



Steven Ruggles and Diana L. Magnuson

## **The History of Quantification in History: The *JIH***

**as a Case Study** The use of quantitative methods in leading historical journals increased dramatically in the 1960s and declined sharply after the mid-1980s. The *JIH* is an invaluable source for analysis of the boom and bust in the use of quantitative methods in history; the journal remained under the same editors for almost fifty years and made no attempt to change editorial policies during that period. Shifting patterns of content and authorship in the *JIH* from the 1980s to the early 2000s reveal how the journal responded to a dramatic decline in quantitative submissions by U.S.-based historians. Recent years have seen a revival of quantification both in the *JIH* and in mainstream historical journals, especially among historians located at institutions outside the United States.

Quantification was highly fashionable when the first issue of the *JIH* appeared in autumn 1970. In the opening paragraph of the opening essay, the *JIH* editors enthused that “Whole new fields, such as historical demography, and entirely new techniques, such as computer data processing, have appeared and have made a broad impact on many areas of research.” The fiftieth anniversary of the *JIH* presents

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a timely opportunity to reflect on the changing applications of data and statistics in interdisciplinary historical research. This half-century spans a boom and bust of historical quantification, as powerful new intellectual currents sweeping over the humanities and social sciences buffeted the field. This special article uses the *JIH* as a case study to trace the shifting contours of quantification in history.<sup>1</sup>

Quantification was the central defining element of the “new” histories—the new social history, new economic history, and new political history—that transformed the landscape of historical research in the 1960s and 1970s. The new social history focused on the lives of ordinary people. Literary evidence produced by and for a small elite was seen as a problematical source for understanding non-elite populations. Accordingly, most new social historians viewed quantitative evidence as indispensable for history from the bottom up. They especially prized sources that covered the bulk of the population, such as parish registers, censuses, and city directories.

Historical demography took off in 1956 with the publication of a manual on the use of parish registers for demographic research by Fleury and Henry, spawning hundreds of “family reconstitution” studies of fertility, mortality, and marriage over the following decades. In 1963, Laslett and Harrison used population listings to show that the seventeenth-century village of Clayworth, Nottinghamshire, had extremely high geographic mobility, and that few families included extended kin. U.S. historians reported similar findings of high geographic mobility and simple family structure. In 1964, Thernstrom used linked nineteenth-century census records from Newburyport, Massachusetts, to argue that opportunities for upward social mobility were highly constrained for those at the bottom of the social hierarchy.<sup>2</sup>

1 Robert I. Rotberg and Theodore K. Rabb, “Interdisciplinary History,” *Journal of Interdisciplinary History*, I (1970), 3–5.

2 Michel Fleury and Louis Henry, *Manuel de dépouillement et d'exploitation de l'état civil ancien* (Paris, 1956); Peter Laslett and John Harrison, “Clayworth and Cogenhoe,” in Henry E. Bell and Richard L. Ollard (eds.), *Historical Essays 1600–1750 Presented to David Ogg* (London, 1963), 157–184; James C. Malin, “The Turnover of Farm Population in Kansas,” *Kansas Historical Quarterly*, IV (1935), 23–49, 164–187; Merle Curti, *The Making of an American Community: A Case Study of Democracy in a Frontier County* (Stanford, 1959); Philip J. Greven, “Family Structure in Seventeenth-Century Andover, Massachusetts,” *William and Mary Quarterly*, XXIII (1966), 234–256; Stephan Thernstrom, *Poverty and Progress: Social Mobility in a Nineteenth Century City* (Cambridge, Mass., 1964).

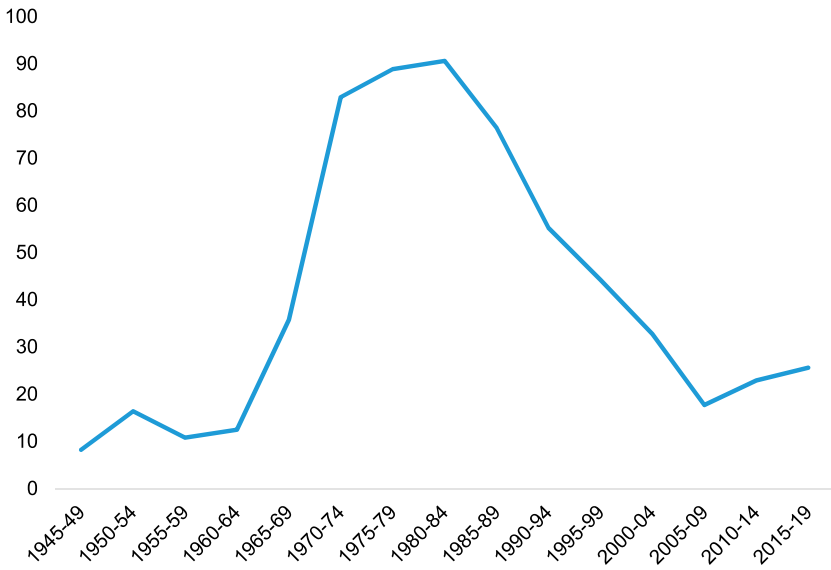
Economic historians had always used numbers, but before the late 1950s, most of them had focused on descriptive analyses using aggregated economic data series. The new economic history combined quantitative measurement and economic theory, creating a “cliometric revolution.” Many of the new studies combined firm-level or individual-level data with increasingly sophisticated statistical methods to test economic hypotheses about the past; as North expressed it, “The new economic history employs quantitative methods to test the hypotheses, the old economic history employs statistics as supporting evidence.” Among prominent early examples of the new economic history, Conrad and Meyer renewed the debate over the profitability of slavery; Fogel examined the impact of railroads on the economy; and North estimated the impact of cotton on interregional trade and economic growth.<sup>3</sup>

The new political history focused on the quantitative analysis of voting statistics and legislative roll calls, looking mainly at the United States. In the late 1950s and early 1960s, Benson, Hays, and others argued that ethnic and religious divisions, rather than economic ones, were the main determinants of U.S. voting behavior in the nineteenth century. To facilitate quantitative political research, in 1963 the American Historical Association formed an ad hoc committee for the collection of data on American political history, chaired by Benson. The committee oversaw the first large-scale efforts to digitize historical data for shared use. This project, funded by the National Science Foundation and executed by the Inter-university Consortium for Political Research in Ann Arbor, Michigan (now ICPSR), created massive files of historical election returns and county-level demographic and economic characteristics, and made the data broadly accessible to the research community.<sup>4</sup>

3 Douglass North, “The New Economic History after Twenty Years,” *American Behavioral Scientist*, XXI (1977), 187–200; Claudia Goldin, “Cliometrics and the Nobel,” *Journal of Economic Perspectives*, IX (1995), 191–208; Robert Whaples, “A Quantitative History of the *Journal of Economic History* and the Cliometric Revolution,” *Journal of Economic History*, LI (1991), 289–301; Alfred H. Conrad and John R. Meyer, “The Economics of Slavery in the Ante-bellum South,” *Journal of Political Economy*, LXVI (1958), 95–130; Robert Fogel, *Railroads in American Economic Growth* (Baltimore, 1964); North, *The Economic Growth of the United States 1790–1860* (Englewood Cliffs, 1961).

4 Lee Benson, “Research Problems in American Political Historiography,” in Mirra Komarovsky (ed.), *Common Frontiers of the Social Sciences* (Glencoe, 1957); *idem*, *The Concept of Jacksonian Democracy: New York as a Test Case* (Princeton, 1961); Samuel P. Hays, “History as Human Behavior,” *Iowa Journal of History*, LVIII (1960), 193–206; Allen G. Bogue, “United States: The ‘New’ Political History,” *Journal of Contemporary History*, III (1968), 5–27; *idem*, “The Quest for Numeracy: Data and Methods in American Political History,” *Journal of Interdisciplinary History*, XXI (1990), 89–116.

Fig. 1 Statistical Graphs and Tables per 100 Articles in Four Prominent Historical Journals, 1945–2019



The quantitative turn of the new histories had a profound impact on mainstream historical scholarship. Figure 1 shows the number of statistical tables and graphs per 100 articles in four major historical journals—the *American Historical Review*, *Journal of American History*, *Journal of Modern History*, and *Past & Present*. By this measure, statistical presentations increased eightfold between the 1960s and the first half of the 1980s. At the peak in the 1980s, every 100 articles featured 91 tables or graphs, and about one-fourth of articles included at least one table or statistical graph. The heyday of quantification in elite historical journals lasted just two decades, from 1970 to 1990. After 1990, the decline of quantification was almost as precipitous as its ascent. Quantification reached a nadir from 2004 to 2009, recovering slightly since then. This recovery is evident in all four journals.<sup>5</sup>

5 This discussion builds on J. Morgan Kousser, “Quantitative Social Science History,” in Michael Kammen (ed.), *The Past Before Us* (London, 1980), 433–456, and Bogue, “Numerical and Formal Analysis in United States History,” *Journal of Interdisciplinary History*, XII (1981), 137–175.

Historians have offered a variety of explanations for the rejection of quantification by the discipline after 1990. Some point to the heated controversies about Fogel and Engerman's *Time on the Cross: The Economics of American Slavery*, published in 1974, which, as Klein has argued, "encouraged an outright rejection of quantitative studies as a tool of historical research." In the late 1970s, historians seeking a "revival of narrative" began to unleash a backlash against quantification. Stone's article about that topic concluded that the movement to narrative history "marks the end of an era: the end of the attempt to produce a coherent and scientific explanation of change in the past." The traditionalist critique of quantification in history was soon joined by the cultural turn that blossomed across the humanities and many social sciences during the 1980s and 1990s. Cultural theorists rejected narrative history, but they also rejected positivist social science in general and quantification in particular; instead, they focused on semiotics, language, and meaning.<sup>6</sup>

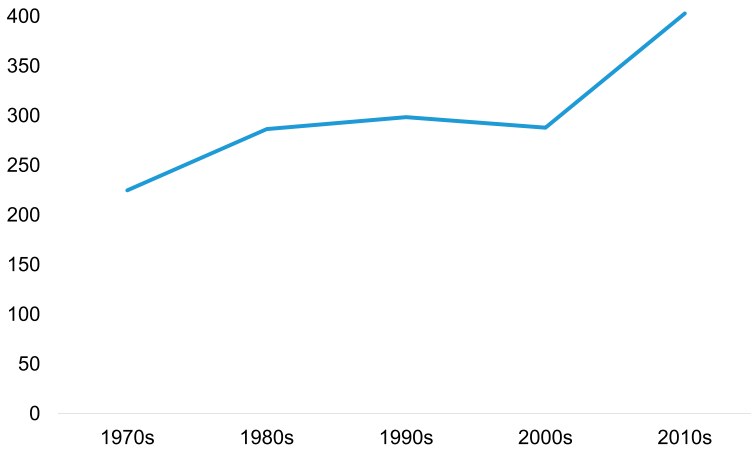
As historians abandoned quantification after 1990, other disciplines took up the slack. In the top three economics journals, the percentage of articles classified as "economic history" has roughly tripled since 1990. Our preliminary investigation suggests that the top journals of sociology, demography, and political science have also seen significant increases in quantitative historical analyses.<sup>7</sup>

QUANTIFICATION IN THE *JIH* The *JIH* offers a useful case study for analysis of the boom and bust of historical quantification. The journal had the same editors for almost five decades, and it made no intentional shift of disciplinary or topical focus across those years. The journal's core principle is the application of interdisciplinary approaches. For the most part, this approach has usually meant the application of methods drawn from the social sciences to investigate historical problems, but the journal has also featured

6 Fogel and Stanley L. Engerman, *Time on The Cross: The Economics of American Negro Slavery* (Boston, 1974), 2 v.; Lawrence Stone, "The Revival of Narrative: Reflections on a New Old History," *Past & Present*, LXXXV (1979), 3–24; Herbert S. Klein, "The 'Historical Turn' in the Social Sciences," *Journal of Interdisciplinary History*, XLVIII (2018), 295–312; Jan de Vries, "Changing the Narrative: The New History That Was and Is to Come," *ibid.*, 313–334.

7 The generalization about economics journals is based on Ran Abramitsky, "Economics and the Modern Economic Historian," *Journal of Economic History*, LXXV (2015), 1240–1251. Ruggles and Magnuson are currently analyzing leading journals for quantitative historical analyses in the disciplines of political science, sociology, and demography, as well as economics.

Fig. 2 Statistical Graphs and Tables per 100 articles in the *JIH* from 1970–2018

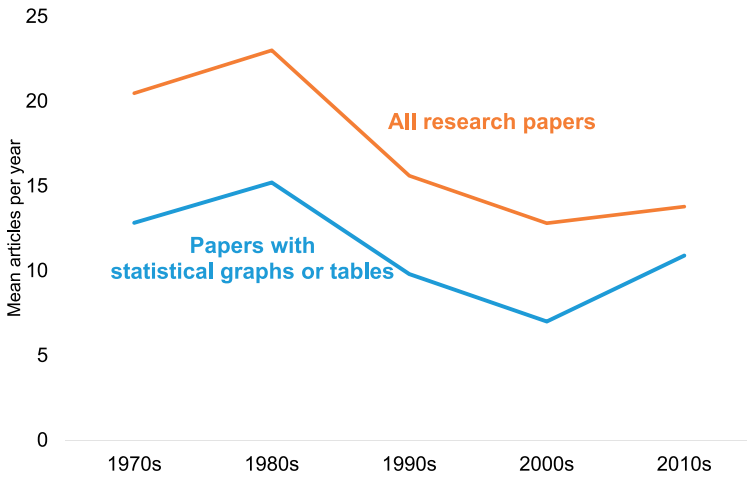


work using methods from the natural sciences or the humanities. According to managing editor Edward Freedman, the main criterion is that “we don’t accept narrative history of any kind (be it literary, intellectual, religious, cultural, etc.) or history that strikes as too arcane or specialized to have any appeal to our readership.” From the outset, most *JIH* authors were historians, but a substantial minority was spread across a wide variety of other disciplines. A close look at the shifting content, methodology, and authorship of *JIH* articles can lend insight into broader intellectual currents of the past half-century.<sup>8</sup>

Figure 2 shows the number of graphs and tables per 100 articles for the *JIH*. Unsurprisingly, the levels are much higher for the *JIH* than for the mainstream journals shown in Figure 1, ranging from 200 to 400 graphs and tables for every 100 articles. The *JIH* shows a modest increase in quantification between the 1970s and the 1980s, but after the 1980s, it diverged dramatically from the

8 Managing Editor Freedman indicates that he was unaware of any conscious efforts to shift the topical focus of the journal at any point in the past. “Nothing like that ever crossed my path, though I had a sense that certain trends were occurring beyond any deliberate encouragement from us.” Personal communication, February 15, 2019. Freedman’s comments on the *JIH* criteria for accepting submissions for publication were quoted in Maartin Draper, “Journal of Interdisciplinary History: A Journal Review, 2006–2010,” available at <https://www.rug.nl/let/education/master/rema/mhir/journal-interdisciplinary-history-draper.pdf>.

Fig. 3 Average Number of Research Papers per Year in the *JIH* from 1970–2018

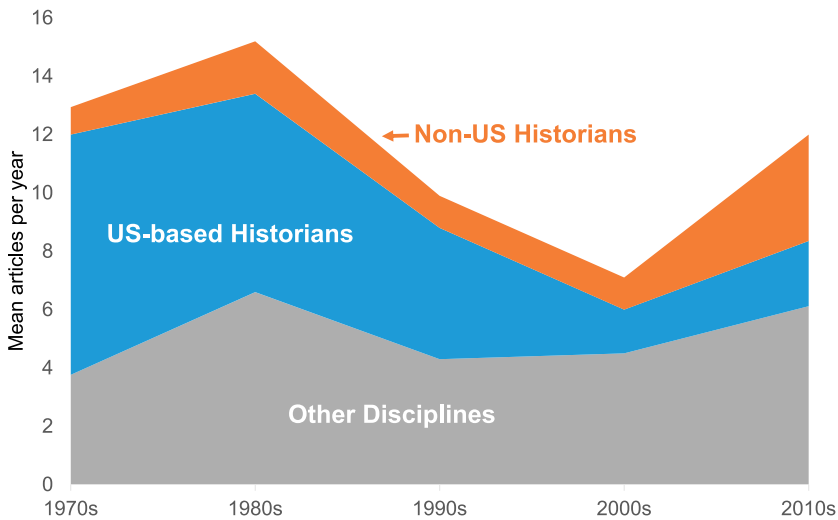


trend shown in Figure 1. Instead of the sharp decline in quantification seen in the mainstream journals, the frequency of graphs and tables in the *JIH* held steady through the 1990s and 2000s. In the 2010s, the *JIH* saw a substantial increase in quantitative displays; they now stand at the highest levels in the history of the journal.

Despite the stability in the ratio of graphs and tables to articles between the 1980s and the 2000s, the absolute *number* of articles making use of quantitative analysis declined steeply. We define quantitative articles as those with at least one statistical graph or table. In the 1980s, the *JIH* published an average of 15.2 quantitative articles per year; the number fell to just 7.1 in the period from 2000 to 2009. The reason is simple: The journal dramatically reduced the number of research papers published in this period, from an average of 23.0 per year in the 1980s to just 12.8 per year in the 2000s. These changes are shown in Figure 3.

The overall number of pages in the journal did not change appreciably, but the content moved away from original research toward review essays and book reviews. At the low point in the early 2000s, most issues had just one or two research papers. This apparently was not an intentional policy. Editor Robert Rotberg and Managing Editor Freedman concur that the journal made no

Fig. 4 Average Number of Quantitative Articles per Year in the *JIH* from 1970–2019, by Leading Author’s Discipline and Nationality



deliberate attempt to reduce the pages available to publish research. Rotberg and Freedman agree that the most plausible explanation for the decline was “a lack of good or appropriate submissions.”<sup>9</sup>

Why did the number of submissions decline? Figure 4 breaks down the published quantitative articles by discipline and institutional location (nationality) of the first-named author. U.S.-based historians, shown in blue, accounted for almost two-thirds of the quantitative articles in the 1970s, averaging 8.2 quantitative articles per year. The U.S. representation dropped precipitously in the following decades, to a low point of just 1.5 articles per year in the 2000s. The decrease in quantitative publications by U.S. historians can account for the entire decline in quantitative publications in the *JIH* between the 1970s and the 2000s, and 88 percent of the decline in the total number of research articles published.

Since the 2000s, the number of quantitative articles in *the JIH* has jumped sharply, nearly attaining the level of the 1970s. Little of this increase, however, can be ascribed to U.S.-based historians.

9 Freedman, Personal communication, February, 12, 2019; Rotberg, personal communication, February, 12, 2019.



Instead, it reflects a major expansion in articles from historians based in other countries, primarily Europe, in combination with a steady growth in the number of articles from other disciplines.

The most plausible explanation for these developments is that the number of high-quality quantitative submissions for U.S.-based historians dried up after the 1980s. The decline of research by U.S.-based historians was not, however, confined to quantitative research. Figure 5 shows the disciplinary distribution for both non-quantitative (Panel A) and quantitative (Panel B) articles published in the *JIH*. In the 1970s, 61 percent of non-quantitative articles were written by U.S.-based historians; this number declined to just 19 percent in the 2010s. The shift was only slightly greater for the quantitative articles; about 64 percent were from U.S.-based historians in the 1970s, compared with 19 percent in the 2010s. The striking decline in articles by U.S.-based historians may be indicative of a broader rejection of interdisciplinary approaches, not simply a rejection of quantification.<sup>10</sup>

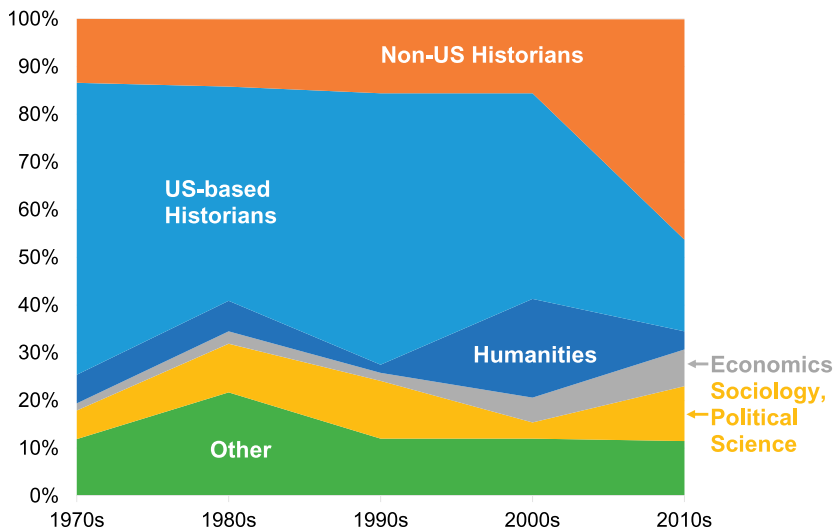
TRENDS IN THE CHARACTERISTICS AND IMPACT OF ARTICLES IN THE *JIH* Despite the dramatic change in the disciplinary affiliations of *JIH* authors, the broad distribution of *JIH* research topics has remained relatively stable. Figure 6 shows a classification of *JIH* articles according to the three new histories (social, political, and economic). We also identify demographic/family history and psychohistory. The rest of the social category includes urban history, social-mobility studies, education, and labor history, as well as investigations of race, gender, and ethnicity. The “other” category is a catch-all, including environmental history, cultural history (including studies of art, architecture, literature, and music), and religion.

The top panel of Figure 6 shows the trends in the topical distribution of all *JIH* articles and research notes. In the 1970s, psychohistory was a significant category, but it disappeared in the 1980s as psychoanalytic theory fell from favor. Social history expanded in the 1990s and 2000s; a diverse array of both qualitative and quantitative articles focused on poverty, labor, voluntary associations,

10 In his *JIH* article, “The ‘Historical Turn,’” Klein argues that the rejection of quantitative analysis by historians was followed by a “progressive distancing from the other social sciences, even by historians trying to answer questions in economic history” (295). “The ‘Historical Turn,’” 295.

Fig. 5 Disciplinary Distribution of Articles and Research Notes in the *JIH* (Percentages)

A. Non-Quantitative Articles



B. Quantitative Articles

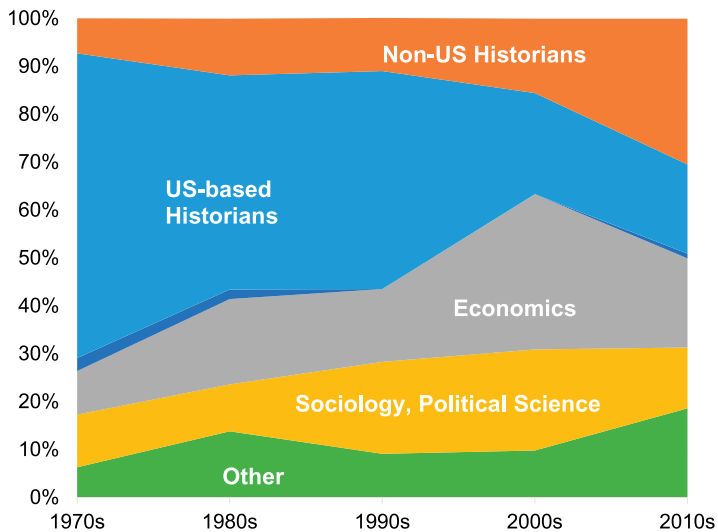
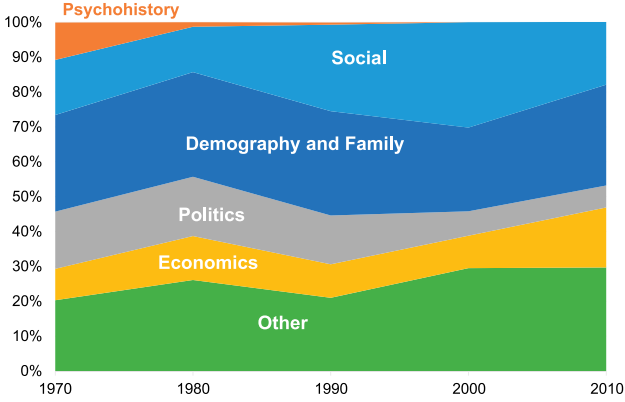
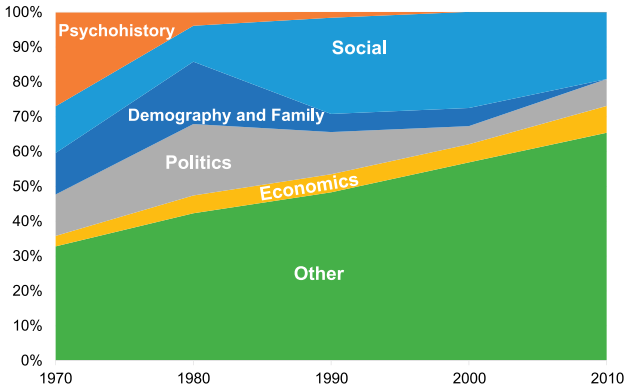


Fig. 6 Topical Distribution of Articles and Research Notes in the *JIH*

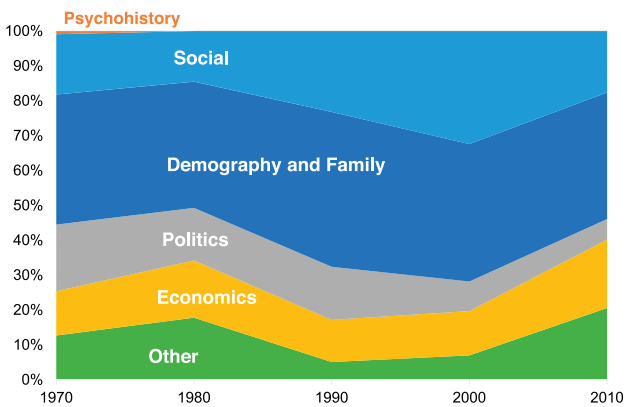
A. All Articles



B. Non-Quantitative Articles



C. Quantitative Articles



immigration, education, gender, and race. Studies in demography and family history have remained stable as a percentage of *JIH* articles. Politics has declined significantly, and economics has expanded slightly in the last decade.

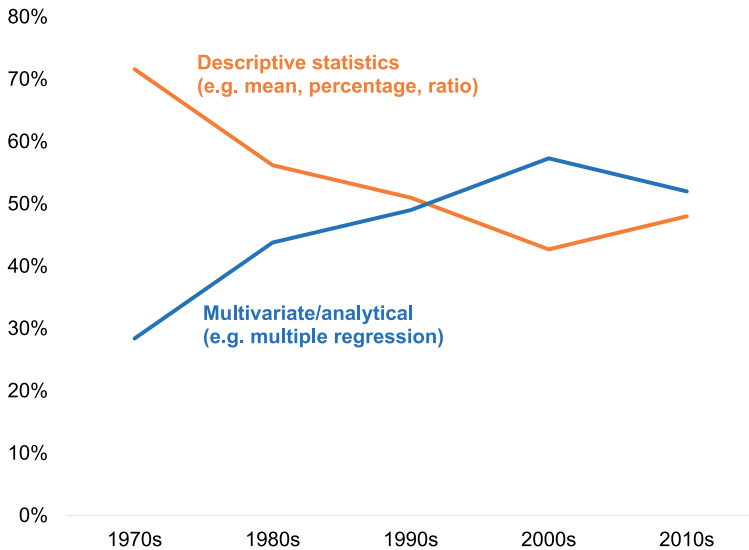
The overall distribution of topics may have changed only modestly, but the topics of non-quantitative articles changed dramatically. Panels B and C of Figure 6 compare the topical distributions of non-quantitative and quantitative articles, respectively. The three new histories comprised a small minority of qualitative articles, whereas the “other” category started to dominate, accounting for more than half of the material published during the twenty-first century. Many of these articles were recruited for publication in special issues on religion, opera, and biography. By contrast, the distribution of quantitative articles, shown in Panel C, continues to be dominated by articles in the traditional new history domains, especially demography, family, and social history. The upward bumps in the “other” category during the 1980s and the 2010s reflect two spurts of articles on environmental history, especially climate change.

Some of the fluctuations in the characteristics of *JIH* articles reflect variations in special issues. The *JIH* has relied heavily on special issues, which account for 28 percent of all the articles and research notes that it has published to date. In all periods, articles in special issues were significantly less likely to include graphs or tables than were regular articles and research notes, especially in the 1990s and 2000s, when just 18 percent of articles in special issues included quantitative analysis, compared with 72 percent of regular research articles.

The quantitative methods featured in the *JIH* have become much more sophisticated over the past five decades. In the 1970s, almost three-fourths of the quantitative articles used simple descriptive statistics. As shown in Figure 7, the percentage of quantitative articles driven by more advanced analytic methods, such as multiple regression, increased sharply, reaching a peak from 2000 to 2009, when 57 percent of quantitative articles contained analytic statistics. The slight increase in descriptive analyses in the past decade partly reflects a spike in articles about the environment that rely mainly on descriptive statistics.

We can estimate the impact of different kinds of *JIH* articles through an index of citations for quantitative and non-quantitative

Fig. 7 Methods Used in Quantitative *JIH* Articles

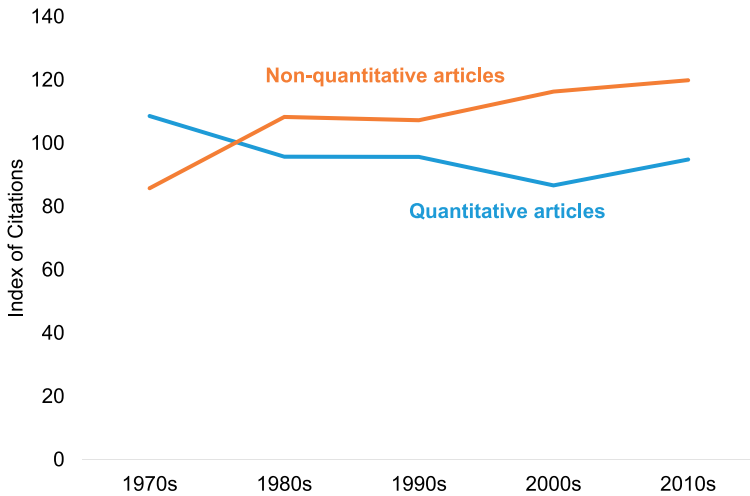


articles. Using citation counts in the Web of Science index, we can calculate the number of times each article has been cited as a percentage of the mean citations for all articles published in the *JIH* within the same decade. Thus, a citation index of 200 means that an article had twice as many citations as the average article of its decade, and a citation index of 50 means that the article had half as many citations as the average article of that decade. Figure 8 compares the citation indexes for quantitative and non-quantitative *JIH* articles and research notes. In the first decade, the quantitative articles were more often cited than the qualitative ones, but this pattern reversed in the 1980s. The higher citation rate of qualitative articles relative to quantitative ones increased further in the 2000s. As quantitative approaches lost favor among historians, relative citations of *JIH* quantitative research diminished.<sup>11</sup>

Closer examination of the most-cited articles from each decade of the *JIH* reveals how the quantitative changes described herein played out. Among the ten most-cited articles in the 1970s, U.S.-based historians wrote six and U.S.-educated scholars teaching in

11 The databases of the Web of Science (a subscription service) are available at <https://clarivate.com/products/web-of-science/>.

Fig. 8 Index of Citations for Quantitative and Non-Quantitative Articles in the *JIH*



Canada wrote two. The non-historians among the most-cited articles of the 1970s were Gourevitch, a political scientist, who performed a comparative analysis of the depression of 1873–1896, and Wood, an English professor, who wrote about women’s “fashionable diseases” of the nineteenth century. Seven of the ten most-cited articles included quantitative analysis; the exceptions were the Gourevitch and Wood articles, as well as an article by Kuhn about the history of science.<sup>12</sup>

Several of the most highly cited *JIH* articles of the 1970s focused on illegitimacy and premarital sexual activity. In his controversial article about the sexual revolution, Shorter argued that the rise of illegitimacy in nineteenth-century Europe reflected the sexual emancipation of working-class women. Responding to Shorter in another highly cited article, Tilly, Scott, and Cohen argued that the rising numbers of women who had illegitimate children did not reflect the pursuit of sexual pleasure so much as the growing exposure of

12 Peter Alexis Gourevitch, “International Trade, Domestic Coalitions, and Liberty: Comparative Responses to the Crisis of 1873–1896,” *Journal of Interdisciplinary History*, VIII (1977), 281–313; Ann Douglas Wood, “The ‘The Fashionable Diseases’: Women’s Complaints and Their Treatment in Nineteenth Century America,” *ibid.*, IV (1973), 25–52; Thomas S. Kuhn, “Mathematical vs. Experimental Traditions in the Development of Physical Science,” *ibid.*, VII (1976), 1–31.

women to vulnerable circumstances and the erosion of community and familial constraints. The single most-cited article from the 1970s was a paper by Smith and Hindus about trends in premarital pregnancy over the long run (1640 to 1971), primarily in the United States but with comparisons to European countries. Smith and Hindus argued for a cycle of premarital sexual activity driven by both cultural and structural changes.<sup>13</sup>

Among the other highly cited *JIH* articles of the 1970s, Tilly wrote about food riots; Katz proposed a system of occupational classification; Thernstrom and Knights investigated urban mobility; and Kousser discussed ecological regression in political history. Other than Kousser's, none of the highly cited articles of the 1970s employed methods more sophisticated than percentages, and most of them included just a few descriptive tables.<sup>14</sup>

Ten years later, the character of the most prominent articles had shifted. In the 1980s, most of the highly cited articles came from special issues; political scientists and sociologists were more frequent contributors than were historians. Among the ten most-cited articles in the 1980s, just four used quantitative approaches, including just one quantitative article by a U.S. historian—Shammas' analysis of self-sufficiency in early America. Among the other quantitative articles were one by Abbott, a sociologist, and Forrest, an anthropologist, that used sequence analysis to investigate Morris dances; one by Fogel, an economist, and nine collaborators that described the decline in stature in America and Britain in the nineteenth century; and one by Wrigley of the Cambridge Group for the History of Population and Social Structure that presented an interpretation of urbanization and agricultural change in early modern Europe.<sup>15</sup>

13 Edward Shorter, "Illegitimacy, Sexual Revolution, and Social Change in Modern Europe," *ibid.*, II (1971), 237–272; Louise A. Tilly, Joan W. Scott and Miriam Cohen, "Women's Work and European Fertility Patterns," *ibid.*, VI (1976), 447–476; Daniel Scott Smith and Michael S. Hindus, "Premarital Pregnancy in America 1640–1971: An Overview and Interpretation," *ibid.*, V (1975), 537–570.

14 Tilly, "The Food Riot as a Form of Political Conflict in France," *ibid.*, II (1971), 23–57; Michael B. Katz, "Occupational Classification in History," *ibid.*, III (1972), 63–88; Thernstrom and Peter R. Knights, "Men in Motion: Some Data and Speculations about Urban Population Mobility in Nineteenth-Century America," *ibid.*, I (1970), 7–35; Kousser, "Ecological Regression and the Analysis of Past Politics," *ibid.*, IV (1973), 237–262.

15 Carole Shammas, "How Self-Sufficient Was Early America?" *ibid.*, XIII (1982), 247–272; Andrew Abbott and John Forrest, "Optimal Matching Methods for Historical Sequences," *ibid.*, XVI (1986), 471–494; Fogel, Engerman, Roderick Floud, Gerald Friedman, Robert A. Margo, Kenneth Sokoloff, Richard H. Steckel, T. James Trussell, Georgia Villaflor, and

These patterns persisted for the next two decades. Of the ten most-cited articles in the 1990s, five used quantitative analysis, and in the 2000s, four did. In these decades, economists accounted for more than half of the most highly cited quantitative articles. For example, economists Goldin and Katz investigated the rise of secondary schooling in the United States; Clark assessed the returns to capital in England in the sixteenth and seventeenth centuries; and Bodenhorn documented the association of skin complexion with stature among free blacks in antebellum Virginia. U.S.-based historians contributed two highly cited quantitative research notes in the 1990s, but none in the 2000s.<sup>16</sup>

The decade of the 2010s saw something of a throwback to the patterns of the 1970s. Seven of the ten most-cited articles from the past decade include quantitative analysis; six were written by historians, including three U.S.-based historians and three international historians. A marked revival of interest in climate, a theme that had first emerged in the 1970s, occurred, but in this period, the research was often undertaken by large interdisciplinary teams. For example, McCormick and eleven collaborators documented climate change during and after the Roman Empire, and Halden and fourteen collaborators integrated documentary, archeological, pollen, and stalagmite evidence to understand climate change in Anatolia from 300 to 1400 A.D. Most of the other top-cited quantitative articles of the 2010s focused broadly on demographic topics, but the themes were creative and diverse, using novel sources and methods. Thus, Silveira and colleagues conducted a spatial analysis of the demographic impact of railroads in Portugal, and Dewitt and Slavin combined skeletal and documentary evidence to assess the health impacts of the great famine in fourteenth-century England.<sup>17</sup>

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Kenneth W. Wachter, "Secular Changes in American and British Stature and Nutrition," *ibid.*, XIV (1983), 445–481; E. Anthony Wrigley, "Urban Growth and Agricultural Change: England and the Continent in the Early Modern Period," *ibid.*, XV (1985), 683–728.

16 Goldin and Lawrence F. Katz, "Human Capital and Social Capital: The Rise of Secondary Schooling in America, 1910–1940," *ibid.*, XXIX (1999), 683–723; Gregory Clark, "The Political Foundations of Modern Economic Growth: England, 1540–1800," *ibid.*, XXVI (1996), 563–588; Howard Bodenhorn, "The Mulatto Advantage: The Biological Consequences of Complexion in Rural Antebellum Virginia," *ibid.*, XXXIII (2002), 21–46.

17 Michael McCormick, Ulf Büntgen, Mark A. Cane, Edward R. Cook, Kyle Harper, Peter Huybers, Thomas Litt, Sturt W. Manning, Paul Andrew Mayewski, Alexander F. M. More, Kurt Nicolussi, and Willy Tegel, "Climate Change during and after the Roman Empire: Reconstructing the Past from Scientific and Historical Evidence," *ibid.*, XLIII (2012), 169–220; John Haldon, Neil Roberts, Adam Izdebski, Dominik Fleitmann, Michael McCormick, Marica Cassis, Owen



THE REVIVAL OF QUANTIFICATION IN HISTORICAL RESEARCH Quantitative research by scholars affiliated with U.S. history departments expanded rapidly in the late 1960s and 1970s, remained strong through the 1980s, and collapsed precipitously in the 1990s. The rejection of quantitative methods by historians coincided with the cultural turn: Beginning in the late 1970s, U.S. historians began questioning the epistemological foundations of historical social science. Relativist interpretations gained favor over empiricist and positivist approaches. In place of systematic empirical research, many saw the role of the historian as an interpreter of language, agency, and discourse.

The decline in the number of articles using quantitative methods—both in the *JIH* and in the mainstream historical journals—was not, in all likelihood, driven by changes in editorial policies. It is much more plausible that the change emanated from the bottom up, as the flow of submissions from historians diminished. The mainstream historical journals responded by publishing more non-quantitative articles, especially research in cultural history. The *JIH* followed a different path, greatly reducing the total number of research articles published and increasing the number of book reviews and review essays to compensate.

Recent years have seen a revival of quantification in historical research, with modest increases in articles containing statistical tables or graphs in the *American Historical Review*, *Journal of American History*, *Journal of Modern History*, and *Past & Present*. In the *JIH*, the mean number of articles per year by historians using quantitative methods fell 72 percent from the 1970s to the 2000s, but it grew 126 percent between the 2000s and the 2010s (through the first issue of 2019). The revival of historical quantification has been most pronounced among historians based in Europe. Over the past decade, the mean number of quantitative *JIH* articles per year by historians located outside the United States grew 230 percent, compared with just 49 percent growth among U.S.-based historians.

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Doonan, Warren Eastwood, Hugh Elton, Sabine Ladstätter, Sturt Manning, James Newhard, Kathleen Nicoll, Ioannes Telelis, and Elena Xoplaki, “The Climate and Environment of Byzantine Anatolia: Integrating Science, History, and Archaeology,” *ibid.*, XLV (2014), 113–161; Luís Espinha da Silveira, Daniel Alves, Nuno Miguel Lima, Ana Alcântara, and Joseph Puig, “Population and Railways in Portugal, 1801–1930,” *ibid.*, XLII (2011), 29–52; Sharon DeWitte and Philip Slavin, “Between Famine and Death: England on the Eve of the Black Death—Evidence from Paleoepidemiology and Manorial Accounts,” *ibid.*, XLIV (2013), 37–60.

The revival of quantification among U.S. historians, which is still new and small-scale, can be detected only through quantitative analysis of publications. Klein, one of the most perceptive analysts of quantification in history, recently wrote, “North American historians still show hostility for any kind of quantitative and comparative work that does not fit into these new styles and ideologies, especially in the field of social history. Although European pioneers in these new historical trends do not unilaterally see any inherent conflict between macro- or micro-history (in Ginzburg’s terms, “serial history and individual biography”), North American cultural historians are reluctant to relate individual experience to the larger world that they inhabit; such a strategy would require an explanation of the universality or the uniqueness of the individuals in question. This rejection of quantitative evaluation marks a good deal of the current cultural history.”<sup>18</sup>

There is still broad hostility to quantification among U.S. historians, and it is likely to continue for some time. Nevertheless, the evidence for a broad-based revival of quantification among U.S. historians is strong. What has caused that revival? The cultural turn in history is gradually fading. When postmodern history became entrenched in the establishment, it lost the excitement of its insurgency three decades ago. As Spiegel noted in her presidential address to the American Historical Association, we have seen “accumulating discontent with poststructuralism.” The “science wars” of the 1990s—which pitted postmodernist critics of science against its rationalist defenders—are over. In the face of climate-change denial and general hostility towards science on the political right in the United States, humanistic skepticism about the scientific enterprise seems to be diminishing.<sup>19</sup>

The waning influence of the cultural turn has encouraged the revival of quantification in history, but it is not the only factor. New data resources and new methods are creating exciting opportunities for quantitative analysis, and new technology makes data analysis far simpler and less expensive than it ever was in the heyday of historical quantification. We now have free access to billions

18 Klein, “Historical Turn,” 297.

19 Gabrielle Spiegel, “The Task of the Historian,” *American Historical Review*, CXIV (2009), 1–15. For the decline of postmodern history, see de Vries, “Changing the Narrative”; Spiegel (ed.), *Practicing History: New Directions in Historical Writing after the Linguistic Turn* (New York, 2005); for the science wars, Keith Ashman and Philip Baringer (eds.), *After the Science Wars* (New York, 2001).

of individual-level census records describing the entire enumerated populations of multiple countries and hundreds of localities within them between 1703 and 1940. These data include the characteristics of all enumerated individuals nested into households. New machine-learning, record-linkage techniques are allowing investigators to link censuses together to form longitudinal series, allowing scholars to examine the life histories of tens of millions of people, to trace families across multiple generations, and to link individuals to administrative documents (military, tax, and vital records). Census and survey samples for ninety-four counties in the period 1960 through the present are also available.<sup>20</sup>

Furthermore, new spatial tools allow us to measure change for consistent geographical footprints in more than ninety counties, and to merge demographic data with historical climate data and land-cover information. Every year, new historical data sources become available for research on myriad topics, such as climate change, agriculture, religion, health, stature, immigration, the slave trade, Spanish colonial expenditures, and Chinese lineages. Perhaps most important, textual sources are being digitized. Millions of digitized books are already available, and increasingly archival manuscript sources are being made available in digital form.

Klein argued that the explosive growth of digital historical data has stimulated a “historical turn” in the social sciences. It would be a big mistake for historians to abandon the quantitative analysis of the past to economists, sociologists, and demographers. Too often, social scientists analyze historical data without understanding the context of the time and place in which the data were generated, and without interrogating the motives and biases of their creators. The revival of quantification allows historians to participate and engage with the rapid growth of historical social science, which will benefit both history and social science.<sup>21</sup>

20 Ruggles, “Big Microdata for Population Research,” *Demography*, VI (2014), 287–297; *idem*, “The Future of Historical Family Demography,” *Annual Review of Sociology*, XXXVIII (2012), 423–441; *idem*, Catherine Fitch, and Evan Roberts, “Historical Census Record Linkage,” *Annual Review of Sociology*, XLIV (2018), 19–37; Mikołaj Szoltysek and Siegfried Gruber, “Mosaic: Recovering Surviving Census Records and Reconstructing the Familial History of Europe,” *History of the Family*, XXI (2016), 38–60; Ruggles, Tracy A. Kugler, Fitch, and David C. Van Riper, “Terra Populus: Integrated Data on Population and Environment,” *2015 IEEE International Conference on Data Mining Workshop (ICDMW)* (2016), 222–231, available at doi: 10.1109/ICDMW.2015.204; Klein, “Historical Turn.”

21 Klein, “Historical Turn.”

