

1 Introduction

Good health is a supportive and sometimes necessary condition for anything else one might wish to achieve. Also, societies with inhabitants in poor health tend to suffer from other sorts of deprivations. Hence, it is important to know why population health is better, or improves faster, in some societies than in others. Medical research has shown how therapeutic medical technologies, personal preventive measures, and mechanisms of disease transmission have influenced biological processes that lead to morbidity and mortality (Mosley and Chen 1984). Social science research has focused on more distal determinants of population health, including economic affluence, income inequality, women's empowerment, state capacity, and political regime type. To help policy makers and the public decide how to allocate time, effort, and material resources to expanding the health-related and democracy-related capabilities of a society's inhabitants, it is important to know how, and how much, each of these macrosocial factors has affected population health and has in turn been influenced by population health.

To this end, it seems useful to identify, classify, and evaluate the findings of quantitative research on the impact of democracy on population health, as well as on the impact of population health on democracy. Consumers of research on democracy and population health will benefit from this Element's summary and critique of quantitative studies completed to date. Producers of such research will benefit from the study's inventory of methodological challenges that other scholars have confronted. In particular, practitioners of qualitative or mixed-method (qualitative and quantitative) approaches will, it is hoped, draw from this Element a better idea of which particular country studies or small-N comparisons will have the greatest payoff in elucidating the causal mechanisms behind the associations identified in quantitative analyses, and in advancing the understanding of questions left unresolved by previous quantitative research.

This Element makes two arguments about the association between democracy and population health. First, when democracy improves the provision and utilization of health-enhancing government programs and services, it does so not just through electoral competition – the democratic dimension most often cited in the literature as mattering for population health – but also through electoral participation; other forms of political participation; the freedoms of association, assembly, organization, and expression; and long-term legal and cultural changes. Second, despite recent advances in research design, statistical technique, and data availability and quality, research on democracy and population health faces five methodological challenges. First, the most frequently used

quantitative indicators of democracy do not really measure whether a political regime has free and fair elections, basic human and civil rights, and “electoral victors [with] meaningful power to rule” (Diamond 2015: 143). Some indicators neglect suffrage rights, others neglect many or all basic human and civil rights, and others neglect whether electoral victors have meaningful power to rule. Second, estimates of infant and under-five mortality in particular countries in particular years often change within the same child mortality database as information from more recent sources comes in. Third, seemingly minor changes in the measurement of democracy, or of population health, can have momentous effects on findings. Fourth, democracy is among the factors that are antecedent to good governance, so it is not surprising that democracy sometimes loses significance when good governance is added to a statistical model. Fifth, research on the association between democracy and population health has been unduly preoccupied with whether democracy improves population health regardless of time and place, and insufficiently concerned with identifying, by using qualitative as well as quantitative methods, the senses, degrees, ways, and contexts in which democracy affects population health, and in which population health affects democracy.

Section 2 of the Element traces the rise of scholarly interest in the association between democracy and population health and reviews the findings of 201 journal articles, books, unpublished papers, and chapters that assess quantitatively the association between the two phenomena. Section 3 explores how democracy and population health have been conceptualized and measured. This section argues that widely used quantitative indicators of democracy fail to measure some widely agreed-upon dimensions of democracy, and that appropriate and necessary revisions of infant and child mortality estimates as new information comes to light make conclusions reached on the most recent estimates of population health indicators even more tentative. Section 4 identifies dimensions of democracy that encourage the provision and utilization of health-promoting government programs and services. Some of these dimensions, such as free and fair elections, are common to all democracies; others, such as proportional representation or presidentialism, are found only in certain democracies. The research reported in this section shows that many aspects of democracy, not just electoral competition, appear to be beneficial for population health. Section 5 calls into question the claim that democracy adds little to population health once good governance is taken into account, shows that democracy influences other macrosocial factors that in turn affect population health, and identifies pathways by which population health has affected democracy. Section 6 concludes by summarizing recent advances and current challenges in research on democracy and population health, exploring

the research potential of a perspectivist epistemology in which empirical confrontation is used less to support or refute hypotheses than to refine and develop them, and recommending that future research where possible combine quantitative analyses of large numbers of units with historical case studies and small-scale comparisons.

2 The Rise of Scholarly Interest in Democracy and Population Health

The impact of politics on population health has been studied since the mid-nineteenth century (Virchow 1985 [1879]: 307, 309), and in some respects since the classical era in Greece (Olafsdottir and Beckfield 2011: 101; Kouloumentas 2014: 883–885). Before 2000, however, scholars published few articles about the impact of democracy on population health, albeit many about the impact of democracy on economic growth and income inequality. Among the 201 studies reviewed for this Element, the first in a political science journal appeared in 1985. It found that across 116 countries, more democracy in the early 1960s was associated with lower infant mortality and longer life expectancy in the early 1970s (Moon and Dixon 1985).

In the early 1990s, sociologists and public health specialists began to inquire more systematically into the macrosocial determinants of population health (Link and Phelan 1995). In the 1980s, scholars writing from a historical perspective began to address democracy and population health in the United States (Nathanson 1996), Great Britain (Szreter 1997; Lizzeri and Persico 2004), and developing countries (Caldwell 1986; Drèze and Sen 1989). In the early 1980s, Amartya Sen pointed out that “harrowing newspaper reports and troublesome opposition parties” could help explain why colonial India and revolutionary China experienced famine, whereas democratic post-independence India has not (Sen 1983: 759). The capabilities approach to development, which conceptualized both democracy and population health as inputs to the expansion of the ability to lead a thoughtfully chosen life (Sen 1999; Nussbaum 2011), also raised interest in the association between democracy and population health.

Improvement in cross-national democracy and mortality data sets over the past fifty years has permitted more rigorous exploration of the association between democracy and population health. Cross-national democracy data sets based on expert judgments or empirical indicators date back to the late 1950s (Bollen 1980), and initial versions of Polity and Freedom House, the two cross-national democracy data sets used most widely in the 201 studies reviewed (Section 3.1, Table 5), went public in the early 1970s (Gurr 1974; Gastil 1990). An equally important obstacle to the systematic study of the

impact of democracy on population health involved the measurement of mortality and morbidity. As late as 1990, cross-national data on population health were inconsistent, even across United Nations sources, notably for infant and under-five mortality, the most keenly followed indicators. Only after 1990 did United Nations agencies begin systematically to compile (UNPD 1992) and reconcile (Hill et al. 1999) infant and under-five mortality estimates. A watershed year was 2004, when four UN agencies – the United Nations Children's Fund (UNICEF), the United Nations Development Programme (UNDP), the United Nations Population Division (UNPD), and the World Bank – formed the Inter-Agency Group for Child Mortality Estimation to develop a common set of cross-national infant and child mortality statistics.

Beginning around 2000, then, the emergence of the capabilities approach, rising interest from scholars in several disciplines, and better data encouraged more social-scientific studies of the association between democracy and population health. To identify these studies, the ISI Web of Science v. 5.30, “All Databases,” was searched using the topic phrase ((democra* and (mortality or life expectancy)) NOT (Democratic Republic)) (the NOT term was used to exclude an impressive number of studies of the Democratic Republic of the Congo). The 652 abstracts produced yielded 177 pertaining to articles and chapters in which some sort of quantitative method seemed to have been used to explore the association between a democracy measure and a population health indicator. Perusal of these 177 articles excluded 41, mostly interesting think-pieces or literature reviews, leaving 136 articles. Second, alternative combinations of terms were used to search each of the ten journals with four or more articles on democracy and population health, yielding 13 additional studies. Third, because the Web of Science does not include books, theses, or working papers and has incomplete coverage of chapters in edited volumes, references in the works identified in the first and second stages, combined with general knowledge of the literature, added 52 studies to the total.

Each of the resulting 201 studies (136+13+52) was coded in an associated database (Appendix Table 12) on 12 criteria (Table 1) subsuming a total of 321 subcriteria. The 201 studies identified comprise a fairly (not fully) exhaustive subset of quantitative analyses of the relation between democracy and population health, subject to the search terms used and to the author's judgments about the domain of inquiry. The 201 studies reviewed included 184 journal articles (one article by Bollyky et al. 2019 reported 3 studies), 6 books, 4 theses, 3 working papers, and 2 chapters. The earliest appeared in 1985, but 191 of the 201 studies reviewed were published in or after 2000.

From 2000 to 2018, the production of articles on democracy and population health rose more steeply than the production of social science articles in general

Table 1 Database of Articles on Democracy and Population Health: Major Coding Categories

Variable category	Number of variables coded in category
Bibliographic information	14
Universe of cases	8
Study findings	8
Dependent variable	59
Independent variable	5
Democracy role	2
Democracy measure	34
Democracy source	20
Method	14
Control variables	143
SCImago journal classification	10
Study impact	4
Total	321

Note: For a complete list of the 321 variables coded in each category including observation counts and minimum and maximum values, see Appendix Table 1.

(Figure 1). The 184 journal articles reviewed were published in 93 journals, with the top 10 accounting for almost half of the articles (Table 2). These journals were diverse. In the SCImago (2018) database, each of the 93 journals had one (70), two (18), three (4), or four (1) field classifications: 56 in the social sciences, 26 in medicine, 24 in economics or business, 6 in psychology, 4 in arts and humanities, and 2 each in agriculture/biology, environmental sciences, and engineering.

Studies written from a historical perspective (e.g., Caldwell 1986; Drèze and Sen 1989; Nathanson 1996; Szreter 1997) inspired much current research on democracy and population health. This study focuses on quantitative research, which has become more rigorous over time (Figure 2), but most quantitative research is designed to detect association. Elucidation of causal mechanisms requires historical studies.

Democracy per se was involved in 150 of the 201 studies relating democracy to population health: as a right-hand side variable predicting an overall population health outcome in 141, as a right-hand side variable predicting a population health inequality in 5, and as a dependent variable in 4 (Table 3). Of the 146 studies in which democracy per se served as a right-hand side

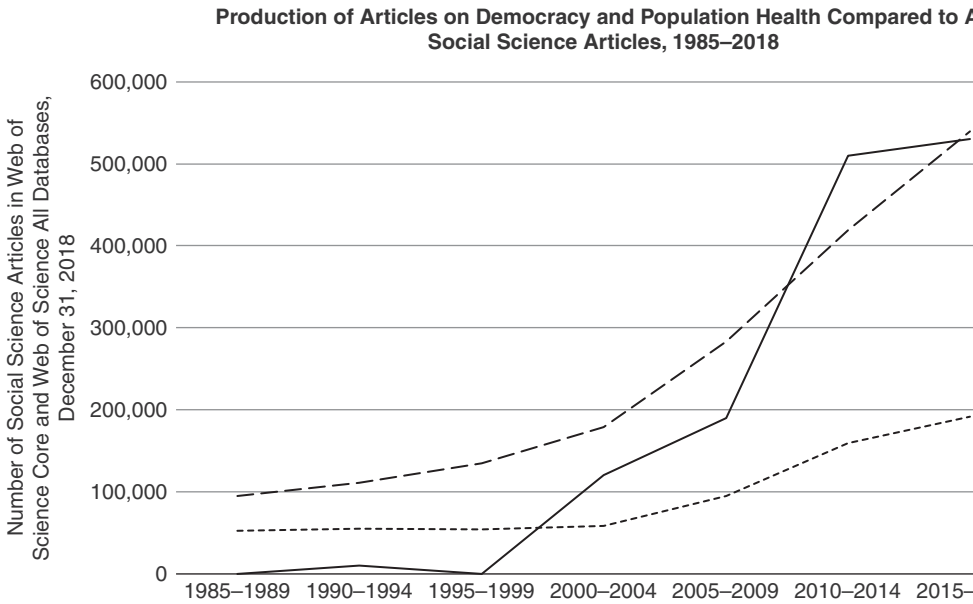


Figure 1 Production of Articles on Democracy and Population Health Compared to All Social Science Articles, 1985–2018

Source: Democ/Health: 136 journal articles 1985–2018 obtained from the Web of Science with the search p...
 WOS all: aggregated annual data from the Web of Science consulted December 18, 2018. Appendix Figure 1

Table 2 Journals with the Most Articles on Democracy and Population Health

Journal	Number of articles in database	Journal category
Social Science & Medicine	22	Health (soc. sci.)
World Development	14	Development
International Journal of Health Services	13	Health Policy
Studies in Comparative International Development	7	Sociol./Pol. Sci.
International Journal of Comparative Sociology	6	Sociol./Pol. Sci.
Social Forces	6	Sociol./Pol. Sci.
American Journal of Political Science	4	Sociol./Pol. Sci.
Health & Place	4	Health (soc. sci.)
International Journal of Epidemiology	4	Epidemiology
Journal of Epidemiology and Community Health	4	Public Health
<i>Total, 10 journals listed in table</i>	82	
<i>Total journal articles reviewed</i>	186	
<i>Total studies reviewed</i>	201	

Note: Journals with the most articles in the database of 201 studies reviewed for this Element. Journal categories provided in the SCImago (2018) database. For the complete list of journals and additional information on the journals, see Table 2a and Table 2b.

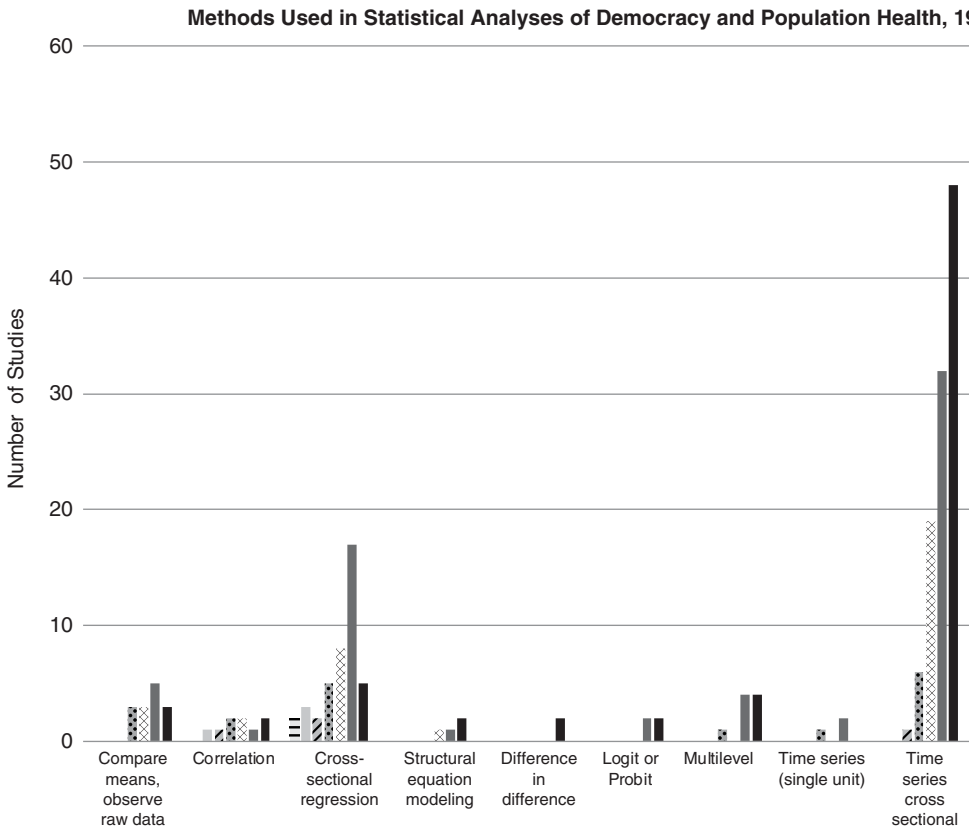


Figure 2 Method Used in Statistical Analyses of Democracy and Population Health, 1980-2010

Source: A total of 201 studies reviewed for this Element. Appendix Figure 2a has the annual and quinquennial main method used in each of the 201 studies.

Table 3 The Statistical Impact of Democracy on Population Health: St

Independent variable	Dependent variable	Number of studies	Significant & beneficial	Significant & harmful	Insig
Democracy per se	Overall population health	141	82	4	28
Democracy per se	Population health inequality ¹	5	3	0	2
Democracy-related variable	Overall population health	41 ³	Table 4	Table 4	Table
Population health	Democracy per se	4	4	0	0
Population health	Democracy-related variable	10	Appx Tab3b	Appx Tab3b	Appx
Total		201			

- 1 “Beneficial” means inequality reduced. Population health inequalities studied: life expectancy, male/female associated with lower inequality), infant mortality, richest/poorest income quintile (one study finds that de one study finds no significant association), and child growth stunting, urban/rural (one study finds no s Appendix Table 3a.
- 2 Appendix Table 3a identifies which of the 141 studies came to each conclusion and gives the reasons why res results, depending on how democracy was operationalized (7 studies), what universe of cases was analyze
- 3 A total of 41 studies *exclusively* explored the statistical impact on population health of one or more democra term democratic experience), but not of democracy per se. Some of these studies explored the statistica democracy, and some studies of democracy per se also explored one or more subdimensions of democracy
- 4 In Hu et al. 2015, democracy was a control variable in a study of the impact of income inequality on infant n adjusted mortality rate. The coefficients for democracy were never reported or discussed, even in the supp

variable, it served as an independent variable of interest in 99, as a control variable in 36, and as a moderator variable (hypothesized to specify the effect of another independent variable of interest on a population health outcome) in 11. Of the 146 studies in which democracy served as a right-hand side variable predicting population health, 58 percent found it to be beneficial, 21 percent found no association, 18 percent found it to be beneficial only in certain analyses (when measured in a particular way, observed over a certain set of cases, etc.), and 3 percent found it to be harmful (Table 3). In 41 other studies, a democracy-related variable – voter turnout, partisanship, proportional representation, and so on – was the hypothesized cause of population health. Many of these 41 studies examined the impact of more than one democracy-related variable on population health, and some of the studies that examined democracy per se also explored the impact of one or more such variables. Accordingly, the total number of results involving a democracy-related variable was 124 (Table 4). The results involving democracy-related variables will be discussed in Section 4.

The literature reviewed underscores that since the turn of the twenty-first century, the association between democracy and population health has centrally concerned political scientists, sociologists, economists, and public health specialists. Some of these social scientists have focused on democracy, treating population health as one of its hypothesized macrosocial consequences, alongside economic growth, income inequality, good governance, violence decline, women's agency and well-being, public spending allocation, the provision and take-up of social services, and recovery from economic shocks and natural disasters. Others have focused on population health, treating democracy as one of its hypothesized macrosocial causes, alongside geographic factors, economic affluence, income inequality, type of social welfare state, state capacity, women's status and opportunities, social capital, and the avoidance of civil strife and international war. Whichever side of the association is their central concern, scholars interested in the relation between democracy and population health face similar challenges, not only of causal inference but also of conceptualization and measurement.

3 Democracy and Population Health: Concepts and Measures

Democracy is best defined as free, fair, inclusive, and decisive elections plus basic rights. Quantitative analyses of the association between democracy and population health have yet to employ an indicator of democracy that satisfies these not-too-controversial criteria. Population health is usually operationalized