A Supporting Appendix for "Forecasting Partisan Collective Accountability During the 2024 U.S. Presidential & Congressional Elections"

Contents

A.1 Quarterly Models Testing Approval & Brands as Distinct Concepts

A.1.1 Descriptive Statistics

Table A1: Quarterly Descriptive Statistics, 1937-2024

	N	Mean	Min	Max	Median	Std. Dev.
Incumbent Party Party Brand	349	49.58	41.75	57.40	49.45	3.11
Presidential Approval	349	52.07	35.00	67.91	51.71	7.89
Quarterly Incumbent Party Time in Power	349	22.36	1.00	80.00	19.00	17.63
Quarterly GDP Growth	309	0.01	-0.09	0.07	0.01	0.01
Quarterly Unemployment Rate	346	5.92	0.97	19.57	5.48	2.76

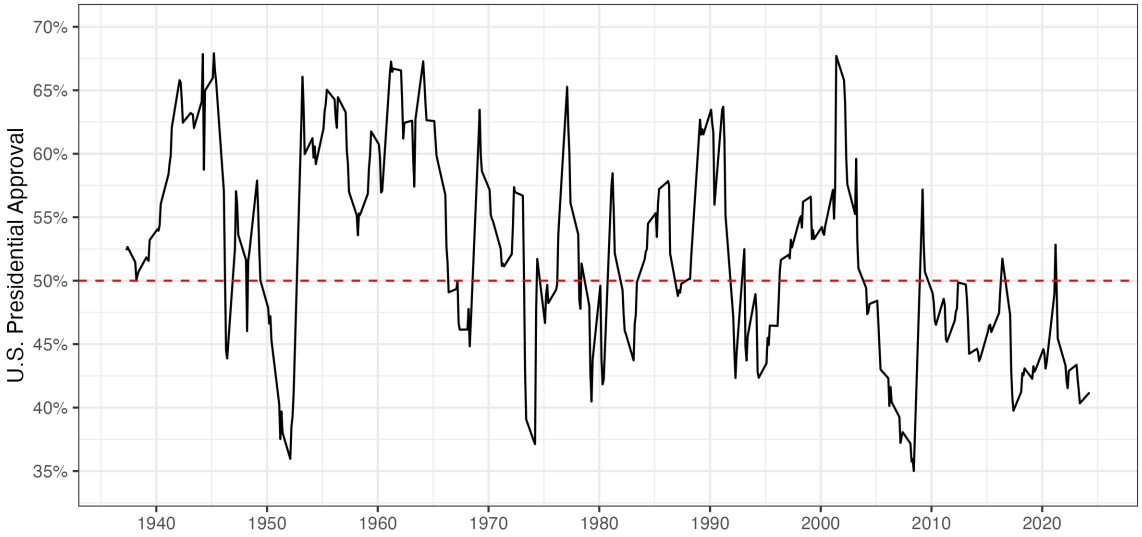
GDP missing = 1937.3-1947.1 & 2024.3 (40 Qs)

Unemployment missing = 1937.3-1937.4 & 2024.3 (3 Qs)

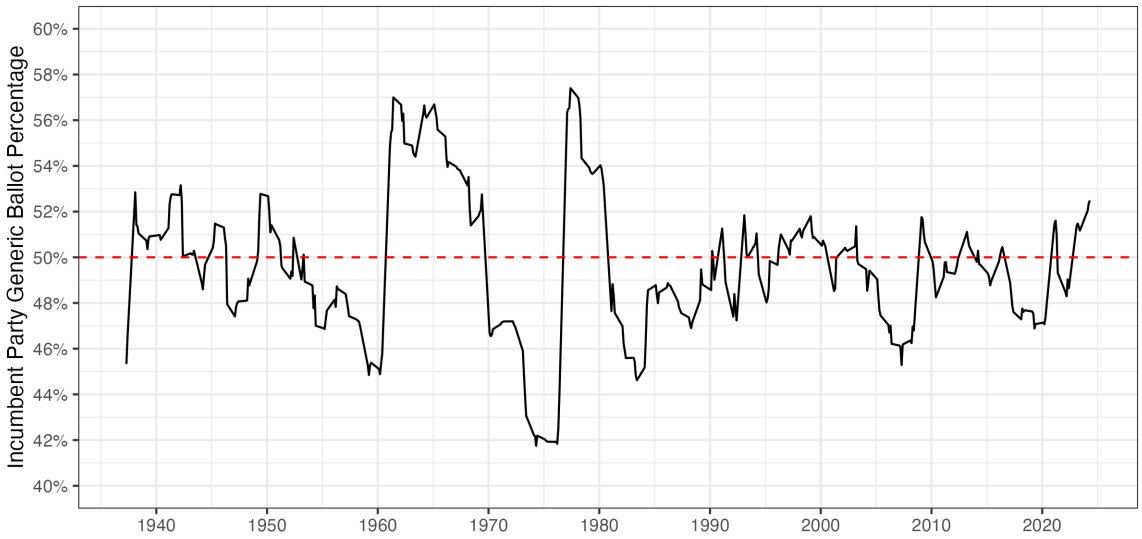
A.2 Figures of Presidential Approval & Incumbent Party Brands

Figure A1: Presidential Approval & Incumbent Party Congressional Generic Percentage

(a) Quarterly U.S. Presidential Approval, 1937-2024

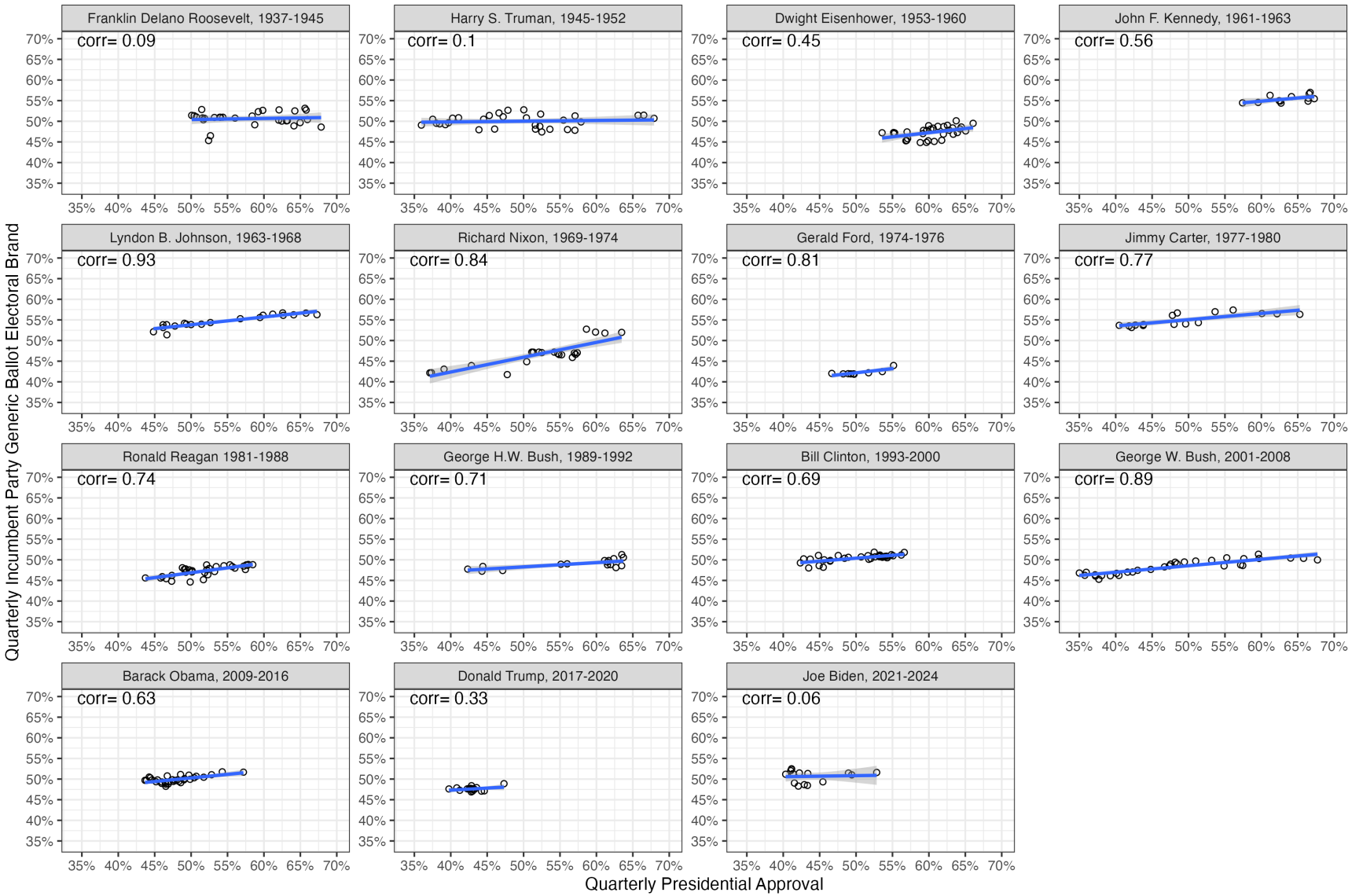


(b) Quarterly Incumbent Party Lead in Congressional Generic Ballot, 1937-2024



N = 349 quarterly time-points from 1937 Q3 to 2024 Q3. Both variables created using Stimson's (1998) dyadic ratios model derived from survey marginals. Presidential approval. Presidential approval latent time-series estimated from N = 6,597 survey marginals across 99 unique pollsters. Generic incumbent party lead in congressional generic ballot latent time-series estimated from N = 8,412 survey marginals across 148 unique pollsters.

Figure A2: Correlation of Quarterly Presidential Approval & Incumbent Party Brand By President



A.2.1 Quarterly Model Results

Table A2: Quarterly OLS Models Predicting Incumbent Party Electoral Brand, 1937-2024

	(1)	(2)	(3)	(4)
Presidential Approval	0.10***	0.13***	0.09**	0.15***
	(0.03)	(0.03)	(0.03)	(0.02)
Time in Power	-0.02	-0.02	-0.02	-0.02
	(0.05)	(0.02)	(0.05)	(0.03)
GDP Growth			0.61	8.23
			(4.25)	(11.73)
Unemployment Rate			0.12	-0.09
			(0.13)	(0.14)
N	349	349	309	309
R^2	0.976	0.847	0.980	0.881
Adjusted R^2	0.968	0.840	0.973	0.874
Fixed-Effects & Clustered Std. Errors	Yearly	Administration	Yearly	Administration

DV: Incumbent party electoral generic ballot brand.

A.3 Models Predicting Aggregate Election Outcomes

A.3.1 Descriptive Statistics

Table A3: Annual Descriptive Statistics, 1938-2022

	N	Mean	Min	Max	Median	Std. Dev.
Incumbent Party Two-Party Vote % Won	21	52.03	44.55	61.79	51.24	5.02
Incumbent Party Electoral Votes Won	21	307.57	49.00	525.00	286.00	140.30
Incumbent Party U.S. Senate Seats Won	43	50.28	34.00	71.00	49.00	8.53
Incumbent Party U.S. House Seats Won	43	208.91	143.00	295.00	203.00	36.27
Incumbent Party Party Brand	43	49.41	41.75	56.29	49.15	3.08
Presidential Approval	43	50.79	35.95	64.25	50.69	7.30
Midterm Election Cycle	43	0.51	0.00	1.00	1.00	0.51
Democratic Administration	43	1.53	1.00	2.00	2.00	0.50
Quarterly Incumbent Party Time in Power	43	25.05	7.00	79.00	23.00	17.73
Quarterly GDP Growth	43	6.55	-6.10	28.30	5.90	5.03
Annual Unemployment Rate	43	6.08	1.27	19.12	5.57	2.99

A.3.2 Presidential Popular Vote Percentage Models

Table A4: OLS Models Predicting Incumbent Party Popular Vote Percentage, 1940-2020

	(1)	(2)	(3)	(4)	(5)
Presidential Approval	0.54***		0.54***	0.51***	0.46**
	(0.08)		(0.09)	(0.09)	(0.13)
Incumbent Party Brand		0.31	0.19	0.45	0.47
		(0.49)	(0.27)	(0.33)	(0.44)
Democratic Administration				-2.25	-2.46
				(1.67)	(1.92)
Time in Power				-0.04	-0.05
				(0.04)	(0.05)
GDP Growth					0.25
					(0.29)
Unemployment Rate					0.00
					(0.16)
N	21	21	21	21	21
R^2	0.647	0.033	0.659	0.721	0.742
Adjusted R^2	0.628	-0.018	0.621	0.651	0.632

DV: Two-party presidential vote-share won by incumbent party.
HC2 robust standard errors reported in parenthesis.

A.3.3 Presidential Electoral Votes Models

Table A5: OLS Models Predicting Incumbent Party Electoral Votes, 1940-2020

	(1)	(2)	(3)	(4)	(5)
Presidential Approval	14.48***		14.52***	13.74***	12.87*
	(2.33)		(2.60)	(2.93)	(4.67)
Incumbent Party Brand		2.19	-1.11	3.41	4.74
		(13.08)	(9.31)	(12.45)	(15.78)
Democratic Administration				-41.55	-50.50
				(58.11)	(64.76)
Time in Power				-1.09	-1.01
				(1.12)	(1.70)
GDP Growth					6.76
					(9.76)
Unemployment Rate					4.87
					(8.27)
N	21	21	21	21	21
R^2	0.586	0.002	0.586	0.629	0.658
Adjusted R^2	0.564	-0.050	0.540	0.536	0.512

DV: Electoral votes won by incumbent party.

HC2 robust standard errors reported in parenthesis.

A.3.4 U.S. Senate Seats Models

Table A6: OLS Models Predicting Incumbent Party U.S. Senate Seats, 1938-2022

	(1)	(2)	(3)	(4)	(5)	(6)
Presidential Approval	0.19		0.04	0.04	0.06	0.04
	(0.17)		(0.11)	(0.12)	(0.13)	(0.17)
Incumbent Party Brand		1.92***	1.91***	1.91***	1.52***	1.62**
		(0.27)	(0.29)	(0.30)	(0.37)	(0.45)
Midterm Election				-0.29	-0.85	-0.71
				(1.97)	(2.04)	(1.88)
Democratic Administration					3.17	2.19
					(2.59)	(2.70)
Time in Power					-0.08+	-0.05
					(0.04)	(0.05)
GDP Growth						0.24
						(0.17)
Unemployment Rate						1.00*
						(0.44)
N	43	43	43	43	43	43
R^2	0.026	0.481	0.482	0.482	0.511	0.611
Adjusted R^2	0.002	0.468	0.456	0.442	0.445	0.533

DV: U.S. Senate seats won by incumbent party.
HC2 robust standard errors reported in parenthesis.

A.3.5 U.S. House Seats Models

Table A7: OLS Models Predicting Incumbent Party U.S. House Seats, 1938-2022

	(1)	(2)	(3)	(4)	(5)	(6)
Presidential Approval	0.66		-0.10	-0.08	0.07	0.04
	(0.74)		(0.41)	(0.38)	(0.43)	(0.50)
Incumbent Party Brand		9.57***	9.62***	9.82***	8.63***	8.79***
		(0.70)	(0.69)	(0.71)	(1.35)	(1.50)
Midterm Election				-12.65+	-12.33+	-12.11+
				(6.42)	(6.75)	(6.80)
Democratic Administration					9.72	8.18
					(11.04)	(11.81)
Time in Power					-0.01	0.04
					(0.22)	(0.23)
GDP Growth						0.38
						(0.83)
Unemployment Rate						1.54
						(1.65)
N	43	43	43	43	43	43
R^2	0.018	0.661	0.661	0.692	0.700	0.713
Adjusted R^2	-0.006	0.652	0.644	0.668	0.659	0.656

DV: U.S. House seats won by incumbent party.

HC2 robust standard errors reported in parenthesis.

A.3.6 Presidential Approval Varying By Election Type Interactive Models

In light of the historic news of President Biden's decision to suspend his re-election campaign and thus upending the 2024 U.S. presidential election, we provide additional analysis showing how presidential approval predicts U.S. presidential elections by moderating approval by a dummy variable indicating if the presidential contest features (0) an open-seat contest or (1) an incumbent re-election bid. This approach allows us to exactly test the hypothesis that presidential approval may correlate with presidential election outcomes depending if the contest features an incumbent's re-election bid or an open-seat race. Since we find that presidential approval does not correlate with congressional election outcomes after accounting for the party brand (i.e., the incumbent party's differential in the generic ballot), we replicate the analysis found in Table A4 (OLS Models Predicting Incumbent Party Popular Vote Percentage, 1940-2020) and Table A5 (OLS Models Predicting Incumbent Party Electoral Votes, 1940-2020) by including the previously measured interaction. Note that we only specify this interaction for Models 1, 3, 4, and 5 given that Model 2 did not include presidential approval as a predictor.

We present these results in the figure below showing the marginal effect of presidential approval on presidential election outcomes conditional on if the presidential election features an incumbent re-election bid or an open-seat contest. Note that these results are suggestive, given that we are including an interaction term to our regression models with 21 presidential election observations and only have 7 of these 21 elections since 1940 drew an open-seat contest. As one can see, across all of our models presidential approval is a consistent predictor of the two-party popular vote percentage won by the incumbent party in both cases of an open-seat or incumbent re-election. Unsurprisingly, we find all specifications that the relationship between presidential approval and the incumbent party's popular vote percentage is *stronger* when the incumbent president seeks re-election relative to open-seat races.[1] Nevertheless we find that—even during the small number of open-seat races such as the current 2024 presidential contest—presidential approval still plays a role in shaping the presidential election contest.

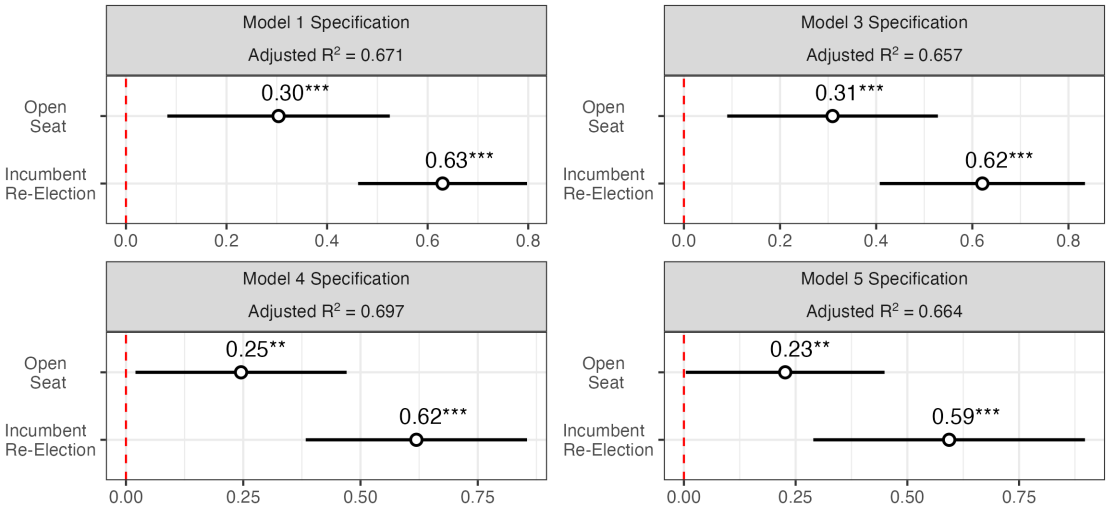
We replicate these results to a degree when switching out the outcome variable to the number of electoral votes won by the president's party. In this specification, we find in Models 1 and 2 that presidential approval is still predictive of the number of electoral votes won by the incumbent party in the presidential election even during cases of an open-seat. While these results do replicate in Models 4 and 5—perhaps due to the inclusion of control variables and, as we show, the large amounts of variation in the number of electoral votes won in the data—the results here show that presidential approval *still* plays a role in shaping presidential election outcomes as measured by the number of electoral college votes on by the incumbent president's party.

Taken together, the results of this additional analysis shows that presidential approval still shapes these outcomes when an incumbent president is not seeking re-election, resulting in an open-seat contest. Within the context of the popular vote we find very consistent evidence that, while approval is more salient when an incumbent seeks re-election, presidential approval still plays a significant role in shaping the popular vote percentage won by their party. While the evidence is more mixed when predicting the number of electoral college votes won by the incumbent party, these results help establish the utility of our model in forecasting the current 2024 elections without an incumbent president seeking re-election.

[1] Note that across all specifications the marginal effect of approval for incumbent re-election bids significantly larger than the corresponding marginal effect for open-seat contests at $\rho < 0.05$.

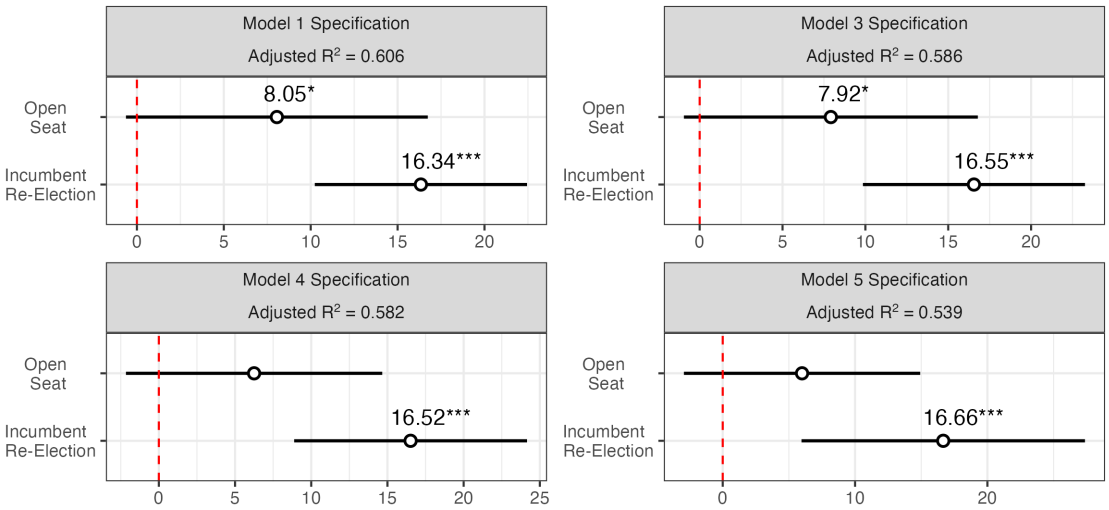
Figure A3: Marginal Effect of Presidential Approval on Outcomes By Election Type, 1940-2020

(a) Presidential Popular Vote Percentage Model



* p < 0.10 ** p < 0.05; *** p < 0.01. N = 21 Presidential Elections

(b) Presidential Electoral Votes Model



* p < 0.10 ** p < 0.05; *** p < 0.01. N = 21 Presidential Elections

Note: The results in these Figures articulate the average marginal effect of presidential approval on the incumbent party's performance in the presidential election by whether the election feature an open-seat contest or incumbent re-election bid. To estimate these marginal effects, we include an interaction between presidential approval and election type to Models 1, 3, 4, and 5 predicting the (1) incumbent party's popular vote percentage and (2) electoral college votes won as shown in Tables A4 and A5 of the appendix. 95% confidence intervals reported from HC2 robust standard errors.

A.4 Out-Of Sample Model Predictions of Aggregate Predictive Models

A.4.1 Presidential Popular Vote Model Out-of-Sample Predictions

Table A8: Out of Sample Predictions for Incumbent Party Popular Vote Percentage, 1940-2020

Election Model	Adjusted R^2	Observed Result	Model Prediction	95% Lower Bound CI	95% Upper Bound CI	Residual Error	Absolute Error	Discrete Correct Prediction
1940	0.61	55.00	54.43	52.96	55.90	0.57	0.57	Yes
1944	0.63	53.77	56.81	54.34	59.29	-3.04	3.04	Yes
1948	0.62	52.37	52.64	51.14	54.13	-0.27	0.27	Yes
1952	0.57	44.55	46.29	44.12	48.46	-1.74	1.74	Yes
1956	0.59	57.75	58.26	54.68	61.84	-0.51	0.51	Yes
1960	0.68	49.92	55.85	51.48	60.21	-5.93	5.93	No
1964	0.54	61.35	60.12	54.71	65.54	1.22	1.22	Yes
1968	0.61	49.59	49.56	47.10	52.02	0.03	0.03	Yes
1972	0.66	61.79	54.44	52.06	56.82	7.35	7.35	Yes
1976	0.65	48.95	54.14	47.96	60.31	-5.19	5.19	No
1980	0.61	44.70	49.40	46.44	52.37	-4.71	4.71	Yes
1984	0.68	59.17	52.46	50.67	54.26	6.70	6.70	Yes
1988	0.62	53.90	52.22	49.77	54.67	1.68	1.68	Yes
1992	0.59	46.55	47.49	45.77	49.21	-0.94	0.94	Yes
1996	0.63	54.74	52.29	51.07	53.52	2.44	2.44	Yes
2000	0.65	50.27	54.27	53.00	55.55	-4.01	4.01	Yes
2004	0.62	51.24	50.37	49.06	51.68	0.87	0.87	Yes
2008	0.61	46.31	42.94	41.15	44.72	3.37	3.37	Yes
2012	0.62	51.96	50.62	49.39	51.85	1.35	1.35	Yes
2016	0.62	51.11	52.30	51.05	53.54	-1.18	1.18	Yes
2020	0.60	47.73	47.71	45.92	49.51	0.02	0.02	Yes

DV: Two-party presidential vote-share won by incumbent party.

19/21 correctly predicted. Predictions from Model (3). 95% CI'S estimated from HC2 robust SE'S reported.

A.4.2 Presidential Electoral Vote Model Out-of-Sample Predictions

Table A9: Out of Sample Predictions for Incumbent Party Electoral Votes, 1940-2020

Election Model	Adjusted R^2	Observed Result	Model Prediction	95% Lower Bound CI	95% Upper Bound CI	Residual Error	Absolute Error	Discrete Correct Prediction
1940	0.54	449.00	354.03	315.04	393.03	94.97	94.97	Yes
1944	0.52	432.00	426.63	354.24	499.03	5.37	5.37	Yes
1948	0.54	304.00	324.66	279.58	369.75	-20.66	20.66	Yes
1952	0.48	89.00	155.12	82.00	228.24	-66.12	66.12	Yes
1956	0.51	457.00	479.53	376.86	582.20	-22.53	22.53	Yes
1960	0.65	220.00	446.01	311.50	580.52	-226.01	226.01	No
1964	0.50	486.00	507.07	330.05	684.09	-21.07	21.07	Yes
1968	0.52	191.00	226.84	138.37	315.32	-35.84	35.84	Yes
1972	0.52	521.00	394.15	303.83	484.47	126.85	126.85	Yes
1976	0.59	241.00	418.37	219.42	617.32	-177.37	177.37	No
1980	0.51	49.00	219.49	116.77	322.20	-170.49	170.49	Yes
1984	0.59	525.00	325.57	271.43	379.72	199.43	199.43	Yes
1988	0.55	426.00	321.69	248.68	394.70	104.31	104.31	Yes
1992	0.51	168.00	193.40	135.46	251.33	-25.40	25.40	Yes
1996	0.55	379.00	303.84	263.91	343.77	75.16	75.16	Yes
2000	0.56	267.00	357.27	316.94	397.60	-90.27	90.27	No
2004	0.54	286.00	263.57	220.29	306.85	22.43	22.43	No
2008	0.54	173.00	73.14	3.42	142.86	99.86	99.86	Yes
2012	0.55	332.00	264.12	223.17	305.07	67.88	67.88	No
2016	0.55	232.00	309.49	269.07	349.91	-77.49	77.49	No
2020	0.53	232.00	197.89	138.08	257.70	34.11	34.11	Yes

DV: Electoral votes won by incumbent party.

15/21 correctly predicted. Predictions from Model (3).

95% confidence intervals estimated from HC2 robust standard errors reported.

A.4.3 U.S. Senate Model Out-of-Sample Predictions

Table A10: Out of Sample Predictions for Incumbent Party U.S. Senate Seats, 1938-2022

Election Model	Adjusted R^2	Observed Result	Model Prediction	95% Lower Bound CI	95% Upper Bound CI	Residual Error	Absolute Error	Discrete Correct Prediction
1938	0.48	71.00	52.84	50.35	55.34	18.16	18.16	Yes
1940	0.45	66.00	52.74	49.94	55.53	13.26	13.26	Yes
1942	0.43	57.00	56.47	51.93	61.00	0.53	0.53	Yes
1944	0.45	57.00	49.63	46.59	52.67	7.37	7.37	Yes
1946	0.45	45.00	52.51	49.07	55.95	-7.51	7.51	No
1948	0.45	54.00	49.58	47.01	52.16	4.42	4.42	Yes
1950	0.45	49.00	53.48	50.14	56.82	-4.48	4.48	Yes
1952	0.44	47.00	49.87	45.69	54.06	-2.87	2.87	No
1954	0.44	47.00	48.58	44.39	52.76	-1.58	1.58	No
1956	0.44	47.00	49.83	45.96	53.70	-2.83	2.83	No
1958	0.45	34.00	47.03	43.85	50.21	-13.03	13.03	Yes
1960	0.42	36.00	43.77	40.41	47.14	-7.77	7.77	Yes
1962	0.38	68.00	62.70	57.34	68.05	5.30	5.30	Yes
1964	0.38	68.00	62.74	56.20	69.28	5.26	5.26	Yes
1966	0.41	64.00	58.31	54.32	62.30	5.69	5.69	Yes
1968	0.43	58.00	55.12	50.82	59.41	2.88	2.88	Yes
1970	0.44	45.00	44.92	40.96	48.88	0.08	0.08	Yes
1972	0.43	43.00	46.43	43.18	49.68	-3.43	3.43	Yes
1974	0.41	38.00	34.71	28.07	41.36	3.29	3.29	Yes
1976	0.41	38.00	37.12	32.00	42.24	0.88	0.88	Yes
1978	0.43	59.00	63.58	57.86	69.29	-4.58	4.58	Yes
1980	0.49	47.00	59.89	55.52	64.25	-12.89	12.89	No
1982	0.48	54.00	42.28	38.82	45.74	11.72	11.72	No
1984	0.45	53.00	47.30	44.81	49.79	5.70	5.70	No
1986	0.44	45.00	49.46	45.95	52.98	-4.46	4.46	Yes
1988	0.44	45.00	45.71	43.04	48.37	-0.71	0.71	Yes
1990	0.45	44.00	52.10	48.39	55.82	-8.10	8.10	No
1992	0.44	43.00	47.27	44.09	50.45	-4.27	4.27	Yes
1994	0.44	48.00	51.70	47.91	55.48	-3.70	3.70	No
1996	0.46	45.00	53.33	50.40	56.27	-8.33	8.33	No
1998	0.46	45.00	53.49	50.54	56.43	-8.49	8.49	No
2000	0.44	50.00	52.98	49.99	55.96	-2.98	2.98	Yes
2002	0.44	51.00	52.30	48.69	55.91	-1.30	1.30	Yes
2004	0.45	55.00	49.13	46.50	51.77	5.87	5.87	No
2006	0.45	49.00	44.83	40.83	48.83	4.17	4.17	Yes
2008	0.43	41.00	45.95	41.60	50.30	-4.95	4.95	Yes
2010	0.45	53.00	48.60	45.42	51.78	4.40	4.40	No
2012	0.44	55.00	50.51	47.68	53.34	4.49	4.49	Yes
2014	0.45	46.00	50.75	47.23	54.28	-4.75	4.75	No
2016	0.45	48.00	52.37	49.46	55.29	-4.37	4.37	No
2018	0.46	53.00	45.79	42.14	49.44	7.21	7.21	No
2020	0.45	50.00	46.00	43.06	48.95	4.00	4.00	No
2022	0.44	51.00	48.89	44.98	52.79	2.11	2.11	No

DV: U.S. Senate seats won by incumbent party.

29/43 correctly predicted. Predictions from Model (4).

95% confidence intervals estimated from HC2 robust standard errors reported.

A.4.4 U.S. House Model Out-of-Sample Predictions

Table A11: Out of Sample Predictions for Incumbent Party U.S. House Seats, 1938-2022

Election Model	Adjusted R^2	Observed Result	Model Prediction	95% Lower Bound CI	95% Upper Bound CI	Residual Error	Absolute Error	Discrete Correct Prediction
1938	0.69	263.00	219.36	212.16	226.56	43.64	43.64	Yes
1940	0.68	269.00	227.97	217.48	238.47	41.03	41.03	Yes
1942	0.67	223.00	233.43	217.61	249.26	-10.43	10.43	Yes
1944	0.68	245.00	209.36	197.83	220.89	35.64	35.64	No
1946	0.68	189.00	215.77	207.31	224.24	-26.77	26.77	Yes
1948	0.71	264.00	209.29	200.78	217.80	54.71	54.71	No
1950	0.67	236.00	218.44	209.86	227.01	17.56	17.56	Yes
1952	0.67	214.00	214.02	200.44	227.61	-0.02	0.02	Yes
1954	0.67	203.00	190.04	177.12	202.97	12.96	12.96	Yes
1956	0.67	201.00	208.55	193.66	223.44	-7.55	7.55	Yes
1958	0.66	153.00	182.76	172.82	192.70	-29.76	29.76	Yes
1960	0.66	175.00	175.02	161.72	188.31	-0.02	0.02	Yes
1962	0.66	258.00	271.91	255.68	288.13	-13.91	13.91	Yes
1964	0.62	295.00	277.27	256.42	298.11	17.73	17.73	Yes
1966	0.66	248.00	247.19	236.58	257.80	0.81	0.81	Yes
1968	0.66	243.00	242.41	229.66	255.16	0.59	0.59	Yes
1970	0.66	180.00	174.38	163.01	185.75	5.62	5.62	Yes
1972	0.67	192.00	191.54	179.17	203.92	0.46	0.46	Yes
1974	0.65	144.00	123.48	108.43	138.52	20.52	20.52	Yes
1976	0.64	143.00	147.87	132.49	163.26	-4.87	4.87	Yes
1978	0.64	277.00	267.05	253.53	280.57	9.95	9.95	Yes
1980	0.66	243.00	258.85	243.56	274.15	-15.85	15.85	Yes
1982	0.66	166.00	169.11	158.09	180.13	-3.11	3.11	Yes
1984	0.67	182.00	201.52	191.61	211.43	-19.52	19.52	Yes
1986	0.67	177.00	197.28	186.39	208.17	-20.28	20.28	Yes
1988	0.67	175.00	191.64	181.55	201.73	-16.64	16.64	Yes
1990	0.69	167.00	210.07	199.40	220.74	-43.07	43.07	Yes
1992	0.67	176.00	201.71	190.80	212.62	-25.71	25.71	Yes
1994	0.67	205.00	211.89	201.79	221.99	-6.89	6.89	Yes
1996	0.67	209.00	229.12	218.78	239.46	-20.12	20.12	No
1998	0.67	212.00	217.03	207.79	226.26	-5.03	5.03	Yes
2000	0.67	214.00	227.65	216.83	238.47	-13.65	13.65	No
2002	0.67	229.00	209.44	198.10	220.78	19.56	19.56	No
2004	0.67	232.00	210.02	200.40	219.63	21.98	21.98	No
2006	0.68	202.00	177.57	166.80	188.34	24.43	24.43	Yes
2008	0.67	178.00	195.11	180.10	210.12	-17.11	17.11	Yes
2010	0.67	193.00	197.32	188.52	206.12	-4.32	4.32	Yes
2012	0.67	201.00	218.75	208.70	228.79	-17.75	17.75	No
2014	0.67	188.00	207.42	198.24	216.60	-19.42	19.42	Yes
2016	0.69	194.00	225.98	216.20	235.76	-31.98	31.98	No
2018	0.67	199.00	184.46	173.78	195.13	14.54	14.54	Yes
2020	0.67	213.00	194.87	184.21	205.53	18.13	18.13	Yes
2022	0.67	213.00	198.44	187.81	209.07	14.56	14.56	Yes

DV: U.S. House seats won by incumbent party.

35/43 correctly predicted. Predictions from Model (4).

95% confidence intervals estimated from HC2 robust standard errors reported.

References

Stimson, James A. 1998. *Public Opinion in America: Moods, Cycles, and Swings.* Second ed. Boulder, CO: Westview Press.