictions. During the data tabulation process after the census information is collected, person and household information collected by enumeration geography is aggregated up or transferred to the tabulation geography codes for data publication.²⁶

²⁶ U.S. DEP’T OF COMMERCE, U.S. BUREAU OF THE CENSUS, PHC80-R-2A, 1980, CENSUS OF POPULATION AND HOUSING, HISTORY, PART A, 3-1-3-39 (1986), *available at* http://www2.census.gov/prod2/decennial/documents/1980/1980censusofpop802unse_bw.pdf; U.S. DEP’T OF COMMERCE, U.S. BUREAU OF THE CENSUS, CPH-R-2C, 1990 CENSUS OF POPULATION AND HOUSING, HISTORY, PART C, 3-17 (1995).

Thus as the Census Bureau and the state and local government officials charged with redistricting confronted the data issues presented by the new mandates for one person, one vote, they found themselves scrambling for solutions. During the planning phase for the 1970 Census, the issues came into sharp focus. First, officials discovered that comprehensive liaison arrangements between states, local jurisdictions, and the Census Bureau that might address the data issues presented by the new mandates for one person, one vote, did not exist. Whose responsibility was it to set standards for fifty different states? Who provided training in data use? How did one ask for more or different data? Who paid for it?

Second, what data did the Census Bureau have at hand that could be used immediately for the redistricting required after the 1970 Census? The redistricters very quickly began to define what they wanted from the Census Bureau, and four criteria for “good data” emerged. First, the data would have to be reported at very low levels of geography to serve as building blocks for legislative districts. Second, such data should be accessible and easy for the redistricters to use. Third, it needed to be timely, e.g., available in the year after the census so the redistricters could meet the deadlines for the next Congressional election cycle. And fourth, it needed to be disaggregated by race for Voting Rights Act enforcement.

It quickly became clear that the Census Bureau did not have an existing data tabulation program that would serve these purposes for the nation as a whole. For some states and jurisdictions, tract or block level data tabulations existed, developed over the previous half century in conjunction with cities and states for urbanized and metropolitan areas. But though these programs covered roughly 60 percent of the nation’s population, they covered only 2 percent of the national geography and could not rapidly be expanded to the remaining states and jurisdictions.

The Census Bureau’s solution to the immediate problem after the 1970 Census was to provide redistricters with the “Master Enumeration District List (MEDList) and census maps,” in other words, with data aggregated by enumeration or collection geography, not tabulation geography. These lists and maps contained population and housing counts with comprehensive coverage of the geography of the state for all jurisdictions, as well as census tract and blocks where applicable. But as the Census Bureau acknowledged, “Many States experienced problems in using the MEDList and maps in relation to their election or legislative areas because the boundaries of the census

entities often did not coincide with the State or local voting district boundaries.”²⁷

C. PL94-171

Between 1972 and 1975, therefore, Congress, the Census Bureau, and state and local officials began a dialog about what to do after the 1980 Census. The Reapportionment Task Force of the National Conference of State Legislatures (NCSL) and the Census Bureau began working on data improvements. NCSL conducted surveys. Congress and local government organizations held public hearings and began to draft legislation to amend Title XIII²⁸ to address the new mandates. By 1974, solutions began to emerge in legislative language. The House passed bills in 1973 and 1974. The Census Bureau expressed concern about elements of the language, particularly that the proposed eight month time frame for reporting the data was too stringent. In late 1975, Congress passed HR1753, which was signed into law in December as PL94-171. The law authorized a process for states to cooperate with the Census Bureau in defining the geographic areas for which they would receive small area population counts for redistricting. The law set a deadline of one year after the census date, that is, April 1 of the year after the census, for the Bureau to provide the tabulations to the states. The law itself did not specify a particular level of geographic detail, but stakeholders clearly preferred the smallest possible tabulation area, such as the block, because larger geographies were harder to map to existing local jurisdictions. It was generally possible to aggregate blocks up to wards, for example, but it was not easy to figure out how to split population in an enumeration district that crossed two or more wards. At the time, block-level geography was defined for about 2.5 million

²⁷ U.S. DEP'T OF COMMERCE, U.S. BUREAU OF THE CENSUS, GEOGRAPHIC AREAS REFERENCE MANUAL 14-3 (1994), available at <http://www.census.gov/geo/www/GARM/GARMcont.pdf>; see generally *Tabulation of Population for Purposes of Apportionment of State Legislative Bodies: Hearing on H.R. 1753 Before the Subcomm. on Census and Population*, 94th Cong. 1 (1975) (noting that states have faced a number of problems in attempting to work with the data presently available from the Bureau; for example, the enumerated districts are too large to be effectively used by officials in their legislative redistricting and there are difficulties in defining boundaries of enumerated districts); *Tabulation of Population for Purposes of Apportionment of State Legislative Bodies: Hearing on H.R. 9290 Before the Subcomm. on Census and Statistics*, 93d Cong. 1-2 (1973) (noting that states have difficulty in using the Bureau's census figures in states' apportionment of legislative bodies); U. S. DEP'T OF COMMERCE, U.S. CENSUS BUREAU, DESIGNING P.L. 94-171 REDISTRICTING DATA FOR THE YEAR 2010 CENSUS 5-8 (2004), available at <http://www.census.gov/rdo/pdf/DesignPL94-171.pdf> (discussing state and local official use of the 1970 census data).

²⁸ 13 U.S.C. §§ 1-79 (2006).

entities in urban and metropolitan areas, covering approximately 60 percent of the population but only 2 percent of the country's land area. The new law would raise the question about how and whether to map the remaining land area and population into small area entities.

The goals of PL94-171 were partially achieved for the 1980 Census round. All or part of twenty-three states worked with the Census Bureau to customize their data requirements for voting or election district data. The states received block level data where available and enumeration district data where finer tabulations were not designated. Given the technological capacities of the time, the data and maps were delivered on paper, computer tape, and microfiche. The variables available on the 1980 file for each geographic unit were total population broken into five race groupings and Hispanic/Latino.²⁹

After the 1980 Census round, the Bureau and the stakeholders from states and local governments committed to improving the program for the next census. The Bureau also committed during the 1980s to building the TIGER/MAF system, a national digitized map linked to all addresses in the nation. Computerized geographic information system technologies were also developed during the 1980s, making it possible to move the data distribution process from paper and microfiche to electronic media. These new technologies in conjunction with continued cooperation with state and local governments on small area and block-level mapping, permitted the 1990 Census PL94-171 data to provide comprehensive small area data for redistricting in the entire nation.

At the 1990 Census, the Bureau expanded the variables to be published in the PL94-171 files to include a breakdown of the population of an area by total and voting age population, e.g., eighteen and over, and it produced block-level data for the entire nation, some seven million blocks. With the expansion of the program in 1990 and the new GIS technology, which permitted digital mapping of these data, not only did the data facilitate ever more elaborate mapmaking for legislative districts, it also facilitated the visualization of detailed race and ethnic distributions for every place in the nation. Newspaper accounts of changes in the white, black, etc. population for a local area, which up to 1980 had to be hand drawn by a cartographer, usually using census tract data (where it existed), were suddenly possible with block level distinctions for the nation as a

²⁹ U.S. DEP'T OF COMMERCE, U.S. BUREAU OF THE CENSUS, PHC80-R-2D, 1980 CENSUS OF POPULATION AND HOUSING, HISTORY, PART D, 8-29 (1989), *available at* http://www2.census.gov/prod2/decennial/documents/1980/1980censusofpopu802uns_bw.pdf.

whole and began to appear in every local newspaper, book or magazine with access to reasonably powerful desktop software.³⁰

The average population of a census block is about thirty-five people. The next larger census reporting unit, the block group, has an average population size of around 1200. There are over 200,000 such units in the nation. To put the matter another way, the average block group contains thirty-five blocks, and thirty-five times more people than a block. If one divides the block population by race, voting age, and ethnicity, empty or extremely small data cells predominate. In 2000 and 2010, the reporting detail in the PL94-171 files expanded once again, as the racial classifications expanded to include results for people who checked more than one race, creating dozens more data cells per block.

As long as the tabulation blocks in the PL 94-171 files were seen as simple building blocks, namely units to be aggregated up for redistricting, the small size of the individual block might seem innocuous. But there was one parallel but unexpected result of the PL94-171 program, namely the status of the accuracy of the block level data, that is, whether the small count for an individual block was in some sense “true,” e.g., an accurate reflection of the population of the local area, both in size, and by age and race/ethnicity distribution. Were there really forty-seven white persons of voting age in a particular block? Did it matter if the number was fifty-three or twenty-nine? Or if the persons were “really” of a different race or ethnic group? Or if thirty-eight of the forty-seven “really” should have been counted in a different block, because the geocoding of the census results was flawed? That question emerged in the context of another population counting issue of the past half century, namely the accuracy of the census enumeration itself.

D. Census Undercount

During the 1930s and 1940s, as part of the general trend in statistical innovation at the Census Bureau, statisticians began their first systematic efforts to measure census accuracy.³¹ Ever since George Washington had complained in the 1790s, officials had been concerned about undercounting the population. And over the years many local officials had objected to their census counts. In response, officials had worked to improve the counting process to minimize errors, be they what came to be called undercounts, overcounts,

³⁰ U.S. DEP'T OF COMMERCE, U.S. BUREAU OF THE CENSUS, CPH-R-2C, 1990 CENSUS OF POPULATION AND HOUSING, HISTORY, PART C, 3-1-3-10 (1995).

³¹ ANDERSON & FIENBERG, WHO COUNTS?, *supra* note 13, at 3-53.

miscounts, padding, or curbstoning. The growth of other large scale administrative population data systems—vital records and public health data in particular—and the development of the disciplines of demography and statistics prompted a new set of questions. On one hand, these other data systems sometimes generated alternative estimates of the population or segments of it. On the other, demographers and statisticians needed census counts for the denominators for their rate calculations or as sampling frames for other studies. Accordingly, both the professional community of statisticians and demographers and census officials began to conceive of measuring census accuracy precisely for particular segments of the population.

The issue began to be framed precisely after a somewhat serendipitous natural experiment in 1940. The selective service registration of October 1940 allowed demographers to compare the April 1940 census counts of men of draft age (twenty-one to thirty-five) with the counts of men who registered for the draft. As Daniel O. Price reported in his article on the subject, nationally, the census under reported about 3 percent of the men in the age cohort since the draft registration recorded some 453,000 more men than the census did. More significantly, though, was the finding that the level of the undercount varied by region and race. Some 13 percent of the black men of draft age were missed in the census. Nationally, 229,000 more black men registered for the draft than would have been expected from the census estimate. Price also demonstrated that the black men registered for the draft in dramatically higher numbers in urban states than would have been expected from the April census counts. He could not, however, determine if such men had migrated to an urban area between the time of the census and the registration date, or whether the census did a poorer job of counting urban residents. Price concluded his article by discussing some of the implications of his findings, particularly that the standard indicators of vital rates, such as death rates, would have to be recalculated in light of these data.³²

Additional studies followed in later years. In 1955, Ansley Coale, as part of the general project of developing a definitive demographic analysis of the American population, published a “revision of census figures” by “age, sex, and color” for 1950. Coale’s elaborate iterative technique used age cohort data by race and sex from the 1930, 1940 and 1950 Censuses to estimate the size of each cohort for each year, adjusted by aging the population forward each decade and correcting for deaths and immigration. Coale estimated a net census undercount

³² ANDERSON & FIENBERG, WHO COUNTS?, *supra* note 13, at 29–30.

of about 2.5 percent. He also concluded that the census undercounted “nonwhites” dramatically—by 11 percent in 1950. Again, his “revisions” were in service of his larger demographic project so he ended his analysis by producing revised data by race, sex and age for use by demographers.³³

In the 1950s, the Census Bureau also began evaluation studies of undercounts as part of their larger evaluation program. One research thrust employed the methods “demographic analysis” as the techniques used by Coale and Price came to be called. Information from earlier censuses and other population data sources were compared with the aggregate population counts for particular cohorts of the population. A researcher might compare the data from cohorts organized by age, race, sex, region in two sources and calculate estimates of the differences for each cohort. The corrected cohorts were then reaggregated to generate an overall estimate of the accuracy of the count.

Demographic analysis as a technique has the advantage of being relatively easy to undertake. The researcher may have to make a very large number of individual cohort analyses. A matrix based upon, for example, two sex categories, fifteen five-year age cohorts, two racial groups (white/nonwhite), in two data systems generated 120 individual cohort estimates. Price’s selective service/1940 Census comparison generated ninety-eight cohort estimates of undercount, that is, for the two race categories, and the forty-eight states plus the District of Columbia. Nevertheless, once the appropriate data are available, the analysis is relatively straightforward.

The disadvantage of demographic analysis is its inability to pinpoint exactly why the undercount (or overcount) exists. As an aggregate methodology, it cannot identify which particular individuals were missed, nor can it provide more specific information on the sources of undercount beyond the information available from the original cohort variables.

To overcome these disadvantages, the Census Bureau developed new techniques, particularly the post enumeration survey (PES). After the 1950 Census, the Bureau undertook a sample re-enumeration of the country to try to identify households missed by the enumerators, household members who were not reported within households, as well as other classification and categorization errors in the original enumeration. The survey used trained interviewers to improve the quality of the information reported. The Bureau then matched the information from the sample survey to the original census forms and

³³ *Id.* at 30.

developed estimates of the quality of the original count. Analysis of the results again indicated an undercount and poorer coverage of the nonwhite population.

By the time of the 1960 Census, census officials and the community of professional demographers were well on their way to understanding census undercounts. They built evaluations procedures in the form of a post enumeration survey and demographic analysis into the 1960 Census design. Professional discussions continued quietly on the best means to estimate undercounts for particular groups in the population, as well as to develop new census methodologies to count better in the first place. These methodological discussions are evident in the Bureau technical reports, and in the general social science literature of the late 1950s and early 1960s.

What was still missing from the undercount discussion was any sense that there were any larger political or social implications of the undercount. From the 1940s through the mid-1960s, the literature was totally “methodological”—of interest to demographers, statisticians and survey researchers, but not to Congressmen, policymakers, or the undercounted communities. This situation changed dramatically in the mid-1960s.

The reapportionment decisions and the increasing use of federal funds allocations based on population formulas propelled the census undercount onto the political stage in the mid-1960s. In 1960, 15 percent of state and local funding came from federal aid. Once the Supreme Court had invalidated the massive legislative malapportionments of the past, the statisticians and politicians realized that the census undercount also could have the effect of denying representation to the uncounted. As with the new mandates for small area data for redistricting, the Census Bureau found itself facing new scrutiny and demands from state and local government officials not just to measure, but to eliminate census undercount.

E. Improving the Accuracy of the Census

For most of the 1970s and 1980s, at the same time that the Bureau was working to develop new technologies and data series to provide small area data for redistricting, it was also embroiled in a complex set of controversies about improving the accuracy of the count. Congress, statisticians, local officials, and minority representatives demanded that the Bureau count the population better. They also began to ask why the Bureau could measure the level of the undercount but could not correct for it in the published tabulations. The Bureau responded by explaining the limits of demographic

analysis, then the gold standard for undercount measurement. Critics were not convinced and pointed out that the bureau was quite adept at technical innovation. If it could pioneer in computer use and the TIGER/MAF system, why could it not figure out how to correct for census undercounts? When the prodding from congressional oversight committees and public pressure did not seem to be yielding results, local governments, particularly New York City, took the Commerce Department to court to force the constitutional issues. The Bureau successfully defended itself against fifty-four lawsuits after the 1980 Census.³⁴

In the 1980s, statisticians and the Bureau began to develop new methods to improve the count and to experiment with adjustment methods to correct for undercounts. The budget for the census grew dramatically. New advisory committees worked on the planning efforts. By the late 1980s, the Bureau developed what it hoped would be a statistically defensible method of adjusting the decennial census for the undercount. The new design included a large post enumeration survey with dual systems estimation to measure error in the census enumeration, and a post stratification method to carry down the corrected counts to the small geographic levels needed for redistricting. In other words, as with the innovations spawned from the passage of PL94-171, it looked at the time that the new requirements for accurate small area data prompted by the reapportionment decisions would also prompt the use of new methods to measure accuracy in the count and correct for identifiable error.

It did not turn out that way. Undercount and error correction seemed to all sides of the political spectrum to contain a partisan bias, namely it would benefit areas that voted Democratic. Thus, the new methods came under tremendous scrutiny, and that scrutiny quickly took on a partisan cast. The Commerce Department of the Reagan and George H. W. Bush administrations tried to cancel the new program to measure and correct for undercount. In response, the City of New York again sued, and the courts mandated that the new methods be implemented in 1990. The post-enumeration survey program went forward, but the decision whether to use the adjusted counts was postponed until after the census. In 1991, the census director recommended adjustment but the commerce secretary decided not to adjust the 1990 Census results. Further litigation upheld the secretary's decision as within the scope of the Administrative Procedures Act.³⁵

³⁴ *Id.* at 35–53.

³⁵ *See Wisconsin v. City of New York*, 517 U.S. 1, 4 (1996) (holding “Secretary’s

The irony was that the court rulings ultimately depended on how one evaluated the capacity of the program to correct for error at the block level. Everyone conceded the small size the tabulation unit increased the uncertainty of any block level count or estimate. Were the unadjusted counts inviolable, as Republicans claimed, because the supporters of adjustment could not prove they were more accurate at the block level? Or should the adjusted block level tabulations be used, as Democrats claimed, since when aggregated for legislative districts they resulted in districts with less known bias deriving from the census error?³⁶

In the 1990s, Bill Clinton's administration took the latter tack, proposing a census design that included adjustment of the 2000 Census, including the apportionment counts. Republican members of Congress sued to stop the Clinton plan. In *Department of Commerce v. United States House of Representatives*,³⁷ the Supreme Court ruled that the current census statute prevented the use of sampling methods for reapportioning congressional seats after the 2000 census. The Census Bureau changed the design for the 2000 count so that the remaining census results, including the redistricting data, could be adjusted if the results indicated that adjusted data were more accurate. In 2001, the Census Bureau decided against adjustment, and the George W. Bush administration did not revive further efforts to adjust census results for undercount or to plan for such an eventuality in the 2010 census.³⁸

III. CURRENT STATUS OF CENSUS QUALITY

The statistical innovations of the post enumeration survey with dual systems estimation were not implemented to adjust the census for error. In 2000 innovations in the traditional census methodology, notably better outreach and advertising and a sharply increased budget, narrowed the level of the national undercount. These were repeated in 2010. Evaluations of the accuracy of the 2010 count will be published in 2012.

The latest evidence available of census accuracy is from the 2000 count. The National Academy of Sciences (NAS) panel charged with

decision . . . conformed to applicable constitutional and statutory provisions”).

³⁶ ANDERSON & FIENBERG, WHO COUNTS?, *supra* note 13, at 77–99.

³⁷ 525 U.S. 316 (1999).

³⁸ ANDERSON & FIENBERG, WHO COUNTS?, *supra* note 13, at 291–304. For an example of efforts to adjust census results for undercounting for the 2000 Census, see Dep't of Commerce v. U.S. House of Representatives, 525 U.S. 316, 320 (1999), describing the Census Bureau's “plan to use two forms of statistical sampling” to capture undercounting.

reviewing the 2000 census concluded that “net undercount rates were . . . reduced in 2000” compared to 1990 and the differentials between groups were also reduced.³⁹ But they cautioned, “the 2000 census *overcounted* the total population” by 1.3 million people and “differences in net undercount rates between such groups as minorities and others and owners and renters remain.” And they noted, “[c]ensus counts at the block level—whether adjusted or unadjusted—are subject to high levels of error and hence should be used only when aggregated to larger geographic areas.”⁴⁰ The NAS panel also recommended amending PL94-171:

The experience with the 2000 Accuracy and Coverage Evaluation Program and the evaluation of census processes and data content make clear that useful evaluation requires considerable time. In particular, it appears difficult to complete sufficiently comprehensive assessments of population coverage and the quality of basic characteristics by the currently mandated schedule for releasing block-level census data for use in redistricting (which is 12 months after Census Day).⁴¹

And they continued; “Congress should consider moving the deadline to provide block-level census data for legislative redistricting to allow more time for evaluation of the completeness of population coverage and quality of the basic demographic items before they are released.”⁴² The recommendation has yet to find supporters in Congress.

In short, states will complete the 2010 decennial redistricting round before the Census Bureau reports the level of bias and inaccuracy in the 2010 results. It remains to be seen if that fact will lead to further litigation or legislation.⁴³

³⁹ NATIONAL RESEARCH COUNCIL, *THE 2000 CENSUS: COUNTING UNDER ADVERSITY* 248 (Constance F. Citro, Daniel L. Cork & Janet L. Norwood eds., 2004).

⁴⁰ *Id.* at 30.

⁴¹ *Id.*

⁴² *Id.* at 267.

⁴³ On May 22, 2012, the Census Bureau reported the results of the post enumeration survey to evaluate the accuracy of the 2010 census. U.S. DEP'T OF COMMERCE, U.S. CENSUS BUREAU, NEWSROOM, *Census Bureau Releases Estimates of Undercount and Overcount in the 2010 Census* (May 22, 2012) http://www.census.gov/newsroom/releases/archives/2010_census/cb12-95.html; U.S. DEP'T OF COMMERCE, U.S. CENSUS BUREAU, PRESS KITS, CENSUS COVERAGE MEASUREMENT (May 22, 2012) <http://2010.census.gov/news/press-kits/ccm/ccm.html>. The Bureau reported a net national overcount of .01 percent. This result was not statistically significantly different from the results in 2000. The Bureau estimated 16 million omissions in the household population, which were balanced by a roughly equal number of “erroneous enumerations,” mostly duplicate enumerations. Thus a more rigorous measure of accuracy called “gross error” (which adds the erroneous enumerations and the omissions) comes

to over 10 percent of the household population of 300.7 million, though as of this date, significant differential coverage does not appear to affect the uses of the data, including for redistricting.