

## Public Policies and Suicide Rates in the American States

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Accepted: 17 March 2008 / Published online: 1 April 2008  
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**Abstract** We are interested in the relationship between public policies and outcomes measuring quality of life. There is no outcome more final than the ending of one's own life. Accordingly, we test the relationship between public policy regimes and suicide rates in the American states. Controlling for other relevant factors (most notably a state's stock of social capital), we find that states with higher per capita public assistance expenditures tend to have lower suicide rates. This relationship is of significant magnitude when translated into potential lives saved each year. We also find that general state policy liberalism and the governing ideologies of state governments are linked to suicide rates. In response to a growing literature on the importance of non-political factors such as social connectedness in determining quality of life, these findings demonstrate that government policies remain important determinates as well.

**Keywords** Public policy · Social capital · Suicide · American state politics · Welfare spending

Political scientists have devoted enormous attention to the inputs of the public policy making process. Considerably less attention has been paid to the output side of public policies—their eventual consequences. This is an important omission since we are presumably interested in the link between political inputs and policy because we believe that these policies have some real impact on the quality of citizens' lives. Put differently, there is nothing inherently interesting about welfare, nor about education spending, tax rates, and so on. We are

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A previous version of this paper was presented at the 2007 annual meeting of the Midwest Political Science Association.

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interested in such things in part, of course, because they may help us understand the policy making process, but more importantly because we believe that different levels of state spending on welfare or education have real consequences for the lives of ordinary people. This is precisely why we focus on such items in our efforts to evaluate the democratic process—we study how the political process impacts redistribution because redistribution is important ultimately because it affects human beings. We would hardly care about welfare policy, or the political conditions that cause it to rise or fall, if it did not have such effects.

Do the policies we study have the kind of dramatic and compelling consequences for human life that we unconsciously assume? Recent studies have begun examining exactly this question by assessing the relationship between public policies and various indicators of a society's well being, including divorce rates (Buckingham 2000), poverty rates (Kenworthy 1999; Lobao and Hooks 2003), economic performance (Atkinson 1999) and even levels of happiness (Radcliff 2001). This literature directly addresses the fundamental notion that the study of public policies is ultimately justified by the significance of the final impact or outcome in the real world.

There is no outcome more final than the ending of one's own life. Accordingly, sociologists have long been interested in the study of suicide (e.g., Durkheim 1897). Political scientists, on the other hand, have given virtually no attention to the subject, on the presumed logic that it falls outside our disciplinary boundary. However, if we believe that political decisions have some bearing on the well being of citizens' lives, an obvious place to begin is by considering whether there is there a link between politics and such a basic issue of life and death as suicide. This paper is devoted to that question. Specifically, we ask if different policy regimes affect suicide rates across the American states.

Using several different measures of public assistance generosity, and controlling for other relevant factors (most notably social capital), we find that states with higher per capita spending tend to have lower suicide rates and that the relationship is dramatic in terms of its substantive impact. We also find that states with more liberal public policy regimes, and states where the governing ideologies of government leaders are more liberal, have lower suicide rates as well. Together, we uncover an important link between the public policy choices of state governments and a decidedly "final" outcome.

## 1 Background: Political Science and the Study of Suicide

One likely reason why suicide has received little attention from political scientists to date is that measures of suicide rates are rarely, if ever, linked to explicitly political variables. Instead, studies of suicide tend to focus on either individual-level psychological and demographic factors or group-level sociological ones. In what is surely the most famous and influential study of suicide, Emile Durkheim (1897) argued that differences in suicide rates across communities should be viewed as indicators of the "health" of these societies. High levels of suicide, then, indicate an ill society, with a collective problem that can only be solved by a collective solution. In modern societies, such collective remedies are most readily found in the activities of the state in the types of public policies previously discussed.

Durkheim, like most subsequent commentators, places great emphasis on the deterioration of social and familial bonds as a cause of suicide. In other words, lack of social integration, in both the traditional sense of anomie, but also in the simple notion of a lack of social connection, fosters suicide. Recently, political scientists have devoted increased attention to social integration, with the term "social capital" ascending to common usage (Coleman 1988; Putnam 1993, 2000). One commonly cited reason for studying social

capital is to assess its consequences in terms of a society's well being by asking: Do communities with higher levels of social capital tend to have a better quality of life? Many studies have found support for this assertion. For instance, the degree to which citizens are interconnected (i.e., a state's level of social capital) has been shown to highly correlate with a number of state level indicators including lower violent crime rates, healthier citizens, and better educational outcomes (Putnam 2000). Cross-nationally, higher levels of social capital have even been found to correlate with lower suicide rates (Helliwell 2007). "Bowing alone," then, makes a convenient metaphor for the isolation and loneliness that are postulated to contribute to suicide.

However, few studies have linked suicide to explicitly political variables or public policies such as public assistance spending in the United States.<sup>1</sup> To our knowledge, the only such study is Zimmerman (2002). While she finds some (inconclusive) evidence that suicide rates are in fact lower in states with higher public welfare expenditures, she explicitly considers welfare spending to be merely a proxy measure of the real variable of interest: a state's stock of social capital. As Zimmerman (2002, p. 351) explains, "Thus, the connection that I hypothesized between states' spending for public welfare and their suicide rates had less to do with expenditures per se than with the norms of mutual aid and support they connote." Given that welfare spending is treated literally *as a measure of social capital*, her study is incapable of separating the potential effects of spending from those of social capital. To disentangle the effects of each, *both* government spending and social capital must be examined simultaneously.

Therefore, the degree of social integration in a state stands as an alternative explanation to any possible relationship between public policies and suicide. In other words, it may be that state public assistance spending bears no relationship to suicide rates after controlling for a state's degree of social integration. In the next section, we lay out a theoretical argument for why we expect welfare spending to have a direct and independent effect on a state's suicide rate that is separable of any effect of social integration.

## 2 The Theoretical Link Between Public Policy and Suicide

From a public policy standpoint, the social capital explanation is troubling because it leaves little room for government action to have a meaningful impact on a state's quality of life, since social connectedness is not something directly amenable to governmental intervention. The state cannot, for instance, legislate that citizens must join more civic organizations, or play cards with their neighbors more often. Simply stated, if indicators of a society's health are largely determined by non-political factors, then what role for politics?<sup>2</sup> In this study, we assert a central role for politics and test the link between public policies and an important measure of a society's health (suicide rates). After controlling for measures of social connectedness and other commonly used predictors of state suicide rates, we expect an independent relationship such that states with more generous public assistance benefits and more liberal public policy regimes have lower suicide rates.

Why might public policies (especially public assistance expenditures) have an independent effect on suicide rates? One reason is that a stronger "safety net" provided by the

<sup>1</sup> In a parallel literature, several cross-national studies have found that countries with more generous welfare expenditures tend to have lower criminal homicide rates (Fiala and LaFree 1988; Gartner 1991; Messner and Rosenfeld 1997).

<sup>2</sup> Muntaner and Lynch (1999, p. 59) also point out that "an emphasis on social cohesion can be used to render communities responsible for their mortality and morbidity rates: a community-level version of 'blaming the victim.'"

government likely decreases the most extreme forms of poverty and economic desperation that might lead one to take his/her own life. Put differently, more generous welfare benefits help to insulate citizens from the unpredictable and oftentimes unforgiving forces of a market economy. As Lane (1978, p. 3) puts it, markets are “indifferent to the fate of individuals” (see also Esping-Anderson 1990; Messner and Rosenfeld 1997; Radcliff 2001). Not only does the safety net literally protect against the enormous psychological costs that come with dire economic circumstances, but it also insulates individuals against at least some of the strain on interpersonal relationships that extreme financial problems are well known to create. We need not rehearse here the familiar and obvious fact that marriages and other intimate personal relationships are often profoundly stressed or even broken by unemployment and poverty (to say nothing of the cost that the mere realistic fear of such things imposes on those who live on their edge). These same conditions can also foster a more generalized sense of isolation from society, its norms, and its values (i.e., anomie), given that individuals who feel that they are victimized by a system “indifferent to their fate” may naturally, and even rationally, withdraw their support from that system, its norms, and its values. It is precisely this kind of deteriorating connection to society that Durkheim (1897) and others view as among the principal determinants of suicidal behavior.

As the above emphasizes, it is not merely financial difficulties that create these kinds of stresses, but also just the persistent fear of them. It is this insecurity inherent in the market economy that is widely argued to have the most pervasive and deleterious consequences for the human psyche. Thus, as Lindblom (1977, p. 82) notes “a pertinent objection to markets is that they foist insecurities on the population,” which become “all the more a problem when [one’s] livelihood is at stake.” This insecurity about how one will earn a livelihood, and the consequences to one’s self and one’s family should it prove impossible, understandably produces enormous emotional stress (Brenner 1977), which may make one more likely to contemplate suicide through obvious mechanisms. State governments can insulate their citizens from these feelings of insecurity by providing more generous benefits to those in need and reducing dependence on the market for one’s livelihood. While states have little control over how well its citizens are integrated together in social networks, they can at least attempt to combat extreme forms of economic deprivation by supporting more generous welfare policies that care for the most at-risk citizens and temper the concerns of those afraid of falling into such a situation.

Conventional anomie theory leads to similar conclusions when linked to political economy. As Hirschman (1992) argues, the market economy (in which citizens have to depend upon employers to provide them a livelihood) promotes a cynical, instrumental, and narrowly self-interested view of social relationships, such that other people are more likely to be conceived of as means rather than ends. This in turn loosens society’s normative system for regulating conduct and attitudes, so that they begin to lose their force (Merton 1964). The market, then, fosters anomie by reducing the social bonds between people, as well as by weakening social norms (of which not taking one’s own life is surely one of the most important). As Messner and Rosenfeld (1997, p. 1397) observe, the “resulting attenuation of normative controls is likely to lead to high levels of deviant behavior,” including suicide. As the same authors also persuasively argue, the welfare state tends to reduce these anomic pressures, by virtue of the fact that the safety net it provides acts as a counterbalance to the anomie-inducing characteristics of the market.

A state’s welfare policies can also impact its suicide rate by providing needed medical care (especially mental health care) for those most likely to contemplate suicide and least likely to be able to afford adequate preventative treatment. As the link between clinical depression and suicide is well established (Cavanagh et al. 2003), government medical assistance benefits that provide the resources for disadvantaged individuals to gain access to

needed care could prove crucial in preventing someone who is mentally ill from taking their own life. Again, the level of generosity in medical benefits provided to citizens living in poverty is a political factor that state governments have the direct ability to manipulate.

In sum, political factors such as generosity of public assistance benefits may have a direct impact on various measures of the health of a particular society above and beyond the impact of social integration. Or, instead, public policies might merely act as a proxy for the degree of social connectedness and integration in a state. In the following analysis, we test these competing theories of politics vs. social capital.

### 3 Data and Method

As many scholars have noted, the variation in the public policy programs that state governments choose to enact provide both “laboratories of democracy” and rich comparative data for study (Erikson et al. 1993). Accordingly, in all subsequent analyses, we use the American states as the unit of analysis. Our dependent variable of interest, state suicide rates, is measured as a state’s suicide rate per 100,000 residents, averaged across 1990–2000. We rely on the mean value over a decade because while there are sustained and real differences across states, there is also considerable volatility from year to year. It is for this reason averaging is recommended by McIntosh (2007) when comparing states, and we adopt that practice here. For the 50 states, the mean value for the suicide rate averaged across this decade is 12.9, with a standard deviation of 3.2. Nevada has the highest average suicide rate at 23.4; New Jersey has the lowest rate at 7.1.<sup>3</sup>

Our principal independent variable is the state’s effort at income redistribution. Given the absence of any universally agreed upon way of operationalizing this concept, we utilize four measures, also averaged across 1990–2000. In each case, we use the per capita level of spending in real dollars for:

- (1) *Transfer Payments*: Current transfer receipts of individuals from governments including retirement and disability insurance benefits, medical benefits, income maintenance benefits, unemployment insurance compensation, veterans’ benefits, and education and training assistance.
- (2) *Medical Benefits*: These include Medicare and Medicaid benefits, public assistance medical care such as the state children’s health insurance program (SCHIP), and military medical insurance benefits.
- (3) *Family Assistance*: These benefits were payments to low-income families under the state-administered Aid to Families with Dependent Children (AFDC) and emergency assistance programs that received Federal matching funds. In 1997, these programs were superseded by the Temporary Assistance to Needy Families (TANF) program.
- (4) *Total state spending*: Total expenditures by the state government.

As discussed above, the degree of social integration in a state stands as a competing hypothesis to any relationship between public policies and suicide rates. To try to isolate the effect of welfare expenditures, we control for social connectedness using Putnam’s (2000, Ch. 16) 14 item state-level Comprehensive Social Capital Index which is composed of items like trust, sociability, volunteerism, and engagement in public affairs and community life (states that score higher on the social capital index are coded higher).<sup>4</sup> By controlling for social connectedness, we test whether there is any independent relationship between state

<sup>3</sup> We provide the source and descriptive statistics for our data in the appendix (see Table A.1).

<sup>4</sup> The Comprehensive Social Capital Index does not include measures for Hawaii or Alaska. Thus, in all analyses, the universe of cases is the forty-eight remaining states.

expenditures and suicide rates above and beyond the prevalence of the norms of mutual aid and support that such spending might be viewed as a proxy measure of.

We also control for other factors that have been associated with suicide rates in past studies (Zimmerman 2002). We include a state's rate of residential mobility (the percent of the population residing in that state for less than 5 years) and the divorce rate per 1,000 residents to control for the extent to which residents of a state are embedded within their communities. This is based on the expectation that individuals who are less embedded within a social network are more likely to commit suicide than those with a close network of support (Breault 1986; Pescosolido and Georgianna 1989). We also control for a state's rate of unemployment, with the expectation that joblessness and dire economic circumstances may make one more likely to commit suicide (Lewis and Sloggett 1998).<sup>5</sup>

Because our measure of suicide rates is continuous, the data lend themselves to analysis with the old work horse of OLS. To control for the possible heteroskedasticity that cross-sectional data of this sort are especially subject to, we use robust standard errors in all analyses. We test the robustness of our findings by performing the same analyses using bi-weight robust regression (a method that helps ensure that the results are not sensitive to atypical data points), by eliminating outliers/leverage points, and by removing states with the highest and lowest measures of spending.

#### 4 Results

First, regressing the average yearly suicide rate (1990–2000) on different measures of state spending, social capital, and our set of controls reveals a significant and robust negative relationship between three of the four measures of per capita spending and suicide rates (see Table 1). As per capita spending on total transfer payments, medical benefits, and family assistance increase across the states, suicide rates fall, as evidenced by the significant and negative coefficients for these variables. In Fig. 1a–c, we present bivariate scatterplots of these three measures of public assistance spending and suicide rates to illustrate this negative relationship. From the results in Table 1, it is also notable that the type of state spending is relevant, since the measure of total state spending bears no significant relationship with suicide rates. In other words, it is specifically social welfare spending, and not a state's total budget, that is related to reducing suicides.<sup>6</sup>

Interestingly, in all four models the Social Capital Index variable is statistically significant but wrongly signed; that is, states with higher stocks of social capital tend to have higher suicide rates as well. This result is robust to different model specifications and suggests that the relationship between social capital and suicide rates requires additional scholarly attention.<sup>7</sup> The coefficients for residential mobility, divorce rate, and unemployment

<sup>5</sup> State measures of residential mobility, divorce rate, and unemployment rate are yearly values averaged across 1990–2000.

<sup>6</sup> Another literature points to the importance of the way in which social services are delivered to citizens (as opposed to spending levels) in the prevention of suicide (e.g., Garland and Zigler 1993; Miller et al. 1984). In relation to our results, it may be that states with higher levels of public assistance spending are also more effective in their delivery of services aimed at preventing suicides. This is a matter for further research.

<sup>7</sup> We find that this result is unchanged when each of the individual components that make up the Social Capital Index are used instead of the index in the model specification for Table 1. Also, the four measures of state spending and social capital correlate at no higher than 0.23, indicating that they are measuring different concepts. While there are strong theoretical reasons to expect that a state's stock of social capital may influence the tone and type of public policies implemented, there is little evidence here that social capital has a direct influence on actual levels of per capita spending.

**Table 1** Welfare spending and state suicide rates

	(1)	(2)	(3)	(4)
Transfer payments	-1.275** [0.580]			
Medical benefits		-2.579*** [0.857]		
Family assistance			-22.394*** [7.915]	
Total spending				-0.182 [0.481]
Social capital	1.740*** [0.492]	1.499*** [0.468]	2.042*** [0.439]	1.788*** [0.521]
Residential mobility	0.186*** [0.063]	0.195*** [0.058]	0.217*** [0.069]	0.207*** [0.068]
Divorce rate	1.503*** [0.236]	1.360*** [0.234]	1.388*** [0.266]	1.610*** [0.274]
Unemployment rate	0.927** [0.349]	0.837*** [0.298]	1.057*** [0.326]	0.673** [0.312]
Constant	2.324 [2.067]	2.485 [1.805]	-0.629 [1.733]	-0.343 [2.298]
R <sup>2</sup>	0.80	0.80	0.81	0.78
N	48	48	48	48

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000)

OLS regression coefficients, robust standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

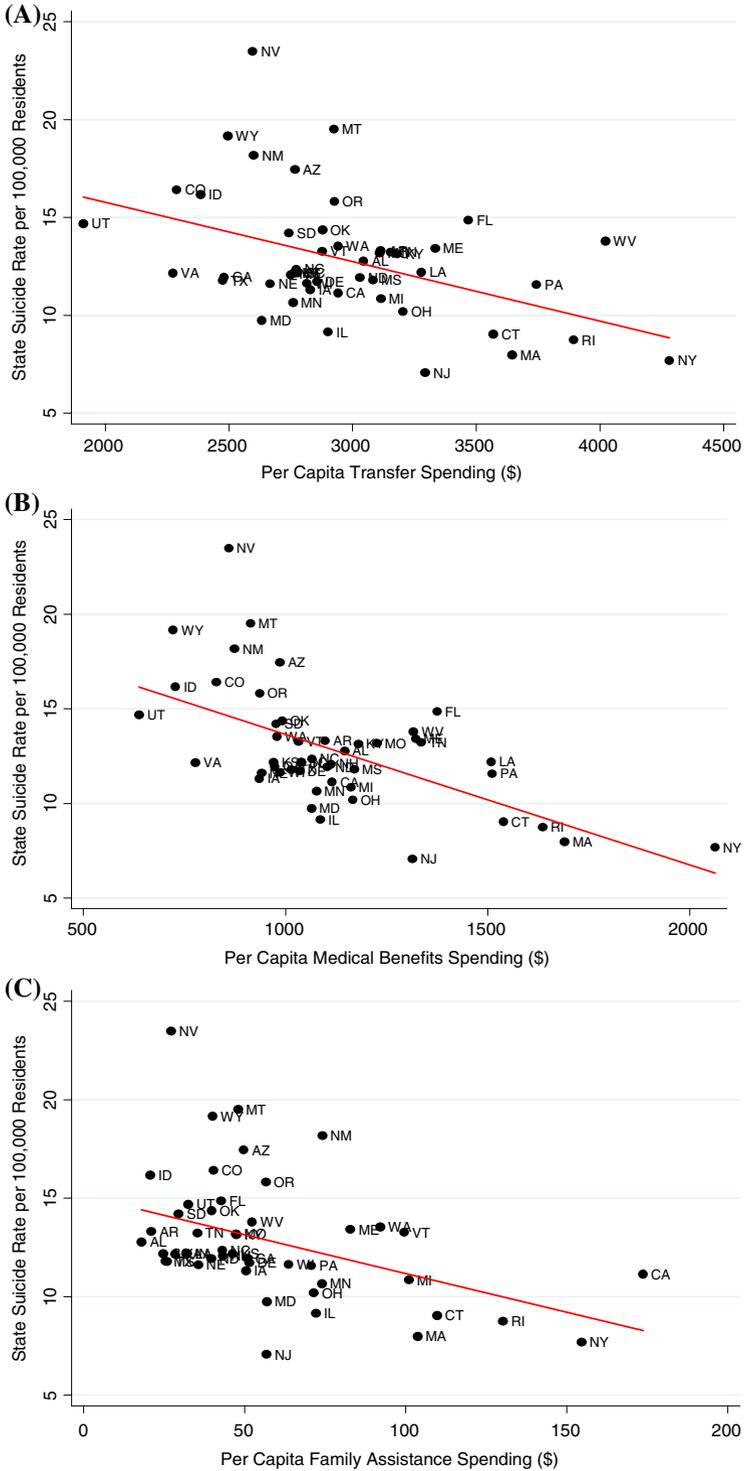
rate are all significant and in the expected direction (i.e. they bear a positive relationship with suicide rates). Taken together, we find evidence of an independent relationship between public assistance spending and suicide rates that is separable from social connectedness.<sup>8</sup>

As suggested previously, we test the robustness of the relationship between social welfare generosity and suicide rates in a number of ways. First, we use bi-weight robust regression which accounts for the influence of leverage points in the data by more heavily weighting data points with smaller residuals (see Table A.2). We also repeated the analysis, excluding states with large DF-betas for the independent variable of interest for each of the four models.<sup>9</sup> Doing this suggests no meaningful difference in the results (see Table A.3). Finally, we also estimated each model excluding the eight states with the largest residuals (Table A.4) and, separately, excluding the two states that spend the most and the two states that spend the least for each of the four measures of spending (see Table A.5). Again, our findings do not change. In sum, the negative relationship between generosity of welfare benefits and state suicide rates is rather robust.

The significance of these findings is important, especially given that human lives lay in the balance. To illustrate this impact, we report the predicted change in a state suicide rate when moving from one standard deviation below to one standard deviation above the mean for each measure of social welfare spending given the value for its coefficient. For transfer payments, the marginal effect is a 1.2 unit reduction in suicides per 100,000 state residents, for medical benefits the effect is a reduction of 1.4, and for family assistance the reduction is 1.5. In contrast, moving from one standard deviation below to one standard deviation above the mean on the Social Capital Index produces an *increase* of 2.7 in the suicide rate per 100,000 state residents.

<sup>8</sup> Given differing beliefs about suicide across religious denominations, the religious composition of a state may also impact its suicide rate. To test this possibility, we re-estimated the models in Table 1 using the same specification plus indicators for percent Catholic, percent Evangelical, and percent Mainline Christian in each state. None of the three religion variables was statistically different from zero in any of models. We also found that a state's political culture (Sharkansky 1969) bears no relationship with state suicide rates.

<sup>9</sup> The DF-beta is a measure of the potential influence on the parameter estimate that each observation has, so showing that results are unchanged when removing them increases our confidence in the findings. Specifically, we dropped cases with a DF-beta value larger than  $2/(\sqrt{n})$ .



◀ **Fig. 1** (a) Transfer spending and state suicide rates. Bivariate scatterplot; spending coefficient is significant at the  $p < .001$  level;  $R^2 = 0.20$ . (b) Medical benefits spending and state suicide rates. Bivariate scatterplot; spending coefficient is significant at the  $p < .001$  level;  $R^2 = 0.35$ . (c) Family assistance spending and state suicide rates. Bivariate scatterplot; spending coefficient is significant at the  $p < .001$  level;  $R^2 = 0.18$

In terms of real lives, the substantive impact is striking. From our model estimates, the “cost” of reducing a state’s suicide rate by a full point is an increase of roughly \$45 in per capita public assistance spending.<sup>10</sup> If every state in the nation increased per capita public assistance funding by \$45 per year, this would translate into 3,000 fewer suicides nationwide each year, representing a 10% reduction in the total number of suicides. Further, it is estimated that there are at least 100 reported suicide *attempts* for every successful suicide (Grollman 1988), implying that the modest change in per capita spending noted above would (per our estimates) result in fully 300,000 fewer suicide attempts per year. Given that the psychological and emotional costs to individuals and their families of such attempts are themselves enormous, this last figure perhaps represents the true human impact of such a change in spending.

Second, if welfare spending has such dramatic effects, can we find similar evidence for a more generalized relationship between suicidal behavior and state policies? Put differently, does the suicide rate vary with the overall ideological complexion of the state’s policy regime? We examine this possibility by first regressing our dependent variable on a measure of general state policy liberalism first developed by Erikson et al. (1993) and updated by Gray et al. (2004) and then, separately, on the index of the governing ideology of state elected officials developed by Berry et al. (1998).<sup>11</sup> We substitute these terms in place of the spending measures used previously, keeping the other variables in the model unchanged. We find, as documented in Table 2, that suicide rates are lower in states with more liberal public policy regimes and in states with more liberal governing ideologies. Substantively, moving from one standard deviation below to one standard deviation above the mean for general policy liberalism produces a decrease of 0.29 in the suicide rate per 100,000 state residents. For a state with a population of 3.8 million residents (the median for state population), a change in public policy of that magnitude would prevent fully 11 suicides per year (and thus an estimated 1,100 attempted suicides). Similarly, moving from one standard deviation below to one standard deviation above the mean for governing ideology reduces the suicide rate by 1.1. For the same median population state, this change would prevent 42 suicides per year (or 4,200 attempts). Together, these findings provide additional evidence that the content and tenor of state public policies do have a real impact on the well being of citizens.

## 5 Conclusion

We find that political factors are systematically related to an important measure of well being in the American states. Namely, more generous social welfare expenditures, more liberal public policy regimes, and more liberal state governments are all associated with lower suicide rates, controlling for other traditional predictors. This general relationship is substantively important, as it translates into thousands of (prevented) suicides, and tens of

<sup>10</sup> We compute this figure using the parameter estimate for family assistance spending. Specifically, we take the estimate (which indicates that an increase of \$1000 in per capita family assistance spending corresponds to a 22.4 point reduction in a state’s suicide rate) and divide to find the “cost” of reducing the suicide rate by a single point.

<sup>11</sup> For both measures, more liberal policies/governing ideology are coded higher. See Table A.1 for further description of these measures.

**Table 2** State politics and suicide rates

	(1)	(2)
General policy liberalism	-0.034* [0.019]	
Governing ideology (liberalism)		-0.026** [0.011]
Social capital	1.944*** [0.479]	1.553*** [0.430]
Residential mobility	0.230*** [0.064]	0.228*** [0.071]
Divorce rate	1.458*** [0.280]	1.521*** [0.252]
Unemployment rate	0.866*** [0.303]	0.709** [0.279]
Constant	-0.591 [2.015]	0.366 [1.841]
$R^2$	0.79	0.80
$N$	48	48

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000).

OLS regression coefficients, robust standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

thousands of attempts, each year. Such a contention must be considered good news for proponents of democracy, whatever their ideological preferences. The choices made by voters in choosing governments, and the subsequent policy decisions those governments undertake, do have important consequences. Democracy, then, matters.<sup>12</sup>

Our findings may also be welcome in the professional sense by vindicating, in at least some small way, mainstream “behavioral” research in political science from the familiar complaint that what we study is without significant relevance to the world and its problems. Thus, to return to the issue with which the paper began, our results suggest that the usual suspects in the empirical study of democratic theory and practice—public policies and electoral outcomes, and thus all the myriad factors (mass participation, party politics, public opinion, interest groups, legislative behavior, etc.) which in turn determine such—do indeed matter, in so far as we consider the decision to take one’s own life as itself mattering.

Our findings also have implications for the academic study of the issues at hand. Most obviously, we offer further evidence in support of the disputed contention that welfare policies and the general ideological complexion of governments affect quality of life, to the extent that we can treat the suicide rate as a measure of “social health.” More importantly, perhaps, this fact in turn has implications for our theoretical understanding of what determines well-being. We would argue that the evidence presented here suggests more than simply adding another variable to the list of those thought to affect quality of life. By demonstrating that public (i.e., democratic) “intrusion” into the economy improves social health, we hope to focus scholarly attention on the basic question of theoretical approaches to modeling the determinants of well-being. The conventional approach in so much of social science is to assume, implicitly, and perhaps unconsciously, that society is composed only of individual persons, who happen to vary in their many individual-level characteristics but who remain largely unaffected by macro-level conditions. Far too little attention has been devoted to theorizing about how sociopolitical conditions determine quality of life. In demonstrating the importance of political outcomes, we highlight the need for richer theories that incorporate such factors.

<sup>12</sup> We find that the same cannot be said of social capital, at least in this context. Contrary to expectations, public policies are more closely related to suicide rates than is social capital—indeed, higher levels of social capital appear to be associated with higher levels of suicide.

## Appendix

Table A.1 Description and summary statistics of variables

Variable name	Description	Mean, SD, range	Source
Suicide rate	Number of suicides per 100,000 residents	12.84, 3.14, 7.06 to 23.47	McIntosh, John L. U.S.A. SUICIDE: <i>State and Regional Data, 1990–1999 and 2000</i> . <a href="http://mypage.iusb.edu/~jmcintos/SuicideStates.html">http://mypage.iusb.edu/~jmcintos/SuicideStates.html</a>
Transfer payments	Per capita transfer receipts from federal and state governments to individuals (\$1,000s)	2.9, 0.45, 1.91 to 4.28	Bureau of Economic Analysis. <a href="http://www.bea.gov/bea/regional/spi">http://www.bea.gov/bea/regional/spi</a>
Medical benefits	Per capita federal and state medical benefits transferred to individuals (\$1,000s)	1.11, 0.26, 0.63 to 2.06	Bureau of Economic Analysis. <a href="http://www.bea.gov/bea/regional/spi">http://www.bea.gov/bea/regional/spi</a>
Family assistance	Per capita AFDC (1990–1996), TANF (1997–2000), (\$1,000s)	0.05, 0.03, 0.01 to 0.17	Bureau of Economic Analysis. <a href="http://www.bea.gov/bea/regional/spi">http://www.bea.gov/bea/regional/spi</a>
Total spending	Per capita total state spending (\$1,000s)	3.07, 0.54, 2.25 to 4.27	United States Bureau of the Census. <i>Statistical Abstract of the United States</i>
General policy liberalism	Rank of policy liberalism (48 = most liberal)	24.5, 14, 1 to 48	Gray et al. (2004)
Governing ideology	Governing ideology of state legislatures (liberal values coded higher)	47.0, 19.7, 6.5 to 88.9	Berry, William D., Evan J. Ringquist, Richard C. Fording, and Russell L. Hanson. "Measuring Citizen and Government Ideology in the United States" (ICPSR Study #1208)
Social capital	Fourteen item state-level "Comprehensive Social Capital Index" (factor score)	0.01, 0.78, -1.42 to 1.70	Putnam (2000). <a href="http://www.bowlingalone.com/data.php3">http://www.bowlingalone.com/data.php3</a>

Table A.1 continued

Variable name	Description	Mean, SD, range	Source
Residential mobility	Percent of the population residing in that state for less than 5 years	11.07, 4.49, 4.3 to 29.4	"State Politics and Policies Quarterly Data Resource," <a href="http://psrm.cqpress.com/data_resources.html">http://psrm.cqpress.com/data_resources.html</a>
Divorce rate	Divorce rate per 1,000 residents	4.92, 1.41, 2.53 to 10.45	"State Politics and Policies Quarterly Data Resource," <a href="http://psrm.cqpress.com/data_resources.html">http://psrm.cqpress.com/data_resources.html</a>
Unemployment rate	Percent of state residents who are jobless, looking for jobs, and available for work	5.19, 1.04, 2.64 to 8.17	U.S. Department of Labor, Bureau of Labor Statistics. "Local Area Unemployment Statistics," <a href="http://data.bls.gov/cgi-bin/dsrv?la">http://data.bls.gov/cgi-bin/dsrv?la</a>

Note: All variables (except for general policy liberalism and social capital) are state values averaged over the span 1990–2000

**Table A.2** Welfare spending and state suicide rates (bi-weight robust regression)

	(1)	(2)	(3)	(4)
Transfer payments	-1.175* [0.680]			
Medical benefits		-2.467** [1.135]		
Family assistance			-20.791** [8.806]	
Total spending				-0.268 [0.540]
Social capital	1.636*** [0.395]	1.462*** [0.391]	1.862*** [0.402]	1.589*** [0.436]
Residential mobility	0.203*** [0.069]	0.208*** [0.065]	0.236*** [0.066]	0.225*** [0.071]
Divorce rate	1.507*** [0.242]	1.376*** [0.252]	1.343*** [0.245]	1.550*** [0.250]
Unemployment rate	0.793** [0.320]	0.757*** [0.280]	0.923*** [0.318]	0.508 [0.324]
Constant	2.436 [2.423]	2.499 [2.224]	-0.057 [1.750]	0.751 [2.166]
$R^2$	0.78	0.80	0.79	0.76
$N$	48	48	48	48

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000)

Bi-weight robust regression coefficients, standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

**Table A.3** Welfare spending and state suicide rates (eliminating large DF betas)

	(1)	(2)	(3)	(4)
Transfer payments	-1.699*** [0.516]			
Medical benefits		-2.197*** [0.809]		
Family assistance			-24.613*** [6.728]	
Total spending				-1.062** [0.394]
Social capital	1.816*** [0.502]	1.482*** [0.480]	1.807*** [0.307]	1.835*** [0.537]
Residential mobility	0.160** [0.065]	0.188*** [0.059]	0.275*** [0.054]	0.267*** [0.055]
Divorce rate	1.520*** [0.240]	1.388*** [0.232]	1.128*** [0.217]	1.257*** [0.251]
Unemployment rate	1.103*** [0.399]	0.711** [0.303]	1.044*** [0.245]	0.768** [0.312]
Constant	2.888 [1.931]	2.604 [1.827]	0.324 [1.552]	2.881 [2.310]
$R^2$	0.82	0.80	0.86	0.81
$N$	43	47	43	45

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000)

OLS regression coefficients, standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

**Table A.4** Welfare spending and state suicide rates (eliminating largest residuals)

	(1)	(2)	(3)	(4)
Transfer payments	-1.009** [0.423]			
Medical benefits		-2.234*** [0.699]		
Family assistance			-20.375*** [5.492]	
Total spending				-0.217 [0.395]
Social capital	1.712*** [0.328]	1.524*** [0.312]	1.899*** [0.256]	1.791*** [0.336]
Residential mobility	0.228*** [0.049]	0.233*** [0.046]	0.273*** [0.043]	0.256*** [0.053]
Divorce rate	1.550*** [0.188]	1.425*** [0.188]	1.319*** [0.185]	1.601*** [0.221]

**Table A.4** continued

	(1)	(2)	(3)	(4)
Unemployment rate	0.696*** [0.249]	0.650*** [0.207]	0.938*** [0.169]	0.527** [0.235]
Constant	1.957 [1.794]	2.256 [1.494]	-0.416 [1.080]	-0.043 [1.809]
R <sup>2</sup>	0.90	0.91	0.91	0.90
N	40	40	40	40

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000)

OLS regression coefficients, robust standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

**Table A.5** Welfare spending and state suicide rates (eliminating two highest and two lowest spending states)

	(1)	(2)	(3)	(4)
Transfer payments	-1.305* [0.776]			
Medical benefits		-2.370* [1.392]		
Family assistance			-29.403** [11.303]	
Total spending				-0.735 [0.608]
Social capital	1.682*** [0.537]	1.437*** [0.493]	2.097*** [0.461]	1.772*** [0.540]
Residential mobility	0.195*** [0.066]	0.202*** [0.059]	0.227*** [0.077]	0.220*** [0.079]
Divorce rate	1.472*** [0.258]	1.328*** [0.236]	1.343*** [0.288]	1.454*** [0.304]
Unemployment rate	0.844** [0.378]	0.823** [0.315]	1.091*** [0.347]	0.835** [0.327]
Constant	2.849 [2.857]	2.357 [1.961]	-0.327 [1.845]	1.154 [2.632]
R <sup>2</sup>	0.79	0.76	0.80	0.76
N	44	44	44	44

Dependent variable: Average yearly state suicide rate per 100,000 residents (1990–2000)

OLS regression coefficients, robust standard errors in brackets

\*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .01$

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