

THE BIRTH OF THE HEALTH CARE STATE

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It is sometimes said that we are born alone, live alone, and die alone. For more than two hundred years, the state has begged to differ: the modern state trains, licenses, and employs large numbers of health care professionals, who assist our mothers when we are born, maintain and manage our lives, and try—with some success—to preserve us from an early death. For better or worse, the state won't leave us alone.¹

In this paper, we examine the development of three important public health programs—midwifery services, mental health care, and vaccination programs—between the beginning of the nineteenth century and the Second World War. The paper has two objectives. First of all, we provide an account of the *origins* of these three programs, showing that states began to provide certain health care services early on, in some cases already in the eighteenth century. Second, we provide an explanation for the cross-country variation in how health care services were *governed*, concentrating on three dimensions: centralization, secularization, and subsidization.

1. STATE BUILDING AND THE HEALTH CARE STATE

There is a missing link in the history of government. Political scientists know a great deal about state building in the early-modern period: the process through which states developed modern bureaucracies and increased their capacity to raise revenue and mobilize society's resources. Political science also tells us a great deal about the twentieth century's many political conflicts over distribution and redistribution.

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¹The source of the quote about birth, life, and death is Orson Welles's film *Someone to Love* (1985). Date of this draft: August 22, 2016. The paper is a part of a larger study of the expansion of public services in Western Europe, North America, and the Asia-Pacific region. The provisional title of the book is *Inward Conquest*. The two other empirical parts of the book deal with public order and education.

We know much less about the struggles over the scope of government that began in the nineteenth century, when states first began to provide many of the goods and services that we now take for granted: education, health care, and public order.

During the nineteenth and early twentieth centuries—an era of democratization, religious tumult, and nation-building—states around the world transformed themselves from *protectors* to *providers*. The early-modern state assembled armies of soldiers to protect its subjects (while insisting on its right to tax their resources). The industrial-era state assembled armies of professionals to provide new services to its citizens (and to secure their loyalty and obedience), health care services among them. As Mann (1993, chapter 14) has noted, one result of this transformation was a major shift in the composition of public spending: during the nineteenth century, the growth in civilian spending far outpaced the growth in military spending in the leading European states.

This important political transformation has received little attention in political science. It happened too *late* to attract the attention of scholars of state building (who are typically more interested in the early-modern than the late-modern period), but too *early* to attract the attention of scholars of the welfare state (who have always been more interested in the twentieth century than the nineteenth).² Much of the comparative literature on the history of the welfare state is concerned exclusively with income transfers, especially with social insurance programs. For example, in the chapter on the “emergence” of the welfare state in the *Oxford Handbook of the Welfare State*, Kuhnle and Sander (2010) concentrate entirely on the emergence of social insurances, and therefore begin their investigation in the 1880s. They recognize that this perspective is a narrow one, as it “neglects other areas of emerging governmental responsibility for societal well-being such as health and education” (61), but claim that it is nevertheless “historically justifiable” since the late nineteenth century marks the “take-off of the modern welfare state” (citing Flora and Alber 1981). This approach strikes us as anachronistic. From the perspective of the late twentieth and early twenty-first centuries, it may well seem as if

²Two notable exceptions in the health care area are Jane Lewis’s book on midwifery (1980) and Peter Baldwin’s book on contagious diseases (1999). See also Barker (1943).

the welfare state began with social insurances, but from the perspective of, say, the middle of the nineteenth century, the development of programs such as compulsory immunization and midwifery represented a significant change in the role and scope of government.³

We begin our investigation of the emergence of the health care state with midwifery, insane asylums, and vaccines, not with doctors and hospitals. The reason is that modern hospitals did not emerge until late in the nineteenth century. Before that, health care was typically provided in the home (for those who could afford it). As Rosenberg (1995 [1987], 5) notes, “Aside from a handful of surgical procedures, there was little in the way of medical capability in 1800 that could not be made easily available outside the hospital’s walls.” Hospitals, which were typically run by philanthropic associations, provided simple health care services for the poor—they were not *medical* establishments (Rosen 1963; Granshaw 1989). It was only toward the very end of the nineteenth century that medical knowledge and technology had become so advanced that hospitals employing academically trained physicians began to dominate health care provision (Wilsford 1991, 8). The public health programs that we examine were introduced much earlier than that.

2. CENTRALIZATION, SECULARIZATION, AND SUBSIDIZATION

The first aim of our paper is to account for the emergence of three important public health programs—midwifery, insane asylums, and vaccinations—between the beginning of the nineteenth century and the Second World War. Our second aim is to understand how these three programs were governed—especially why they were governed in different ways in different countries.

Our theoretical expectations are based on our earlier study of primary education, in which we distinguished between three dimensions of institutional variation when it comes to the governance of public

³In their chapter on “health” in the *Oxford Handbook of the Welfare State*, Freeman and Rothgang (2010, 368) note that the world’s first public health policies included local regulations on “sanitation and vaccination as well as quarantine”—but the rest of their chapter is concerned with modern medicine (and it says nothing at all about childbirth and midwifery).

services: centralization, secularization, and subsidization (Ansell and Lindvall 2013).

The first dimension is *centralization*: the distribution of power between the central state, regions (sub-national governments), and local authorities. In the early nineteenth century, most government services—to the extent that they were provided at all—were provided locally (arguably since states lacked the capacity to control its agents in the periphery before the proliferation of network technologies such as the railway and the telegraph). In the course of the nineteenth century, however, central governments increased their capacity to control service provision. Ansell and Lindvall (2013) argued that at least in the area of education, the centralization of services was most likely in right-wing dictatorships and in democracies governed by liberal or socialist parties. In the empirical sections of the paper, we test whether this explanation holds for health care programs as well.

The second dimension is *secularization*: the extent to which public services were operated by secular authorities rather than parishes or religious orders.⁴ Ansell and Lindvall (2013) argued that the secularization of public services was most likely under liberal and socialist governments and in countries without established churches. We now test the same hypotheses in the domain of health care.

The third dimension is *subsidization*: the provision of public funding for private providers of services. In most countries, all public spending for services went to public providers (such as government agencies, municipal governments, or the parishes of an established church). In some countries, however, governments subsidized *private* service providers. Ansell and Lindvall (2013) argued that the subsidization of private schools was most likely in religiously mixed societies, since it provided a solution to the problem of religious conflict. We test the same hypothesis in the health care domain.

⁴When we use the term “secularization,” we refer to the original meaning of the word, which is “[b]elonging to the world and its affairs as distinguished from the church and religion; civil, lay, temporal” (*Oxford English Dictionary*)—that is, we refer to the transfer of control from ecclesiastical to civil authorities, not to the decline of religiosity or church attendance.

3. RESEARCH DESIGN AND METHODS

We examine the development of midwifery, mental health care (insane asylums), and vaccinations in nineteen countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the United Kingdom, and the United States. We concentrate on these particular countries since the comparative literatures on the welfare state and the origins of political institutions are concerned with these nineteen states. For example, these are essentially the same countries examined in Cusack, Iversen, and Soskice (2007), which explores the connections between economic interests and the origin of electoral systems, in Esping-Andersen’s (1990) foundational analysis of the welfare state, and in Martin and Swank’s (2012) analysis of the origins of employer coordination. We start in the year 1800 (or later, for countries that were not independent in 1800). We end in 1939. Our analysis is based on our own coding of the scope and structure of national public-health systems, drawing on a wide range of country-specific secondary sources.

In the last part of our analysis—where we use statistical methods to identify the correlates of various forms of health care governance—we are restricted to the period 1870–1939, due to the lack of data on explanatory variables from the early to mid-nineteenth century.

As we explained in Section 2, our hypotheses involve four explanatory variables: political regime (democracy or authoritarianism), the ideological orientation of the incumbent government, religious heterogeneity (measured here relative to the proportion of Catholics in the population), and the relationship between church and state. As our measure of democracy, we use the dummy indicator developed by Boix, Miller, and Rosato (2012). Our data on the ideological orientation of heads of government (prime ministers, chancellors, and presidents) comes from Brambor, Lindvall, and Stjernquist (2013). The underlying dataset distinguishes between six ideological categories, but in the paper, we use a simple binary variable that distinguishes between secular liberal and socialist/social democratic heads of government on the one hand and all other categories on the other. In some of our specifications, we interact this ideology variable with the democracy dummy, which

allows us to distinguish the behavior of conservative governments in democracies from the behavior of conservative governments in autocracies (including fascist dictatorships). It also allows us, perhaps less intuitively, to differentiate between liberal and socialist governments elected in democracies and the radical parties that governed in what can be called “liberal oligarchies” in the nineteenth century. Concerning religious heterogeneity, we rely on data on the size of the Catholic population from Lindert (2004).⁵ Our variable is the negative of the absolute difference between the proportion of Catholics in a country and fifty percent. Hence, as the proportion of Catholics approaches fifty percent, our measure of religious diversity increases. Finally, we have created our own indicator of established churches (a dummy variable that takes the value 1 if the country has a Protestant state church).⁶

As control variables, we include a measure of real GDP per capita in thousands of dollars (with 1990 as the baseline) from Maddison (2011), and a dummy for federalism, coding Australia, Canada, Switzerland, and the United States as federal for the entire period, Germany as federal from 1871 to 1932, following Confino (2002) and Noakes (1980), and Spain as federal during the First Spanish Republic in the 1930s.

4. BIRTH

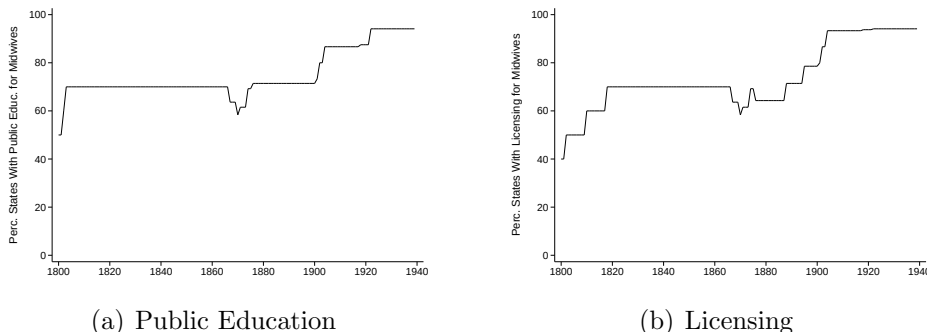
Human birth is dangerous, and childbirth once posed great risks for both the child and the mother. Today, at least in the rich democracies in our sample, those risks are small (to take one prominent example, Sweden’s maternal mortality rate fell by 99.6 percent between the late eighteenth century and the early 2000s). The reduction of maternal and infant deaths in most of the world’s countries is one of the most impressive public-health achievements of the past two centuries (Besley and Kudamatsu 2006).

We therefore begin our investigation of the origins of the health care state at the beginning, as it were: with birth, and in particular with the expansion and professionalization of midwifery, which is one of the

⁵Lindert does not have data on the Catholic population in Ireland, so for Ireland we use census data from Kennedy (1973, 112).

⁶The countries with established churches in our sample are Denmark, Finland (until independence from Russia in 1918, when the Evangelical Lutheran Church of Finland was disestablished), Germany (until the abdication of the Emperor in 1918), Norway, Sweden, and the United Kingdom (England).

FIGURE 1. Midwives: Education and Licensing



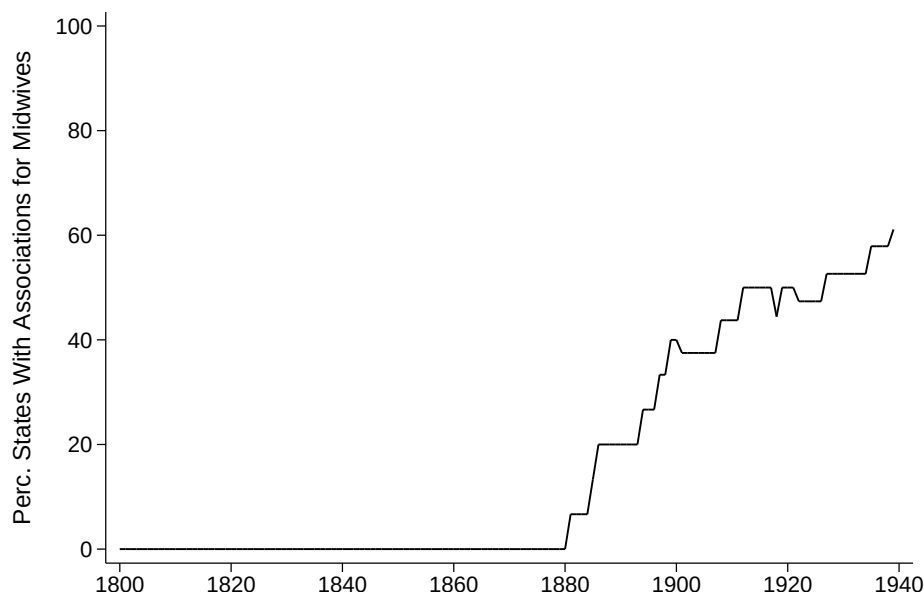
Comments: The left-hand figure describes the proportion of sovereign states in our sample that provided some form of public education for midwives. The right-hand figure describes the proportion of sovereign states in our sample that had a licensing system for midwives.

main causes of the decline of maternal mortality and infant mortality worldwide (Loudon 1992; Pettersson-Lidbom 2014).

Interestingly, some states became involved in the provision of midwifery services as early as the eighteenth century. In Figure 1, we use two simple indicators to describe the role of the state *vis-à-vis* midwifery in the countries in our sample between the year 1800 and the Second World War. The left-hand panel describes the proportion of countries in our sample that provided some form of public education for midwives; the right-hand panel describes the proportion of countries in our sample in which the practice of midwifery required a license that was issued by a public authority (not surprisingly, these two variables are highly correlated).

Already in the early 1800s, in the very beginning of the time period that we examine, four countries in our sample provided public education for midwives (and required practicing midwives to be licensed): Denmark, the Netherlands, Spain, and Sweden. In Denmark—and therefore also in Norway, which was controlled by Denmark at the time—public education for midwives goes back to the sixteenth century, and from 1787, it was centralized at Copenhagen’s Royal Maternity Hospital (Cliff 1992). In the Netherlands, municipal-level training for midwives, overseen by provincial medical committees, was in place from the seventeenth century; in 1823, centralized midwifery schools

FIGURE 2. Midwives: Associations



Comments: The figure describes the proportion of sovereign states in our sample that had a national association for midwives.

were established in six major cities, but the old local-provincial system continued to train the majority of midwives (Loudon 1992, 417; Van Lieburg and Marland 1989). In Spain, beginning in the late eighteenth century, training for midwives was carried out under the supervision of the Royal Colleges of Surgery in Barcelona and Madrid (established in 1760 and 1787) (Ortiz 1991). In Sweden, finally, legislation adopted in 1757 required each parish to employ a midwife and to pay for at least three months of education in Stockholm, overseen by an institution called the Collegium Medicum (Högberg 2004; Romlid 1998).

The proportion of countries that licensed and provided public education for midwives remained fairly stable for much of the nineteenth century, only to increase to almost 100 percent of all countries around the year 1900 (the only country that did not provide *any* formal education for midwives was Canada, where midwifery "remained a traditional craft across most jurisdictions of the country" during the entire time period that we consider in this paper; see Benoit, Wrede, and Sandall 2001, 41).

Figure 2 describes the proportion of countries in our sample that had a national association for midwives. As the figure shows, the first such association—Britain’s Royal College of Midwives, called the Matron’s Aid Trained Midwives Registration Society at the time—was established in 1881. Other countries soon followed, and by the 1920s, the majority of the countries in our sample had a national association, testifying to the emergence and organization of midwifery as a recognized profession in the late nineteenth and early twentieth centuries.

Table 1 describes how midwifery was governed in the nineteen countries in our sample between 1800 and 1939, mapping governance regimes with the help of our three dimensions—centralization (meaning here that at least *some* midwives worked for central government authorities), secularization, and subsidization. As the table shows, midwifery was rarely centralized among the countries in our sample, but there were a few examples, such as Ireland and Norway, where at least some midwives in public employment worked for—or were managed by—central government authorities. Religious control was also rare. Nevertheless, there is variation in all three dimensions, raising the question of which political, economic, and social factors were associated with particular institutional configurations.

In Tables 2, 3, and 4, we present the statistical results. Given that the number of institutional changes were so few, relative to the number of years under analysis (1870 to 1939 for most of the countries that we examine), we collapse the data into decade averages. The way that we generate the country-decade data depends on the variable under analysis. For the independent variables—such as partisanship, religious heterogeneity, and economic development—we take the country average for each decade. For the dependent variables, which are categorical in nature, this procedure does not make sense—for one thing, there is no score of, say, 0.5 on the centralization dimension—and since we want to make sure that we are not predicting, for example, the position in the centralization dimension in 1871 with effects of democracy that occur in 1879, we take each country’s score in the last year of each decade (1879, 1889, . . . , 1939). We do the same for the established church variable, for democracy, and for federalism.⁷

⁷For Austria, we use data from 1938 instead of 1939.

TABLE 1. Governing Midwifery

	Centralized and Partly Centralized Systems		Decentralized Systems	
	No Funding for Private Prov.	Funding for Private Prov.	No Funding for Private Prov.	Funding for Private Prov.
Secular	Finland, Ireland, New Zealand 1904–1937, Norway	New Zealand 1938–1939	Denmark, Italy 1889–1939, Japan 1926–1938, Netherlands 1818–1926, Sweden 1862–1939, United Kingdom 1834–1917, United States 1922–1939	Japan 1939, Netherlands 1927–1939, United Kingdom 1918–1939
Religious	Germany 1876–1939, Spain 1937–1939		Australia 1920–1939, France, Spain 1861–1936, Sweden 1800–1861	Belgium

We run a series of binary probit estimations, with country-clustered standard errors, where the dependent variables are, in turn, centralization, secularization, and subsidization. In each case we present the following series of models: (1) a baseline analysis with democracy, government ideology, federalism and GDP per capita; (2) the same specification with democracy and government ideology interacted; models (3) and (4) add religious heterogeneity and established church to the previous two models; models (5) and (6) add decade dummies. Decade dummies control for overall tendencies across time to centralize, secularize, or subsidize services.

Table 2 shows that the political pattern that we identified in the education domain can also be found in the area of midwifery. As in our paper on education, we find a positive coefficient on the interaction term and negative coefficients on the ideology and democracy variables alone. However, unlike the case of education, the centralizing tendencies in democracies are not as strong: in less than fully democratic countries, liberal governments were unlikely to centralize midwifery services, but in democracies, they were just as likely as right-wing governments to do so (in the area of education, we found that liberal and social democratic governments were *more* likely than conservative and Catholic governments to centralize service provision in democracies).

Interpreting the coefficients is easier graphically, as we demonstrate in Figure 3, taken from Model 6 and providing predicted probabilities with ninety-five percent confidence intervals.⁸ We find that centralization of midwifery was extremely rare in countries coded as democracies, and that ideology has no apparent effect in these countries. Conversely, while autocracies under liberal government are also not associated with centralization, autocracies with conservative government do appear to be more likely to have centralized midwifery—a finding that seems to be driven by countries such as Germany and Spain.

⁸All graphs are calculated using Stata’s `margins` command. Ninety-five percent confidence intervals represented estimates for *predicted values*, which include measurement error about the prediction as well as the coefficient (that is, they include overall prediction uncertainty as well as inferential uncertainty related to the “effect” of one variable on another).

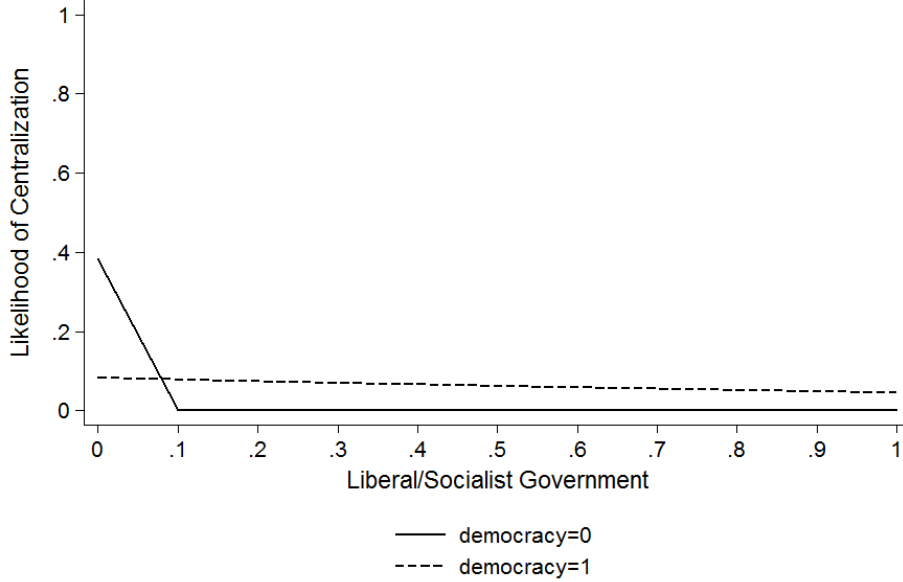
TABLE 2. The Centralization of Midwifery, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	-0.707 (0.474)	-40.468*** (5.042)	-0.542 (0.432)	-36.614*** (6.288)	-0.671 (0.466)	-39.718*** (6.400)
Democracy Dummy	-1.110*** (0.352)	-1.430*** (0.300)	-1.037*** (0.248)	-1.346*** (0.300)	-1.210*** (0.288)	-1.523*** (0.345)
Ideology * Democracy		40.116*** (4.991)		36.319*** (6.368)		39.311*** (6.417)
GDP per capita	0.474** (0.222)	0.468* (0.241)	0.413* (0.251)	0.418 (0.261)	0.313 (0.450)	0.331 (0.465)
Federalism	0.917 (0.908)	0.832 (0.882)	0.327 (0.895)	0.330 (0.891)	0.224 (0.855)	0.217 (0.848)
Religious Heterogeneity			2.818 (2.430)	2.439 (2.618)	3.613 (3.116)	3.207 (3.288)
Established Church			0.282 (0.528)	0.149 (0.567)	0.462 (0.741)	0.322 (0.794)
Constant	-2.337*** (0.736)	-2.072*** (0.790)	-2.647*** (0.571)	-2.332*** (0.604)	-2.940*** (0.520)	-2.549*** (0.586)
Observations	104	104	104	104	104	104
Countries	17	17	17	17	17	17

Country-clustered standard errors in parentheses. Models 5 and 6 contain decade dummies

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 3. Political Regimes and Centralization of Midwifery



In Table 3, we find few robust relationships between the political and economic variables that we consider and secularization, which is in contrast to our earlier findings regarding primary education. In our article on education, liberalism was found to be correlated with secularization, but here, liberalism/socialism is, if anything, *negatively* correlated with secularization. Religious heterogeneity is also uncorrelated with secularization. In Models 3 through 5, we do find a relationship between having an established church and the secularization of midwifery—but even here the results are unexpected: we would normally expect the fusion of church and state to be associated with *less* secularization, but here we find the reverse. This can be seen in most clearly Figure 4.

Table 4 finds the *opposite* of what we found in Ansell and Lindvall (2013): a negative relationship between religious heterogeneity and subsidization rather than a positive relationship (however, this association is only statistically significant at the ten percent level). We also find a negative effect of liberalism/socialism on subsidization. Figure 5 demonstrates the combined effect of the two variables. As the figure shows, conservative governments were more likely to subsidize privately provided midwifery services, particularly at moderate levels of religious

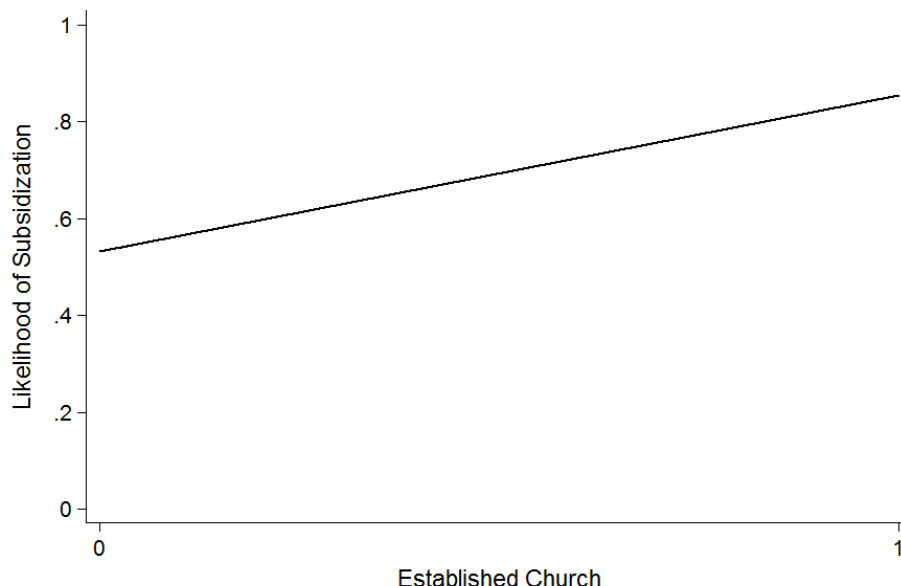
TABLE 3. The Secularization of Midwifery, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	−0.346 (0.667)	−1.241 (1.402)	−0.351 (0.724)	−0.577 (1.380)	−0.369 (0.779)	−0.560 (1.476)
Democracy Dummy	0.137 (0.626)	−0.212 (0.615)	0.267 (0.639)	0.177 (0.615)	0.265 (0.666)	0.187 (0.546)
Ideology * Democracy		1.231 (1.709)		0.313 (1.552)		0.268 (1.565)
GDP per capita	0.116 (0.189)	0.115 (0.181)	0.073 (0.218)	0.076 (0.207)	0.044 (0.355)	0.055 (0.336)
Federalism	−1.279 (0.816)	−1.286 (0.808)	−1.342 (1.048)	−1.323 (1.034)	−1.351 (1.059)	−1.334 (1.047)
Religious Heterogeneity			0.454 (3.178)	0.356 (3.039)	0.600 (3.572)	0.477 (3.466)
Established Church			1.139* (0.615)	1.094* (0.593)	1.160* (0.672)	1.117 (0.682)
Constant	0.269 (0.620)	0.479 (0.626)	0.037 (0.737)	0.098 (0.815)	0.045 (0.692)	0.090 (0.743)
Observations	101	101	101	101	101	101
Countries	17	17	17	17	17	17

Country-clustered standard errors in parentheses. Models 5 and 6 contain decade dummies

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 4. Established Churches and Secularization of Midwifery



heterogeneity. Religious heterogeneity has a particularly negative impact on subsidization in conservative regimes. For liberal and socialist governments, a floor effect is in play: the probability of subsidization is low regardless of religious heterogeneity.

To summarize, only in the case of centralization do we find patterns that are similar to those we uncovered with respect to education in Ansell and Lindvall (2013), and even here, there is only one similarity: the centralizing behavior of conservative governments in autocracies, including fascist dictatorships (we do not find, as we did for education, that liberal democratic regimes were associated with centralization). In the cases of secularization and subsidization, the results are very different from the results for education. State churches are associated with secularization, and subsidization is less common when religious heterogeneity is high. This probably reflects the lower political profile of midwifery *vis-à-vis* education: subsidization as a compromise solution to the funding of schools in religiously mixed societies clearly does not apply in the case of midwifery, where governments were apparently only happy to subsidize religiously provided birth services in cases of religious homogeneity. This may be because midwifery was

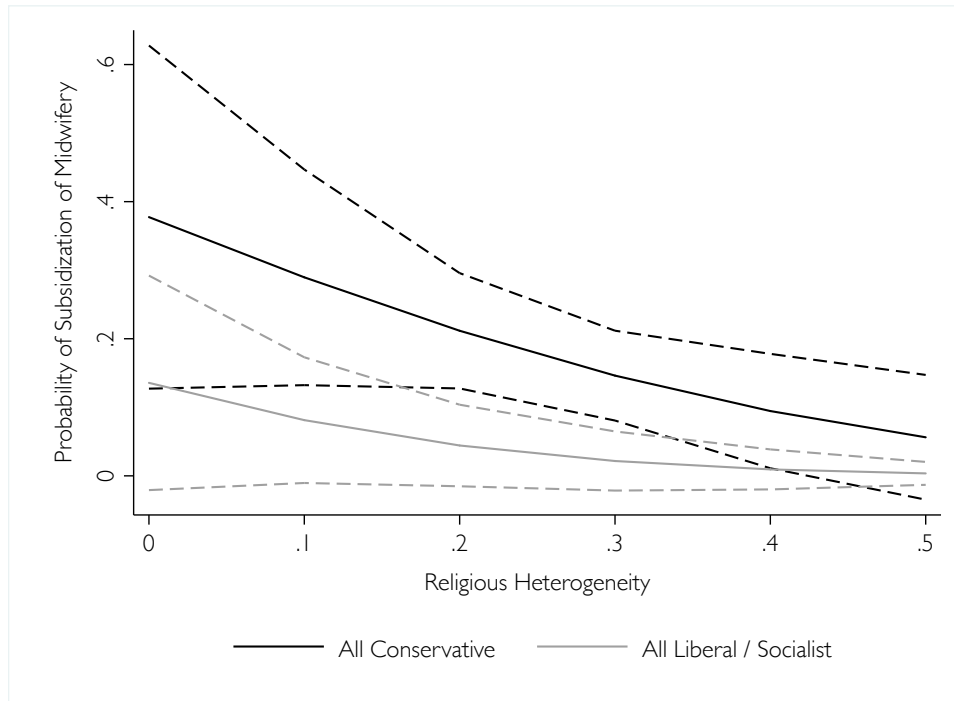
TABLE 4. The Subsidization of Midwifery, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	−1.108** (0.544)	0.682 (1.006)	−1.620*** (0.568)	−0.048 (0.878)	−1.620*** (0.568)	−0.048 (0.878)
Democracy Dummy	−0.489 (0.300)	−0.101 (0.505)	−0.344 (0.393)	0.097 (0.512)	−0.344 (0.393)	0.097 (0.512)
Ideology * Democracy		−2.249 (1.742)		−2.076* (1.181)		−2.076* (1.181)
GDP per capita	0.629*** (0.181)	0.663*** (0.182)	1.071*** (0.375)	1.030*** (0.372)	1.071*** (0.375)	1.030*** (0.372)
Religious Heterogeneity			−6.393* (3.358)	−6.079* (3.260)	−6.393* (3.358)	−6.079* (3.260)
Established Church			−0.549 (0.790)	−0.281 (0.667)	−0.549 (0.790)	−0.281 (0.667)
Constant	−2.739*** (0.751)	−3.142*** (0.739)	−2.768*** (0.616)	−3.103*** (0.685)	−2.768*** (0.616)	−3.103*** (0.685)
Observations	104	104	104	104	104	104
Countries	17	17	17	17	17	17

Country-clustered standard errors in parentheses. Models 3 through 6 contain decade dummies

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 5. Political Regimes, Religious Heterogeneity and Subsidization of Midwifery



not universally used (hence no need to buy off religious groups), and not something that governments gave priority to controlling (hence a willingness to subsidize even in the absence of religious competition).

5. MADNESS

Today, mental illness is often dealt with through therapy, medication, and community care, whereas physical illness is dealt with in expensive, capital-intensive hospitals. It is easy to forget that it was not always so. In the nineteenth century, *mental illness* was often met with institutionalization, whereas *physical* illness was either suffered or dealt with privately (by visiting physicians).

The large-scale institutionalization of the mentally ill was a nineteenth-century phenomenon. Two hundred years ago—in the early 1800s—very few people were committed to lunatic asylums or other institutions dedicated to the confinement and treatment of individuals with “insane and disordered minds” (quoting the name of the first mental hospital in the United States, in Williamsburg, Virginia). A century later, in the early 1900s, matters were very different: at that time, the inmate

population in the United Kingdom, to take one example, exceeded one hundred thousand individuals (Porter 1987), which corresponds to between half a percent and one percent of all adult individuals.

This expansion of mental health care—for want of a better term—in the course of the nineteenth century was the result of a combination of cultural, economic, social, and political factors, including industrialization and urbanization, the end of older forms of poor relief and community care, and the emergence of psychiatry as an academic discipline and profession. There is a vast literature on the cultural and social history of madness, numerous studies of the intellectual history of alienism and psychiatry, and many studies of mental hospitals as institutions of authority and control (following Foucault 1961). But to our knowledge, there are no comparative studies of how states governed mental hospitals and national asylum systems.

We begin by considering some evidence regarding the history of mental health care in our sample of nineteen countries (see Table 5). In the first three columns, we find (a) the name and location of the first institution in each country that catered exclusively to individuals with mental health problems, (b) the year in which this institution was established, and (c) whether it was private or public and whether it was operated by a religious institution or order.

Determining which institution was first is not straightforward. Mental hospitals typically emerged through a gradual process of differentiation: first, other institutions—such as prisons, alms houses, and general hospitals—began to identify the insane as a special category of inmates/patients; second, separate units within prisons, alms houses, and hospitals were created to confine and treat this category of people; third, separate wings and annexes were built; fourth, special hospitals were created for the sole purpose of confining and treating the insane; fifth, these hospitals turned into modern psychiatric hospitals. The information in Table 5 concerns the first institution in each country that cared exclusively for persons with mental health problems (lunatics, madmen, the deranged, the disordered, the insane), and the year in which it started to do so (or, in the event that they were built for this purpose alone, the year it opened).

TABLE 5. Early Mental Hospitals and National Asylum Systems

Country	First Asylum	Established	Type	Asylum System	Expansion
Australia	Castle Hill Lunatic Asylum, New South Wales	1811	Public	1811	1868–1890
Austria	The <i>Narrenthurm</i> (Fool's Tower), Vienna	1784	Public	1842	1820–1850
Belgium	The city of Geel, outside Antwerp	1532	Private/religious	1850	1830–1850
Canada	<i>Hôpital-des-Sœurs-Grises</i> , Montreal	1747	Private/religious	1830	1845–1860
Denmark	<i>Skt. Hans Hospital</i> , Roskilde	1816	Public	1846	1850–1870
England	Bethlem Royal Hospital, London	1547	Public/religious	1808	1845–1880
Finland	<i>Själö hospital</i> , outside Åbo	1785	Public	1840	1880–1900
France	Charenton, Val-de-Marne	1701	Private/religious	1838	1800–1850
Germany	<i>Landes Irrenanstalt</i> , New Ruppin	1811	Public	(1811)	1870–1900
Ireland	Magdalen Asylum, Dublin	1765	Private/religious	(1808)	(Independent 1922)
Italy	<i>Ospedale di Sant'Orsola</i> , Bologna	1710	Private/religious	1865	1870–1880
Japan	Tokyo Metropolitan Matsuzawa Hospital	1879	Public	1919	1919–1939
Netherlands	The madhouse at Zutphen	c.1500	Public	1841	1884–1918
New Zealand	Wellington Lunatic Asylum	1854	Public	1854	1870–1890
Norway	Gaustad Asylum (Oslo)	1855	Public	1848	1860–1890
Spain	<i>Hospital de los Inocentes</i> , Valencia	1410	Private/religious	1822	1860–1880
Sweden	<i>Danviks dårhus</i> (Stockholm)	1788	Public	1813	1860–1880
Switzerland	<i>Les Vernets</i> (Geneva)	1838	Public	1838	1860–1875
USA	Public Hospital for Persons of Insane and Disordered Minds, Williamsburg, Virginia	1773	Public	1808	1870–1890

We learn two important things from this list. First of all, whereas there was a great deal of variation between countries with respect to the creation of separate mental hospitals—the world’s first asylum opened in Spain in the fifteenth century—in most countries, the first mental hospital opened between the middle of the eighteenth century and the middle of the nineteenth. Second, whereas early mental hospitals (fifteenth century to mid-eighteenth century) were typically religious institutions, operated by religious orders, the mental hospitals that opened from the late eighteenth century onward were typically public institutions, operated by secular authorities, not the church.

In the last two columns, we find (d) information about the year in which national legislation on asylums and mental health was first adopted and (e) information about the period in which the inmate population increased the most in the history of the asylum system in each country. As the evidence summarized in the table shows, the creation of national systems of mental health care—with large inmate populations—is a phenomenon of the nineteenth century: with the sole exception of Japan, national legislation on the establishment of asylum systems was first adopted between the years 1808 and 1865, and with few exceptions, Japan being one of them, the largest increase in the inmate population occurred in the second half of the nineteenth century.

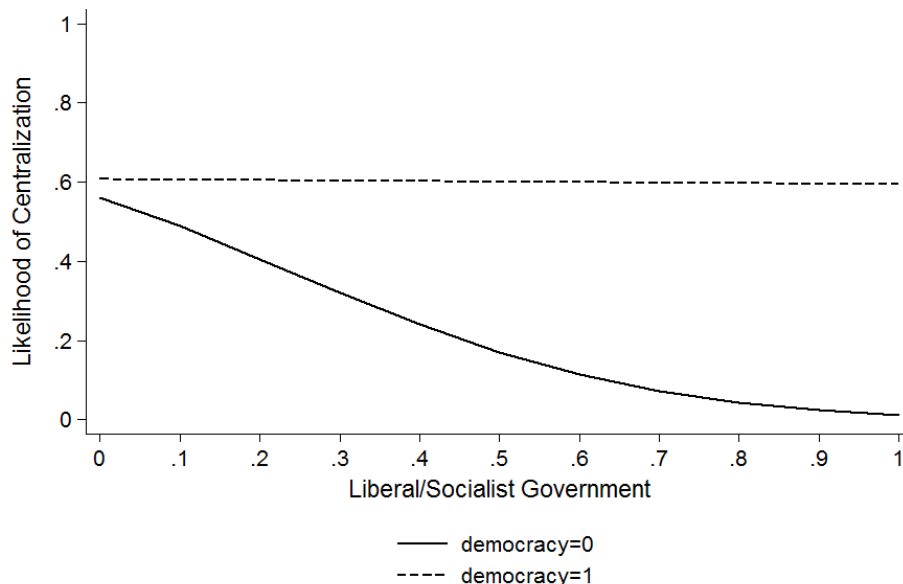
Clearly, the creation and expansion of mental health care systems was an important part of the state formation process in the nineteenth century. Among the rich, industrializing states, the process also appears to have been relatively uniform.

In Table 6, which describes the way in which insane asylums were governed, we find, first of all, that although most countries centralized mental health care (most countries start in the two right-hand columns but end up in one of the two left-hand columns) centralization was not universal; in particular, provision remained local or regional in federal states, such as Australia, Canada, the United States, and pre-Nazi Germany. We also find, with respect to centralization, that the new fascist governments in the inter-war period in Italy (1922), Germany (1933), and Austria (1934) immediately centralized control over mental health care when they won power, reflecting our earlier findings concerning

TABLE 6. Governing Mental Hospitals

	Centralized Systems		Decentralized Systems	
	No Funding for Private Prov.	Funding for Private Prov.	No Funding for Private Prov.	Funding for Private Prov.
Secular	Denmark 1846–1939, Finland 1917–1939, Germany 1933–1939, New Zealand 1877–1939, Norway 1900–1939, Sweden 1800–1939, United Kingdom 1891–1939	Austria (1806–1846), Belgium 1859–1939, France 1839–1939, Ireland 1922–1939, Italy 1922–1939, Netherlands 1841, 1930–1939	Australia 1901–1939, Denmark 1800–1845, Japan 1800–1867, New Zealand (1857–1876), Switzerland 1848–1868, United Kingdom 1846–1890	Japan 1868–1939, Switzerland 1869–1939
Religious	Austria 1934–1938, Netherlands 1842–1929		Germany (1800–1849), United States 1830–1939	Austria (1847)–1933, Belgium 1830–1858, Canada 1867–1939, France 1800–1838, Germany (1850)–1932, Netherlands 1815–1840, Spain 1800–1939, United Kingdom 1800–1845, United States 1800–1829, Italy (1861)–1921

FIGURE 6. Political Regimes and Centralization of Asylums



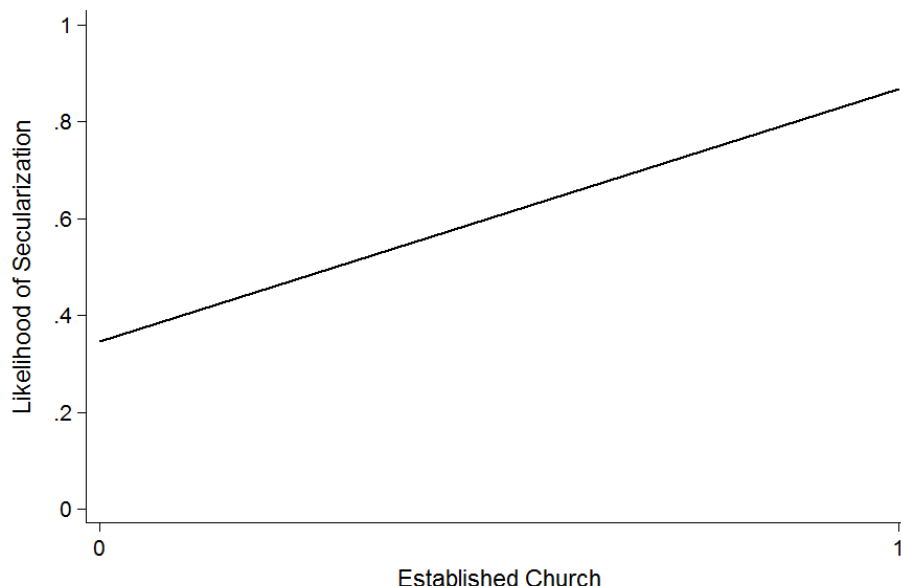
schools (Ansell and Lindvall 2013). Regarding the role of the church and the provision of public funding for private providers of mental health care, we also find important variation across countries. (Many countries provided public funding for private mental health care, but it appears that this was not, as in the domain of schooling, to manage religious diversity, but because of overflow from the public system.)

We now turn to our statistical analysis of the structure of national asylum systems in the late nineteenth and early twentieth centuries. As with midwifery, we begin by examining the relationship between our political, economic and religious variables and *centralization*. The pattern, demonstrated in Table 7 is as before—a negative effect of liberalism/socialism and a positive interaction of that ideology variable with democracy. As before, we demonstrate the effect graphically in 6. The effect of government ideology can only be observed in autocracies—with more liberal governments being less likely to centralize than more conservative (and fascist) governments. In democracies, there is, as before, no estimated effect of ideology in democratic governments, but the probability of centralization of asylums in democracies is uniformly *high*. In other words, the only cases where asylums remained decentralized appear to be liberal oligarchies.

TABLE 7. The Centralization of Asylums, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	-1.133* (0.593)	-3.911** (1.892)	-1.075** (0.537)	-3.896** (1.911)	-1.254** (0.639)	-4.460*** (1.612)
Democracy Dummy	1.089* (0.585)	-0.080 (0.672)	1.131** (0.529)	0.053 (0.663)	1.486*** (0.502)	0.333 (0.594)
Ideology * Democracy		4.013** (1.942)		3.912** (1.929)		4.361*** (1.639)
GDP per capita	0.612** (0.242)	0.681*** (0.255)	0.659*** (0.223)	0.789*** (0.229)	0.615* (0.318)	0.932*** (0.358)
Federalism	-3.906*** (1.016)	-3.962*** (0.963)	-3.468*** (1.068)	-3.631*** (0.986)	-3.663*** (0.991)	-3.753*** (0.941)
Religious Heterogeneity			-1.661 (2.558)	-2.308 (2.449)	-1.894 (2.870)	-3.920 (2.908)
Established Church			0.658 (0.809)	0.403 (0.803)	0.654 (0.765)	0.165 (0.812)
Constant	-1.085 (0.772)	-0.805 (1.016)	-1.307* (0.770)	-1.058 (1.025)	-1.081 (0.687)	-0.777 (0.942)
Observations	118	118	118	118	118	118
Countries	19	19	19	19	19	19

FIGURE 7. Political Regimes and the Secularization of Asylums



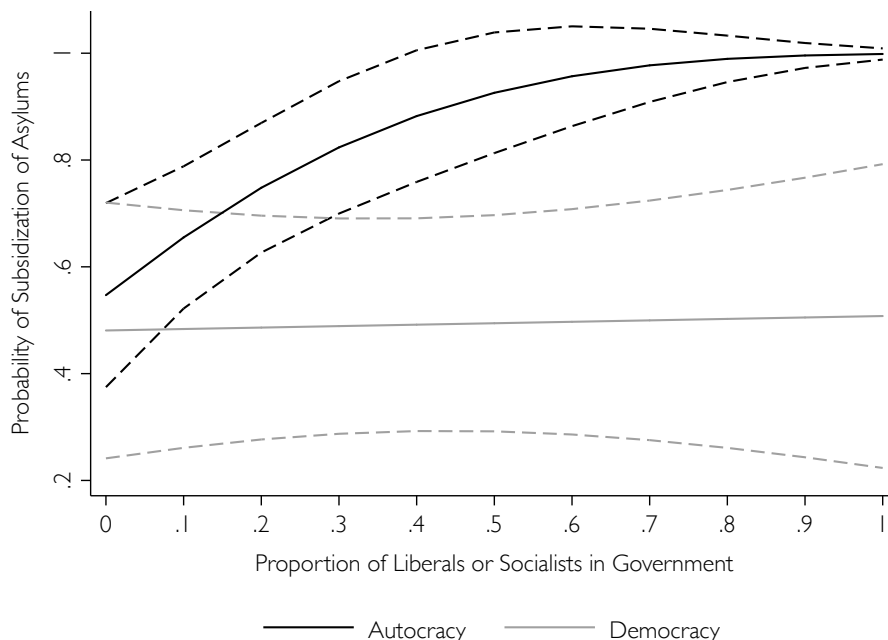
We now move to examine secularization of asylums. Here we find the same surprising effect that we did with midwifery—countries with established churches were *more* likely to remove control over asylums from the church. There is a further interesting association that is worth examining and is shown in Figure 7: there appears to be an interactive relationship between ideology, democracy, and secularization—once more, “liberal oligarchies” stand out from the rest, being, here, the least likely to remove control over asylums from the church. This is strikingly different from the case of schools, for Ansell and Lindvall (2013) show that liberal governments were *more* likely to engage in the secularization of education. Again, this suggests that the politics behind the state’s early involvement in health care was sharply distinct from the educational experience.

Finally, we examine the relationship between political and religious forces and the subsidization of asylums. Again we do not find the expected association between religious factors and subsidization. In particular, there is no stable relationship between religious heterogeneity and subsidization—in contrast to the findings for education. For church establishment, there is a strong negative effect on subsidization,

TABLE 8. The Secularization of Asylums, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	−0.118 (0.602)	−4.437** (1.968)	−0.229 (0.577)	−4.024* (2.067)	−0.265 (0.589)	−4.508** (2.078)
Democracy Dummy	0.302 (0.459)	−0.441 (0.525)	0.689 (0.443)	0.093 (0.599)	0.732 (0.451)	0.054 (0.632)
Ideology * Democracy		4.954** (2.059)		4.296** (2.187)		4.808** (2.192)
GDP per capita	0.133 (0.198)	0.131 (0.202)	0.132 (0.224)	0.143 (0.222)	0.130 (0.352)	0.234 (0.328)
Federalism	−0.810 (0.675)	−0.901 (0.686)	−0.221 (0.798)	−0.305 (0.804)	−0.206 (0.792)	−0.291 (0.804)
Religious Heterogeneity			−1.987 (2.461)	−2.130 (2.503)	−2.070 (2.682)	−2.572 (2.719)
Established Church			1.646** (0.683)	1.438** (0.715)	1.654** (0.674)	1.372* (0.711)
Constant	−0.447 (0.679)	0.071 (0.685)	−0.834 (0.907)	−0.394 (0.937)	−0.753 (0.855)	−0.226 (0.892)
Observations	118	118	118	118	118	118
Countries	19	19	19	19	19	19

FIGURE 8. Political Regimes and Subsidization of Asylums



implying that only in countries *without* established churches was the state likely to fund private asylums.

The relationship between political variables and subsidization is also interesting, and can be seen in Figure 8. We find a *negative* interaction between democracy and liberal/socialist ideology: “liberal oligarchies” were most likely to subsidize private asylums (much as they were the least likely to centralize them or secularize them). This suggests a specific pattern for “liberal oligarchies” with regard to asylums: keep the state at arm’s length from existing private religious asylums by only providing funding support rather than exerting direct control.

6. DEATH

Deaths from communicable diseases were once common in all parts of the world (even today, they account for one third of all deaths globally), but in today’s advanced democracies, they are rare. In this section, we examine national programs for the provision of the world’s first vaccine—the smallpox vaccine, which was invented the British physician Edward Jenner in the 1790s (Jenner 1798). According to McKeown (1979, 30), the smallpox vaccine was the only case in which

TABLE 9. The Subsidization of Asylums, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	0.424 (0.575)	3.760** (1.817)	0.472 (0.617)	3.017** (1.474)	0.422 (0.595)	4.703*** (1.633)
Democracy Dummy	−0.299 (0.435)	0.226 (0.525)	−0.661 (0.468)	−0.373 (0.533)	−0.730 (0.476)	−0.268 (0.523)
Ideology * Democracy		−3.749* (2.015)		−2.729* (1.654)		−4.595*** (1.714)
GDP per capita	−0.479** (0.187)	−0.486*** (0.182)	−0.525** (0.221)	−0.526** (0.218)	−0.731** (0.367)	−0.820** (0.355)
Federalism	0.979 (0.624)	1.045* (0.615)	0.826 (0.676)	0.848 (0.665)	0.730 (0.674)	0.772 (0.659)
Religious Heterogeneity			−0.190 (2.333)	−0.031 (2.233)	0.856 (2.668)	1.422 (2.468)
Established Church			−2.012*** (0.631)	−1.870*** (0.633)	−1.961*** (0.638)	−1.718*** (0.637)
Constant	1.427** (0.583)	1.081 (0.687)	2.306*** (0.593)	2.044*** (0.680)	2.206*** (0.627)	1.773*** (0.678)
Observations	118	118	118	118	118	118
Countries	19	19	19	19	19	19

“immunization and therapy” contributed to a decline in the death rate before the year 1900 (the decline in the death rate before that year is largely attributable to other causes). It is therefore natural to concentrate on smallpox rather than trying to cover a range of different diseases.

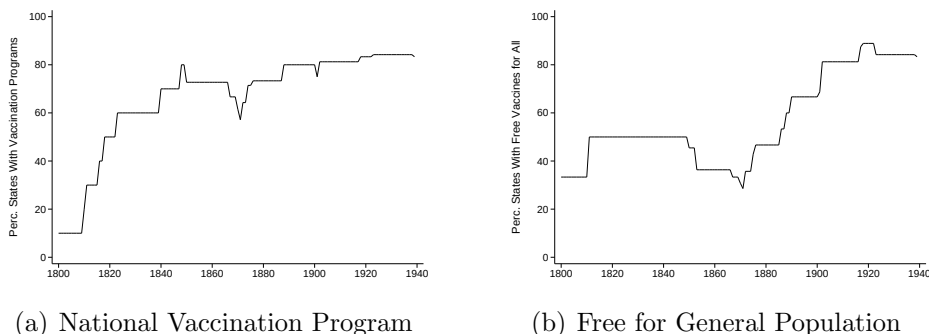
Smallpox—the deadliest of all communicable diseases, going by the total number of deaths through history—was caused by two different viruses: *Variola major*, causing the more common, and more deadly, form of the disease, and *Variola minor*, causing a less common and less deadly form. The virus was endemic in human populations for at least three thousand years, probably longer, until its final eradication in the late 1970s through a program launched by the World Health Organization (smallpox is the only infectious disease affecting humans that has ever been eradicated) (Fenner et al. 1988). The deadlier form of the smallpox virus killed up to 50 percent of its victims and left survivors horribly scarred (Williams 2010, 14).⁹

The politics of smallpox has already been the subject of several studies, most importantly *Contagion and the State*, Peter Baldwin’s magisterial study of England, France, Germany, and Sweden (1999, Chapter 4). We present comparative evidence on a longer time period, emphasizing, as in other parts of our project, political conflicts over the *administration* of public programs.

Figure 9 describes the development of smallpox vaccination programs using two simple indicators. The figure’s left-hand panel describes the proportion of sovereign states in our sample that had a national vaccination program for smallpox (judging from the country-specific medical histories that we have consulted). As the figure shows, the proportion went from just above 0 percent (only the Netherlands had introduced a program before the year 1800) to around 80 percent (three federal states—Australia, Canada, and the United States—never had national vaccination programs), with most of the growth occurring in the first half of the nineteenth century. In other words, soon after the development of the smallpox vaccine, a majority of the states in

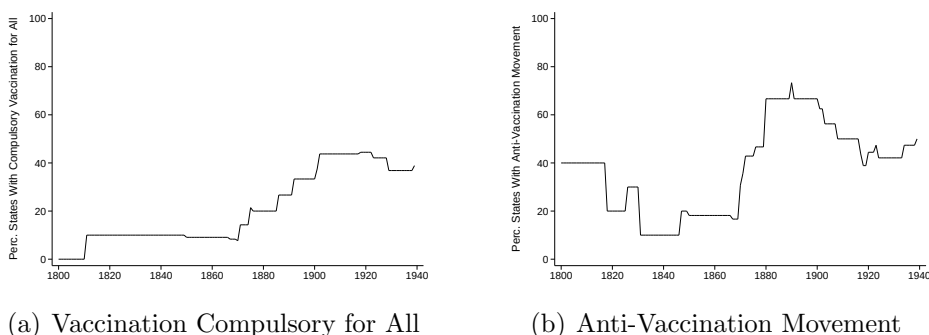
⁹The titles of two recent histories of smallpox—*The Greatest Killer* (Hopkins 2002) and *The Angel of Death* (Williams 2010)—speak for themselves.

FIGURE 9. The Smallpox Vaccine: Vaccination Programs



Comments: The left-hand figure describes the proportion of sovereign states in our sample that had national vaccination programs for smallpox. The right-hand figure describes the proportion of sovereign states in our sample where vaccines were free for the general population (where provided).

FIGURE 10. The Smallpox Vaccine: Compulsion



Comments: The left-hand figure describes the proportion of sovereign states in our sample where vaccination was compulsory for all groups throughout the country. The right-hand figure describes the proportion of sovereign states in our sample that had significant anti-vaccination movements.

our sample made it a national policy to protect the population against smallpox.

Where vaccines were provided for young children, they were typically provided without cost. As the right-hand panel in Figure 9 shows, however, only around half of all states provided vaccines, where available, for free for the *general* population before the late nineteenth century, when the proportion of states that did so increased to almost 100 per cent (presumably this was a consequence of the great smallpox epidemic in Europe in 1870–1875, after the Franco-Prussian War).

Vaccination raises serious political and ethical questions. The most critical question is this: may the state *compel* individuals to be vaccinated? Most vaccinations are invasive medical procedures in a very obvious sense (and the smallpox vaccines certainly were): a biological agent is injected into (and “invades”) the body. On the other hand, *public* health is compromised when individuals choose to refrain from vaccination. The tension between these principles is discussed in the opinion of the first Justice Harlan in the case of *Jacobson v. Massachusetts* (197 U.S. 11), which concluded that “Upon the principle of self-defense, of paramount necessity, a community has the right to protect itself against an epidemic of disease which threatens the safety of its members.”

The left-hand panel of Figure 10 describes the proportion of countries in our sample where smallpox immunization was compulsory for the general population (as opposed to just specific groups, such as Native Americans in the United States). The right-hand panel describes the proportion of countries in our sample where there was a significant anti-vaccination movement. It is interesting to note that already in the nineteenth century—as in the twenty-first century—vaccinations was a contentious political issue.¹⁰

Table 10 describes how vaccination programs were governed in the nineteen countries in our sample over time, mapping the governance regimes using our three dimensions of centralization, secularization, and subsidization.

In Tables 11 and 12, we present the statistical results (it is not possible to analyze the process of secularization statistically, since the public provision of vaccinations had already become almost completely secularized in the countries in our sample by the 1870s, when our statistical analyses begin).

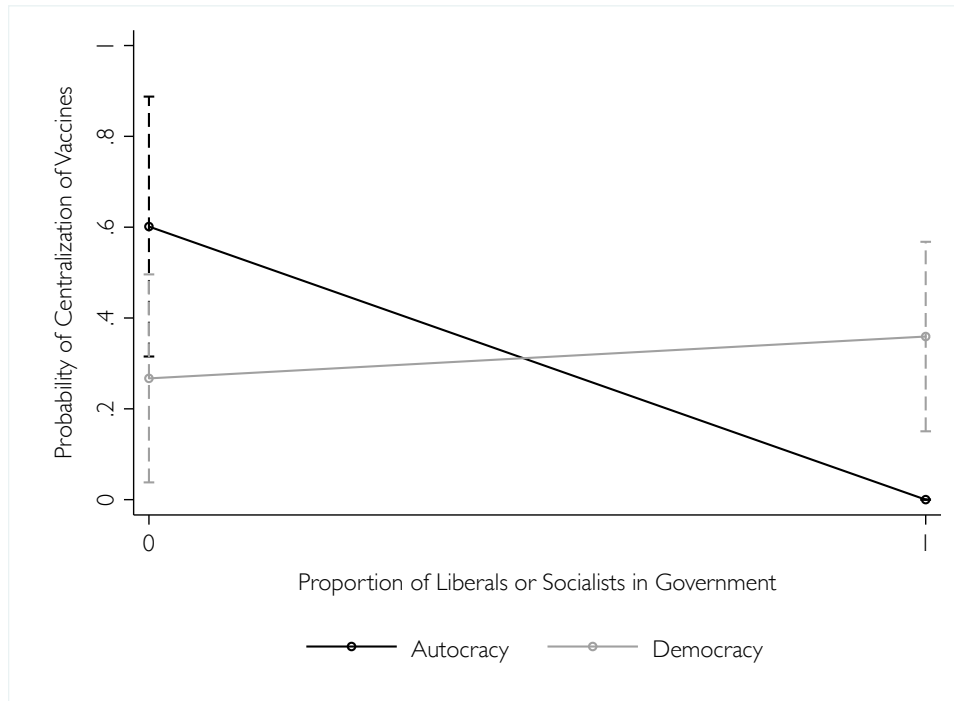
For centralization, we once more find the expected conditional relationship between regimes, the ideological orientation of the government, and governance. This pattern can be seen in Figure 11. As before ideology does not appear to matter very much in democracies

¹⁰Anti-vaccine sentiments were probably more justified in the nineteenth century than they are today: in the nineteenth century, vaccinations were commonly provided “arm-to-arm,” which meant that vaccination was associated with an increased risk of contracting blood-borne diseases such as syphilis and hepatitis.

TABLE 10. Governing Vaccines

	Centralized Systems		Decentralized Systems	
	No Funding for Private Prov.	Funding for Private Prov.	No Funding for Private Prov.	Funding for Private Prov.
Secular	Denmark 1871–1939, Ireland, Japan 1872–1939, New Zealand, Sweden 1873–1939, United Kingdom 1856–1939		Australia, Austria, Belgium, Canada, Finland, Japan 1850–1856, 1869–1871, Netherlands, Norway 1866–1939, Spain 1823–1939, Sweden 1851–1872, United Kingdom 1800–1855, United States 1814–1939	France 1903–1939, Germany 1871–1939, Italy 1872–1939, Japan 1857–1868, Switzerland
Religious	Denmark 1810–1870		Denmark 1800–1809, Norway 1811–1865, Spain 1800–1822, Sweden 1800–1850, United States 1800–1813	France 1800–1902, Italy 1870–1871, Switzerland 1807–1848

FIGURE 11. Political Regimes and Centralization of Vaccine Provision



(which have a one-in-three probability of centralizing regardless of who controls the government). By contrast, we again see the pattern of conservative autocracies being substantially more likely to centralize vaccination programs than “liberal oligarchies.” Accordingly, the same striking pattern has been evident across all three areas of early health provision: midwifery, asylums, and vaccinations. No states were particularly keen to acquire central control over the provision of these services *except* for conservative autocratic governments, including, importantly, fascist governments. The contrast with education is striking, for in the case of education, democracies with liberal or social democratic governments were avid centralizers.

When it comes to the subsidization of vaccination programs, however, we do find the same positive effect of religious heterogeneity that we found for education systems in Ansell and Lindvall (2013). Figure 12 demonstrates this pattern, splitting the sample by the degree of liberalism of government ideology. For both conservative and liberal/social democratic governments, religious heterogeneity is positively associated with the probability of subsidization, though the effect is estimated

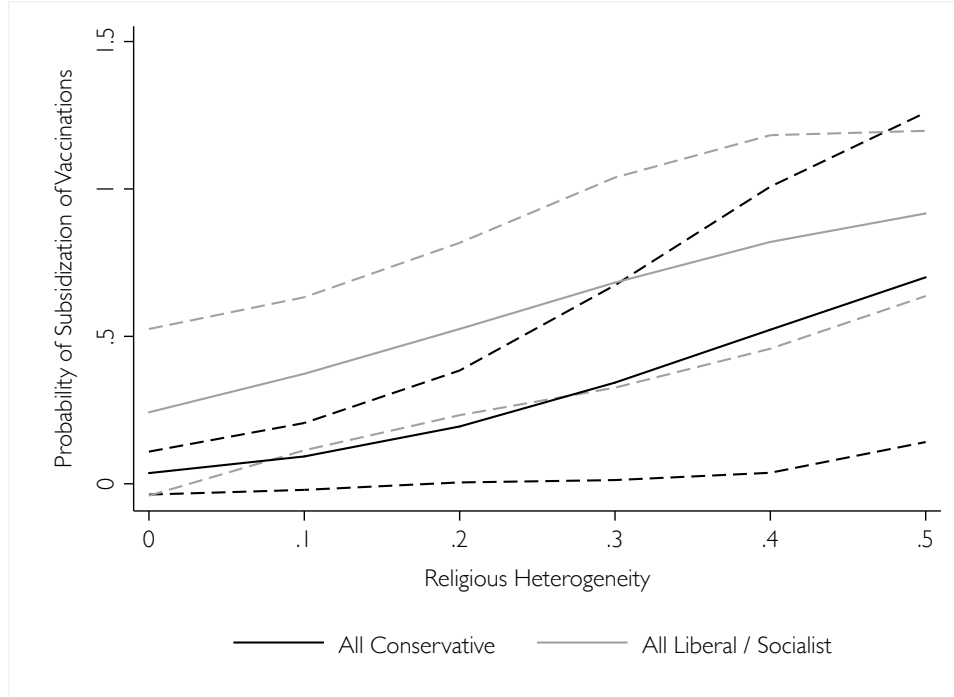
TABLE 11. The Centralization of Vaccine Provision, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	−0.129 (0.422)	−4.056** (1.983)	−0.751 (0.671)	−4.761** (2.172)	−0.835 (0.768)	−7.762*** (2.864)
Democracy Dummy	−0.393 (0.412)	−1.167** (0.523)	−0.044 (0.546)	−1.065 (0.660)	0.048 (0.580)	−1.651 (1.085)
Ideology * Democracy		4.613** (2.044)		4.824** (2.360)		8.242*** (3.185)
GDP per capita	0.100 (0.197)	0.090 (0.204)	0.265 (0.272)	0.365 (0.237)	0.409 (0.443)	0.797* (0.481)
Religious Heterogeneity			−4.912** (1.982)	−5.630*** (2.020)	−5.983** (2.691)	−8.817*** (3.213)
Established Church			1.358* (0.698)	1.100 (0.751)	1.299* (0.694)	0.896 (0.721)
Constant	−0.487 (0.721)	0.019 (0.748)	−0.782 (0.985)	−0.351 (0.955)	−0.645 (0.940)	0.273 (0.880)
Observations	114	114	114	114	114	114
Countries	19	19	19	19	19	19

Country-clustered standard errors in parentheses. Models 5 and 6 contain decade dummies

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

FIGURE 12. Political Regimes and Subsidization of Vaccine Provision



with more precision in the case of liberal governments. The effects are quite large in magnitude, with liberal/social democratic governments moving from a twenty-five to ninety-five percent probability of subsidization and conservative governments moving from a five percent to sixty percent probability of subsidization as religious heterogeneity moves from its minimum to its maximum.

7. CONCLUSIONS

In this paper, we have shown that governments in Western Europe, North America, and the Asia-Pacific region became involved in birth, life, and death—midwifery, insane asylums, and vaccinations—as early as the late eighteenth and early nineteenth centuries. The comparative-historical literature on the welfare state has failed to appreciate the importance of these early public-health programs.

We have also demonstrated, building on our earlier work on education (Ansell and Lindvall 2013), that the structure of these public health programs can meaningfully be described in three dimensions:

TABLE 12. The Subsidization of Vaccine Provision, 1870–1939

	(1)	(2)	(3)	(4)	(5)	(6)
Ideology	0.816* (0.446)	0.959 (1.134)	1.109** (0.518)	1.287 (0.838)	1.187** (0.593)	1.691* (0.929)
Democracy Dummy	-0.291 (0.670)	-0.238 (0.621)	-0.674 (0.542)	-0.608 (0.478)	-0.700 (0.581)	-0.512 (0.470)
Ideology * Democracy		-0.200 (1.314)		-0.242 (1.066)		-0.676 (1.089)
GDP per capita	-0.205 (0.161)	-0.200 (0.170)	-0.303 (0.201)	-0.298 (0.213)	-0.487 (0.343)	-0.503 (0.333)
Religious Heterogeneity			4.433 (2.929)	4.479 (2.868)	5.618 (3.446)	5.888* (3.366)
Established Church			-0.405 (0.588)	-0.374 (0.576)	-0.262 (0.651)	-0.157 (0.641)
Federalism	0.912 (0.671)	0.906 (0.671)	-0.066 (0.877)	-0.078 (0.867)	-0.210 (0.895)	-0.257 (0.889)
Constant	-0.467 (0.590)	-0.509 (0.643)	-0.433 (0.685)	-0.493 (0.750)	-0.435 (0.713)	-0.581 (0.747)
Observations	114	114	114	114	114	114
Countries	19	19	19	19	19	19

Country-clustered standard errors in parentheses. Models 5 and 6 contain decade dummies

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

centralization (the balance of power between local, regional, and central government), secularization (the balance of power between religious and secular authorities), and subsidization (the provision of public funding for private providers).

Finally, we have tested whether the ideas about the political drivers of education governance that we introduced in Ansell and Lindvall (2013) apply in the public-health field. Four patterns stand out—patterns that we hope to explore further in future work.

(1) As in the area of education, “liberal oligarchies”—that is, non-democratic countries governed by liberal political parties—were unlikely to *centralize* the provision of health care. In other words, liberal government in non-democratic regimes is associated with decentralized models of governance. (Conservative governments in non-democracies, by contrast, were keen to centralize service provision.)

(2) Unlike in the area of education, however, liberal and social democratic governments in democracies were *not* more likely to centralize health care provision than conservative governments in democracies. The most plausible explanation is that whereas education was central to liberal and social democratic political ambitions and ideas about nation-building and reform, health care was not (in other words, positions on health care did not separate the left and the right).

(3) Another difference between health care and education is that churches do not appear to have been eager to retain control over (publicly provided) health care services. In the case of smallpox vaccinations, we found that vaccine provision had become almost completely secularized by the 1870s, and in the other two areas—midwifery and insane asylums—we found that countries with established churches were in fact *more* likely to move to a secular model of service provision than countries without established churches. Again, the most likely explanation is that health care was not as politically salient as primary education—churches saw no need to control publicly provided health care (although churches sometimes operated a parallel system of their own).

(4) When it comes to subsidization, health care programs appear to vary. In two cases—midwifery and insane asylums—we did not replicate our earlier findings concerning religious heterogeneity; in those

two areas, subsidization does not appear to have been a response to religious conflict, but rather a functional response to overflow and a lack of capacity within the public system. In the case of the smallpox vaccine, however, we *do* find the expected pattern (subsidization is more likely in religiously divided societies). One explanation for this difference among health care programs is that vaccines were politically and religiously controversial in a way that midwifery and mental health care were not. One observation that speaks in favor of this interpretation is that subsidization was more likely in countries with a significant anti-vaccination movement (where the likelihood of having subsidization was 30 percent) than in countries where there was no mobilization against vaccines (where the likelihood was 20 percent).

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