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Governments: Conceptualizing and  
Testing the Political Determinants of  
Health

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September 2018

Users Working Paper

SERIES 2018:18

THE VARIETIES OF DEMOCRACY INSTITUTE



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# **On the Social Organization of Governments: Conceptualizing and Testing the Political Determinants of Health \***

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\* The author thanks Susan McDaniel (University of Lethbridge, Canada) for her mentorship during a postdoctoral fellowship (2015-2017), as well as Angelia Wagner (University of Alberta), Jason Roy (Wilfrid Laurier University), and audience members for their feedback after a presentation at the 2018 meeting of the Canadian Political Science Association, Regina, Canada.

## Abstract

A burgeoning research area asks whether political factors can affect population health. Risk of losing a forthcoming election, for instance, arguably motivates leaders in democracies to adopt policies that best promote health. However, less population health research considers more specific roles in democratic governments or other, unelected roles. To address these gaps, this study compares cross-national life expectancies and infant mortality rates across 167 countries according to political data drawn from the Varieties of Democracy Project. A series of regression models test whether population health is better in countries with 1) proportional and/or mixed-member electoral rules, 2) independence of the highest court from political interference, and 3) appointments of state administrators based on merit rather than nepotistic social ties. Subsequent models test, respectively, whether 4) deliberative consensus, 5) transparency / predictability of court behaviour, or 4) political corruption mediate relationships between political structures and population health. Findings most consistently suggest that meritocratic recruitment of state administrators may promote stronger life expectancy and infant health by curbing corruption. The independence of a country's highest court from political interference also appears to promote population health, although this finding is most consistent with respect to infant mortality. Proportional and mixed-member electoral rules relate to these outcomes only when tested separately, while deliberative consensus is at best a modest mediator thereof. Findings altogether suggest population health may be traceable to institutional protocols that shape the roles of government actors. Further work is needed to corroborate this view.

# 1. Introduction

A growing literature links political environments to population health. This literature contends that, if public policy is a likely determinant of health at the macro scale, then certain political variables may also bear upon health by way of affecting the quality of the legislative and/or policy process. A large literature depicts political democracy as one such variable. There are likely many more, possibly quite diverse political factors to consider, however, as is apparent from one recent study (Mackebach & McKee, 2015). Yet the proposition that the political environment is somehow impactful to health, though long-standing (Kickbusch, 2010; Waitzkin, 2007), remains underexplored in contemporary health research. By postulating a small set of *political determinants of health*, the following study aims to ameliorate these circumstances. Moreover, it aims to investigate opportunities to promote changes to institutional protocols that are manageable to achieve, but which have the potential to shape policy for the long term. In particular, this study proposes that some institutional-level rules and protocols may promote health by encouraging a broader tendency to make sound policy decisions. That is to say, the very political culture of a society may be contingent on the assumptions under which public servants come to power. Creating a healthier society may involve altering institutional procedures in government.

## 2. Background

A proliferation of research over the last two decades has shown that the ways societies organize themselves socially will impact their health. According to this literature, the distribution of statuses – and the privileges that go along with those – structure people’s access to opportunities. Various forms of socioeconomic status (income level, educational attainment, job rank) are prominent examples of these *social* determinants of health, as are social categories that form the basis of discriminatory practices like race and gender. One of the foremost theories in this literature comes from Link and Phelan (1995; 2010). They discuss how socioeconomic status confers ‘flexible resources’ like purchasing power and knowledge, which people will use creatively to protect their health. In this way socioeconomic status has a reliable, virtually universal association with health, despite how intervening mechanisms like health-related behaviours may change over time. For these reasons Link and Phelan argue that socioeconomic status is a ‘fundamental cause’ of health disparities.

More recent literatures have provided the opportunity to extend similar arguments to the political arena. The social organization of a society’s key decision-makers also seems to matter for

the health of the citizenry that they serve. It follows that fair, effective government will tend to produce sound decisions on policy, which in turn will correspond with better population health. This argument thus reaches beyond particular policy considerations, instead suggesting that those too are determined by political variables that should be of interest to population health research. Parallel to Link and Phelan's (1995; 2010) theory, it is possible to conceptualize *political determinants of health* (Mackenbach, 2014) as variables that apply to the political arena, correspond reliably with health, and do so robustly over time despite how policies may change.

The first seminal paper in this area comes from Amartya Sen (1994) on the benefits of political democracy, particularly with regards to the global distribution of famines. He argues that electoral democracy disciplines leaders such that they are more likely to pursue the common good by adopting effective policy, lest they should risk losing a forthcoming election. Democracy works because it provides systems of accountability, although he proposed other mechanisms as well. Among these are feedback mechanisms so that democratic leaders are more likely to be made aware when policy decisions have been harmful, while those working for an autocratic leader will avoid questioning the wisdom of those same choices. A number of studies have since corroborated Sen's thesis by applying it to a broad range of other health outcomes like life expectancy (Besley & Kudamatsu, 2006; Lin, 2012), mortality (Franco et al., 2004; Zweifel & Navia, 2000; Gerring et al., 2012; McGuire, 2013), and disease control (Thornhill et al., 2009), for which democracies have the advantage.

Given the apparent importance of variables like democracy, a number of scholars have called for more investigation of 'political' considerations as they relate to health (Muntaner, 2014; Brownlea, 1981). This may be partly out of frustration with the difficulties that they have had in getting governments to adopt policies they view as beneficial. It is not enough to investigate, for instance, the benefits of egalitarian social policies like welfare programs that supposedly benefit health, but also to understand how those are ultimately adopted (Kickbusch, 2010; Raphael, 2014).

Subject to question, however, is what counts as 'political'. Worth considering also is how even democracy is not always an ideal solution for human problems (Przeworski, 2016). This is for a few reasons. Promoting democracy is an admittedly ambitious project, considering how new democracies often revert back to autocracy (Gurr, 1974). The creation of *bona fide* elections, moreover, offers no guarantee that a democracy exists (Levitsky & Way, 2010). Finally, there are a number of competing definitions for democracy, which can undermine the validity of empirical research on it (Munck & Verkuilen, 2002). The democracy-health relationship is nevertheless one of the most reliable in this literature however it may be defined. The point of departure for the

current study is the desire to find other kinds of infrastructures and protocols that may have implications for health, even in the most reputable democracies.

### 3. Conceptualizing the Political Determination of Health

For purposes of an empirical analysis, this study offers a simple, albeit arbitrary set of distinctions. I specify four kinds of phenomena that occur on the macro scale and pertain to the political determinants of health. First, *political structures* are the rules, protocols, and procedures that shape how people in government relate to each other. The word ‘structure’ refers to how combinations of people have a synergistic effect when their roles, statuses and corresponding duties define their relationship to each other. An analogy from Martin (2009) is appropriate here: adding a hydrogen atom to two oxygen atoms will form something quite different from any of these in isolation, i.e., a water molecule. Similar may be said for how factors like democratic elections will fundamentally shape the relationships of politicians to their citizens. However, these same rules can be a substantive target for policy change, such as through a program of electoral reform.

Until they are altered, electoral and other types of rules remain static characteristics of societies, while responses to them through everyday behaviour do change. *Political outcomes* are a second concept, which relate to the ongoing behaviours of people in government. The much-discussed polarization of political parties in the United States is an example of a political outcome, which has led to quite a lot of conflict as well as frustration among the American electorate. Political corruption is another outcome that can be challenging to resolve (Rothstein & Uslander, 2005; Xezonakis, Kosmidis, & Dahlberg, 2016). Presumably, such outcomes are also consequences of political structures. In both of these examples, scholars hope to find long-term solutions and altering the rules for recruiting government workers counts among the possibilities.

*Economic outcomes* are a third consideration. Following the work of Karl Polanyi (1944 / 1957), this paper assumes that the economy is in and of itself an outcome of political processes. Although broadly theoretical, such a stance is tenable given various illustrations of how the economic environment responds to political circumstances (e.g., Gerring, Bond, Barndt, & Moreno, 2005; Esping-Andersen, 1990). Yet this is also to say that assuming economic variables are confounders rather than potential mediators, thus controlling for them at the outset in all models, may be an analytical mistake. A better strategy may be to present models both before and after controlling for economic correlates while leaving interpretation to the reader.

Finally, a fourth outcome is *population health*. Political variables are thus conceptualized in this study as determinants of health, either directly or (via the economy) indirectly. This is to say

that the political economy should impact health, but allowing the assumption in particular that the economy intervenes between the political environment and health. This is most intuitive when considering the abundance literature to suggest that socioeconomic status is a ‘fundamental cause’ of health disparities (Link & Phelan, 1995; 2010). The political economy is that larger context that stretches beyond a person and her or his paycheque, but which presumably has much bearing indeed on how many dollars are written on it. Moreover, consequences for health are understood as ‘multifactorial’ (Waitzkin, 2007), meaning that a single variable at the macro scale may manifest in multiple different kinds of health outcomes. Again, studies on the health effects of democracy substantiate this point. However this paper takes the more simplistic, general notion of ‘health’ that allows tests of reliability across outcomes.

### *Political Structures*

The first characteristic of the macro scale, which this study suggests may be an originating cause of health disparities via political outcomes and the economy, consists of how people in government organize themselves. While other kinds of political structures may have bearing here, this study focuses on rules of recruitment. Clearly, the presence of putatively free and fair elections – thus, the recruitment of democratic leaders – has been pivotal for this literature in keeping with Sen’s (1994) claims. Democracies vary in how they conduct elections and who, even how many can take seats of office. Elected leaders also are not the only people in government who matter, nor does the ultimate fate of policies take place with the passing of motions or moments when heads of state sign those policies into law. There are also people in government who decide how policies are to be honoured.

First are the rank-and-file staff who ultimately report to elected leaders, namely, civil service professionals and other public administrators. They not only decide how specifically legislation is to be carried out, but often play a hand in deciding the wording for proposed statutes, motions etc. Far from being the least important people in government, research suggests that state administrators are essential in curbing corruption (Dahlström, Lapuente, & Teorell, 2012). Corruption, such as when state administrators accept bribes in exchange for preferential treatment, mitigates the effectiveness of policy and may even be detrimental to health (Holmberg & Rothstein, 2011). This may mean that state administrators can protect population health through the wisdom and fairness with which they perform their day-to-day work. In other words, it is not enough for governments to reach decisions about building hospitals, removing contaminants from the water supply, or supporting cancer research. These must be done well for the benefit of health.

Second are the courts. If policies can positively influence population health by way of being conceived and articulated thoughtfully, then similar could be said for how they are enforced. Preferably, like state administrators, the courts will honour the law impartially. Courts that in contrast provide preferential treatment for some groups while discriminating against others will mitigate the effectiveness of laws that have been passed, much like what corruption does for state administrators. Most societies also rely upon courts to interpret a country's legislation when citizens challenge the fairness thereof. This helps to guarantee that the treatment of citizens – by both their governments and their compatriots – is just.

The same logic as Sen's (1994) original theory applies here, in that some governing infrastructures should tend broadly to produce effective policies, which in turn will more often benefit health than not. In contrast to most previous studies, however, the present one interprets policy as having a life course where multiple actors play a hand. Indeed, such a life course will include a process of deciding priorities (legislators), hands-on logistics (state administrators), and enforcement (courts). A failure at any of these points will presumably derail the effectiveness of a policy.

*Recruitment procedures as structures.* Rules for recruitment are not the only kinds of political infrastructures imaginable, but they do have a precedent in this literature as studies on democratic health advantages show. They are also institutional-level policies that are amenable to reform. One recent study (Patterson & Veenstra, 2016) examines *electoral* democracy explicitly according to whether a country holds 'free and fair' elections, finding that the democratic advantage in health is potentially quite large. Democracies do vary in how their elections are orchestrated, however. The more particular kinds of electoral rules may therefore matter as well. A followup study (Patterson, 2017) finds that the majoritarian system of elections (of which Canada and the United States are examples) has the *worst* health among the democracies, appearing more like competitive autocracy (Levitzky & Way, 2010) on average. Proportional and mixed-member systems, on the other hand, emerge as having the most consistent advantage in comparison. By including both *electoral systems* as a focus and a measure of *free and fair elections*, the current study seeks to replicate these findings based on a different dataset.

In most cases state administrators are appointed rather than elected. Research on corruption (and, its presumed opposite – quality of government [Rothstein, 2014]) demonstrates that the way they are recruited still matters, however. Specifically, it has been proposed that *recruitment based on merit* rather than nepotistic social ties leads state administrators to perform those roles impartially. Dahlström and colleagues (2012) support this point by finding that recruitment of civil servants based on their substantive credentials reduces corruption. They furthermore find that meritocratic

recruitment is the key contributor to a more general sense of professionalism in how they carry out their roles. Who is hired thus seems to matter more than the salary or other benefits that the job offers.

A similar principle can be applied to courts. Ideally, court officials should be appointed based on merit rather than political ties. Judges may often be highly qualified already since their roles require special legal expertise, but this does not mean that they always retain their objectivity. Since judges can be appointed on the whims of a country's leaders, their roles could still be defined by nepotistic social ties. The principle of checks and balances also holds that the courts should work independently of the legislative process. All of this is to say that courts should make decisions based on their own sincere evaluations of the integrity of the law, regardless of the fluctuating preferences of politicians and thus acting independently from them. Focusing on a country's topmost court, this feature is measurable as *high court independence*.

### *Political Outcomes*

Presumably, political structures affect the behaviour of people in government. Part of what explains the democratic health advantage is that democratic leaders respond to the wishes of the electorate rather than behaving unilaterally. Politicians may also cooperate with each other in crafting thoughtful policy. Again in keeping with what Sen (1994) claims about democracy, the best policies should come from collaboration across multiple actors, which gives democracies the advantage over autocracies. What may be called *deliberative consensus* captures this notion of a thoughtful, collaborative policy process. Speaking more specifically of electoral rules, Powell (2000) theorizes that proportional elections support the broad representation of diverse social groups. Once they win office, elected officials must undergo a process of negotiation with each other in order to pass legislation. This is in contrast with majoritarian rules, which act retrospectively to hold elected leaders accountable for making problematic choices in policy. Moreover, a long-standing principle is that majoritarian rules tend to reduce the number of parties to two over time (Duverger, 1954) since strategic voting from the electorate will tend to eliminate the most likely losers. Not only should deliberative consensus be more common in democracies compared to autocracies, but they may be most common in democracies with proportional electoral rules.

Another outcome of interest is *political corruption*. Corruption is a multivalent concept often associated with the bribery of public servants (Varraich, 2014), but refers more broadly to the abuse of power in government and/or the betrayal of public trust to serve personal interests. Receiving offers of kickbacks in return for preferential treatment when choosing between

subcontractors is an example. Regardless of definitional issues, corruption is widely recognized as inimical to the well being of societies, eroding the trust that citizens have not only in their government but in each other as well (Rothstein & Stolle, 2008). It also harms population health (Holmberg & Rothstein, 2011), for example by encouraging drug pilfering and other failures of health care delivery. Rothstein (2014) theorizes that the opposite to corruption is high quality of government or (taking certain liberties) ‘good governance,’ the most important element of which he argues is impartiality in the execution of public service.

A final political outcome is *due process* of law. Rather than making decisions arbitrarily, courts will ideally follow established protocols that facilitate their impartiality in reviewing cases. All citizens would best be treated equally, for instance, irrespective of any personal social ties that they may have to court officials. More generally, courts should behave in a predictable, transparent way that is complimentary to the laws that they presume to honour. Doing otherwise will mitigate the effectiveness of those laws or worse.

#### *Economic Outcomes*

A broad range of studies expounds upon the interplay that political variables have with economic variables. Active debate surrounds questions of what economic growth has to do with corruption, for instance, how policies can help reduce income inequality, which should be prioritized first and what these have to do with political structures like those discussed above. However, the present study offers the simple distinction that the ‘economy’ – broadly writ – stands separately from politics, or at least can be analyzed as such. This follows concerns noted previously (Patterson & Veenstra, 2016) that, if economic correlates have not been concertedly ruled out as confounders in this vast interdisciplinary literature, then they should not be treated so in models. Researchers habitually control for GDP in all models when some evidence suggests that it plays a mediating role instead (*id.*). Controlling for economic correlates prematurely may therefore mask some important patterns in the global distribution of health. There is also some theoretical justification for presuming that the economy is itself an outcome of politics. In contrast with writers like Karl Marx, this study finds greatest sympathy with Polanyi’s (1944 / 1957) claim that the economy is a product of conscious, purposeful action of governments. Governments must therefore own their roles as stewards of the economy rather than retracting from this sphere under the presumption that the market is the best, most trustworthy purveyor of human welfare. In any case, the fullest models control for economic correlates while leaving interpretation to the reader.

### *Population Health Outcomes*

Finally population health is taken as the dependent variable in the analysis below. Two health outcomes are analyzed separately, life expectancy and infant mortality, so as to examine whether impacts on 'health' are reliable. Health outcomes in turn are presumed to be consequences of economic outcomes, political outcomes, and (either directly or indirectly) the political structures that impinge upon all of these.

## **3. Hypotheses**

Several hypotheses relate to the relationship between the political economy and population health. Analysis pertains to each of life expectancy and infant mortality rates as distinct measures of population health, but with an interest in the reliability of results between the two. These hypotheses are as follows:

H1: All political structures will relate to population health when tested individually.

H2: Political outcomes will mediate relationships between political structures and population health.

H2a: Deliberative consensus will mediate free/ fair elections and electoral regime types.

H2b: Political corruption will mediate meritocratic recruitment of state administrators.

H2c: Due process of the law will mediate high court independence.

H3: All economic outcomes will mediate relationships between political outcomes and population health

Additional models test the possible interplay within the different categories discussed above: political structures, political outcomes, and economic outcomes. This can be characterized as

H4: Within each level of the causal model, each factor affects health independently of the others.

H4a: This is true of the different political structures.

H4b: This is true of the different political outcomes.

H4c: This is true of the different economic outcomes.

H5: The abovementioned mediation effects will appear across the levels.

## 4. Analytical Strategy

Analysis of life expectancy is based on ordinary least squares linear regression, while log-linked gamma regression is used to test infant mortality rates. For the model coefficients, calculation of statistical significance is based on Newey-West standard errors. As a first step, for each health outcome the impact of the different political structures is tested in separate models. Mediation is then tested by adding the respective political outcome(s) to a second model. Following Baron and Kenney (1986), a mediation effect is declared if the coefficient for the political structure reduces substantially in size and loses statistical significance in this second model. Finally, Hypothesis #4 is tested by including all of the political structures together in a first model, then adding all of the proposed political outcomes in a separate model, and finally adding the proposed economic outcomes. Hypothesis #5 is tested by viewing the same results based on Baron and Kenny's algorithm. All models control for log population size and year of data collection to rule out possible confounding.

## 5. Data and Methods

This study is based on annual data from the Varieties of Democracy (V-DEM) Project (version 8; Coppedge et al., 2018), the World Bank, and the United Nations. Results are reported for 167 nation-states as they existed between 1960 and 2012. The dependent variables, life expectancy and infant mortality rates, were lagged by 1 year and so are drawn from the years 1961 through 2013. These along with GDP per capita are drawn from the World Bank Indicators database. Where values were missing from the World Bank data, supplementary data are drawn from the United Nations National Accounts Database and the 1997 historical supplement to the United Nations Demographic Yearbook. A strategy of multiple imputation was used, but only for the health data and GDP and based on the algorithm from previous studies (Patterson & Veenstra; 2016; Patterson, 2017). This leaves some countries excluded from analysis. These countries primarily countries whose sovereignty is not clear, such as contested territories (e.g., Taiwan), protectorates of other countries (e.g., Guam, Puerto Rico), and countries occupied by a foreign power during wartime. Specific efforts were undertaken to include countries that are now defunct, most prominently East and West Germany and the former USSR. Depending on the circumstances of the data, this was accomplished either by using supplementary information from the United Nations or calculating weighted aggregates across constituent countries based on population size. Additional data remain missing from V-DEM and no attempt is made to impute those. However, models are retained using all existing data from this dataset. Models testing the

impact of electoral regime type exclude Saudi Arabia and Qatar since these countries have never held elections of any form. Models testing the impact of court independence exclude Bahrain. The Data for meritocratic recruitment of state administrators were especially sporadic. In total meritocratic recruitment is available for 83 countries, of which 22 had incomplete records. This leaves 107 countries with at least some data missing for meritocratic recruitment and 85 for which all such data were missing. Skepticism is encouraged with regards to these results especially. The number of missing countries and country-years is specified in each of the models below. Data are laid out in country-years.

## 6. Variables

All political variables are drawn from the V-DEM project database. With the exception of the variable for type of election, most of these are based on aggregate ratings from interviews with experts. First are the measures of political structure. *Free and fair elections* (the V-DEM variable *v2elrfair*) is a numeric variable, negative scores for which indicate that the elections are and/or unfair not free. *Election type* (*v2elparlel*) is a dummy-coded categorical variable for the type of election that has occurred in the lower chamber of the main legislative body, which distinguishes closed autocracies (the reference category with a value of '0') from countries with elections based on majoritarian, proportional, mixed-member, or other kinds of electoral rules (the latter of which include for instance single transferable votes). For each of these, rows of data reflect the most recent non-missing value. *High court independence* (*v2jubcind*) is a measure of the degree to which a country's highest court acts independently of the wishes of other government officials. *Meritocratic recruitment* (*v2stcritrecadm*) reflects the degree to which state administrators are appointed based on their credentials, as opposed to their personal social ties to government officials (i.e., nepotism). Second are the proposed political outcome variables. These include the degree to which a country achieves the principle of deliberative democracy (*v2xdl\_delib*) as a measure of *deliberative consensus*. A rating of the predictability and transparency of a country's legal proceedings (*v2cltrnshw*), in combination with the degree to which citizens enjoy equal protection under the law (*v2xeg\_eqprotec*) are used to assess the level of *due process*. Included also is V-DEM's overall rating of the level of political corruption in government (*v2x\_cor*). Third, economic outcomes include the World Bank Indicator for gross domestic product (GDP) per capita, in log form and adjusted to reflect 2010 United States dollars, as well as three measures from V-DEM of the degree to which a country pursues an egalitarian distribution of resources. The latter include degree to which resources are allocated publicly as opposed to a particularistic principle (i.e., favouring particular persons or business entities) (*v2dlencmps*), redistribution based on a universalistic as opposed to a means-tested

principle (the latter of which places pressure on a person seeking welfare to prove that they need it) (*v2dlumiv*), and the level of inequality in educational system (*v2peedueq*). Finally, health outcomes include *life expectancy* and *infant mortality rates* as discussed above. Descriptive statistics for these variables, as they apply across all country-years together, are displayed in Table 1.

## 7. Results

The first set of regression models shown in Table 2 tests the relationship between political structures and life expectancy, as well as political outcomes as potential mediators. Model 1 shows that electoral democracy, as measured by the freedom and fairness of the most recent election (whenever that may have been), corresponds strongly with life expectancy. As the difference between the highest possible value and the lowest possible value on the measure of free and fair elections is 6.22, multiplying this amount against the model coefficient of 2.84 indicates that free and fair elections improves life expectancy by more than 17 years controlling for type of election. Similarly, most electoral regime types except majoritarian have an advantage of 6+ years of life expectancy relative to closed autocracy, whereas evidently for majoritarian democracies this advantage is smaller and non-significant. Model 2 includes the measure for deliberative consensus. Multiplying against the figure shown in Table 1, an increase by 1 standard deviation in this variable corresponds with 2.17 additional years of life expectancy. However, deliberative consensus when measured as such only modestly mediates either of the structural variables, both coefficients for which retain their statistical significance in Model 2 without losing much magnitude.

When tested separately, the independence of a country's high courts from political interference is another strong predictor of life expectancy as shown in Model 3 of Table 2. A change by one standard deviation in this variable explains a difference of four years in life expectancy, as well as a difference of 19.77 years comparing countries with the highest and lowest values for this variable. The impact of this variable also appears strongly mediated by the two proposed political outcomes, the degree to which court decisions are predictable / transparent and the degree to which they provide equal protection under the law, variables which are also clearly impactful to life expectancy in Model 4. Supplementary analysis suggested that the latter of these was only a partial mediator.

The last political structure is meritocratic recruitment of public administrators. This variable too appears as a strong predictor of life expectancy, with a similar impact as high court independence when multiplying the model coefficients against the standard deviation shown in Table 1 and the range (the product being (4.08 and 18.72, respectively).

Results shown in Table 3 are similar. One unit change in the level of free and fair elections corresponds with 25% less infant mortality in Model 1, an amount which reduces to 18% in Table 2. Non-majoritarian electoral systems also have the largest advantages in infant health, with infant mortality being about 40% smaller in mixed or proportional systems. “Other” kinds of electoral systems, a category which includes single transferable votes, enjoy 58% less infant mortality. However, these advantages again reduce only moderately in size when the measure for deliberative consensus is added in Model 2 of Table 3. Deliberative consensus is a powerful predictor on its own right, however, with each unit increase reducing infant mortality by 50%.

In contrast, agreeing with results on life expectancy, the same mediating effect appears with respect to the other structural variables. Model 3 links each unit increase in the measure for high court independence from political interference to 25% less infant mortality. This effect is reduced almost to nil when the measures for due process are included. Again, supplementary analysis shows that the stronger mediating effect comes from the variable for predictable and transparent court decisions.

Finally, in Model 5 each unit increase in meritocratic recruitment of civil servants reduces infant mortality by 32% in Model 5. Political corruption is a strong mediator here, reducing this effect almost to nil when it is included in Model 6. Moving from the lowest to highest levels of corruption (as these variable ranges between 0 and 1), in turn, corresponds with an eightfold increase in infant mortality. Although the various effects are arguably stronger in terms of infant mortality, being the more sensitive measure, both measures of health present a consistent picture. Political structures appear to have bearing on health while political outcomes like corruption seem to mediate their effects.

The final set of models shown in Table 4 test concurrent relationships of variables at to health at each level. Judging from the level of statistical significance, none of the structural variables predict life expectancy, although this is likely a problem of multiple correlation. However, supplementary analysis that restricted this model to the putative democracies in the sample (free and fair elections > 0.5) left meritocratic recruitment as the only statistically significant variable, with each unit increase tied to 2.36 years of added life expectancy. In Model 2, only political corruption continued to bear an independent influence on health controlling for all other political variables, with a maximal difference of about 17 years in life expectancy. In Model 3 both GDP (wealth per capita) and priority on public rather than particularistic distribution of goods impacts life expectancy controlling for all else. The unexpected direction of the latter may reflect a problem of multiple correlation, or perhaps a suppressing effect, since it turns positive when tested against

life expectancy in isolation from the others. Regardless, GDP appears as having the strongest influence on life expectancy among the economic variables.

With respect to infant mortality, independent effects appear for high court independence and meritocratic recruitment of public administrators in Model 4, political corruption as a likely mediator in Model 5, and both GDP per capita and educational equity in Model 6. Interestingly, the latter appear to have a repressing effect on meritocratic recruitment, which reemerges as statistically significant controlling for all else and cuts infant mortality by an estimated 10%.

Altogether, these last results highlight the importance of meritocratic recruitment of state administrators, the threat of political corruption thereof, and wealth per capita. Although less consistent between the two health outcomes, high court independence and the equality of the educational system also appear important.

## 8. Discussion

This study offers some notable contributions to the literature on the political determinants of population health. First, it is possible to manage the task of deciding what counts as ‘political’ by using a convenient set of categories for political phenomena. In this case political structures are distinguished from political outcomes, which in turn are distinguished from economic and health outcomes. Two additional categories are added so as to relate macro-social phenomena in general, namely, economic outcomes and population health.

Perhaps the more important task is to take a stance on how all of these phenomena relate to each other. Although certainly not a definitive answer on this score, it is possible to marshal different sets of social theory to support a claim like this:

There are alterable rules that apply to political institutions, which impact how people in government relate to each other and the protocols that they follow. Some of these rules can improve the quality of the legislative process and other political activities. These in turn can positively influence the well-being (economic, physical) of a society’s citizens.

Although certainly not the only such statement possible, this one takes a recognizable stance on what the ‘political determinants of health’ comprise and how indeed they impact health, a project is surely incomplete for health research. Another benefit to the approach used in this study is that it offers potential to help researchers know what to ask for when they speak to politicians.

Overall, results lend at least some support to this presumptive model. Consistent with other studies in this literature (e.g., Dahlström et al., 2012; Holmberg & Rothstein, 2011), insisting on recruitment of civil servants and other hired hands in government based on their credentials – rather than who they know – may promote population health by way of reducing corruption, even in advanced democracies. Beyond the admittedly ambitious project of democratization, this recommendation could be offered to all countries.

Similar may be said of the independence of a country's courts from the vicissitudes of politics. Political interference in court proceedings seems to harm population health. There could be a number of mechanisms at play here, but this finding is certainly consistent with the broader notion that an untarnished system of checks and balances is good for societies.

In Canada, the Liberal government under Justin Trudeau has dropped discussion of electoral reform from its agenda, despite that this issue was on the platform he used to win office in the 2015 federal election. Findings are perhaps less supportive of prospects for electoral reform in countries like Canada, controlling for the overall fairness of the electoral process, although worth noting is that electoral regime type could still be an 'originating cause' that these other political variables mediate. Also possible is a problem of multiple correlation in Table 4 such that countries with non-majoritarian electoral rules happen to be the same that use meritocratic recruitment of public administrators, high court independence, etc. Worth noting also is that another recent study (Patterson, 2017) found a much stronger pattern of disadvantage among the majoritarian democracies compared to their proportional and mixed-member counterparts.

There are also some important limitations to note. On the theoretical end, the causal model discussed above is broadly presumptive. It is very likely that relationships are multidirectional. The notion that governments ultimately decide the shape of a country's economy was one adopted by Polanyi (1944 / 1957) but is at odds with the tradition set forth by Karl Marx. Similarly, health is broadly recognized as a predictor of economic growth. Addressing this transdisciplinary debate falls beyond the scope of the current study, however, and is encouraged for future research. On the logistical end, a large proportion of missing data affects the variable for meritocratic recruitment of civil servants. Skepticism is encouraged with regards to these results in particular. Findings may give cause for the V-DEM project to continue creating data for this variable. In the meantime future research should consider options for addressing the data that are missing.

# Appendix

**Table 1. Descriptive Statistics**

	<b>Mean</b>	<b>S.D.</b>	<b>N</b>	<b>Missing</b>
<i>Political structures</i>				
Free/fair elections	-0.06	1.53	7480	0
<i>Election type</i>				
Closed autocracy (ref)			590	0
Majoritarian			3597	0
Proportional			2478	0
Mixed			658	0
Other			157	0
High court independence	0.07	1.44	7453	27
Meritocratic recruitment	0.33	1.28	2980	4500
<i>Political outcomes</i>				
Deliberative consensus	0.54	0.30	7479	1
Predictable/transparent courts	0.50	1.53	7480	0
Equal protection	0.60	0.26	7480	0
Political corruption	0.51	0.30	7442	38
<i>Economic outcomes</i>				
GDP per capita (logged)	8.37	1.70	7480	0
Public vs. particularistic distribution	0.46	1.24	7480	0
Universalistic vs. means-tested	0.57	1.20	7480	0
Educational equality	0.32	1.48	7480	0
<i>Health outcomes</i>				
Life expectancy	62.99	11.62	7480	0
Infant mortality	58.59	49.76	7480	0

**Table 2. Models Predicting Life Expectancy**

Life Expectancy	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Political structures</i>						
Free/fair elections	2.84 ***	1.86 ***				
<i>Election type</i>						
Closed autocracy (ref.)						
Majoritarian	2.43	1.19				
Proportional	6.01 *	4.59				
Mixed	6.06 .	4.67				
Other	8.82 **	7.65 *				
High court independence			2.98 ***	0.50		
Meritocratic recruitment					3.18 ***	-0.03
<i>Political outcomes</i>						
Deliberative consensus		7.11 *				
Predictable/transparent courts				1.90 **		
Equal protection under law				12.11 **		
Political corruption						-20.57 ***

**Table 3. Models Predicting Infant Mortality Rates (in anti-logged form)**

Infant Mortality Rates	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
<i>Political structures</i>												
Free/fair elections	0.75	***	0.82	***								
<i>Election type</i>												
Closed autocracy (ref.)												
Majoritarian	0.79		0.89									
Proportional	0.60	**	0.69	*								
Mixed	0.61	*	0.71									
Other	0.42	**	0.49	*								
High court independence					0.75	***	0.93					
Meritocratic recruitment									0.68	***	0.87	.
<i>Political outcomes</i>												
Deliberative consensus			0.50	***								
Predictable/transparent courts							0.78	***				
Equal protection under law							0.43	**				
Political corruption											8.02	***

**Table 4. Models Predicting Population Health based on Political Structure, Political Environment and the Economy**

	Life Expectancy			Infant Mortality		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<i>Political structures</i>						
Free/fair elections	1.14	0.56	0.45	0.86 *	0.95	0.94 .
<i>Election type</i>						
Closed autocracy (ref.)						
Majoritarian	3.36	2.39	3.22	0.81	0.88	0.99
Proportional	5.51	4.45	3.73 .	0.66	0.77	0.95
Mixed	4.66	6.29	5.38	0.78	0.75	0.84
Other	0.97	2.06	7.87 **	1.18	0.98	0.78
High court independence	1.11	0.11	-0.25	0.88 *	1.00	1.04
Meritocratic recruitment	1.36	-0.44	0.10	0.79 **	0.96	0.90 **
<i>Political outcomes</i>						
Deliberative consensus		-3.78	2.44		1.75	0.92
Predictable/transparent courts		0.22	-1.41 .		0.84	1.02
Equal protection		6.44	6.14		0.67	0.84
Political corruption		-16.17 ***	-2.70		4.75 ***	1.44
<i>Economic outcomes</i>						
GDP per capita (logged)			4.21 ***			0.73 ***
Public vs. particularistic distrib.			-1.57 *			1.09
Universalistic vs. means-tested			0.25			0.97
Educational equality			1.12 .			0.83 ***

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