

The Effect of Political Office on Life Expectancy^{*}

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Abstract: In this paper, we analyze the effect of political office on candidates' health. We build on a novel dataset of birth and death dates of close to all deceased candidates for US gubernatorial office in the post-war period, and estimate causal effects using a regression discontinuity design. We find that candidates who win the gubernatorial election live on average 5 years longer than candidates who lose. These results are robust to a wide range of robustness checks and placebo tests. Our findings suggest that holding political office has important non-monetary benefits.

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Introduction

The participation of citizens in the political process, including as candidates for political office, is essential to the functioning of democracy. It is often argued that the decision of whether or not to stand for political office is at least partly determined by the net benefits that holding office entails. This implies that the material benefits of holding office play a crucial role for political selection. If potential politicians are competent, impatient and risk averse to varying degrees, political selection can have important consequences for policy outcomes.

In this paper, we study a key return to office that has so far received little attention in the literature: How politicians' health is affected by holding important political office. From a theoretical perspective, the effect of political office on candidates' health is ambiguous. On the one hand, elected politicians experience an increase in status and lifetime earnings, both of which have been found to be positively related to health outcomes (Chetty et al. 2016; Marmot 2004; Wilkinson 2005). On the other hand, it is well known that political life entails stress, long working hours and an irregular work schedule which are associated with negative health outcomes. The adverse effects of holding political office on life expectancy has been a frequent subject of debate in epidemiology (e.g. Goldbaum 2012; Olshansky 2011), with some studies documenting negative effects on longevity of up to 5 years (e.g. Olenski, Abola, and Jena 2015).

However, these studies rely on observational evidence, making a causal interpretation of the findings challenging. One potential problem is reverse causality: Voters might value candidates' mental or physical health directly when casting their vote. Another concern relates to omitted variable bias: Candidates' baseline health could be correlated with attributes that affect their probability of winning the election, such as their social status or wealth. Whenever the assignment into political office is non-random, estimates that rely on a comparison of winning and losing candidates risk conflating the effect of political office with the effect of unobserved candidate characteristics.

In order to test the health effect of political office empirically, we collect a unique and novel dataset on the longevity of all now-deceased candidates from past US gubernatorial elections from 1945-2012. This large dataset allows us to estimate the causal effect of winning the gubernatorial election on candidates' life expectancy using a regression discontinuity design. This design focuses on close elections, and the identifying assumption is that candidates who narrowly win or lose a gubernatorial election are similar across all baseline characteristics that might affect their longevity.

The main result of this paper is that winning the gubernatorial election increases the longevity of the candidate by approximately 5 years. This is a sizable effect: It represents an increase in longevity of close to 18 percent for an average candidate for gubernatorial office. Our results are robust to a wide variety of robustness checks and sample restrictions, and, importantly, we show that candidates within our chosen bandwidth are similar in all our available baseline characteristics at the day of the election.

Our paper is the first to document a positive causal effect on longevity of holding political office. By showing that political office has important health benefits, our findings provide an important addition to the literature on the financial returns to political office (e.g. Eggers and Hainmueller 2009; Fisman, Schulz, and Vig 2014; Palmer and Schneer 2016). Our results have potentially important implications for political selection. In the event that political office had positive pecuniary benefits, but negative effects on life expectancy, political office might attract citizens who are either very impatient or risk tolerant. It is unclear how such a selection pattern would affect political outcomes and welfare. Instead, our results show that political office has positive health effects, which might help attract more patient or risk averse citizens to political life.

The health effects of political office

What are the health effects of holding political office? On the one hand, public office might lead to accelerated aging and reduced longevity due to the inherent pressure and stress of holding political leadership positions. Stress has direct psychological and biochemical effects, but has also been found to affect health outcomes indirectly by increasing the likelihood that an individual engages in harmful health behaviors (Schneiderman, Ironson, and Siegel 2005). On the other hand, elected politicians experience an increase in status and lifetime earnings, both of which have been found to be positively related to health outcomes (Chetty et al. 2016; Marmot 2004; Wilkinson 2005).

The adverse health effects of holding political office have received substantial attention in epidemiology and demography, but the evidence is inconclusive. US presidents are more likely than the average American to suffer from stress-related diseases (J. M. Jones and Jones 2006), but there are no systematic differences in mortality rates between presidents and the average American (Olshansky 2011; Shavelle et al. 2008). In the UK, parliamentarians have been shown to have lower mortality rates than the general population, in particular among Conservative

MPs (Dennis and Crayford 2015).

However, politicians often have better socioeconomic backgrounds than the average citizen. For this reason, comparing elected politicians to the general population risks conflating the effect of holding office with unobserved factors such as wealth or education (Goldbaum 2012). In part due to these concerns, Olenski, Abola, and Jena (2015) compare longevity of elected leaders in 17 Western countries with runner ups who never served in office. They find that elected candidates lived on average 4.4 fewer years after their last election compared to candidates who never served. Similarly, Link, Carpiano, and Weden (2013) find that US presidents and vice presidents lived on average 5.3 years shorter than candidates for who did not serve in these offices.

In addition to direct physiological effects, holding office can also increase candidates' social status and personal wealth, both of which are related to longevity. In sociology and social epidemiology, social status has been found to be associated with lower mortality and better health outcomes (Marmot 2004; Wilkinson 2005). Several recent studies document a positive causal effect of social status on longevity. Rablen and Oswald (2008) compare scientists who won the Nobel prize in Chemistry and Physics to scientists who were nominated, finding that the causal effect of winning a Nobel prize on longevity is approximately 1.6 years. Liu et al. (2015) estimate the effect among scientists of being elected to the Chinese Academy of Science and Engineering. They estimate that becoming an academician increases longevity with approximately 1.2 years.

Holding political office has also been shown to entail sizable pecuniary benefits. Eggers and Hainmueller (2009) find that winning a parliamentary seat in Britain almost doubled the wealth for Conservative MPs, but had no discernible effect for Labour MPs. Palmer and Schneer (2016) estimate the returns to office that former US senators and governors receive from serving on boards of directors for publicly traded companies. They find that winning a senate seat or a gubernatorial election increases the likelihood of serving on a board of directors with approximately 30 percentage points. The authors do not distinguish the effect by political party, but show in a different paper that former Republican governors are significantly more likely to serve on boards than Democratic governors (Palmer and Schneer 2015).

The close relationship between income and longevity is well documented (e.g. Cristia 2009; Cutler, Deaton, and Lleras-Muney 2006; Deaton 2016). Recently, Chetty et al. (2016) use administrative population tax records in the US to show that higher income is associated with greater longevity throughout the income distribution. According to their estimates, the relationship between life expectancy and income percentile is almost linear. This means that the effect of income on

life expectancy is the same whether one moves from the 10th to 15th - or the 90th to 95th - percentile.

This brief literature review suggests several channels through which political office can affect longevity. The epidemiological literature suggests that political life entails stress, long working hours and sleep deprivation which are associated with negative life expectancy. However, elected politicians also experience increases in status, wealth, power and beneficial connections which all could lead to health advantages. Which of these effects dominate is ultimately an empirical question.

From the point of establishing a causal relationship between political office and longevity, the observational approaches described above are inadequate for several reasons. Comparing politicians to the general population is problematic not just because politicians are more affluent than the average citizen (e.g. Carnes 2012, 2013), but also because unhealthy citizens might decide not to run for office if they fear that political life will affect their health negatively. Even observational approaches that compare candidates who compete for the same position risk selection bias whenever candidates' health profile at the time of the election correlates with attributes that affect citizens' voting behavior. In the next sections, we outline our data collection and describe our strategy for estimating the causal effects of political office on longevity.

Data sources and descriptive statistics

We focus on the effect on longevity of holding gubernatorial office in the US. In addition to being the ceremonial head of state, governors are central figures in the political landscape with important budgeting, planning, and managerial powers and responsibilities. Governors nominate and appoint local judges, enact state legislation, prepare state budgets, and they are responsible many symbolic roles, e.g. related to tourism (Ransone 1982; Sabato 1978).

We collect data on all gubernatorial elections from the CQ Voting and Elections Collection (Press 2010). These data contain names and votes for all candidates running in a gubernatorial election from 1945-2012. We limit attention to the two candidates who received the highest number of votes. We use these data to generate the assignment variable which is defined as the fraction of all votes received by the winning candidate less the vote share of the (closest) losing candidate.

The main data innovation of this paper is to append these data with information on birth and death dates which we use to calculate the main outcome variable, namely how many days each candidate lives after the election. There is no central

data source for information on birth and death dates for all the candidates in our dataset. We therefore manually collected this information. Birth and death dates for winning candidates are available in Glashan (1979) and Mullaney and Glashan (1988). Finding similar data for losing candidates represented a major challenge, and these data had to be gathered from a variety of specialized sources. The online appendix contains detailed information on the major data sources used to identify this information.

From these sources, we are able to identify biographical information for approximately 97 percent of all the candidates who run for gubernatorial office from 1945-2012. This includes date of birth and death, as well as the gender of the candidate. Of these observations, 820 are still alive as of April 2017. When these observations are removed we are left with a total of 1,040 candidate-year observations and 655 unique elections. In a few cases, we are only able to identify the year of birth or death, not the exact date of the event. For these candidates, we impute the date as July 1 of the given year. This introduces some degree of nonsystematic measurement error which should bias our parameter estimates toward zero. In the online appendix, we show that our results are robust when observations with incomplete information are dropped from the analysis.

We also obtain life expectancy for an average US citizen with the same age as the candidate at the time of the election. These data are available from the Human Mortality Database (<http://www.mortality.org>). Next, we merge our candidate-level dataset with additional information at the state level. This includes annual (real) per capita income, population, and total state expenditure, available from Jordan and Grossmann (2016), as well as the region of the state as defined by the US Census Bureau, and information on whether the state has gubernatorial term limits. We use this auxiliary information in a series of placebo regressions to assess the validity of our regression discontinuity design.

Table 1 contains summary statistics for the main variables used in the analysis. From the table, we see that the average candidate lived on average slightly more than 10,100 days (~ 27.7 years) after the election. This is approximately 1,000 days (~ 2.7 years) longer than the life expectancy for the average American of the same age as the candidate at the time of the election. This supports the notion that candidates for political office are systematically different from the average citizen (Goldbaum 2012), for example because they are richer or better educated, or because unhealthy citizens are less likely to run for office. We also see that there is considerable variation in the outcome variable, with one candidate having lived only 46 days after the election (i.e. this candidate died in office), whereas another went on to live 21,370 days (~ 59 years). In the online appendix, we show that our

results are robust to the removal of such outliers. From the table we also see that the average candidate is slightly less than 52 years at the time of the election, that almost all of the candidates are male, and that we have almost complete balance in terms of party and geographic location of the candidates.

Table 1: Summary statistics

Statistic	N	Mean	St. Dev.	Min	Max
Candidate:					
Days alive after election	1,040	10,131	4,863	46	21,370
Days alive before election (imputed)	1,040	18,935	3,189.02	11,450	30,633
Days alive before election (not imputed)	1,012	18,939	3,184	11,818	30,633
Life expectancy	1,040	9,134	2,381	1,850	15,519
Female (dummy)	1,040	0.02	0.12	0	1
Democrat (dummy)	1,040	0.50	0.50	0	1
Republican (dummy)	1,040	0.49	0.50	0	1
State:					
State has term limit (dummy)	1,040	0.37	0.48	0	1
Per capita income	1,040	4,666	5,536	659	39,900
Population	1,040	3,757,322	4,153,351	145,000	27,000,000
Total expenditure	1,037	2,546,588	6,849,278	9,618	79,000,000
Census region: South (dummy)	1,040	0.27	0.44	0	1
Census region: West (dummy)	1,040	0.24	0.43	0	1
Census region: Northeast (dummy)	1,040	0.28	0.45	0	1
Census region: Midwest (dummy)	1,040	0.21	0.41	0	1

Empirical strategy

We estimate the causal effect of winning the gubernatorial election using a sharp regression discontinuity (RD) design based on close elections. The idea is to compare the longevity of candidates who narrowly win to candidates who narrowly lose the election. The underlying identification assumption is that candidates within this narrow margin are similar across all other characteristics that might affect longevity. Because election outcomes within this narrow bandwidth can be considered essentially random, the RD setup allows us to use candidates who narrowly lose the election as a counterfactual for the longevity of candidates who narrowly win - had they instead lost the election.

Let X_{itj} be the vote share of candidate i who runs in election t in state j , minus the vote share of her opponent. Let Y_{itj} be the number of days candidate i lives after the election. Candidate i wins if $X_{itj} > 0$, and loses otherwise. We focus on elections where X_{itj} is lower than some bandwidth h . The treatment effect τ

defines the local average treatment effect, i.e. the average difference between the longevity of candidates who narrowly win and narrowly lose the election:

$$\tau = E[Y_{itj}|X_{itj} > 0] - E[Y_{itj}|X_{itj} < 0], \quad \forall X_{itj} \in (-h, h).$$

We estimate τ nonparametrically using local polynomial inference. We rely on linear regression in the main specifications, but the online appendix shows robustness of our results to using a second order polynomial (Gelman and Imbens 2014). In all models, we use the optimal bandwidth, bias correction, and robust standard errors initially proposed by Calonico, Cattaneo, and Titiunik (2014) and recently refined in Calonico et al. (2016).

The causal effect of political office on longevity

Table 2 reports our main results. Column one presents the raw estimate without control variables. In the next three columns we include various pre-treatment covariates. Including these controls may generate more precise estimates of the causal effect (Calonico et al. 2016; Lee and Lemieux 2010). In column two, we add state level controls. These include indicators for the Census region of the state, and information on whether the state had gubernatorial term limits at the time of the election. Column three includes controls for pre-treatment candidate characteristics such as gender, life expectancy at the time of the election, and political party. Column four includes all controls simultaneously.

The effect of winning the gubernatorial election on the longevity of the candidate is positive and statistically significant across all specifications. According to the estimates, winning a gubernatorial election leads to an increase in longevity of approximately 2,500 days (~ 6.8 years). This estimate decreases to approximately 1,900 days (~ 5 years) when we include state and candidate controls. This effect is substantively important. It represents an increase in longevity of approximately 18 percent for an average candidate for gubernatorial office.

Figure 1 presents the main findings (without controls) graphically. Observations within the optimal bandwidth and the associated first degree polynomial are displayed. Each point represents the average days a candidate is alive within each bin, selected using the mimicking variance number of evenly spaced bins described in Calonico, Cattaneo, and Titiunik (2015). A jump in the longevity of candidates across the cutoff is directly evident in the plot.

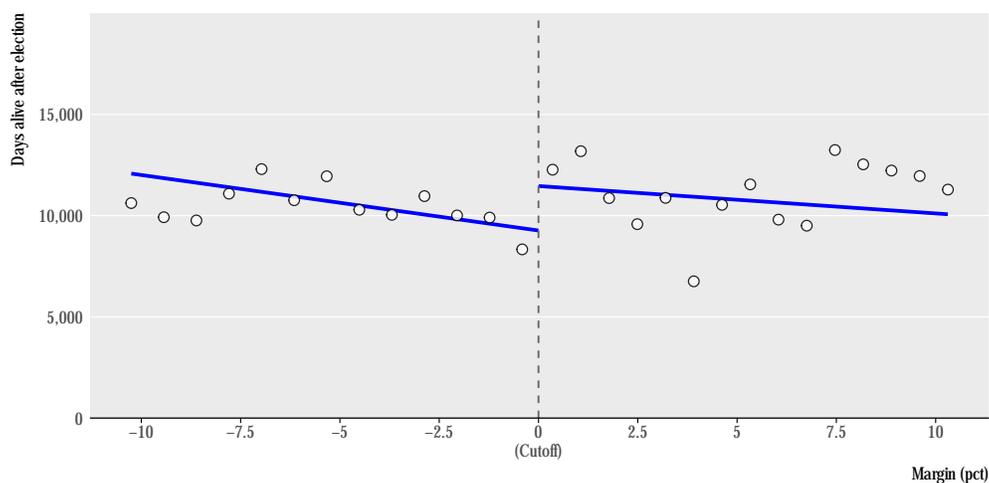
In the online appendix, we report heterogeneous results based on partisanship. Several studies indicate that conservative politicians have larger pecuniary gains

Table 2: Main results

	Days alive after election			
	(1)	(2)	(3)	(4)
Election win	2504.15 ^{***} (957.93)	2535.96 ^{***} (970.05)	1865.44 ^{**} (793.87)	1895.54 ^{**} (793.51)
Observations	1040	1040	1040	1040
Effective observations	502	494	507	502
Bandwidth	10.74	10.48	10.91	10.75
State controls	No	Yes	No	Yes
Candidate controls	No	No	Yes	Yes

Regression discontinuity results. We use Calonico et al. (2016) optimal bandwidth and triangular kernel weights in all columns. All models use local linear regression and include the bias correction and robust standard errors of Calonico et al. (2016). State controls add indicator variables for the Census region of the state, and an indicator variable for whether the state has gubernatorial term limits. Candidate controls include life expectancy at the time of the election, gender, and political party. ^{***} $p < 0.01$, ^{**} $p < 0.05$, ^{*} $p < 0.1$.

Figure 1: The causal effect of winning on longevity



from office (Eggers and Hainmueller 2009; Palmer and Schneer 2015, 2016). If elected politicians live longer due to higher wealth, then we might observe a larger effect for Republicans than Democrats. Our evidence here is inconclusive: While we do find evidence that the point estimates are larger for Republicans than Democrats, the difference between these estimates is not statistically significant.

Robustness

The results presented in the previous section can be given a causal interpretation only when election outcomes within the bandwidth are as good as random. In the following section, we assess the validity of this assumption.

In order for the assumption that election outcomes within the threshold are as good as random to hold, election candidates should be unable to self-select into treatment. While this assumption often holds in electoral settings (Eggers et al. 2015), it is particularly important in our case for the following reason: While we are able to obtain birth and death dates for 97 percent of all gubernatorial elections, it could still be that we are more likely to be able to detect a candidate's birth and death date if they narrowly win the election. For this reason, the likelihood that a candidate is observed could potentially be a function of the running variable. Due to this concern, we test for non-random sorting around the cutoff. A discontinuous jump in the distribution of the running variable would indicate that election winners are systematically more or less likely to be observed in the data. We use the robust approach of Cattaneo, Jansson, and Ma (2016).¹ Reassuringly, the test detects no evidence of sorting around the cutoff ($p = 0.52$).

As a second test of the validity of our design, we perform a series of placebo regressions. The idea is to test whether there are systematic differences in baseline covariates on either side of the cutoff. Any discontinuity would indicate that narrow winners were systematically different from narrow losers before the election, which would violate the validity of our design (Lee and Lemieux 2010). We perform the placebo test by repeating the RD estimation, where we replace the dependent variable with our baseline covariates. We use all the covariates described in Table 1. In a perfect world, we would have access to important candidate characteristics such as education or wealth at the time of the election. However, in practice, such information is impossible to obtain. For this reason, we also include baseline covariates at the state level to make sure that candidates at least do not differ in

¹Results are similar when we use the test proposed in McCrary (2008).

Table 3: Placebo regressions

	Estimate	Std. Error	Z value	P value
Candidate:				
Democrat	0.041	0.100	0.408	0.683
Republican	-0.033	0.099	-0.330	0.741
Female	-0.010	0.017	-0.585	0.558
Days alive before election (imputed)	-227.770	537.097	-0.424	0.672
Days alive before election (not imputed)	-279.219	539.700	-0.517	0.605
Life expectancy	266.957	402.872	0.663	0.508
State:				
State has term limit (dummy)	0.005	0.086	0.057	0.954
Per capita income	52.649	792.406	0.066	0.947
Population	63,907	694,234	0.092	0.927
Total expenditure	118,238	992,534	0.119	0.905
Census region: South (dummy)	0.038	0.066	0.586	0.558
Census region: West (dummy)	-0.047	0.085	-0.558	0.577
Census region: Northeast (dummy)	-0.026	0.075	-0.342	0.732
Census region: Midwest (dummy)	0.019	0.074	0.256	0.798

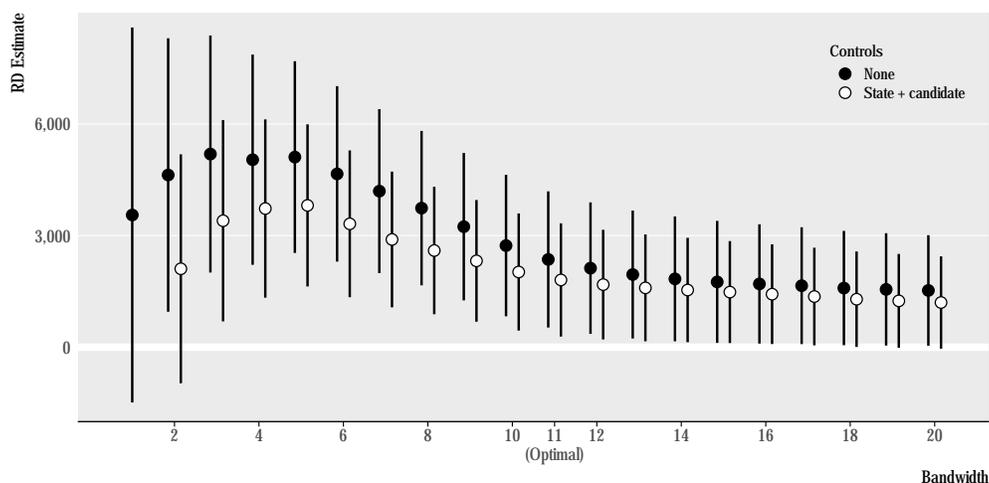
these characteristics. Results are presented in Table 3. Reassuringly, we do not detect systematic baseline differences between narrow winner and losers.

As a last check, we investigate the robustness of the estimated treatment effect to different bandwidths. As is well known, picking an optimal bandwidth involves a bias-variance tradeoff. For small bandwidths, the as good as random assumption is most likely to hold, leading to low bias. However, the effect can only be estimated on few observations, leading to high variance. We investigate the robustness of the choice of bandwidth by reestimating the raw treatment effect without controls (Model 1 in Table 2), and the treatment effect when all controls are included (Model 4), under different bandwidths.² We again apply bias correction and calculate robust standard errors. Results are presented graphically in Figure 2. As can be seen, the results remain positive and statistically significant for a wide range of bandwidths.

In the online appendix, we present a series of additional robustness checks of our main results. We further investigate the validity of the identifying assumption, namely that election outcomes are as good as random within the bandwidth, by

²We are incapable of estimating the full model with controls due to lack of variation when the bandwidth is set at one percent.

Figure 2: Robustness: Main result under different bandwidths



testing for treatment effects at alternative cutoffs. Reassuringly, we find no evidence of significant treatment effects at these synthetic cutoffs.

We continue by investigating the robustness of our results to various sample restrictions. First, we check the validity of our estimates when we censor the outcome variable at the 2nd and the 98th percentile. This seems to only increase the point estimates, although not to a point where they are statistically different from our main estimates. We also limit the sample to first time candidates. This reduces the sample size, which affects the statistical significance of our estimates, but the point estimates are generally close to those reported above.

Conclusion

This paper provides evidence that holding political office has a positive causal effect on the longevity of the candidate. We build on a novel dataset of birth and death dates for close to all deceased gubernatorial candidates from 1945-2012. Our identification strategy relies on a regression discontinuity design, and our parameter estimates imply that holding gubernatorial office increases longevity with approximately 5 years. These results are robust to a wide variety of robustness checks and sample restrictions.

A common limitation of regression discontinuity designs that focus on close

elections is external validity. Our results are by definition “local”, and they do not directly travel to other types of political office, such as the US presidency. One could (rightly) argue that the job of president is inherently more stressful than that of US governor. On the other hand, the benefits in terms of status and lifetime income are arguable also larger. However, we would argue that most types of political office are much more likely to resemble the job of governor than that of US president. For this reason, while we expect the health effects of political office to vary based on institutional settings, we consider it likely that our results have relevance to many other types of political office such as that of senator, parliamentarian, etc. Our findings also highlight the importance of considering non-monetary effects of political office, and we consider this a fruitful avenue for future research.

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