ABSTRACT

TRENT, RACHEL ELIZABETH. Seeing the Nation by Numbers: The 1874 Statistical Atlas and the Evolution of a Demographic Imagination. (Under the direction of Dr. Craig Friend.)

At the turn of the twentieth century, ethnic groups within the United States competed over the authoritative production of demographics statistics. According to the epistemological culture of the time, no group of people could be understood (let alone improved upon) without first being counted and scientifically studied through the collection of social statistics. W. E. B. DuBois, Jane Addams, and other social activists helped to professionalize the idea that social knowledge rested upon statistical study through the new disciplines of social work and sociology.

Such a belief would have been incomprehensible to the vast majority of Americans just a century earlier. To most Americans of the early nineteenth century, not only was human quantification inappropriate, it was considered impossible. Social knowledge was inherently experiential, and the aggregation of demographic numbers failed to convey any social meaning to American audiences. Despite the best efforts of a small community of statistical enthusiasts, the public considered social statistics to be dry and meaningless.

When these vacant numbers were translated into colorful graphic imagery, the familiar visual symbolism of maps and charts immediately imbued the once-lifeless numbers with rich social significance, and American audiences reacted with remarkable excitement. The first major publication to represent national demographics visually was Francis Amasa Walker’s 1874 Statistical Atlas of the United States, published alongside the national census. Reviewers of the atlas were stunned by the visual revelation of the images, which seemed to pull back a hidden veil and reveal the true message of social numbers. Audiences spoke of
the experience of truly “seeing” the American people for the first time, and the atlas was a phenomenal success. By translating demographics into familiar visual language, Walker introduced American audiences to the potential power of social statistics.

This essay helps to fill a gap in the history of demography and the science of visualizations. Although historians Theodore Porter, Patricia Cline Cohen, and Margo Anderson have written thorough histories of the United States census and the rise of an American statistical culture, they have given little attention to the special circumstances and meaning of statistics that are about people rather than inanimate things. The rise of statistics is closely linked to the governmental promotion of scientific authority and objectivity; yet social statistics were slow to gain widespread popularity. Americans persistently refused to recognize meaning within demographic publications, a transition made easier by the visualization of census population data. By placing the visualization of data within a specific historical context, this essay also counters widespread rhetoric in the emerging field of visualizations which seeks to dehistoricize visualizations and locate their meaningfulness in timeless cognitive truths.
Seeing the Nation by Numbers: The 1874 Statistical Atlas and the Evolution of a Demographic Imagination

by
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DEDICATION

To Mom, Dad, and Mary—the three most inspiring people in the world.
BIOGRAPHY

Rachel Trent grew up in University City, Missouri, a place just outside of St. Louis and still near and dear to her heart. She received a BA in History and Sociology with a Minor in Fine Arts from the University of Pennsylvania, after which she taught English to elementary and middle school students in Matsuyama, Japan and traveled northward to brave the winters of Massachusetts. She is concurrently pursuing her Master of Science in Information Science at the University of North Carolina, Chapel Hill.
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TABLE OF CONTENTS

LIST OF FIGURES.................................................................................................................. vi
INTRODUCTION...................................................................................................................... 1
CHAPTER 1 — “Piddling Arithmetical Bores” and Early Demographic Publications.............. 9
CHAPTER 2 — “Clothing the Dry Bones of Statistics in Flesh and Blood”......................... 32
CHAPTER 3 — Self-Study and the Competitive Power of Demographic Imagery............... 62
CONCLUSION....................................................................................................................... 82
BIBLIOGRAPHY.................................................................................................................... 85
LIST OF FIGURES

Figure 1.1. Adam Seybert, “A Statement: Showing the Aggregate Amount of Each Description within the United States of America and the Territories thereof, Agreeably to Actual Enumeration Made According to the Act of the 28th of February, 1800," Statistical Annals, Embracing Views of the Population, Commerce, Navigation, . . . of the United States of America (Philadelphia: Thomas Dobson & Son, 1818), 21 ..................................................10

Figure 1.2. William Mitchell Gillespie, “Diagram Showing the Ups and Downs, in Relative Rank as to the Population of the Several States of the American Union, for Sixty Years,” New York Daily Times, January 17, 1854..........................................................22

Figure 1.3. Edwin Hergesheimer, U.S. Coast Survey, Map of Virginia Showing the Distribution of Its Slave Population from the Census of 1860 (Washington: Henry S. Graham, June 1861) ..........................................................................................................................27

Figure 1.4. Edwin Hergesheimer, U.S. Coast Survey, Map Showing the Distribution of the Slave Population of the Southern States and the United States (Washington: Henry S. Graham, September 1861) ...............................................................................................................28

Figure 1.5. William Reynolds, Reynolds’s Political Map of the United States, Designed to Exhibit the Comparative Area of the Free and Slave States and the Territory Open to Slavery or Freedom by the Repeal of the Missouri Compromise (New York : Wm. C. Reynolds and J.C. Jones, circa 1856) ............................................................................................................30


Figure 2.3. Francis A. Walker, “Chart Showing the Principal Constituent Elements of the Population of Each State, as Foreign, Native, Colored, and Native White, and as Born within or without the State of Residence,” Statistical Atlas of the United States ([New York] J. Bien, lith., 1874). .................................................................................................................41

Figure 2.4. Francis A. Walker, “Chart Showing the Aggregate Number of Idiots and the Proportion of Males and Females, White or Colored, Native or Foreign, at the Ninth Census 1870, Also the Increase since 1860,” Statistical Atlas of the United States ([New York] J. Bien, lith., 1874). ..................................................................................................................42


Figure 2.7: Francis Amasa Walker, “Natives of New York” and “Natives of South Carolina,” “The First Century of the Republic: Growth and Distribution of Population,” *Harper’s Monthly* 51 (August 1875): 413.


Figure 2.9. “The Great Tribulation,” *Saturday Evening Post*, August 18, 1860.

Figure 2.10. “The Census,” *Harper’s Weekly*, June 14, 1890.

Figure 3.1: W. E. B. Du Bois and Atlanta University students, “A Series of Statistical Charts, Illustrating the Condition of the Descendants of Former African Slaves Now Resident in the United States of America,” *Negro Exhibit of the American Section at the Paris Exposition Universelle*, 1900.

Figure 3.2: W. E. B. Du Bois and Atlanta University students, “Negro Business Men in the United States” and “Occupations of Negroes and Whites in Georgia,” *Negro Exhibit of the American Section at the Paris Exposition Universelle*, 1900.


Figure 3.4. “Pittsburgh Typhoid Fever Death Rate per 100,000 by Wards from July 1st, 1906 to June 30th, 1907,” in “The Pittsburgh District Civic Frontage,” vol. 5 of Paul Kellogg, ed., *The Pittsburgh Survey* (New York: Survey Associates, Inc., 1914), 69.

Figure 3.5. “Nationalities Map No. 1 — Polk Street to Twelfth Street, Halsted Street to Jefferson, Chicago,” in Hull House, *Hull House Maps and Papers: A Presentation of Nationalities and Wages in a Congested District of Chicago* (New York: Thomas Y. Crowell & Co., 1895), unnumbered.
INTRODUCTION

“The science of statistics is the chief instrumentality through which the progress of civilization is now measured, and by which its development hereafter will be largely controlled.”

“The census report, is, in fact, an immense, barren waste of unintelligible figures, compiled at an enormous expense, useful to one man, perhaps, in a million; and only slightly useful to him.”

Everywhere modern Americans look, statistics are used to describe the national population: graduation rates, literacy rates, immigration rates, percent English-speaking, percent female, number dead. As audiences encounter these numbers, their brains nimbly convert the mathematical abstractions of rates, percentages, and ratios into meaningful facts about the American people. Numbers actually mean something to people when they consider social groups, a fact so fundamental to modern understandings of community and identity that it is difficult to imagine a time before data routinely helped to define Americanism.

Before the late nineteenth century, however, this was exactly the case: the broader public rarely showed interest in demographic statistics that went beyond the simple sum total of populations. Social data simply did not resonate with Americans’ sense of national or ethnic identity. Although a small community of statistical enthusiasts published numerous volumes of demographic and statistical tracts, publishers of popular periodicals gave such

quantitative publications little coverage, instead either mocking the statisticians’ efforts or lamenting the lack of public interest. When the mid-nineteenth-century public looked at a statistical table of population figures, they saw neither trends, patterns, relationships, nor people. Most importantly, they did not see themselves in these numbers. Instead, the nation’s general readership saw boring, abstract numerals, made meaningless not only by a lack of technical understanding but also by a fundamental belief that people could not and should not be quantified.

Until the last decades of the nineteenth century and the appearance of demographic illustrations, most Americans refused to engage with social statistics even as they came to accept statistical authority more broadly. It was widely felt that statistics dehumanized. Sterile, mechanical, and without soul, statistics struck their American audiences as inhuman. When these cold numerals were applied to people, the individual was lost, averaged out in a sea of tally marks and sum totals. Free will thus obscured by the statistical predictability of human actions, individualism faded into predictable demographic patterns. Birth rates, death rates, sex ratios, population pyramids, rates of population increase and decrease: in the eyes of American audiences, these dry numbers paled in comparison to the richness of everyday human experiences. No more than a string of Arabic numerals, they seemed to communicate little concrete meaning in relation to the world of emotional and social turmoil of life lived by the individual.

The country’s enduring aversion to social statistics was all the more remarkable because the nineteenth century has often been considered by historians to be the golden era
of statistical inquiry and the birth of a cult of statistical objectivity.\(^3\) Nineteenth century “statists” enthusiastically set themselves to the meticulous measurement of anything quantifiable: distances between towns, heights of mountains, widths of roads, depths of ponds, numbers of carriages and carriage wheels in cities, weights of mammals of particular breeds, heights of temperature in particular seasons. Huge collections of statistical trivia were amassed by these statists as they gained support from government agencies that increasingly looked to scientific inquiry to legitimate state decision-making processes. As historians Theodore Porter, Patricia Cline Cohen, and Margo Anderson have shown, in the late nineteenth and early twentieth centuries, government interventions in statistical production and promotion of scientific objectivity of numbers helped elevate the status of statistical data at large.\(^4\) Federal government agencies published increasing numbers of numerical reports to document their rationale behind the initiation and selection of public projects. Such agencies were so effective in promoting the legitimacy of scientifically-produced statistics that, as Theodore Porter put it, by the mid-nineteenth century government statisticians had revolutionized the “character of the information people need to possess before they feel they understand something.”\(^5\) The only legitimate form of reasoning for the state became that which was based on statistical evidence.


In the work of these historians, numbers about people—otherwise known as social statistics, demographics, or population data—are rarely distinguished in a meaningful way from numbers about things. The popular literature of the nineteenth century, however, demonstrates that the American public felt an acute apprehension toward the quantification of social groups—an apprehension they did feel toward counting the beasts and rocks of the earth. Mid-nineteenth-century journalists knew of the public’s negative attitudes toward social data. Many journalists mocked the quixotic efforts of statisticians who attempted to gather data on people, and those journalists who appreciated the data bemoaned the lack of public interest. “When placed in the aggregate,” wrote an 1857 New York Times reporter, an individual’s “identity being swallowed up, his interest becomes paralyzed.” The reporter continued, “The majority of persons would no more consent to wade through the census than they would undertake to decipher Egyptian hieroglyphics.” Just over a decade later, a fellow reporter complained that, “If I attempt now to show or illustrate certain great and invaluable facts by statements in the Times of half a dozen lines of figures, I shall probably lose half my readers for that article.”

Numbers, which seemed to impose order, uniformity and finiteness where none existed—and which were in addition profoundly boring and confusing to most nineteenth-century audiences—experienced a phenomenal transformation during the last decades of the nineteenth century. By the turn of the century, these once-lifeless numbers held a powerful position in the public imagination: they represented the necessary foundation for any

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understanding of a social group—be it the nation as a whole or one of its ethnic and racial groups. The professional and academic fields of sociology and social work emerged during this period, both founded on a belief that social reform could only succeed if it were based on scientific social study. In the early twentieth century, as reformers and civic theorists increasingly explained their social universe in terms of demographic trends, population data became a battleground for ethnic identity and autonomy.

Social statistics also served as the basis for one of the most enduring historical narratives in American historiography. When historian Frederick Jackson Turner announced his frontier thesis at the 1893 Chicago World’s Fair, he was expressing a narrative based not only on social quantification, but also on a particular visual representation of that quantification. According to Turner, the American population had for several centuries progressed westward through successive stages of population density: land that began with less than two people per square mile transformed into land with six people per square mile, then to eighteen, forty-five, and finally ninety. Turner’s frontier line was a visual concept based on demographic categories—categories that had been arbitrarily established by the United States Census two decades earlier and bordered by a “frontier line” that was prominently featured in the nation’s first statistical atlas of 1874. Without a demographic understanding, the idea of such a frontier line would have made very little sense to Turner’s audiences and to later generations of historians. The frontier line, a statistical abstraction, is the graphical (in the sense of a graph) division between one statistically averaged human group and another. A statistical state of mind and a demographic imagination were required
on the part of Turner and his audience to be able to relate the numerical idea of an advancing demographic border to the historical story that constituted the remainder of Turner’s thesis. According to Turner, the challenging process of pushing westward, breaching the frontier line, and claiming and subduing wilderness through the advancing statistical stages of population density had forged American identity and molded the nation into its current state.\textsuperscript{8}

Turner’s thesis was directly inspired by the elegant statistical maps published in the three national atlases that accompanied the Ninth through Eleventh Census. The frontier line was first drawn by Francis Amasa Walker, the author of the country’s first national atlas and Superintendent of the 1870 census, who called it both “the frontier line” and “the line of population.”\textsuperscript{9} Walker featured the line prominently on the visual maps he created as well as in the accompanying explanatory essay, clearly promoting it as a measure of national progress. The line appeared again in the 1880 census atlas, and in 1892 (one year before Turner’s speech at the Chicago World’s Fair), the Census Bureau declared the frontier line so fragmented and broken that “there can hardly be said to be a frontier line” and “it can not, therefore, any longer have a place in the census reports.”\textsuperscript{10}

The 1874 statistical atlas was the first of six statistical atlases published by the federal government in conjunction with the decennial census. It has been called a “landmark in information design” and “one of the most public acts of visual rhetoric in the nation’s


history.”¹¹ With its publication, for the first time in American history, quantifications of the entire national population were visualized in a medium designed to be appealing to a broad public audience. Put to paper in the language of lines, colors, shapes, and shadings, social data instantly became more appealing to American audiences, who reported that the images seemed to contain not only clearer information but more information than had ever been present in the lists and tables of earlier reports. Public reaction to the first atlas, recorded broadly in newspapers and popular magazines, demonstrates that the demographic images spoke to people in a profoundly new way. The visualizations—simultaneously quantitative and artful—drew on a vocabulary of visual experience, emotion, and human interaction that helped bridge the gap between scientific authority and social relevance. The story of the rise of social statistics cannot be told without these visualizations.

Historians have written extensively on statistics’ nineteenth-century ascent: improving popular education, technical and mathematical breakthroughs, and a growing governmental culture of scientific objectivity all helped to make statistics more credible and understandable. What has not been told is the story of how statistical visualizations—maps, graphs, charts, and other demographic diagrams—helped to humanize those raw numbers and meld a visual culture already familiar to the American people of the late nineteenth century with a new graphic language of bar graphs, density maps, pie charts, and social data. Likewise, the historical nature of visual communication has gone largely unrecognized in the recent explosion of visualization research outside of the field of history. Prominent

visualization theorists like Edward Tufte focus on the cognitive aspects of data visualizations in search of natural principles of design. Drawing on data illustrations from “17 countries and 7 centuries, and, for that matter, 3 planets and 1 star,” Tufte has attempted to prove that the “principles of information design are universal—like mathematics—and are not tied to unique features of a particular language or culture.”

This paper historicizes demographic visualizations, telling the story of the first time American peoples saw themselves statistically. Encountering social quantifications through the colorful medium of richly designed maps, charts, and graphs, audiences were struck most by those images that were most familiar: land maps onto which population had been added. Americans’ reactions to the maps (and, increasingly, the entire array of visualizations) were profound, and their expressions of surprise and delight help to demonstrate their degree of difference from modern statistical audiences. By documenting the process by which social statistics became meaningful, this paper is not an attempt to tell the story of how numbers dehumanized people, but of how people humanized numbers.

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CHAPTER 1 — “PIDDLING ARITHMETICAL BORES” AND EARLY DEMOGRAPHIC PUBLICATIONS

“He may not find his name [in the census report], but if he looks among the millions and finds an odd number, he may indulge the proud consciousness that he is that odd number; and the further satisfaction that if, by any accident, he had been omitted among those millions, the entire work would be wrong. Exquisite delight, to be essential to a work that costs $16! ”

If a person living in the United States in the mid-nineteenth century was interested in finding statistics about the country and its people, he certainly had several options to which to turn. Timothy Pitkin’s 1817 *Statistical View of the Commerce of the United States of America* and Adam Seybert’s 1818 *Statistical Annals, Embracing Views of the Population, Commerce, Navigation, . . . of the United States of America* were quite popular within the small community of statistical enthusiasts (figure 1.1). The two texts, over four hundred and eight hundred pages respectively, contained long numerical lists and copious statistical tables, but no pictures or visual aids to break the monotony of data. For more recent information, the inquiring statistical novice might try *Hazard’s United States Commercial and Statistical Register*, a six-volume periodical published regularly from 1839 to 1842 by Samuel Hazard. The volume required the reader to do a bit of digging to locate population

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Figure 1.1. Adam Seybert, “A Statement: Showing the Aggregate Amount of Each Description within the United States of America and the Territories thereof, Agreeably to Actual Enumeration Made According to the Act of the 28th of February, 1800,” Statistical Annals, Embracing Views of the Population, Commerce, Navigation, . . . of the United States of America (Philadelphia: Thomas Dobson & Son, 1818), 21
data beneath the dense economic data “devoted, entirely, to the interests of merchants.” Of course, an alternative to privately published volumes were the official census reports, published every ten years from Washington. Unfortunately, these reports were enormous and not usually printed for general sale. The 1850 report, released in 1853, was over fifteen hundred pages, and the bulk of its pages were consumed by a line-by-line population list of every municipality in the nation. The everyday reader looking for a general demographic description of the nation might have questioned the utility of such chaotic information.

There were also a few publications promoted as being accessible to a broader, non-commercial audience, but in reality they were little better. Foremost was Daniel Haskel and J. Calvin Smith’s Complete Descriptive and Statistical Gazetteer of the United States of America, which one could obtain for three dollars. Statistical reviewers claimed it to be the best of its time, but despite its positive reviews, the gazetteer was a weighty tome of 752 pages, containing an exhaustive “complete view” of the nation’s agriculture, commerce, manufacturing, and literary condition (with population figures accounting only for a small proportion of the work). Sifting through the numeric flotsam and jetsam, readers could find, for example, a list of every post office in the country, and the precise distance of each from Washington, D. C. Were a reader to flip to page 300, he would find the population for each seat of each county of Iowa, and on page 461 the basic facts of every American town alphabetically positioned between New Paltz, New York and Newport, Delaware (New Paris, Indiana, for example, was summarized by the following facts: the town had one church, four

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4 Samuel Hazard, Hazard’s United States Commercial and Statistical Register 1, no. 1 (February 13, 1839).
stores, two grist mills, four saw mills, sixty dwellings, and four hundred inhabitants). Characterized by an indiscriminate accumulation of numerical trivia, the gazetteer did not rely on clarity of presentation, organization, or purpose—nor did its authors seem at all inspired by such goals. Rather, the opposite: the authors of demographic and statistical publications of the early and mid-nineteenth century displayed a preoccupation with curating large data collections—bringing together interesting, rare, and only possibly useful statistical information into impressive agglomerations of mathematic facts.

It is no surprise that such publications were not known for their captivating presentation. Although the Haskell and Smith’s gazetteer contained endless pages of statistical tables and lists, like other publications of its day, the book lacked any visual aids to summarize its multitude of data. For three times the price of the gazetteer, readers could purchase the accompanying six-by-seven-foot geographic map of the nation’s political boundaries, rivers, streams, canals, railways, lakes, and mountains (drawn by the gazetteer’s second author, geographer J. Calvin Smith). Although the map may have sparked viewers’ interests in the geography of the country, it contained no information about population. It was a map of the nation’s land but not the nation’s people.

The authors of these dry numerical tomes belonged to a small community of American statistical hobbyists who founded organizations like the American Statistical Association (ASA) in 1839 and the American Social Science Association (ASSA) in 1865.

Occasionally, these men were also involved with the far more prestigious Statistical Society of London (renamed Royal Statistical Society in 1887), but more often they were not active participants in the international statistical community before the latter decades of the nineteenth century.\(^7\) Although many small and short-lived statistical societies cropped up around the nation during the nineteenth century, the earliest remained the most prominent: the ASA. Based in Boston, the society’s founding members were not professional statisticians (such a profession did not yet exist in the America) but were instead drawn from the ranks of the city’s lawyers, medical doctors, local historians, and antiquarians. Usually men of relatively high status who enjoyed a degree of leisure time, ASA members were often active leaders of the Massachusetts Historical and Genealogical Society and the American Antiquarian Society. Early projects of the association included the computation of the number of carriages in Massachusetts in 1756 and calculation of the expenses of Governor Winslow’s funeral in 1680.\(^8\) Although some members worked to focus the society’s energies toward the application of statistics to the social issues of the day, many more of the members were purely interested in the process of accumulating numbers. As historian Patricia Cline Cohen characterized them, “these were men who relished painstaking individual labors on narrow topics.”\(^9\) Numerical hoarders, these statistical enthusiasts diverted little attention to the art of communicating complex demographic data to a general public. Rather, their eyes

\(^7\) This was not always by choice, as many American statistical enthusiasts sought to catch up to what they saw as the superior statistical achievements of Europe. Patricia Cline Cohen, *A Calculating People: The Spread of Numeracy in Early America* (New York: Routledge, 1999), 178-182. On the American Social Science Association’s founding, see Craig Calhoun’s introduction to *Sociology in America: A History* (Chicago: University of Chicago, 2007), 11.

\(^8\) Cohen, *A Calculation People*, 181.

\(^9\) Ibid.
were set more toward lifting the status of American statistics to that of its European counterpart.

Through the end of the eighteenth century in the United States, arithmetic and numerical calculation had been tainted by an association with the commercial class. The calculation of numbers and the figuring of weights and measurements were considered professional skills relevant only to the lives of merchants who dealt in the chaotic world of pounds, ounces, barrels, gallons, shillings, and acres. Arithmetic and numerical studies were deemphasized in the standard liberal arts education of the elite—if not downright excluded—and often considered a “vulgar subject” according to Cohen. Throughout the eighteenth century, mathematics education focused on memorization rather than problem solving, and many American and European scholars believed that numerical exercise had no positive effect on students’ mental dexterity. Those students who wanted to gain a mathematical education most often would attend evening classes that catered to commercial professionals and taught bookkeeping, weights, and measures rather than calculus or geometry.¹⁰ Beginning in the nineteenth century, the men who participated in statistical associations and who published statistical works for a non-commercial audience had formed a small community of elite enthusiasts who hoped to reclaim statistical inquiry as a worthy pursuit of learned men and leaders of republican governments—on both sides of the Atlantic.

The founding purpose of the American Statistical Association, as described in a circular published one year after its founding, was the “collecting, preserving and diffusing

¹⁰ Ibid., 116-130.
[of] statistical information in the different departments of human knowledge.” Although the association claimed to be interested in “presenting information in the form most interesting and useful,” its early publications proved otherwise.11 Included in the association’s first publication of papers in 1847 were several essays with such titles as “Latitudes and Longitudes of Objects whose positions have been determined by Secondary Triangles” and “Statistics of Taxation in Massachusetts, including Valuation and Population”—all written with ornate linguistic flare but none including visual aids or special attention to introducing novices to such data. The members of the organization were expressly motivated by the growth of statistics in Europe and the apparent failure of American numerical inquirers to keep pace. The author of an ASA paper on the population of Massachusetts professed excited anticipation of the day “when writers, like Smith and Malthus, shall arise and be encouraged to publish their researches, speculations and conclusions” within the United States.12

Although a mid-nineteenth-century American could find social statistics in a variety of publications, the sources were—as newspapers frequently reported—uniformly dull. Glutted with bland lists and monotonous numerical tables, these statistical publications may have enthralled the statistical elite, but their data appears to have elicited little enthusiasm from the general public. The “figures are considered too ‘dry,’” complained one reviewer of a 1855 New York state census report on population. The report “must be stripped of its

arithmetical technicalities, and made easy of comprehension, before [the majority of persons] will give it their consideration.”

“There are but few minds,” wrote another reporter on the eve of the Ninth Census, “who understand the value of the nature of statistics, while the multitude of men really dislike and don’t want to hear of them, because, like Paul’s Epistles, they contain some things hard to understand, although these things are of inestimable value and importance.”

Enthusiasts heralded the importance, value, and objective truth of social statistics, but the public responded with little interest.

Although statistics could be collected by public or private means, until the twentieth century, statistics about the nation as a whole were only collected by the federal government, through means of the decennial census. The federal census (referred to simply as the “census” hereafter) thus had a monopoly on national population data, and the census was the source of nearly all nation-wide population figures that appeared in the works of private publishers. The census’s mandate came from the United States Constitution, in which the 1787 framers envisioned the census as a simple head count necessary for the apportionment of the House of Representatives and the levying of certain taxes. If one half of Congress was

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15 The reasons for this are complicated and have mostly to do with the managerial difficulty of taking a census (a feat that regularly taxed even the federal government’s resources) and the lack of understanding of alternatives to a census. A “census” is a count of every individual in a given population, and until the twentieth century the mathematics behind how to take a reliable survey of a sample of the population was unknown. Taking a sampled survey, which can ultimately produce more reliable data, requires dramatically less resources. However, until the twentieth century, the only means by which Americans knew to obtain population statistics was an exhaustive census—a monumental task nearly impossible for any private organization. This dilemma is discussed further in Chapter 3.
16 Many states also took state censuses, although these could be irregular. Private publishers could combine data from state censuses, but because not all states had them and because they took them during different years, this data fell far short of supplying an overall description of the nation. Importantly, the census did not count untaxed Native Americans.
to be based on state population, then the number of people in each state and district had to be
known. Thus, the Constitution defined the method by which the House would be
apportioned:

Representation and direct Taxes shall be apportioned among the several States
which may be included within this Union, according to their respective
Numbers, which 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.\textsuperscript{17}

With little additional debate, the delegates to the Constitutional Convention mandated that
such an apportionment required that a count of the population be made. Specifying few of
the details of such a monumental task, the Constitution simply stated:\textsuperscript{18}

The actual Enumeration shall be made within three Years after the first
Meeting of the Congress of the United States, and within every subsequent
Term of ten Years, in such Manner as they shall by Law direct.\textsuperscript{19}

The constitutional conventioneers thus left the responsibility to Congress to determine
the precise nature and methods of the census. James Madison saw the census as an
opportunity to not simply count the population, but to gather a broader picture of the
American populace by which policy might be set. He was particularly interested in furthering
the commercial development of the nation by obtaining economic data through the census.

When Congress first met and proposed a simple head count for the census, Madison argued

\textsuperscript{17} Section 2, Paragraph 3.
\textsuperscript{18} On the Constitutional Convention’s decision to have a census, see Margo J. Anderson, \textit{The American Census: A Social History} (New Haven, CT: Yale University, 1988): 9.
\textsuperscript{19} Section 2, Paragraph 3, The census was also tied to taxation: “No Capitation, or other direct, Tax shall be
laid, unless in Proportion to the Census or Enumeration herein before directed to be taken” (Paragraph 4, Article 1, Section 9).
that if the census were to “extended so as to embrace some other objects besides the bare enumeration of the inhabitants; it would enable them to adapt the public measures to the particular circumstances of the community.” Madison attempted to persuade his fellow Congressmen that the census should not only produce the raw number of inhabitants, but should also count Americans according to race, gender, age, color, bondage, and occupation. Although a plan for a simple head count had already been drawn up, Madison convinced the House to allow him to formulate a more elaborate census schedule.  

The plan Madison returned, which included all six of the variables above, proved to be too ambitious for either the House or the Senate. New Hampshire Senator Samuel Livermore warned that such a census would “excite the jealously of the people,” who would assume such questions were asked in the service of taxes. Virginia Representative John Page spoke up as well, arguing that Americans would otherwise see the questions’ only purpose as “gratifying an idle curiosity.” The public, he argued, would be alarmed by question that “could serve no real purpose” since “if they were [not] acquainted with the minutiae they would not be benefited by it.” After some debate, the Senate decided to accept Madison’s basic questions on race, gender, age, color, and bondage, but removed all questions on occupation, which were the most important in Madison’s eyes. Angered by the Senate’s refusal to envision a much-expanded census, Madison wrote to Jefferson that his plan was “thrown out by the Senate as a waste of trouble and supplying material for idle people to

make a book.”22 The census law that passed called for no formal report or publication of the census results. The census would ask of each household six brief questions: the name of the head of household, the number of free white males over sixteen and under sixteen, the number of free white females, the number of other free persons, and the number of slaves.23

Thusly designed, for its first six decades, the census remained a census of households rather than individuals. Its constituent questions remained relatively simple, with modest additions over those years. In 1820, a question about occupation was added but considered a failure and removed the following decade. Age was collected with increasing detail, and in 1830 the first questions on disability were added. In 1840 and 1850, new legislation transformed the operation of the national census. Although the 1840 census schedule contained an expanded set of questions covering blindness, the “insane and idiotic,” students, and military service, Secretary of State John Forsyth placed William Weaver in charge of the operation of the census. A man with “a rather spotty record in government service” and virtually no interest or experience in statistics, according to Margo Anderson, Weaver’s already limited skills were combined with a minuscule staff and severely limited funds.24

Despite the fact that intense controversy plagued the returns of the 1840 census and statistical enthusiasts from the American Statistical Association lambasted the results for the low quality of their collection and calculation, Congress determined that 1850 would be the year of the most accurate and far-reaching census yet conducted. Enumerators entered the field that year with six separate schedules: one each for the free population, slave population,

mortality, agriculture, manufacturing, and social statistics. Even more importantly, the Seventh Census was the first true census of individuals. Before 1850, the United States Census had been a census of households, where the unit of analysis had been the household rather than the individual and the only name recorded was that of the head of household. For 1850, though, Congress completely reorganized the census. The name of every individual was to be recorded, save for two important exceptions: slaves, who were recorded only in number, and untaxed Indians, who were excluded from the count altogether. With a greatly expanded mission, the revamped census was positioned to ask more questions of more people than ever before. This development seemed to represent a radical step forward for statistical enthusiasts, one that they hoped would produce a set of statistics appealing to the general American public.\footnote{Ibid., 32-57.}

Despite initial high hopes, the results of the bold effort drew mixed reviews. The 1850 census presented a huge amount of data, far more than any previous census. Reviewers not only questioned its statistical reliability, they often complained that there was simply too much data for a single individual to digest. One article that generally praised the initial statistics released in 1851 concluded with a tactful plea that further reports present data in a more accessible manner:

> It has seemed to me that a work, the expense of which is shared by the whole community, should be arranged, as far as possible, for general utility, and not a compilation of mere columns and figures [numbers], interesting only to the man of science, or legislative purposes, or for reference, but should be so adapted, that while it will furnish practical information to the statesman and
philosopher, and useful data for the legislator, it will contain also matters interesting to every portion of the community . . . .

The following year, another newspaper reporter was less than impressed by the census office’s publications. “An immense variety of statistics have been crowded into the census,” complained the reporter:

The returns of the Marshals are sent in by tons. A dozen volumes of the size of a family Bible, with the apocrypha and concordance bound in, would scarcely contain the results; and if they did, there are no men living to buy and read them in an average lifetime. And as to getting the facts about 1850, into one’s head before the next decennial period, it is simply impossible. The census report, is, in fact, an immense, barren waste of unintelligible figures, compiled at an enormous expense, useful to one man, perhaps, in a million; and only slightly useful to him.

The reporter concluded that “these vast accumulations of figures are outrageously costly, and practically worthless. Let us have no more of them.”

In 1854, Union College civil engineering professor William Mitchell Gillespie attempted to make the census results more accessible by designing a diagram of state population rankings from 1790 to 1850. The diagram, published simultaneously in the New York Times and Harper’s Magazine, appears to have been the first visualization of United States population data published within the country (figure 1.2). Its thin, criss-crossed lines represent the rise of fall of state populations, tracking Virginia’s path as it shrank from largest

Figure 1.2. William Mitchell Gillespie, “Diagram Showing the Ups and Downs, in Relative Rank as to the Population of the Several States of the American Union, for Sixty Years,” New York Daily Times, January 17, 1854.
to fourth largest state and Ohio’s as it grew from seventeenth to third. The New York newspaper described the “very curious and interesting diagram” as “illustrating in a very graphic and striking manner” the comparative progress in population across the states and territories, proudly proclaiming that the diagram “is certainly one of the most ingenious and beautiful methods of illustrating the growth of the country we have ever seen.”

Later that year, Harper’s commented on the final results of the census, without illustration. Thus limited, the article consisted of several pages of demographic data tables with lengthy descriptions. Although the article reviewed the census positively, the magazine made a pointed editorial decision by dedicating the following pages to an attack on the explanatory power of statistics. The article, ostensibly about the entire universe rather than the United States, argued the pointlessness of using grand numbers to imagine the size of something too large to be sensed through personal experience. Numbers do not clarify the size of a very large thing, the article argued. A person who has never seen 1,000,000 of anything in her life would struggle to imagine what it means that the sun is 93,000,000 miles from the earth or that the population of the United States is 23,191,876. Big numbers, Harper’s bemoaned, spoke little to the imagination:

Lecturers have astonished us with rows of decimals, as though these could vivify the imaginative faculty . . . . They have talked to us of millions, and millions of millions, as though the computation of immense numbers denoted the highest exercise of the human intellect, or the loftiest sublimities of human thought . . . . Such contrivances as we have mentioned only weary instead of aiding the conceptive faculty.

30 “Editor’s Table,” Harper’s New Monthly Magazine 4, no. 22, April 1852.
In fact, although Harper’s regularly covered the release of census data, the magazine consistently ridiculed the census and statisticians’ shabby attempts to quantify human behavior. In 1852, the editor teased the “Scientific Ass-associate” who pathetically demands that “an accurate calculation should be made of the number of shaving brushes and the number of half pounds of soup used in the course of the year by respectable shavers.” A short piece from the Editor’s Drawer that same year sardonically proposed that a “Statistics of Snuff and Sneezing’ may yet form a part of some remote census of these United States:”

How about “Statistics of Chewing?”—the time employed in selecting, inserting, rolling, and ejecting the quid?—the length of the yellow lines at the corners of the mouth, in the aggregate?—the lakes of saliva, spirted, squirted, spit, sprinkled, and drizzled? We commend the pregnant theme to some clever American statist.

Such colorful mockery of the statistical community and its tedious texts was commonplace throughout popular periodicals. In the summer of 1841, editor Lewis Gaylord Clark of New York’s popular Knickerbocker magazine derided the “piddling, arithmetical bores” of his day. The statistical language of these numerical devotees was no clearer than Latin, wrote Clark, statistics being just another of the many stupefying “nomenclatures” that “must eventually result in inextricable confusion to the general reader, if not to the student.” Clark deferred to the poetical wit of English humorist Thomas Hood who, several years earlier, had attacked “statistical fellows” for being a “prying, spying, inquisitive clan” pathetically devoted to quantifying human behavior. After much “poking” and “routing”

32 “Editor’s Drawer,” Harper’s New Monthly Magazine 4, no. 21, February 1852.
33 “Nomenclature and So Forth,” The Knickerbocker or New-York Monthly Magazine 18, no. 1, July 1841.
about the working man’s home, Hood wrote, these statistical obsessives would emerge proud to proclaim that “a working man wears a pair and a quarter of average breaches!” The humor of Hood’s poetical attack lies in the ridiculous failure, after much effort, of the statisticians to describe something as simple as clothing. Hood’s contempt for statistical fellows reflects a deep ambivalence about statistics that he shared with his audience. Americans were stubbornly hesitant to describe human groups and human behavior through numerical quantification, a fact which continually frustrated demographic producers.

During mid-century, the use of demographic visualizations boomed on the other side of the Atlantic. As Americans eked out their first awkward black and white line-graph of state populations, French statisticians and cartographers printed elaborate, stunningly-colored visualizations of their own national population. The same census from which Professor Gillespie had published his humble line graph drew the attention of German cartographer August Petermann who published an elaborate atlas in 1855 that included twenty-five thematic of the United States.35

African Americans, in fact, became the topic of the first demographic maps published in the United States, a fact made more interesting by the link created in the images between African Americans and the nation’s geography. In the summer of 1861 just after the outbreak of the Civil War, the federal government produced two large graphics in which slave

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populations were drawn onto images of the land (figures 1.3 and 1.4). The first, published in June, mapped slave population density in Virginia; the second, published shortly thereafter in September, presented slave population density throughout the entire South. Published by commercial cartographer Henry S. Graham, they were drawn by Edwin Hergesheimer, a German immigrant and head of the U. S. Coast Survey drafting division (the maps have historically been attributed to the Coast Survey rather than to Graham or Hergesheimer). The titles of both maps claimed the census as their source, each declaring that each was “sold for the sick and wounded” soldiers of the U. S. Army. The map of the South, which was more popular, carried with it the official approval of the Superintendent of the Census. Famously, President Lincoln kept a copy of this map by his side in the Oval Office.

Slavery, demography, and land had long been linked in the American mind, so it comes as little surprise that the first people to be quantified and laid on a map of the American land were slaves. The tumultuous debates leading up to the Civil War had violently merged the issues of geography and slave populations. As new territories became states, the territorial extension or limitation of the slave population caused acute anxiety on both sides of the Mason-Dixon line. Were slavery to spread to new lands, abolitionists argued, the entire country would inevitably become slave. Were slavery’s advance to be impeded, proslavery proponents countered, the entire southern economy—indeed, the American economy—could crumble. Historian Susan Schulten documented the pervasive

38 Ibid., 4-5.
Figure 1.4. Edwin Hergesheimer, U.S. Coast Survey, *Map Showing the Distribution of the Slave Population of the Southern States and the United States* (Washington: Henry S. Graham, September 1861).
use of maps during this period, particularly by northerners. When the Independent Democrats formed in 1854, they urged northerners to “take your maps” and look to see the sweeping swath of land the Kansas-Nebraska Act had just opened to slavery. “The very heart of the North American continent,” party leader Salmon P. Chase argued, was being challenged by the growth of the slave population.39 When young cartographer George Colton attended a large rally in New York in opposition to the act, he brought a giant map of the country, shading in the entire South and most of the West as slave territory and foreboding a future in which the nation was blanketed by slavery. The map served as the centerpiece of the New York rally, and newspapers quickly published it for widespread consumption. In 1856, William Reynolds drew an even closer link between slave demographics and geography by surrounding a map of potential slave states with written-in census population statistics (figure 1.5).40

Although these earlier maps were not, technically speaking, visualizations of social data, they linked the demography and geography of the slave population in a way that the Coast Survey maps later made explicit. The white producers and consumers of these maps were, it seems, more comfortable quantifying enslaved African American people than free Caucasian populations. Slaves—already bought, sold, and enumerated in account books—were easily envisioned as demographic commodities, empty of the social, cultural, and intimately human qualities that made their white counterparts seemly so difficult to quantify.

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Figure 1.5. William Reynolds, *Reynolds’s Political Map of the United States, Designed to Exhibit the Comparative Area of the Free and Slave States and the Territory Open to Slavery or Freedom by the Repeal of the Missouri Compromise* (New York: Wm. C. Reynolds and J.C. Jones, circa 1856).
The first populations to be the subject of statistical debate—however limited this debate was to a the political and statistical elite—were slaves and African Americans, who were also the first to be mapped onto an image of the American land. Although the popular presses continued to question whether human populations should or could be quantified, statistical summaries of the African American population were gaining ground. The following decade, just as the national centennial was upon the country, journalist and war hero Francis Amasa Walker translated these developments into a groundbreaking series of data visualizations of the entire nation as a “statistical community.”41

41 The term “statistical community” is borrowed from Daniel Boorstin, The Americans: The Democratic Experience (New York: Random House, 1974), 165-238.
CHAPTER 2 — “CLOTHING THE DRY BONES OF STATISTICS IN FLESH AND BLOOD”

“A society is possible in the last analysis because the individuals in it carry around in their heads some sort of picture of that society.”

“The very reason of [the 1874 Statistical Atlas’s] being is because words and numbers cannot or will not tell the whole truth.”

According to political scientist Benedict Anderson, the concept of the “nation” is an abnormal social phenomenon, in which vast numbers of strangers are convinced that they belong to a single, shared social group. So firm is their conviction that it is difficult for members of such an imagined community to conceptualize the fabrication of their national identity. Writes Anderson: “An American will never meet, or even know the names of more than a handful of his 240,000,000-odd fellow-Americans. He has no idea of what they are up to at any one time. But he has complete confidence in their steady, anonymous, simultaneous activity.”

The act of imagining such a social construction requires is monumental in its scale and coordination. Poked, prodded, and manage—often by state governments—the creation of such large-scale group identities relies on the creation of shared visions of the group. National demographics, which so disturbed American audiences because of their ability to

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obscure and average individuals, were unable to communicate the vision of shared national identity when trapped within the visual monotony of numerical lists and tables. Although the first eight censuses of the United States offered richly detailed information about the nation, they provided little in the way of shared symbols or coherent narrative.

Under the innovative leadership of Francis Amasa Walker, the 1870 census broke new ground and offered the nation a set of rich illustrations through which it might envision itself as a quantitative whole. Walker, a survivor of the Battle of Chancellorsville and the infamous Confederate Libby Prison, resigned from the army in January 1865, receiving the honorary rank of brevetted Brigadier General. In 1868, he became an editorial writer for the Springfield Republican, but left the job after just two years to become Superintendent of the United States Census. After completing the 1870 census, Walker seriously considered an offer to work with the New York Times, ultimately deciding to continue working for the federal government. More than any previous Census Superintendent, Walker maintained a public presence and regularly published articles about the census results in journals and magazines. It was this interest in communication and public audiences that brought new life to the census.

When published in early 1872, Walker’s final census report contained the first published maps of the entire American population, published within the United States. Six full-color maps depicted population density in undulating bands across the land. A westward

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5 Munroe, A Life of Francis Amasa Walker, 119.
6 The entire population minus untaxed Native Americans, that is. Additionally, similar maps had been produced and published in Europe decades earlier, including those by August Petermann, using the same census data available to American cartographers and publishers.
moving star indicated the migration of the center of population, and a western edge of purple shading depicted the border that Frederick Jackson Turner would later make famous as the frontier line. The report’s maps, which were a preview of the much more extensive maps, charts, and graphs of the 1874 statistical atlas, received public praise. The *New York Times* gushed over how the maps represent “in the most striking manner to the eye, the density of population, nationality, wealth, [and] education.” Unsure what else to call these novel images, the reporter labeled them “chart-pictures” whose beautiful “dark stream of population” wash across the country until it is met by the “perfect white” of the west. With careful detail, the reporter described that “the pure white of the South shows its native American blood,” while the “deepest shades of foreign blood” are found in the East and along the shore of Lake Michigan. The language of the article is rich with organic symbolism, describing the population as one might agriculture: “fertilizing streams of population,” “purifying streams,” and “unfertile district.”

By merging land and human populations in a single graphic aid, the census report presented a visual lexicon familiar to audiences—the geographic map—and related statistics about the nation’s people to pre-existing concerns about the land: expansion of land was linked to expansion of population, untouched virgin lands were elevated alongside native citizens. This rich visual symbolism imbued the social data of the census with a level of significance rarely attributed to the columns and rows of earlier decades’ dense statistical tables.

“These interesting charts,” wrote the same *New York Times* reporter, “reveal the

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history and the moral of history.” Arriving in the wake of the Civil War, the 1870 census revealed the lowest decennial increase in population the nation had ever seen, and commentators like the Times reporter were quick to interpret the maps as lessons from the war. Seeing an emptiness of Southern population, a scarcity of fresh immigration to the South, high illiteracy rates, and little wealth, the reporter believed the atlas maps to be an indictment of slavery and an explanation of lives lost in the war: “They show that, but for one vast system of injustice, the fertilizing streams of wealth and population would have flowed over every portion of this Union. They are a living picture of the retribution which Providence brings after every system of oppression and injustice.”

The maps appeared to audiences as images full of life, speaking a visual language of social symbolism that simple statistics rarely could. These “living pictures” gave demography the spark it had been missing.

The “chart-pictures” of the census appeared as strange and wonderful forms to most who saw them for the first time. Combining the familiar conventions of geographic maps with new methods of representing human populations, Walker’s 1870 census publications helped to spread a new visual vocabulary about which the nation’s people could be discussed. Visual language, like textual and oral language, is not determined by cognitive principals alone. Rather, it is continually defined and redefined by what scholars of communication and literature Charles Kostelnick and Michael Hassett call “discourse communities.”

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Hassett, “visual language must embody codes that normalize its practice among both the designers who deploy it and the readers who interpret it.” Often treated as either a natural cognitive language or as a derivative form of verbal rhetoric, graphic communication is less often recognized as a constructed language like any other, with its own history of negotiated lexography and cultural transformations. The demographic visualizations of the 1870 census, which first included six maps in the 1872 census report and then over one hundred maps, bar charts, pie charts, wind roses, and other graphical displays in a 1874 atlas, broke new visual ground and promoted a new vernacular of social quantitative language—one that would eventually prove far more successful than that of the old demographic lists and tables.

The reception of the 1872 maps was overwhelmingly positive, and Walker was able to leverage their critical responses into Congressional funding of the first national atlas in American history. Especially important was the initial support from professional organizations like the American Geographical Society. Despite the fact that in 1873 the society—formerly the American Geographical and Statistical Society—had recently dropped the word “Statistical” from its title and banned all discussion of numerical data at its monthly meetings in New York City, society president Daniel C. Gilman could not refrain from presenting the exciting new census maps at the annual meeting. Although he admitted that “this Society no longer recognizes the statistical side of geographical inquiry,” he hoped it fair to presume his audience “still interested in the geographical side of statistical inquiry.”

Gilman then displayed the maps and analyzed in detail their import for national well-being.

10 Ibid., 1.
Walker wrote to thank Gilman, reporting how he was “much gratified to learn that the maps met the approval of the Geographical Society.” Walker informed Gilman that he was working to improve the maps in the hopes that Congress would authorize publication of a full atlas. Such an atlas, Walker imagined, would be spectacular. As he proposed it to Congress shortly thereafter, the atlas would include a multitude of novel visual representations to delight and attract readers. Walker took special care to describe the images to Congress. The representations, Walker explained, would be divided into two types: “geometrical illustrations” and “geographical illustrations.” In the “geometrical” images, the nation’s statistical facts would be “exhibited by lines and plane figures.” Each image, Walker emphasized, would be comprised of “between three and one hundred and ten distinct figures.” Secretary of the Interior Columbus Delano enthusiastically promoted Walker’s proposed atlas:

with a view to [promoting] that higher kind of political education which has heretofore been so greatly neglected in this country . . . . The exact knowledge of our country should be the basis of this education; and it is in the power of Congress, by authorizing such a publication as is here recommended, to practically inaugurate [sic] the study of political and social statistics in the colleges and higher schools of the land.

Congress approved funding for the project in early 1873, and when the full *Statistical Atlas of the United States* appeared the following year, it was an international sensation.

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Statistical reviewers called it “the most valuable contribution to the comparative statistics of the United States that has ever appeared,” “one of the most instructive publications ever issued by our government,” and a set of “ingeniously contrived maps” that put former census reports to shame. London literary magazine The Academy reported to its English audience that the volume “free[s] the study of statistics of nearly all its dryness, and brings the statistics themselves nearly to the level of the fine arts.”

Americans took much pride in the positive international attention won by the atlas after it received glowing reviews and a gold medal of first class at the 1875 International Geographical Congress in Paris. Upon returning from the Paris congress, a reporter from London’s preeminent Royal Statistical Society declared that the atlas was the very “essence of statistical information which is laid down in these maps.” American audiences viewed the atlas at the Centennial Exhibition of 1876, inspiring states and cities to create visualizations of their own local census data. The Bureau of Education presented maps from Walker’s atlas alongside diagrams of its own creation (figure 2.5). A judge for the educational section of the exhibition commended St. Louis for exhibiting “a ‘block report,’ giving the residences of all the pupils in its schools, and a shaded map which enabled the visitor to see at a glance where new population was rising, and where schools needed to be

Figure 2.3. Francis A. Walker, “Chart Showing the Principal Constituent Elements of the Population of Each State, as Foreign, Native, Colored, and Native White, and as Born within or without the State of Residence,” Statistical Atlas of the United States ([New York] J. Bien, lith., 1874).
Figure 2.4. Francis A. Walker, “Chart Showing the Aggregate Number of Idiots and the Proportion of Males and Females, White or Colored, Native or Foreign, at the Ninth Census 1870, Also the Increase since 1860,” *Statistical Atlas of the United States* ([New York] J. Bien, lith., 1874).
Figure 2.5. Bureau of Education, “Map No. 32,” Section of Education, Centennial Exhibition, 1876. Reprinted in British Education Department, Reports on the Philadelphia International Exhibition of 1876 (London, 1877), 1:313.
provided.” Walker’s atlas, “a perfect mine of information by means of a series of ingenious maps,” became popular with various departments throughout the American Exhibit as they sought to illustrate the progress of their own populations.\(^\text{19}\)

The atlas depicted a grand narrative of national population, in which the growth of the American population was inevitable and the assimilation of the foreign population essential. Literary scholars Charles A. Hill and Marguerite Helmers argue that the atlas displays a “deterministic narrative” of demographic expansion. “One of the most public acts of visual rhetoric in the nation’s history,” the atlas’s collection of data displays paid special attention to the geographic spread of the immigration population. Individual maps depicted the extent of the foreign-born population of each of five nationalities: Irish, German, “British American,” English and Welsh, and Swedish and Norwegian. Assimilation of the foreign-born population was tracked through two maps of the population with “foreign parentage” and that with “parents of foreign birth.” The mapped data was then replicated in numerous charts and graphs that compared foreign status with literacy, age, gender, geographic mobility, marriage, education, and other perceived measures of social health. As Hill and Helmers argue, Walker (who prepared the population section of the atlas himself) used the images to argue that demographic progress was inevitable and that immigrants—and their assimilation—were an inherent part of that progress.\(^\text{20}\)

In an essay written to accompany the visualizations titled “Progress of the Nation,”


Walker helped initiate readers into his recommended methodology for viewing and interpreting the statistical images. The images, wrote Walker, were created to display the growth of the nation over the course of its first century. This task, achieved “by means somewhat novel,” displayed better than ever before the “relative rapidity and steadiness of advance” of the American people.\textsuperscript{21} The essay first sets to explaining the construction of the population density maps. These maps, wrote Walker, were divided into shaded regions that represented increasingly denser regions of settlement. Five levels of density were displayed, ranging from just two inhabitants per square mile all the way up to ninety and above. The highest group “represents a very advanced condition of industry,” whereas the lowest density group would only be found where settlement had just begun in the “poorest tillage regions,” which occasionally “also sink into this group.”\textsuperscript{22} The second level of density, at six to eighteen inhabitants to the square mile, indicated “almost universally the existence of defined farms or plantations, and the systematic cultivation of the ground, but this, either in an early stage of settlement or upon more or less rugged soil.” Where density had reached eighteen to forty-five to the square mile, Walker concluded that this “almost universally indicates a highly successful agriculture.” These density levels represented stages of development, with ninety or more people to the square mile at its apex. Walker determined that the edge of settlement be set at two people to the square mile, a decision that although apparently arbitrary, continued to define depictions of the frontier in future censuses and was later adopted by Frederick Jackson Turner. This limit marked the point at which meaningful

\textsuperscript{21} Walker, “Progress of the Nation,” 1, 3.  
\textsuperscript{22} Ibid., 3.
population stopped, past which only a “petty population . . . made up of the solitary ranchman, the trapper and the fisherman, the small mining party, and the lumbering camp” resided. These populations were, for the purposes of the atlas, extinguished from the record. They found no place in Walker’s discussion of the “frontier line” that divided the areas of two to the square miles from the “emptiness” beyond.

The frontier line—or “line of population” as Walker also called it—was the measure of American development. The line’s “ins and outs . . . seem to indicate a distinct change of direction in the settlement of the country, for any cause, whether in progression or in retrogression.” Of all the features of his graphic displays, the progress of this line seemed to Walker to be the most plainly apparent, its westernmost apex a testament to the nation’s first century of progress. “The imperial sweep of the ‘line of population’ now embraces 1,178,068 square miles,” remarked Walker, its advance so reliable as to have become “rather humdrum in its steady movement northward and westward.” Thus, the first visual depictions of a frontier line in the United States appeared in Walker’s maps. As historian Fulmer Mood noted in 1945, the 1874 atlas was “the fundamental source in the history of the frontier concept.” Walker’s maps, charts, and graphs depicted a grand national narrative in which demographic momentum incorporated immigrant populations into an epic westward movement, halted only where land was too degraded to support normal human settlement.

The widespread approval with which Walker’s atlas was met is made all the more remarkable by the fact that the 1870 census itself was considered a failure. The Ninth Census

23 Ibid., 1.
24 Ibid., 2.
was the first in the nation’s history to record an increase in population below 30 percent. Reviewers expected to see a slightly smaller growth in population due to the Civil War, but they were not prepared to accept the dramatic drop in population growth that the returns reported. In previous decades, the population had increased so predictably at an average a rate of one third every decade that many people believed it to be a law of American population growth. Between 1860 and 1870, however, the nation grew only 22 percent, a noticeable reduction and cause for considerable alarm to those who were watching the raw figures. Within the statistical community, the 1870 census was considered a failure. While Walker spent years attempting to explain and rectify the numbers in the written report, his atlas was a resounding success. Its graphic forms obscured the drop in population growth, instead displaying images of a population on an unstoppable march westward. The translation of data to visual form offered an additional layer of interpretation into which Walker wrote his vision of national development. Most reviewers of the atlas felt that the graphics “revealed” the truth behind the numbers, rather than obscuring it.

Popular periodicals took care to describe in detail the new maps and charts to their American audiences, most of whom had never seen such images. The widely distributed Popular Science magazine informed its readership that the atlas “gives life” to dull statistics. Readers need not be familiar with the technicalities behind the numbers because the atlas was “designed to represent to the eye” the physical, demographic, and vital aspects of the country. Searching for a way to adequately describe such an alien medium, the journal continued:

26 Munroe, A Life of Francis Amasa Walker, 100-130.
The maps by variety of coloring, show the distribution of the statistical facts over the United States; while the charts, by a system of projected lines and shading, elaborate the details of the general ideas, showing facts as presented by States, sex, race, and age.27

The novelty of such images to their reviewers is apparent in the careful textual description through which the magazine attempted to convey the visual experience of the atlas:

For example: the first map shows the predomination of sex. Areas in which females predominate are left uncolored, while the remaining areas are colored deeply in proportion as the excess of males increase. The accompanying charts comprise a series of projections formed on the following principle: A vertical line, one inch long, is divided by horizontal lines into eight parts, representing as many decades.28

Often unable to reprint the images due to technical printing limitations, publishers of periodicals like *Popular Science* recognized that readers had no prior experience of visual demographics by which to imagine these exciting new images. Even *The American Journal of Arts and Sciences*, with readers far more accustomed to interpreting dense statistics, described with giddy excitement the “most excellent effect” achieved by the use of “polygons of ingenious but simple construction,” an effect so tremendous that “it is impossible to satisfactorily treat it in any written article.” This new, visual language of numbers was, the journal claimed, indescribable: “Precisely as a painting cannot be described in words, so these sixty plates cannot be. Any such description will bear about the same relation to the original that a written description of a person . . . does to his photographic portrait.” The “intimate and varied relations between the density and spread of population as shown by the

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28 Ibid.
maps” proved simply “too fertile to be entered on here.” The journal concluded that “this is one of the most instructive publications ever issued by our government.”

With equal enthusiasm, the Scientific American claimed “that no more elaborate or valuable compilation has ever been organized, printed, and published.”

According to the New York Times:

A single glance at one of the graphic maps conveys information which has been gleaned from the census tables by weeks of severe labor and study, guided by statistical knowledge and aptitude of the very highest degree. A few hours study of the Atlas conveys more information than could be obtained by any one person in the same number of weeks from a study of the census tables, while the facts which the maps exhibit could not be comprehended at all by a large class of people from any tables or even a clearly-written statement.

The Library Table, a New York “fortnightly review and index of current literature and the drama,” published a belated but insightful 1878 review of the atlas, attempting to distill just what had made the atlas so striking to so many viewers during the preceding four years. Its analysis concluded that the images allowed Walker “a painter’s license . . . to be less faithful to fact”—and in doing so threw an even clearer light upon the character of the nation, as might a work of literature or painting. The atlas, wrote the reviewer, had made a groundbreaking contribution to the “object-lesson system of learning”:

The most intangible facts are seized and fastened to material illustration, and thus knowledge which a generation since involved months of labor, now lies before us on a single page, eye supplementing memory and ascending through the gamut of color to final harmonious blending of laws and principles. “The

Statistical Atlas of the United States” . . . carries in the simple statement of these facts a guarantee of something more than merely honest work. It is in reality a Pictorial History of the United States, or better, a Photographic History, including the possibility of a painter’s license, in drawing and rearranging, and therefore of being less faithful to fact . . . . It is quite impossible in the limits [here] to do any justice to . . . how clear a light it throws upon national characteristics, and various points heretofore considered as belonging more to the literature of social philosophy and statics, than to the pages of a popular atlas.32

In the same breath, this reviewer recognized that the creation of these visuals was more of an art than a science and that the opportunity for artistic license seemed to reveal deeper truths behind the facts being represented. So profound was the experience of seeing population image put to picture that viewers nearly always reported that the information displayed by the images represented a higher truth. Again and again, newspapers, magazines, and journals marveled at the ease with which the images cut through the confusion and complexity of the data to reveal the message of the numbers. “They exhibit facts that absolutely refuse to be shown by mere numerical tables,” claimed *The American Journal of Science and Arts*. In the population maps of “Prof. Walker,” if a region has more than two white people per square mile, the journal explained, that region assumed “the dignity of a settlement.” Thus, Walker’s arbitrary quantitative distinction became social fact.33

More than any other U. S. Census superintendent before him, Walker developed links with the press, publishing a steady stream of articles in popular newspapers and magazines. Where he failed to reproduce his statistical maps or graphics in these articles, he convinced

skeptical readers of the value to which population statistics might be put. In an 1873 *Scribner’s* article, Walker promoted the value of population statistics by demonstrating how statistics might be used to disprove a common demographic myth. Irish immigrants, he argued, were not in fact reproducing any faster than were German immigrants, despite common prejudices to the contrary. “The country is now for the first time in possession of certain statistical information” that might prove this very fact: “Although the material referred to has been for more than a year accessible to all, the use to which it will be put in the following discussion does not seem to have occurred to any one.” Appearing the year before Walker’s atlas, his article delicately eased readers into the difficulty of using demographic data: “The plan here pursued being, therefore, not only new, but presumably somewhat more difficult than usual, it will be necessary to ask a careful attention, step by step, to the course of the argument.”

When, in the same year, Walker published in *The Atlantic* an article-length estimate of what the national population would be in 1900, he began the piece by distancing himself from “that austerer race who style themselves ‘statisticians.’”

After the sensational reaction to the 1874 atlas, *Harper’s* invited Walker to publish a six-part series telling the story of the nation’s first hundred years, later published alongside other articles in *The First Century of the Republic: A Review of American Progress* (1876). His third installment in the magazine focused on national population growth and featured five maps, including the popular “Star of Empire” across which the theoretical “center of

population” moved briskly westward from 1790 to 1870 (figure 2.6). Included also were new maps: “Progress of Settlement,” “Natives of New York,” and “Natives of South Carolina” (figures 2.7 and 2.8). Harper’s prepared special, lower quality maps due to its limited printing capabilities. Nonetheless, readers popularly received the images.36

The value of the national atlas became immediately clear to the Census Bureau, and when the 1880 census results began arriving from the field, the bureau knew how to articulate its goals for this new visual medium. The atlas was to be put on sale for the general public, published in collaboration with the Scribner publishing house under the title Scribner’s Statistical Atlas of the United States. Census geographer Henry Gannet and historian Fletcher Willis Hewes served as volume editors and spoke clearly to their audience:

Let these facts be expressed not alone in figures, but graphically, by means of maps and diagrams, appealing to a quick sense of form and color and “clothing the dry bones of statistics in flesh and blood,” and their study becomes a delight rather than a task. The density of settlement, the illiteracy of the people, the wealth or poverty of different sections, and many other features of great importance, hitherto but vaguely comprehended, are made to appear at a glance, and are so vividly impressed as not to be easily forgotten.

But such aids not only the statistician and political economist, but the masses of people, who make public sentiment and shape public policy, may acquire that knowledge of the country and its resources which is essential to intelligent and successful government.37

The mantra of the new era of statistical objectivity and authority was that statistics represented scientific truth. Upon this truth new governmental policies and bureaucracies

Figure 2.7: Francis Amasa Walker, “Natives of New York” and “Natives of South Carolina,” “The First Century of the Republic: Growth and Distribution of Population,” *Harper’s Monthly* 51 (August 1875): 413.
were built. No amount of validity or scientific truth, however, could do what the atlas’s images did: “clothe the dry bones of statistics in flesh and blood,” as Gannett and Hewes described the achievement, borrowing the old language of the Bible. These numbers introduced viewers to a national imagery that linked the California Chinese laborer to the Louisiana tenant farmer to the Boston middle-class professional, each visited in their home by the census enumerator and each recording his name in the census record. The census not only merged the constituent parts of the national population through this process, but also juxtaposed them. To viewers, census statistics represented a curious sort of bringing together and comparing of distinct populations.

Beginning with the 1870 census, newspapers were filled with anecdotal stories about the enumerators who ventured from house to house interacting with people from different social classes, races, and ethnicities. The story of the middle-class enumerator meeting the low-class enumerated supplied endlessly fascinating material for newspapers. During July and August of 1871, the *New York Times* carried a series titled “Taking the Census” in which “the patience of enumerators” was “frequently very severely tried by persons who, from ignorance or a lack of appreciation of the importance of the work,” failed to respond appropriately to the enumerators’ questions. “A case in point,” continued the paper, “was the interview with the keeper of a corner liquor-store in an up-town ward:

Census-Taker—Is the proprietor at home?
Proprietor (from the rear)—Well, young feller, what do you want?
Census-Taker—I am engaged in taking the United States Census in this district, and desire to ask the questions prescribed by the law.
Proprietor—Well, ask away, but I don’t know whether I’ll answer you or not. [This answer is received with a a chorus of laughter from a number of bar-room loafers
waiting to be asked to drink.]
Census-Taker—What is your name?
Proprietor—What’s yours?

. . .
Census-Taker—When were you born?
Proprietor—Don’t know. [With a knowing wink at bummers.]
Census-Taker—Can you read and write?
Proprietor—What’s it to you? Well, no, I can’t.
Census-Taker—Are you a voter?
Proprietor (who is afterward ascertained to be a leading ward politician)—You bet I am. [With a wink that sets bummers into a roar of laughter.] . . .

The following week the enumerator found himself in an “Irishman’s shanty’ up-town” where yet again he came into contact with the “quaint specimens of humanity, who would drive an irritable man to distraction or throw a humorist into ecstasies.”

Whereas journalists of previous decades had mocked the prying census enumerator and the clumsy “Scientific Ass-sociate,” newspapers now turned attention to the foolishness of the interviewees, particularly those in ethnic and immigrant communities. An earlier cartoon appearing in the 1860 Saturday Evening Post depicted the intrusion of a bumbling census enumerator at the dinner table of a middle-class family (figure 2.9). Thirty years later, Harper’s Weekly printed a cartoon poking fun at efforts of a well-meaning enumerator to communicate with a senile senior citizen (figure 2.10).

The shift in comic representation of the census signaled increasing interest in the connection between the census’s abstract numbers and the diversity of actual people behind the numbers. Earlier popular stories had mocked census enumerators and their seemingly

38 “Taking the Census: More Amusing Instances of the Difficulties that the Enumerators have to Contend with —Interesting Details,” New York Times, July 22, 1870.
Figure 2.9. “The Great Tribulation,” Saturday Evening Post, August 18, 1860.
Figure 2.10. “The Census,” Harper’s Weekly, June 14, 1890.

THE CENSUS.

CENSUS-TAKER. “Good-morning, madam; I'm taking the census.”
OLD LADY. “The what?”
C. T. “The c-e-n-u-s!”
O. L. “For lan's sake! What with tramps takin' everythin' they kin lay their han's on, young folks takin' fotygraf of ye without so much as askin', an' impudent fellows comin' roun' as wants ter take yer senses, pretty soon there won't be nothin' left ter take, I'm thinking.”
ridiculous task of quantifying human populations. Now, stories appealed to people’s fascination with unfamiliar ethnic cultures and the new way that census statistics connected audiences with alien peoples and cultures. This merging of statistical and narrative representation illustrates the ways in which Americans began to attach concrete social meaning to population statistics. Averages and sum totals represented constituent parts of the population brought together, just as the experience of the enumerator literally brought middle class and urban poor, native and foreign-born, white and black together in ways that both fascinated and repelled audiences.

As national demographics became more familiar and acceptable to broad audiences, statistical study of human populations became as essential to social knowledge as statistical study of the physical world had become to geographical and physiographical knowledge earlier in the century. Historian Theodore Porter has documented how, by the mid-nineteenth century, American audiences had become comfortable investigating “collective phenomena using what came to be called the statistical method, the method of reasoning about events in large numbers without being troubled by the intractability of individuals.”  

Left out of this growing acceptance of statistical knowledge as the standard of reliable knowledge had been statistics about people. To all but a small group of statistical enthusiasts, the quantification of human populations had remained a comical proposition even as the state aggressively promoted the objectivity of empirical knowledge. Visual representations of demographic data helped to humanize the statistical study of populations and introduce the public

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viewership to a quantitative medium more palatable than the dry numerical tables and lists of decades prior. The gradual spread of public familiarity with demographic imagery helped to change the nature of information people believed they needed before they could understand a people. The census and its national atlases represented the national population from a bird’s eye perspective, summarizing detailed statistics to give a general picture of how each of the constituent parts of the American population played a role in a unified national narrative.
CHAPTER 3 — SELF-STUDY AND THE COMPETITIVE POWER OF DEMOGRAPHIC IMAGERY

“The determination of population is the first desideratum in any scientific study of a people or race. For the correct solution of any social problem, it is an indispensable requisite that the number of persons should be carefully reckoned.”

“This is the exhibit of American Negroes, planned and executed by Negroes . . . . who are here shown to be studying, examining, and thinking of their own progress and prospects.”

“[The sociological researcher] observes the physical environment in which the society under consideration lives, the men who compose it, the race to which they belong, the groups (families, associations, cities) into which they are divided—in a word the anatomy of the social body.”

In the closing decades of the nineteenth century, social statistics gained substantial footing in the United States. In academia, sociology was founded as a discipline to train professional social statisticians. Its first independent departments were initiated at the University of Chicago in 1892 and at Columbia in 1893. Heavily influence by quantitative models of natural progression, the theories of social Darwinism and social evolution gained popularity and influenced many social theoreticians, who increasingly came to believe that measurable laws of human behavior were the key to social progress. Many reformers alternatively focused less on the discovery of social “laws” and more on “revealing” the true

3 Rene Worms, “Sociology and Political Economy,” American Journal of Sociology 1, no. 2 (September 1895): 149.
circumstances of communities through the scientific collection of data. Progressive reformers believed empirical knowledge must be the basis of intelligent, coordinated reform. Major studies were undertaken by academic sociologists and by non-academic reformers (who were beginning to be professionalized into the field of social work). Sociologist W. E. B. DuBois completed a groundbreaking study of African Americans in Philadelphia in 1896; Jane Addams’s Chicago Hull House and the University of Chicago settlements made historical use of social mapping in their studies of Chicago’s immigrant slums; and a team of over seventy researchers under the leadership of Paul Kellogg conducted a large-scale study of Pittsburgh working-class and immigrant life, publishing a six-volume report littered with dramatic population visualizations and photographs. Social statistics were becoming the *de facto* basis of social knowledge by the turn of the century. Those who produced and interpreted the most effective data were those who controlled the public identity of their subjects.

Beginning in the late nineteenth, ethnic and immigrant groups increasingly came to be seen as menacing demographic forces. Nativism was nothing new to the nation, evidenced by proclamations of social and cultural demise with every wave of immigration. Ethnic communities always had seemed to pose threats through labor competition and strange cultural practices. Increasingly, however, in the later decades of the nineteenth century, immigrants were perceived as threats by their sheer numerical force. Nowhere was such demographic fear more evident than when directed against the Chinese in California.

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Speaking to a congressional Joint Commission of Investigation on Chinese Immigration in 1876, California state senator and former mayor of San Francisco Frank McCoppin painted a demographic threat of global proportions. Across the Pacific, he warned, there menaced “the land of Confucius,” a dangerously glutted country teeming with more than a third of the world’s population. The “pressure from within that crowded hive,” threatened McCoppin, “is so great that they have to seek an outlet in foreign lands, and this coast being the most accessible to them is in danger of being overrun by this pagan horde.” A representative from Oregon agreed, claiming that, were their growth left unchecked, “it will not be half a century before the Asiatics will outnumber the Americans on this continent.

Fears of the Chinese population had been growing since mid-century, but 1876 saw tensions in California reach a boiling point. A wave of anti-Chinese demonstrations rolled through the state that year. Demonstrations led to the appointment of a state legislative committee charged with preparing and delivering to Washington a report on the Chinese problem. The committee’s first goal to was to determine the number of Chinese in California, and the city’s chief of police undertook a census of San Francisco’s population. This census, combined with statistics culled from the 1870 national census and the San Francisco Journal of Commerce, painted a picture of a dire demographic situation:

[The Chinese Empire] contains incomparably the greatest population [in the world]—a population comprising at least one-third of the whole human race . . .

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5 Quoted in Otis Gibson, The Chinese in America (Cincinnati, OH: Hitchcock & Walden, 1877), 375.
7 See the committee resolution in Chinese Immigration . . . Testimony Taken before a Committee of the Senate of the State of California (Sacramento, CA: State Printing Office, 1876), 114.
This immense population could send out one-quarter of one per cent. as colonists to our shores, and then equal in numbers all the white population of the Pacific Coast. Were they sufficiently civilized, well armed, learned, and intelligent, they could spread their rule over the world, and be as dreaded in the nineteenth and twentieth centuries as were the hordes of Atilla, Gengis-Khan, and Tamerlane (all from Chinese territory), from the fifth to the fifteenth.  

The committee’s report determined that there were 75,000 Chinese people in San Francisco alone, and 200,000 throughout California. The Chinese, the committee further claimed, were permanently loyal to their homeland and could not possibly be integrated into American society. The only way to combat the degrading social and economic influence of the Chinese was to halt their demographic intrusion with anti-immigration legislation. The political battle over the Chinese in California thus became a battle over human numbers.

Methodist missionary Otis Gibson was one of the few defenders of California’s Chinese community. Horrified by the numerical claims presented by the state committee in Washington, Gibson published his own account of the numbers and natures of Chinese Americans. “The most vague and extravagant notions prevail as to the number of Chinese now in America,” Gibson complained. Accusing the state community of basing its population statistics on “the first impressions made by a Sunday ramble through Chinatown,” Gibson argued that the committee falsely promoted statistics that were “simply preposterous.” He predicted that California’s Chinese population comprised barely a third of what the committee had reported, and that the national Chinese population could be no more than a quarter of the number that the committee had claimed for California alone.

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8 Ibid., 167-68.
10 Ibid., 15.
In 1881, George F. Seward, U. S. Minister to China from 1876 to 1880, similarly defended Chinese immigration. Using 1870 census data, Seward corrected the commission’s estimates, not only arguing that the corrected population statistics simply did not warrant the irrational fears of the committee but making a bolder claim about populations in general: demographic changes, he argued, were fundamental natural occurrences that could not be regulated. Population numbers represented natural forces, forces beyond the control of governmental regulation. Seward explained his “strong feeling that the United States ought not to interfere unnecessarily with immigration . . . because arbitrary interferences with natural processes prove, as a rule, unavailing and injurious.”

11 Despite voices like Gibson’s and Seward’s, the Chinese Exclusion Act passed in 1882, blocking legal immigration of Chinese laborers.

As white Americans became increasingly interested in the production of statistics about minority populations, minority populations became equally interested in producing and interpreting their own numbers about themselves. Writing in the North American Review on the “Position of the Jews in America” in 1878, Rabbi Gustav Gottheill bemoaned the absence of any reliable figures of the Jewish community in 1878. Estimates ranged as high as 1,600,000 (an “enormous exaggeration” in Gottheill’s opinion) to as low as one sixth of that. However, “means have recently been devised,” wrote Gottheill, “that promise to put an end to all mere conjecture.”

12 Two years earlier, the Board of Delegates of American Israelites and the Union of American Hebrew Congregations had begun enumerating the American

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11 Seward, Chinese Immigration, v.
Jewish population. Philadelphia delegate William Hackenburg led the study, which he began with high hopes: the Jewish American census would not simply be “for an exhibit of material prosperity or status as a religious community.” Rather, the numbers would link the Jewish community and national communities; the census “would be mutually beneficial to every section of the country, and enable them to act in greater concert in all that concerns them as children of the Abrahamic faith.” Based on the returns, Hackenburg felt comfortable by 1880 to estimate the Jewish population at a quarter of a million.\(^\text{13}\) The Board published the results, sending copies to every Jewish congregation, lodge, and society in the country as well as major libraries throughout America and Europe.\(^\text{14}\)

The Jewish census had been an exceptionally trying task for Hackenburg. Despite his aspirations, Hackenburg considered the results merely preliminary. Very little expertise in census-taking existed outside a handful of federal agencies, and neither Hackenburg nor the Union of American Hebrew Congregations had the knowledge or materials to conduct a census of a such a geographically dispersed, low-density, never-before-surveyed population. By the turn of the century, Hackenburg again urged the Union of American Hebrew Congregations and the Jewish Historical Society to undertake a new census, this time gathering not only population statistics, but also “congregational, educational, charitable and social work in every city or town in which Jews reside.”\(^\text{15}\)

Johns Hopkins professor George E. Barnett, writing for the American Jewish Historical Society, supported Hackenburg’s call


for a new census. “The determination of population,” wrote Barnett, “is the first desideratum in any scientific study of a people or race. For the correct solution of any social problem, it is an indispensable requisite that the number of persons should be carefully reckoned.”

Based on Hackenburg’s 1880 estimate of 250,000 Jews, Barnett predicted that in the subsequent two decades, that number might have quadrupled to a million, a number in which the Jewish community could find pride. In the 1899 inaugural issue of the American Jewish Year Book, the editors combined immigration statistics from New York, Philadelphia, and Baltimore with Hackenburg’s estimates from two decades prior to produce a similar estimate of 1,043,800 Jewish Americans. Still, without the organizational or technical knowledge of survey-taking methodology, the group became reconciled to the fact that a successful census was beyond its means. The federal government seemed to have a monopoly on national census-taking.

W. E. B. Du Bois and other sociological researchers and reformers at the turn of the century sidestepped such issues by conducting intensive, localized studies of “representative” communities. Under Du Bois’s guidance, a steady stream of statistical studies of the African American population flowed from the Atlanta Sociological Laboratory of Atlanta University. For Du Bois, in order for a community to know itself—and to show the world this self-knowledge—it first needed to count its members. Du Bois was an early leader of American sociology, a discipline he pursued as a tool of civil rights. Having arrived in Atlanta in 1897

17 Cyrus Adler, ed., “Jewish Statistics,” in The American Jewish Year Book (Philadelphia: Jewish Publication Society of America, [1899-1900]): 283-84. The year book is dated by the Hebrew calendar and is labeled by the year 5660, which corresponds to the Gregorian calendar dates September 5, 1899 to September 23, 1900.
fresh from an intensive study of Philadelphia’s African American community (completed with only limited institutional support from the University of Pennsylvania), Du Bois brought a solution to Hackenburg’s logistical woes. Instead of conducting a census of the country’s entire African American population, he and his students undertook numerous intensive statistical studies of small, geographically distinct, and “representative” American-American communities.\textsuperscript{18} *The Souls of Black Folk* and *The Philadelphia Negro*, Du Bois’s most famous publications, began with sociological studies of Georgia’s Dougherty County and Philadelphia’s Seventh Ward, respectively. Du Bois and his students used statistical information from these communities to represent the national African American population, and in doing so they claimed a collection of independently-created statistical descriptions of the African American population.

In 1901, Du Bois published his Dougherty study in the national monthly journal *The World’s Work* under the title “The Negro as He Really Is.”\textsuperscript{19} Here, he humanized his statistics on the Black Belt county in ways nearly inconceivable just thirty years earlier. Without needing to convince his readers of either the validity or appeal of population statistics, Du Bois presented a statistical and descriptive “definitive study of one locality in Georgia showing the exact conditions of every Negro family—their economic status—their


ownership of land—their morals—their family life—the houses they live in and the results of
the mortgage system.” Du Bois relied on demographic images, lyrical prose, and
photographs by A. Radclyffe Dugmore to illustrate his statistics, presenting Dougherty
County as “the geographical centre of the Negro Problems—the centre of those 9,000,000
men who are the dark legacy of slavery.” Artfully weaving together his personal travel
narrative through the South with social description and community statistics, Du Bois
seamlessly leveraged social data to make Dougherty County’s population alive for northern
audiences:

Out of the North the train thundered, and we woke to see the crimson soil of
Georgia stretching away bare and monotonous right and left . . . . We seldom
study the condition of the Negro to-day honestly and carefully. It is so much
easier to assume that we know it all. And yet, how little we know of these
millions—of their daily lives and longings, of their homely joys and sorrows,
of their real shortcomings and the meaning of their crimes.

Du Bois pursued his goals—deeply human and empathetic—with statistical charts and tables,
a combination which had become common by the turn of the century. A tragic tone pervaded
Du Bois’s words and numbers. “Here in Dougherty count, in the open country,” residents
crowded into homes as in any urban area:

The rooms in these cabins are seldom over twenty or twenty-five feet square,
and frequently smaller; yet one family of eleven lives, eats and sleeps in one
room, while thirty families of eight or more members live in such one-room
dwellings . . . . there are among these Negroes over twenty-five persons for
every ten rooms of house accommodation.20

A map of African American population density across multiple states placed Dougherty

20 Ibid., 853.
County and Georgia in their national contexts: shaded in ominous gray tones, the map starkly depicts Georgia at the heart of the Black Belt of which Du Bois wrote. When Du Bois presented his Dougherty research to the Industrial Commission on Immigration that same year, he distributed a density map of Dougherty County in order to visually illustrate the community, saying “You have there a chance to study a community of negroes” in a place that was once “called the Egypt of the Confederacy.”

By devoting their resources to the collection of large numbers of statistics on relatively small populations, Du Bois and his Atlanta University students convincingly represented the “condition” and “soul” of African American populations. A particularly high point was the Negro Exhibit at the 1900 Paris Exposition Universelle, which Du Bois helped to organize with the aid of Daniel A. P. Murray of the Library of Congress, Thomas Calloway, and the Atlanta students. Du Bois and his students prepared a special set of statistical illustrations of the African American population and, in particular, Georgia’s African American population (figures 3.1 and 3.2). African American newspapers covered the exhibit’s preparation extensively, and exposition officials awarded the exhibit a total of seventeen medals. *The Colored American* claimed the exhibit an important opportunity to showcase the development of the race thirty years after the end of slavery: “All Europe will look with considerable curiosity for tangible results from our branch of the American populace,” the newspaper reported, putting the African American population virtually “on

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Figure 3.1: W. E. B. Du Bois and Atlanta University students, “A Series of Statistical Charts, Illustrating the Condition of the Descendants of Former African Slaves Now Resident in the United States of America,” *Negro Exhibit of the American Section at the Paris Exposition Universelle*, 1900.
Figure 3.2: W. E. B. Du Bois and Atlanta University students, “Negro Business Men in the United States” and “Occupations of Negroes and Whites in Georgia,” *Negro Exhibit of the American Section at the Paris Exposition Universelle*, 1900.
trial before the civilization of the world.”  

This exhibit was an opportunity for the African American population to represent itself on the international stage, and visualized statistics became integral to the plan.

Du Bois published his account of the highly successful exhibit in the popular *American Monthly Review of Reviews*. Although he was critical of the United States’ exhibit at large, he expressed pride in the Negro Exhibit section. “More than most others in the building,” the Negro Exhibit captured, “in as systematic and compact a form as possible,” the complete “history and present condition of a large group of human beings.” Like all the exhibits, this one contained all the “usual paraphernalia for catching the eye,” but its special achievement was the careful consideration its planners had given to the science—and art—of communicating quantitative information. Using a carefully planned combination of charts, models, photographs, stories, and manuscripts, the exhibitors attempted to capture the essence of the contemporary African American populations’ achievements. “Thirty-two charts, 500 photographs, and numerous maps and plans form the basis of the exhibit,” reported DuBois:

The charts are in two sets, one illustrating conditions in the entire United States and the other conditions in the typical State of Georgia. At a glance one can see the successive steps by which the 220,000 Negroes of 1750 had increased to 7,500,000 in 1890; their distribution throughout the different States; a comparison of the size of the Negro population with European countries bringing out the striking fact that there are nearly half as many Negroes in the United States as Spaniards in Spain.

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Carefully crafted, the exhibit demonstrated the successes and demographic growth of the African American population, rather than illustrating the rampant racism and painful living conditions many of its families suffered. The charts focused on professional African Americans, and the photograph collection depicted hundreds of middle-class families. The goal of the exhibit curators was to create a more powerful and effective portrayal of the strengths of the African American population (in the context of unmentioned hardships) to compete with the white-produced, disparaging depictions of dark skinned people found elsewhere in the exposition.

After describing the remarkable statistics presented in the exhibit, Du Bois declared that the exhibit marked a new “era in the history of the Negroes of America,” not only because of the thoroughness of the facts presented but because those facts had been gathered independently by African Americans themselves. “This is the exhibit of American Negroes, planned and executed by Negroes,” Du Bois proclaimed, “and collected and installed under the direction of a Negro special agent.” The Paris Exposition represented many populations “under the help and guidance of a stronger group.” Du Bois asked, however, what were these populations doing for themselves? “There is in the whole building no more encouraging answer than that given by the American negroes, who are here shown to be studying, examining, and thinking of their own progress and prospects.”

In Du Bois’s eyes, the African American community came into its own by the act of statistical self-study.

Across the grounds of the exposition were the exhibits of the French sub-Saharan

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24 Ibid., 576-77.
African colonies, which featured over 170 real “natives,” brought to Paris by colonial administrators to live in the “authentic” villages constructed for the fair. The African colonists were asked not only to “dance, sing, and do manual work before the public,” but to perform demonstrations of the civilizing influence of French colonial powers. At the pavilions of the Alliance française and the Berlitz School of Languages, for example, visitors could watch the Africans sitting in classroom chairs receiving language lessons from European instructors.\textsuperscript{25}

While at the exposition, the African visitors were obsessively measured and studied by anthropologists, a fact of which Du Bois and fellow organizer Thomas Calloway were acutely aware. The French Exposition, like other fairs, was an event for nations and cultures to demonstrate their advancement of civilization, and the demonstrations relied on comparisons to “uncivilized” colonial and minority peoples. Du Bois and Calloway carefully curated the American Negro Exhibit to compete with such grossly racist “scientific” representations of Africans and African Americans. When Calloway wrote to Booker T. Washington in 1899 to prose the Negro Exhibit, he made this goal explicit:

\begin{quote}
the Europeans think us a mass of rapists, ready to attack every white woman exposed, and a drug in civilized society. This notion has come to them through the horrible libels that have gone abroad whenever a Negro is lynched, and by the constant reference to us by the press in discouraging remarks. . . . To the Paris Exposition, however, thousands upon thousands of them will go and a well selected and prepared exhibit, representing the Negro’s development . . . will attract attention as did the exhibits at Altanta and Nashville Expositions . . . .\textsuperscript{26}
\end{quote}

\textsuperscript{25} Dana S. Hale, \textit{Races on Display: French Representations of Colonized Peoples, 1886-1940} (Bloomington, IN: Indiana University Press, 2008), 32-34.
\textsuperscript{26} Thomas Julius Calloway to Booker T. Washington, \textit{The Booker T. Washington Papers}, ed. Louis R. Harlan,
As Du Bois and others within African American and immigrant communities sought to produce their own authoritative social research from within, white reformers, academics, and government officials within the United States continued to study them from without. In order to leverage statistical studies as persuasive tools, both groups found that the numbers commanded a far more powerful effect when boldly visualized. Better funding was essential to the expensive production and publication of such images, and it was white reformers and researchers who had the strongest connection to institutional financing.

The Pittsburgh Survey of 1907-1908 was a landmark in social research and social scientific publication funded by the New York Russell Sage Foundation. The study, which involved dozens of academic and activist researchers including Florence Kelley, sought to paint a complete picture of labor in the booming industrial city of Pittsburgh. After completion of the study, the researchers toured the nation presenting their results in speeches and popular publications.27 The study’s leader, Paul Kellogg, wrote of how “We broke with the old stereotypes of social and economic investigations. We reinforced our text with things that spoke to the eye.”28 Dramatic photographs and drawings were combined with the seeming scientific clarify of data visualizations (figures 3.3 and 3.4).

Such urban studies became essential to social reformers across the country. Even Jane Addams’s Hull House participants, who were uniquely committed to the philosophy that

Figure 3.3. “Location of Stogy Factories and Sweatshops, 1907,” in Elizabeth Beardsley Butler, “Women and the Trades: Pittsburgh, 1907-1908,” vol. 1 of Paul Kellogg, ed., The Pittsburgh Survey (New York: Charities Publication Committee, 1909), 82.
THIRTY-FIVE YEARS OF TYPHOID

that time. But in the year 1882 an ordinance was passed requiring such reports to be made. It is very certain that several years elapsed before a majority of the cases was actually reported, and even at the present time, in spite of prosecutions and a more enlightened sentiment, many cases never reach the bureau. Yet the number actually reported in Pittsburgh proper from 1883 to 1908 reached the astounding total of 54,857. Consider this quarter century in which we have records of typhoid. Out of these

Figure 3.4. “Pittsburgh Typhoid Fever Death Rate per 100,000 by Wards from July 1st, 1906 to June 30th, 1907,” in “The Pittsburgh District Civic Frontage,” vol. 5 of Paul Kellogg, ed., *The Pittsburgh Survey* (New York: Survey Associates, Inc., 1914), 69.
social knowledge is developed experientially through daily face-to-face contact, also relied on social surveys and the graphic display of statistical findings. When the Department of Labor conducted *A Special Investigation of the Slums of Great Cities* in 1893 with Hull House resident Florence Kelly, the settlement drew up its own visualizations of the governmental data, combined these graphics with several essays, and published the collection under the title *Hull House Maps and Papers: A Presentation of Nationalities and Wages in a Congested District of Chicago* (figure 3.5). This study and its maps became far more famous than the national study of slums from which it came.

By the early twentieth century, multiple groups were competing over the control of social statistics, because it was through these numbers that authoritative knowledge of peoples produced. Ethnic minorities sought to study themselves in an effort to identify their communities as respectable, “civilized” groups and in order to gain control over social policies aimed at them. As these populations competed with governmental and outside reformers to produce convincing scientific data, the effective visual presentation of that data became an important tool. Visual media combining photography, statistical imagery, and drawings was doubly powerful. Combining the trusted objectivity of photographs and statistics with the emotional power of graphic depiction, such publications demonstrate the growing ubiquity of population statistics. Once ridiculed as meaningless, such data was now an essential and seamless element of American social knowledge.
Figure 3.5. “Nationalities Map No. 1 — Polk Street to Twelfth Street, Halsted Street to Jefferson, Chicago,” in Hull House, *Hull House Maps and Papers: A Presentation of Nationalities and Wages in a Congested District of Chicago* (New York: Thomas Y. Crowell & Co., 1895), unnumbered.
CONCLUSION

“The figures of our census are the arithmetic of God so far as they illustrate the extent and result of our growing laxity of principle and tendency to show indolence, and pleasure... [I]n modern times arithmetic has become a new tongue by new signs and new applications. It now expresses all known masses, atoms, forces, and facts in its own particular way.”

There is nothing intuitive about the application of numbers to people. Statistics do not naturally speak social truths; and human brains born ready to hear them. Instead, population data grew to prominence in the United States during the late nineteenth and twentieth centuries. Before this time, American audiences ridiculed the dull, lifeless statistical productions of a small community of statistical enthusiasts. The “scientific associate” became the butt of jokes, a quixotic tinkerer in human numerals whose books no more described the human condition than would a phone book today. The public refused to accept the idea that people could be meaningfully represented by numbers. Other things—rocks, roads, beasts, and mountains—these were appropriate subjects of quantification, but social groups were not. As statistical enthusiasts and government agencies promoted the authority and objectivity of scientific inquiry, they discovered that the American public stubbornly refused to recognize meaning where the data was applied to social beings.

Although the American public continually criticized demographic data for being lifeless wherever it was presented in the form of numerical lists and tables, the same public immediately recognized social meaning in the numbers once put to graphic form. Abstracted

to lines, shapes, and shading, and using the familiar visual cues of maps, stars, borders, and colors, these data graphics spoke to a socially established network of visual codes in late nineteenth-century America. Such images helped nurture a visual demographic imagination amongst the American populace. Although the visualizations offered their creators an additional opportunity to insert interpretation into the data, audiences recognized the images as being clearer and more meaningful than the plain data. The images were certainly more powerful, and as they helped social scientists gain prominence at the turn of the century, the graphic representation of social survey results became an important tool in the contested ground of social policy. Where claims to social knowledge were not backed by demographic evidence, they were granted little authority. Statistical study of population became a prerequisite to social knowledge, and groups competed over the authoritative production of social numbers.

The persuasive power and ubiquity of population data helped to shape social identity in the twentieth century, both national and ethnic. The reining importance of such a social epistemology is evident in one of the most enduring social theories in American historiography: Frederick Jackson Turner’s theory of the frontier line. In 1893, Frederick Jackson Turner looked at a small technical note released by the Census Bureau and translated it into a human story that has shaped American historical writing for more than a century. A bulletin released the previous year by the Bureau noted that:
Up to and including 1880 the country had a frontier of settlement, but at present the unsettled area has been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent, its westward movement, etc., it cannot, therefore, any longer have a place in the census reports.²

In this “brief official statement,” as Turner characterized it, the historian saw the essential character of the nation. Demographically pressed forward into the wilderness, European immigrants had been stripped of their civilization and “return[ed] to primitive conditions” from which they built a new society. The frontier line—a recent demographic construct of the Census Bureau—pressed forward in Turner’s story, forming the nation. Without forcing audiences to engage directly with data, Turner formulated a thesis that was, at its heart, conceptually visual and statistical. The frontier is a graphic line drawn between two imagined demographic entities. For over a century, historians have debated the authority and meaning of Turner’s thesis as it has garnered, in various forms, wide popular appeal.

Only a few decades before Turner published his thesis, American audiences had mocked and ridiculed the statistician foolish enough to quantify the American character. By the end of the century, popular audiences not only consumed more statistics about themselves as a nation, they saw demographic self-study as essential to the identity of national and ethnic populations. The story of this transformation is, in fact, the combination of multiple narratives: that of the nation’s improving mathematical education, of increasing professionalization within the statistical community, of growing governmental reliance on the scientific authority of statistics, and of the growth of a visual demographic imagination.

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