

Supplementary Materials

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1 Dataset: Additional Details

The dataset used in the paper was constructed in 2017 and 2018 by the author (and a small team of excellent research assistants!) from published, archival, and newspaper sources. Replication data for the analyses in this paper are available at the author’s dataverse page (URL removed for review) and the complete dataset is available from the author on request.

1.1 Calgary

Calgary election results are taken from official election records in the Clerk’s Correspondence, City Clerks Fonds, City of Calgary Archives. These records are mixed amongst other correspondence; the City of Calgary Archives Clerks Correspondence Finding Aid is necessary for locating election results for each year. More recent election results are available at Calgary Public Library and were provided to the author directly by the City of Calgary Elections Office. Candidate incumbency was verified using official results as well as Hunter 2013.

Calgary’s official election records do not include candidates’ party affiliation. Thus we identified candidate party affiliation by examining newspaper coverage of Calgary elections using microfilm copies of the *Calgary Herald*. We examined coverage in a two-week window leading up to each general election; candidates whose party affiliation was unidentifiable from this coverage were listed as independent. Photographs and scans of newspaper coverage used for this partisan coding are available from the author.

1.2 Edmonton

Edmonton election results are taken from the records in Wayne Madden’s (2000) excellent compilation of Edmonton election results from 1945-1998. This source provides election results and party affiliation. We have spot-checked these results against official records and newspaper coverage to verify their accuracy. Results from 1998-2018 were taken from the City of Edmonton website. Pre-1945 election results were reconstructed from newspaper coverage and the City of Edmonton’s official published record of election results.

Partisan affiliation for candidates prior to 1945 was reconstructed in the manner described in the Calgary section above using microfilm copies of the *Edmonton Journal*.

1.3 Vancouver

Vancouver election results are taken from the records in the indefatigable Wayne Madden’s (2003) *Vancouver’s Elected Representatives*, which includes reliable election results (spot-checked against official results in the City of Vancouver archives) as well as party affiliation for 1936-2002. Results for 2003-2018 were taken from online official results at the City of Vancouver website (some were accessed using Internet Archive’s “Wayback Machine”). Earlier results are taken from the election scrapbooks in the City of Vancouver Archives (Series S37 - Record of Elections, City of Vancouver Fonds), with partisan affiliation prior to 1936 collected in the manner described in the Calgary section above.

1.4 Winnipeg

Winnipeg election results are taken from the official records printed in the city’s annual municipal handbook (available at the City of Winnipeg Archives), and after 1966, from the City’s digital database of election results available on the City of Winnipeg open data page (<https://data.winnipeg.ca/Council-Services/Winnipeg-Election-Results/7753-3fjc>). All partisan affiliation data are taken from newspaper searches of the *Winnipeg Free Press* in the manner described in the Calgary section above.

1.5 Political Party Coding

The tables below summarize how each political party or slate in each city is coded in the party voteshare figures in the main text. “Alphabet” parties refer to the nickname for generally right-of-centre non-partisan slating groups (such as “Non Partisan Association” and “Civic Government Association”) which regularly contested municipal elections. Note that parties which never successfully elected any candidate to office – many of which are merely obscure one-time slates of only a small number of candidates – are counted as independents in this analysis. This is a conservative approach, which (if anything) weakens the possibility of finding a relationship between independent vote share and incumbency advantage like that found in the main text. Political party coding has relied on secondary sources (especially Lightbody 1978; Madden 2000; W. D. Madden 2003; Masson and LeSage 1994), a systematic archive of newspaper coverage of general elections in each city from microfilm newspaper sources collected by the author, and investigation of the election results dataset itself.

Table 1: Party Coding: Calgary

Party	Code	Elected
Independent	Independent	591
A.L.	Left/Labour	1
C.C.F.	Left/Labour	2
C.L.P.	Left/Labour	10
C.R.A.	Left/Labour	4
D.L.P.	Left/Labour	8
Ind.-Lab	Left/Labour	3
Labor	Left/Labour	29
Labour	Left/Labour	5
P.C.	Left/Labour	1
P.S.	Left/Labour	1
U.C.L.	Left/Labour	2
Y.I.	Left/Labour	1
Social Credit	Other	7
C.C.	Right/Alphabet	10
C.G.A.	Right/Alphabet	78
C.G.A.-B.V.N.H.R.A.	Right/Alphabet	1
C.G.A.-W.C.O.	Right/Alphabet	2
C.G.T.A.	Right/Alphabet	31
Ind.-C.G.A.	Right/Alphabet	2
U.C.A.	Right/Alphabet	33

Table 2: Party Coding: Edmonton

Party	Code	Elected
Independent	Independent	317
CCF	Left/Labour	1
CDA	Left/Labour	5
CLP	Left/Labour	2
CPA	Left/Labour	2
CYA	Left/Labour	3
ELC	Left/Labour	2
EVA	Left/Labour	4
EVA-ELC	Left/Labour	1
Ind.Lab.	Left/Labour	1
Lab.	Left/Labour	38
UVO	Left/Labour	4
CCCO	Other	2
Cit.Coun.	Other	1
ECRA	Other	3
SC	Other	3
SE	Other	5
BCGC	Right/Alphabet	12
CC	Right/Alphabet	118
CGA	Right/Alphabet	44
CRA	Right/Alphabet	5
CRA-CC	Right/Alphabet	2
Cit.	Right/Alphabet	19
Cit.Prog.	Right/Alphabet	1
ECGA	Right/Alphabet	6
RCC	Right/Alphabet	2
UC	Right/Alphabet	3
UCAP	Right/Alphabet	5
URGE	Urban Reform	11
URGE-ELC	Urban Reform	2

Table 3: Party Coding: Vancouver

Party	Code	Elected
Independent	Independent	533
CCF	Left/Labour	5
COPE	Left/Labour	43
CVA-Labour	Left/Labour	2
Cit./I.L.P.	Left/Labour	1
I.L.P.	Left/Labour	2
Ind. Lab.	Left/Labour	1
OneCity	Left/Labour	1
VV	Left/Labour	27
Green	Other	5
NPA-Labour	Other	1
NPA-UL	Other	1
NPA	Right/Alphabet	225
NPA-CAA	Right/Alphabet	3
NPA-CVA	Right/Alphabet	1
CAA	Urban Reform	2
CVA	Urban Reform	3
Ind.CIG	Urban Reform	1
TEAM	Urban Reform	33

Table 4: Party Coding: Winnipeg

Party	Code	Elected
Independent	Independent	780
C.C.F.	Left/Labour	41
C.C.F.-I.L.P.	Left/Labour	8
Com.	Left/Labour	11
I.L.P.	Left/Labour	57
Ind.-Lab	Left/Labour	1
Ind./L.W.V.	Left/Labour	1
L.E.C.	Left/Labour	10
L.P.P.	Left/Labour	6
Lab.Prog.	Left/Labour	1
N.D.P.	Left/Labour	57
P.E.C.	Left/Labour	1
Rad.Lab.	Left/Labour	2
T.L.C.	Left/Labour	2
U.Frnt.	Left/Labour	1
Unnamed leftist slate	Left/Labour	1
L.C.W.	Other	1
N.W.T.A.	Other	1
W.E.C.	Other	1
W.T.A.	Other	2
B.C.G.	Right/Alphabet	5
C.C.C.	Right/Alphabet	6
C.E.C.	Right/Alphabet	139
C.E.C./L.W.V.	Right/Alphabet	7
C.E.C./N.W.T.A.	Right/Alphabet	1
C.E.C./W.L.V.	Right/Alphabet	1
C.E.C./W.T.A.	Right/Alphabet	3
C.P.A.	Right/Alphabet	16
Cit.	Right/Alphabet	12
G.W.E.C.	Right/Alphabet	19
I.C.E.C.	Right/Alphabet	92
N.W.T.A./C.E.C.	Right/Alphabet	2
C.R.C.	Urban Reform	1

2 Dataset: Institutional Structures

The analysis in the main paper relies on a primary dataset of election results from each of the four cities as well as a secondary dataset which records institutional structures for each city. These institutional structures are: position (mayor vs. council), ward name or number, electoral district type (single-member, multi-member, at-large), electoral system type (single member plurality, single transferable vote), district magnitude (number of candidates elected), votes cast (number of votes to be cast by each voter), and term length (both mayoral and council). To identify these institutional structures, I began with a year-by-year search of provincial statutes for amendments to relevant municipal legislation, along with a similar search through indexes of municipal bylaws. I then supplemented these materials with official election records from archival and newspaper sources as described above to clarify variables such as magnitude and votes cast. Several secondary sources (Hunter 2013, Madden 2000, W. D. Madden 2003) were also useful. Each institutional change is coded in the dataset not for the year in which the relevant statute was passed but for the first election in which the change was effective. The complete institutions dataset, along with a detailed codebook and additional documentation, is available from the author on request.

The timelines below provide information on institutional reforms for each city, including district type and magnitude, council size, term length, and electoral system. I have defined the “modern era” in the main text as the year in which each city’s current institutional arrangement was adopted: for Calgary, this is 1977 with the adoption of single-member ward elections; for Vancouver, this is 1966 with the adoption of simultaneous (as opposed to rotating) at-large elections for ten councillors; for Winnipeg, this is 1971 with the adoption of single-member ward elections. Edmonton presents a somewhat more difficult case, since single-member wards have been in place only since 2010; however, since Edmonton’s multi-member races were very low-magnitude and the overall character of its elections did not evolve in any radical ways during the earlier period (see Masson and LeSage 1994), I have opted to take 1970-present as the “modern era” for Edmonton.

2.1 Calgary

- 1894: City of Calgary incorporated with multi-member ward system. Three councillors elected annually from each of three wards by plurality.
- 1906: New ward added; three councillors now elected annually from each of four wards.
- 1913: At-large system adopted. Council terms switch to two-year overlapping terms.
- 1917: STV electoral system for council elections, AV for mayoral elections.
- 1961: Multi-member ward system adopted
- 1971: Council term lengths increase to three-year terms.
- 1974: Calgary returns to plurality elections for council and mayor.
- 1977: Single-member ward system adopted with fourteen wards.
- 2013: Council term lengths increase to four-year terms.

2.2 Edmonton

- 1904: City of Edmonton incorporated with at-large system. Eight councillors elected for overlapping two-year terms..
- 1912: Council size increases to ten.
- 1923: STV electoral system for council elections, AV for mayoral elections.
- 1927: Plurality elections for council and mayor.
- 1964: Council size increases to twelve.
- 1968: Term length for councillors increases to three years.
- 1970: Multi-member ward system adopted
- 2010: Single-member ward system adopted
- 2013: Council term lengths increase to four-year terms.

2.3 Vancouver

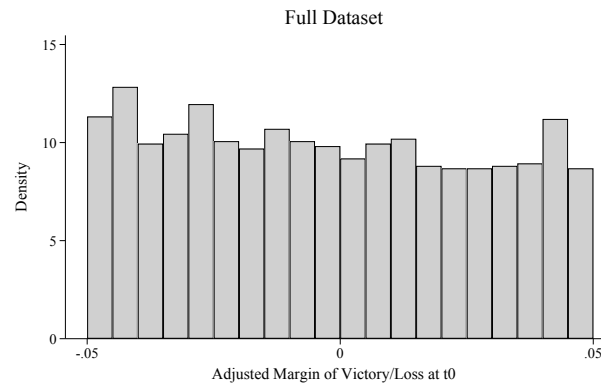
- 1886: City of Vancouver incorporated with at-large system. Ten councillors elected annually.
- 1887: Multi-member ward system adopted. Two councillors elected from each of five wards.
- 1904: Sixth ward added, bringing total council size to twelve.
- 1916: Single-member ward system adopted. One councillor elected from each of eight wards.
- 1921: Multi-member ward system with STV elections adopted.
- 1923: Single-member ward system with plurality elections adopted.
- 1927: Council term length switches to two-year rotating terms.
- 1928: Council size increases to twelve.
- 1936: At-large system adopted. Eight councillors elected at large.
- 1957: Council size increases to ten.
- 1966: Council switches to elections every two years, with all ten councillors elected at the same time.
- 1990: Three-year council term lengths begin.
- 2014: Four-year council term lengths begin.

2.4 Winnipeg

- 1873: City of Winnipeg adopted with multi-member ward system. Twelve councillors elected annually from four wards.
- 1882: Council size increases to 18 with addition of fifth ward.
- 1882: Council size reduced to twelve; two from each of six wards.
- 1889: Two year council term length begins.
- 1906: Council size increases to fourteen with addition of seventh ward.
- 1920: Council size increases to eighteen; six councillors elected from each of three wards. STV for council rates.
- 1971: Single-member plurality ward system adopted. Three year terms.
- 1998: Four-year council term lengths begin.

3 Density Tests

The figures below summarize the density of observations for each 0.005 percent bin within a margin of error bandwidth of $\pm 5\%$ for the full dataset and the “modern era”. Neither figure suggests any clustering near the threshold. Robust density tests (as implemented in Stata by Cattaneo et al. 2018) report p-values of 0.85 (full dataset) and 0.43 (modern era); we thus fail to reject the null hypothesis of no sorting near the threshold.



4 Placebo Tests

In this test, I investigate whether narrow victory in election $t+1$ “causes” incumbency status in election t . In other words, I investigate evidence whether incumbents are able to position themselves into narrow winner rather than narrow loser status (Caughey and Sekhon 2011; Eggers et al. 2015). The table reports p-values for these placebo tests; in no cases are the coefficients statistically significant. We thus fail to reject the null hypothesis that incumbents are no more likely to be narrow winners than non-incumbents.

Table 5: Placebo Test: Does Narrow Victory “Cause” Incumbent Status? (p-values)

	CCT Robust RD
Pooled in "Modern Era"	0.580
Pooled 1904-2018	0.087
Calgary 1896-2018	0.830
Edmonton 1904-2018	0.749
Vancouver 1886-2018	0.157
Winnipeg 1874-2018	0.192
Calgary 1977-2018	0.769
Edmonton 1971-2018	0.793
Vancouver 1966-2018	0.919
Winnipeg 1971-2018	0.746

5 RD Estimates: Full Tables

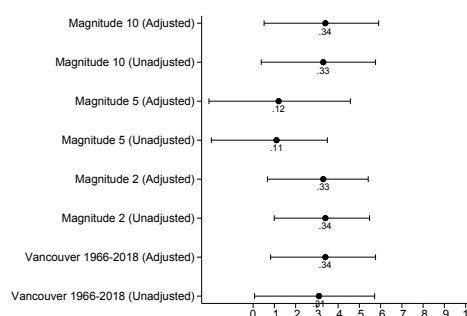
Table 6: RD Estimates: Full Tables

<u>Main Text Figure 2</u>	Coef.	SE	p	Eff. Obs	BW
Full dataset 1904-2018	0.517	0.011	<0.001	8561	
RD Running 1904-2018	0.278	0.039	<0.001	3941	0.165
RD Running+Winning 1904-2018	0.304	0.040	<0.001	3015	0.115
Full dataset "Modern Era"	0.576	0.019	<0.001	3884	
RD Running "Modern Era"	0.419	0.062	<0.001	1445	0.202
RD Running+Winning "Modern Era"	0.411	0.056	<0.001	1442	0.201
 <u>Main Text Figure 3</u>					
At-large 1904-2018	0.268	0.080	0.002	727	0.119
Wards 1904-2018	0.379	0.063	<0.001	1248	0.333
At-large "Modern Era"	0.343	0.126	0.009	304	0.105
Wards "Modern Era"	0.416	0.078	<0.001	836	0.267
Mayor 1904-2018	0.398	0.130	0.001	326	0.264
Council 1904-2018	0.303	0.042	<0.001	2826	0.112

6 Adjusted Voteshare Measure

The voteshare measure used as the running variable for all analysis in the main text adjusts vote-share (and thus margin of loss/victory) for the mechanical effects of larger-magnitude districts. Here I show that this adjusted voteshare measure does not cause any trouble with the estimates. In figure 1 below, I provide RD estimates using original vote share and adjusted voteshare for (a) Vancouver’s ten-member at-large system from 1966-present, (b) two-member wards, (c) five-member wards, and (d) ten-member wards in the dataset. These are the district magnitudes above one with more than 500 observations. The estimates produced by adjusted and unadjusted voteshare running variables are very similar to one another.

Figure 1: Comparison: Adjusted and Unadjusted Voteshare



An alternative approach is to estimate incumbency advantage by first doing estimates within each magnitude type in the dataset using actual rather than adjusted voteshare and then generating an overall estimate using a meta-analysis framework. Table 7 below reports the results of the random effects meta-analysis. Once again, the meta-analysis estimate (30% [22%, 37%]) is extremely close to the pooled estimate reported in the main text (30% [23%, 38%]), suggesting that the adjusted vote share approach is an appropriate solution to the challenge of multiple district types at the municipal level.

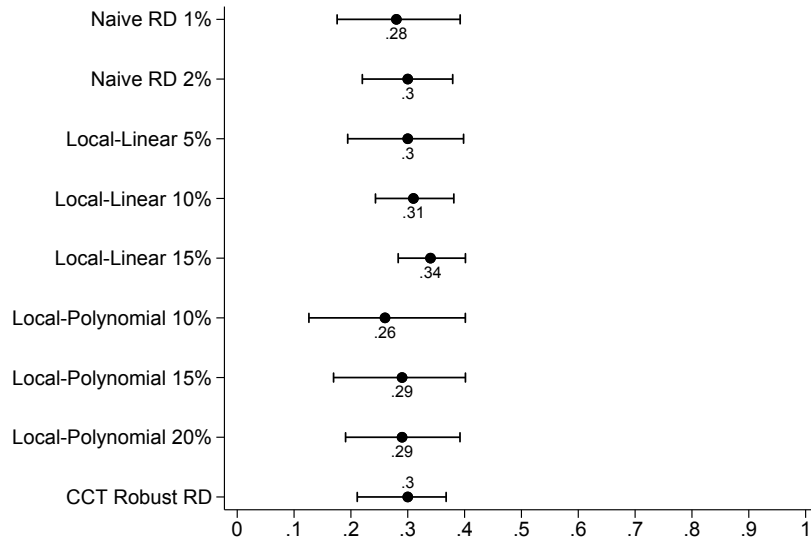
Table 7: Meta-Analysis vs. Original Estimate

Election Type	ES	[95% Conf. Interval]		% Weight
Mayoral	0.400	0.158	0.666	7.97
Magnitude 1, Type 1	0.370	0.233	0.499	29.00
Magnitude 1, Type 2	0.240	0.075	0.360	25.32
Magnitude 2	0.340	0.099	0.548	10.23
Magnitude 3	0.420	-0.342	1.135	0.94
Magnitude 4	0.050	-0.290	0.325	5.44
Magnitude 5	0.110	-0.197	0.349	6.91
Magnitude 6	0.430	0.079	0.768	4.34
Magnitude 8	0.160	-0.957	1.087	0.49
Magnitude 10	0.330	0.038	0.576	7.12
Magnitude 12	0.190	-0.333	0.629	2.23
Meta-analysis est.	0.296	0.224	0.368	100.00
Main paper est.	0.304	0.226	0.382	

7 RD: Specifications and Sensitivity

Here I provide additional specifications and sensitivity tests for the main analyses reported in the paper. Figures 2 and 3 replicate the main unconditional incumbency advantage estimate for the full time period (1904-2018) and the modern era using naive RD, local-linear, and third-order polynomial specifications across a number of bandwidths.

Figure 2: RD Estimate 1904-2018: Alternative Specifications and Bandwidths



We might also worry that our findings are overly sensitive to single unusual election outcomes, particularly in the modern era estimates where available data are more limited. Thus in the figures below, I provide estimates for each city in the modern era, dropping one election out of the estimate at a time. The stability of the estimates at the level of each city suggests that the pooled estimates are even less likely to be unduly influenced by a single extreme or unusual election.

Figure 3: RD Estimate Modern Era: Alternative Specifications and Bandwidths

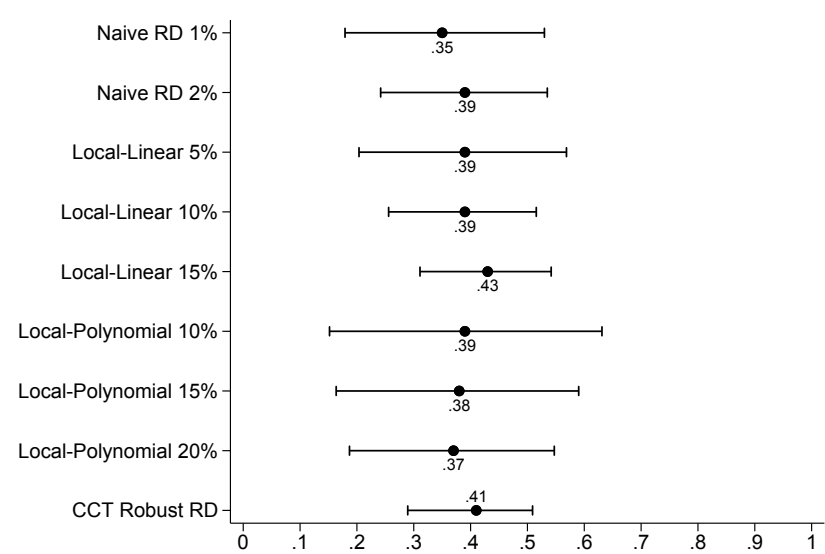
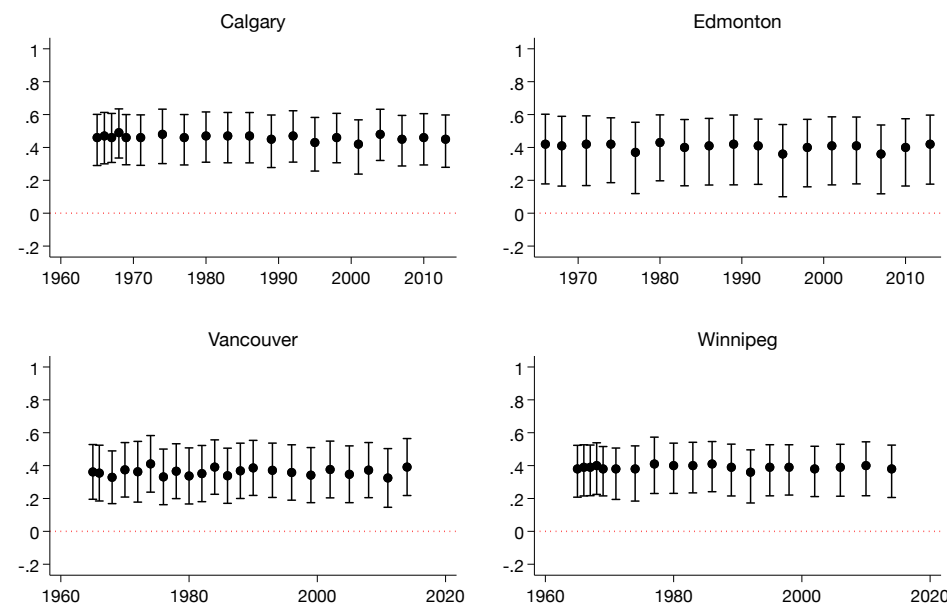


Figure 4: Sensitivity: Dropping one election from Estimates



Description: Each coefficient shows the analysis with that year's election dropped from the analysis.

8 RD: Change Over Time

The rolling estimate in the main text uses a triangularly-weighted thirty-year window. In the figures below, I provide two alternative versions of the rolling figure: the first using an unweighted twenty-year window and the second using an unweighted thirty-year window. Neither figure changes the basic interpretation proposed in the main text.

Figure 5: Unweighted 20-Year Window

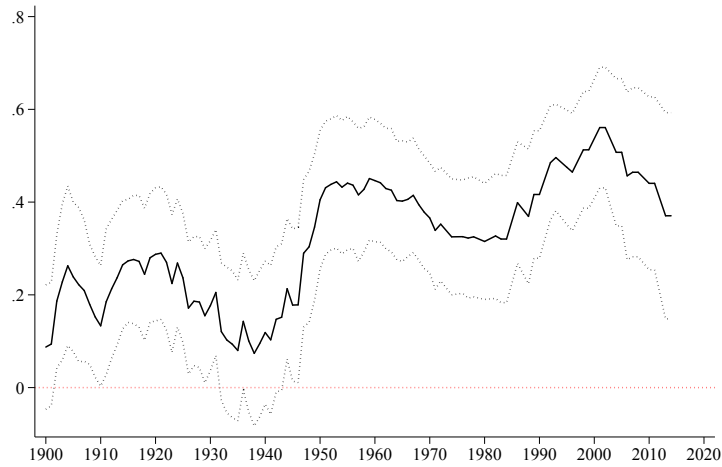
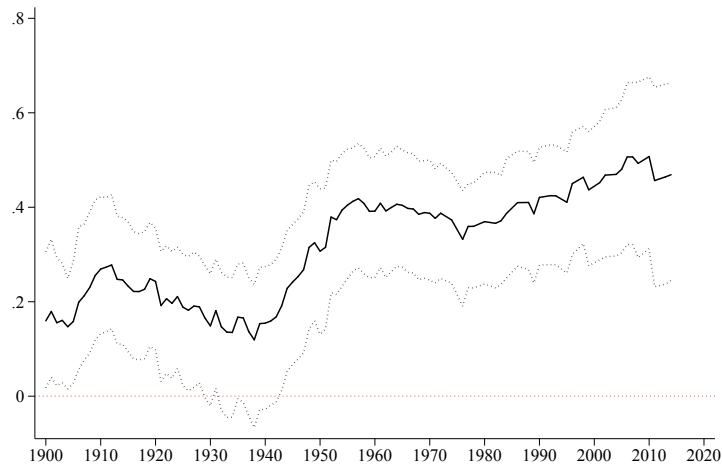


Figure 6: Unweighted 30-Year Window



9 Partisanship and RD Estimates

The table below summarizes the estimate used to produce the expected values figure (figure 6) in the main text. The dependent variable in all analyses is the RD estimate produced by the city-by-city rolling RD estimates. The expected values in figure 6 are drawn from model D, which uses variance-weighted least squares (with variance drawn from the robust standard errors of the rolling city-by-city RD estimates) and city fixed effects.

Table 8: Incumbency Advantage and Independent Voteshare

	A	B	C	D
Votes share won by independents	0.08	0.08	0.07	0.08
(se)	0.02	0.02	0.02	0.02
N	352	352	352	352
City Fixed Effects	No	Yes	No	Yes
Variance-Weighted Least Squares	No	No	Yes	Yes

10 References Cited in Supplementary Materials

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