

# The Great Society, Reagan's Revolution, and Generations of Presidential Voting

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## Abstract

We build a model of American presidential voting in which the cumulative impression left by political events determines the preferences of voters. This impression varies by voter, depending on their age at the time the events took place. We find the Gallup presidential approval rating time series reflects the major events that influence voter preferences, with the most influential occurring during a voter's teenage and early adult years. The fitted model is predictive. It explains more than ninety percent of the variation in voting trends over the last half-century. The fitted model is also interpretable. It divides presidential voters into five main generations: New Deal Democrats, Eisenhower Republicans, 1960s Liberals, Reagan Conservatives, and Millennials. We present each generation in context of the political events that shaped its preferences, beginning in 1940 and ending with the 2016 election.

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We study generational voting in American presidential elections by modeling voter’s partisan preferences as a running tally of impressions left by the political events they live through. When fit to data, the tally is weighted heavily by events that occur in a voter’s teenage and early adult years. For example, the Obama-era shift among young voters is explained by events that disproportionately influence the preferences of young voters. After early adulthood, voter preferences become consistent, and political events hold considerably less weight. The fitted model is predictive—explaining nearly all of the macro-level variation in voting trends over the past half-century—and interpretable—dividing voters into five main generations.

Our model builds on a substantial literature in political science, sociology, and social psychology, beginning with the theory of “political socialization” (Hyman, 1959) and developed through seminal works on American political behavior, such as *The American Voter*. To summarize briefly, these works used panels of high school students to establish the micro-level determinants of political attitudes and behaviors. For example, Campbell et al. (1964) found party identification, the basis of political attitudes and voting behavior, is formed early in life and is influenced primarily by parents.<sup>1</sup>

However, these works were unable to agree on the determinants of macro-level trends. Researchers observed, for example, that older voters were more likely to identify as Republican. Some argued this was the effect of aging: a social or psychological process pushed individuals towards a conservative viewpoint later in life. Others argued the effect was generational: the shared political events of their birth cohort skewed these voters Republican. Much ink was spilled attempting to disentangle the two. Crittendon (1962) emphasized age effects, while Cutler (1969) and Glenn and Hefner (1972) emphasized cohort effects.

Scholars soon discovered the problem of distinguishing between age, period, and cohort effects, the second of which refers to short-term influences of political attitudes that fail to leave a lasting impression. The parameters are not identified because age, period, and cohort are collinear: a voter’s age and cohort uniquely determine the period in which they vote

<sup>1</sup>Reviews of the early literature include (Niemi and Sobieszek, 1977; Delli Carpini, 1989; Niemi and Hepburn, 1995). Of particular note is Jennings and Niemi (1981), which summarizes many of their substantial contributions.

(Converse, 1976; Glenn, 1976; Markus, 1983). Perfunctory attempts to estimate all three require parameter constraints that are difficult to interpret and cannot be validated from the data (Fienberg and Mason, 1979).

We resolve the age-period-cohort problem by directly modeling the influence of major political events that researchers typically interpret as cohort effects.<sup>2</sup> The Gallup presidential approval rating time series is ideal for capturing these events for three reasons. First, the president is the most public and notable in American politics. The position is prominently associated with major political events, even when those events are unrelated to the presidency. Second, presidential elections are among the most salient events in American politics. By a wide margin, presidential turnout is higher than any other form of political participation. Lastly, the series continuously measures the public’s evaluation of the president since the 1930s.

Because presidential approval ratings reflect the political events that influence presidential voting, we need only estimate the age-specific weights that determine the impression left by those events—along with a relatively small number of additional parameters discussed in the following sections. This economy of parameters, along with our massive dataset, vastly improves the precision of our estimates, allowing us to quantify generational trends with accuracy unprecedented in the literature. Our three main findings are:

First, the events forming partisan preferences occur largely between the ages of 14-24, and a generation’s preferred party is essentially locked-in by 40. These weights vary by race and region. They are strongest among non-Southern whites and relatively weak among minorities, suggesting considerable differences in the political socialization process.

Second, the Gallup presidential approval rating time series, together with the age weights, delineate five distinct gen-

<sup>2</sup>We use a “running tally” model, a Bayesian learning model in which voters choose their partisan identification by evaluating each party’s performance over their lifetime (Fiorina, 1981; Achen, 1992). In the simplest version, each evaluation has equal weight regardless of age or recency. That is, political events early in life are no more or less important than those later on.

Several papers generalize the “running tally” model, for example see Gerber and Green (1998). Independent of our work, Bartels and Jackman (2014) combine age-specific weights with period-specific shocks. Both are estimated from the American National Election Study (ANES) cumulative dataset. While these parameters are not underidentified, see footnote 17, (Bartels and Jackman, 2014: pg 14), the model is statistically underpowered. The age-specific weights oscillate between negative and positive. The uncertainty bounds are large, and almost none are statistically distinguishable from zero.

erations. For example, consider white voters born in 1952 and socialized during the Kennedy and Johnson administrations. These voters are consistently 5-10 percentage points more likely to support Democratic presidential candidates than those born in 1968, who came of age during the presidencies of Carter, Reagan, and Bush I. We name these generations: New Deal Democrats, Eisenhower Republicans, 1960s Liberals, Reagan Conservatives, and Millennials.

Third, despite our focus on generations, period effects are still important. However, these effects alone are insufficient for explaining voter preferences within race/regions. Our model explains more macro-level variation than a simple model of only period and race/region effects, especially for non-Southern white voters. This suggests a single defining political event is less important in the formation of voter preferences than the prolonged impression left by a lifetime of events.

We present the details and additional findings in the following four sections. We begin by describing the data and the model. We then demonstrate how the fitted model is interpreted. Next, we provide a narrative of presidential approval over the past half century, using the fitted model to quantify how political events left differential impressions on five generations of American voters. Finally, we conclude with a brief discussion.

## Data and Preliminary Evidence

We assemble a massive dataset from five sources: (1) the ANES cumulative dataset covering elections (1952-2016); (2) Gallup presidential polling data from the Roper Center's iPoll database (1952-2016); (3) the Annenberg National Election Studies (2000, 2004, and 2008); (4) Greenberg Quinlan Rosner Research's internal campaign polls (2012 election cycle); and (5) CNN/ORC and Pew polls (2016 election cycle). We only use presidential election years for the ANES and Gallup datasets. There are 318,482 observations after removing missing data.<sup>3</sup>

The combined data provide clear evidence of generational voting. To demonstrate this, we plot the relationship between

<sup>3</sup>Variables of interest are presidential vote choice, ethnicity, state of residence, and age (or, equivalently, birth year, defined here as the year of the survey response minus age). Throughout this paper, white refers to non-Hispanic white.

age and presidential vote choice in the three panels of Figure 1. We limit the data to white voters for ease of presentation. We also combine all of the data sources without consideration of omitted variables. The model presented in the following section formally estimates the relationships shown here and adjusts for omitted variables.

The left panel shows age and vote choice for the 2012 election. Each bubble is a single year of age. The  $y$ -axis indicates the level of Republican support, and the size of each bubble indicates the sample size. The curve is a locally weighted regression (LOESS).

Republican vote share is clearly related to age, but the pattern is not particularly interpretable. The youngest white voters slightly supported Romney, the Republican candidate. Voters around the age of 24 supported Obama, the Democratic incumbent. Romney's vote grows steadily with age until 45, only to reverse direction until 60. It then climbs one last time to 70, before finally flattening.

The center panel overlays curves for all presidential elections between 2000 to 2016. We remove the bubbles for clarity. As with the left panel, the patterns in each election are not particularly interpretable. Moreover, no common trend is observed across elections.

It is only in the right panel—when we lines the curves up by birth year instead of age—that a strong pattern emerges. The five curves align almost perfectly: the peaks and valleys coincide, and, with the exception of the 2008 election, all curves are essentially on top of each other. This is especially true for voters born between 1940 and 1970, where the bulk of the data lie.

Two peaks occur around the birth years of 1941 and 1968, with a pro-Democratic valley around 1952. This relationship is consistent over 16 years, measured across multiple surveys conducted by different organizations, and unaltered by any complicated statistical model. It is no statistical artifact.

The 2008 curve is lower for almost all birth cohorts. Recall the overall vote totals for each election<sup>4</sup>. Whereas 2000, 2004, 2012, and 2016 were all decided by small margins, in 2008, Obama won by a wide margin. The nature of “uniform swings” in presidential voting is well known (Ghitza and Gelman, 2013), and the data show a widespread, if not uniform,

<sup>4</sup>The Democratic two-party vote share for the 2000-2016 elections were, in order, 50%, 49%, 54%, 52%, and 51%. These totals are for the full electorate, not for white voters only, as is shown in Figure 1.

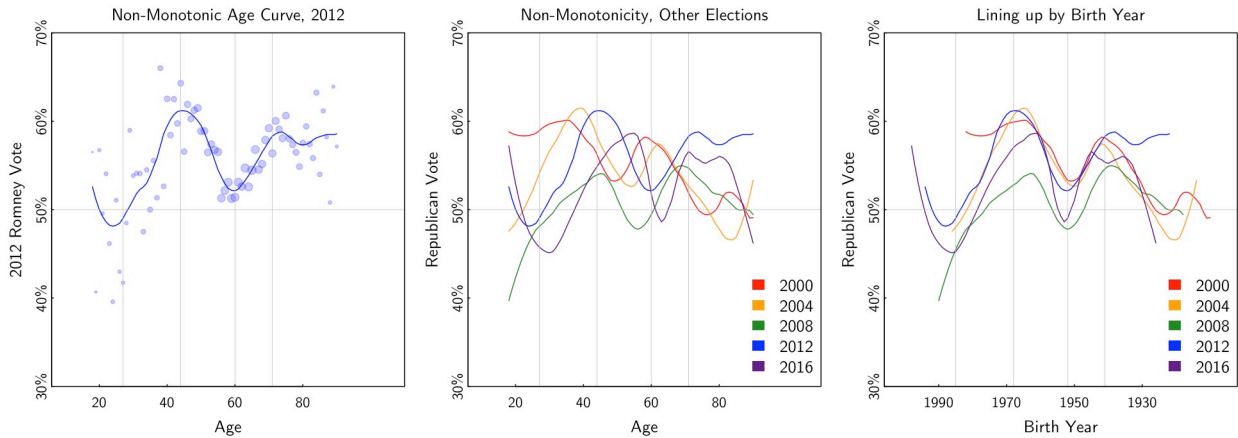


Figure 1: Raw data and loess curves, indicating the relationship between age and presidential voting preferences among non-Hispanic white voters for the 2000-2016 elections. (L) The relationship is non-monotonic and quite peculiar in 2012; instead of a linear or even quadratic relationship, the curve changes directions multiple times. (C) Non-monotonicity characterizes other elections as well. No clear pattern is apparent from this graph alone. (R) The true relationship emerges when the curves are lined up by birth year instead of age. The peaks and valleys occur at almost identical locations, indicating a generational trend.

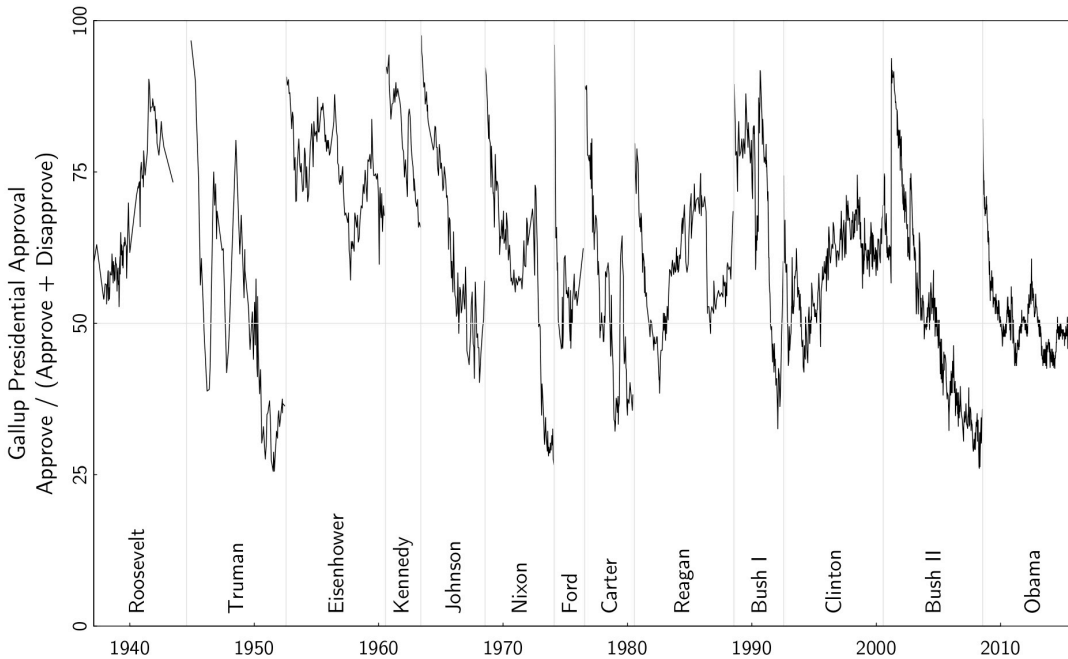


Figure 2: The Gallup Organization's presidential approval rating time series, 1937-2016. The data reflects political events that influence voter's partisan preferences.

swing in 2008.

plore in the next section.

In sum, the data strongly suggest a generational voting model. Period effects also appear necessary. These effects, though temporary, need not be uniform, a feature we will ex-

In addition to individual survey responses, we use the Gallup Organization's long-running presidential approval rating time series, displayed in Figure 2. Recall that in the as

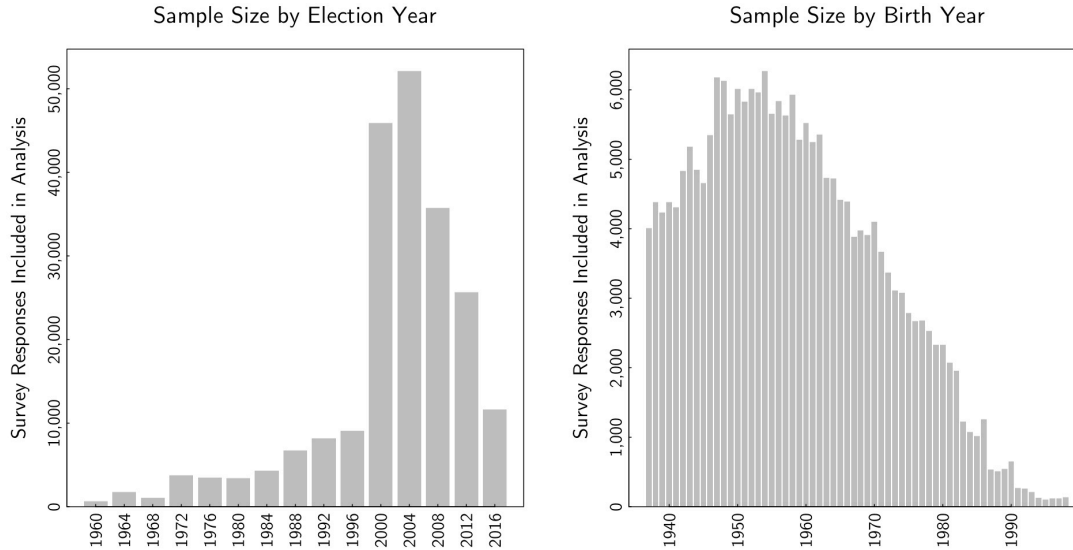


Figure 3: After removing survey respondents born before 1937, the analysis includes 213,566 survey respondents in total, here displayed by election year and year of birth. The data, and thus the analysis, have a strong emphasis towards the most recent four elections, and may be interpreted as weighted towards the contemporary political climate. The data encompass generational cohorts defined by their individual birth year from 1937-1998, with at least 1,000 responses for each birth year until 1986.

yet informally described model, voters keep a “running tally” of their impression from past political events. The Gallup time series captures these political events.

One limitation of Gallup’s approval ratings is that, despite being one of the longest-running time series available for the study of American political behavior, it is “only” available from 1937 onward. Because this analysis examines the formation of preferences over a voter’s *entire* life cycle, and due to the importance of early life political socialization indicated in the literature, we discard observations for which we do not have presidential approval data over the respondents’ entire life span. That is, we drop respondents born before 1937, leaving 213,566 responses. The data are plotted by election year and year of birth in Figure 3. They cover the 1960-2016 elections and sixty-one birth-year cohorts (1937-1998), with at least 1,000 responses for any individual year.

## Statistical Model

We model the partisan preferences of each birth year cohort over the 1960-2016 presidential elections by race and region. We index each survey respondent by three identifiers: (1)

their birth year cohort  $c \in C = \{1937, 1938, \dots, 1998\}$ , (2) the election year in which they responded  $t \in T = \{1960, 1961, \dots, 2016\}$ , and (3) their race/region  $g \in G = \{\text{non-Southern white, Southern white, and minority}\}$ .  $T$  includes non-election years—voters continuously form their preferences even though they only express those preferences in presidential election years<sup>5</sup>. Minorities form a single group. Although it is preferable to separate African Americans, Hispanic Americans, Asian Americans, etc, the data does not distinguish consistently between minority groups in early years.

The index,  $j$ , partitions respondents into  $J$  mutually exclusive cells so that each cell represents a unique combination of the three identifiers,  $(c, t, g) \mapsto j$ . The birth year cohort, period, and race/region group of the respondents in cell  $j$  is denoted by  $c[j]$ ,  $t[j]$ , and  $g[j]$ , respectively.

For each cell  $j$ ,  $y_j$  denotes the number of respondents preferring the Republican candidate, and  $n_j$  denotes the number indicating a Republican or Democratic preference (unde-

<sup>5</sup>This distinction is theoretical since we only use responses from presidential election years.

cided voters are discarded). We model

$$y_j \sim \text{Binomial}(n_j, \text{logit } \theta_j), \quad (1)$$

where  $\theta_j$  is the quantity of interest: the proportion of Republican presidential support within cell  $j$ . To define  $\theta_j$ , we introduce additional notation.

Let  $i[j]$  denote the age of the respondents in cell  $j$ ,  $i \in I = \{1, 2, \dots, 70\}$ . The identifier  $i$  is redundant since  $i[j] = t[j] - c[j]$  for every  $j$ , but the notation is useful for distinguishing between the age of the cohort at period  $t[j]$  and the age of the cohort during which past political events occurred.

With this in mind, let  $i'$  denote an arbitrary age,  $i' \in I = \{1, 2, \dots, 70\}$ . For each cell  $j$ ,  $x_{j,i'}$  denotes the *Republican-directional* presidential approval rating when the  $j$ th respondents were age  $i'$ . It is calculated by (1) subtracting 50% from the Gallup presidential approval rating in the year  $c[j] + i'$ , and (2) multiplying the resulting number by  $-1$  if the sitting president was a Democrat. The rating is positive under two conditions: a Republican president had ratings above 50%, or a Democratic president had ratings below 50%. Conversely, the rating is negative under a popular Democratic or an unpopular Republican president.

For example, consider the cohort born in 1959. That is,  $c[j] = 1959$ . In 1960 (age =  $i' = 1$ ), the average approval rating for the Republican president Eisenhower was 71%, so  $x_{j,1} = (71 - 50) = +21\%$ . In 1961 (age = 2), the presidency flipped to Democratic president Kennedy, who had an average rating of 88%, yielding  $x_{j,2} = -1 \times (88 - 50) = -38\%$ . Note that the  $x$  are top-censored at age 70 because few approval ratings are observed above that age.

We now define the *generational effect* on a particular cell:

$$\gamma_j = \beta_{g[j]} \sum_{i'=1}^{i[j]} w_{i'} x_{j,i'}, \quad (2)$$

where  $w_{i'}$  indicates the *age-specific weight* at age  $i'$ , and  $\beta_{g[j]}$  reflects the importance of the age-specific weights for each race/region group. To identify the model, the former are constrained to the simplex, and the latter are constrained to be positive.

The age weights,  $w$ , are the primary foci of the analysis.

We smooth them with an AR-1 restriction:

$$w_i \sim \text{Normal}(w_{i-1}, 0.0025), \quad (3)$$

with no prior expectation on  $w_1$ .

The  $\beta$ 's control the extent to which the socialization process implied by the age weights is different for each race/region group. A priori, we expect minorities to have a smaller  $\beta$  because (a) African Americans consistently support Democratic candidates, and (b) a large number of Hispanic American immigrants did not experience the political events that strongly influence white voters who have lived in the United States for their entire lives. No prior is imposed on the  $\beta$ 's, however, so that the fitted model can be used to investigate this claim.

We represent election-by-election *period* effects with  $\alpha_{t,g} \sim \text{Normal}(0, \sigma_\alpha)$ . While the  $\alpha$ 's are indexed by  $t$  and  $g$ , we also allow their influence to vary by  $i$  through the interaction terms  $\lambda_{g[j]} \sim \text{Half-Normal}(0, \sigma_\lambda)$ . These parameters combine to produce the final period effect  $A_j$  for cell  $j$ :

$$A_j = \alpha_{t[j],g[j]} + \lambda_{g[j]} w_{i[j]} \alpha_{t[j],g[j]} \quad (4)$$

$$= (1 + \lambda_{g[j]} w_{i[j]}) \alpha_{t[j],g[j]}. \quad (5)$$

The interaction of period effects by age is plausible since, if generational effects vary according to the impressionability of the voter, so might period effects. Like the  $\beta$ 's, we impose no prior on the  $\lambda$ 's.

Adding (2) and (5) together

$$\theta_j = \gamma_j + A_j \quad (6)$$

completes the model.

We fit the model using Stan (Stan Development Team, 2013) and R (R Core Team, 2012). Stan runs a No U-Turn (NUTS) sampler (Hoffman and Gelman, 2014), an extension to Hamiltonian Monte Carlo (HMC) sampling (Duane et al., 1987), which is itself a form of Markov Chain Monte Carlo (Metropolis et al., 1953). We generate 4 chains for 5000 iterations. The final 2500 iterations of each chain converge as indicated by post-modeling diagnostics such as Gelman-Rubin  $\hat{R}$  (Gelman et al., 2004). We ensure satisfactory posterior predictive model performance (Gelman et al., 2004) before using sample means (for estimates) and sample quantiles (for credi-

ble intervals) in the following section.

## Model Results

We now describe the fitted model with a series of graphs. Figure 4 shows the foci of our analysis: the *generational* trends from the fitted model, while Figure 5 shows the election-by-election *period* effects from the fitted model.

### Age Weights

The left side of Figure 4 shows the estimated age-specific weights  $w$ , along with 50% and 95% credible intervals. They quantify the formative years of political socialization with precision unprecedented in the literature. If, as our model posits, presidential voting is a running tally of impressions left by political events, then events around the age of 18 are nearly three times as meaningful as than those later in life.

At a very young age, political events leave virtually no impression. The weight at age 1,  $w_1$ , is essentially zero. This makes sense since one would be hard pressed to find a baby even remotely aware of political events. The weights then increase steadily, peaking around 14-24 and gradually decreasing thereafter.

The importance of adolescence and early adulthood for political socialization is supported by an enormous literature. For example, Erikson, MacKuen and Stimson (2002) also find political events have the largest impact at age 18-19 and decrease thereafter. Yet despite this decline—and the fact that a generation’s preferred party is all but locked-in by 40—we find political events continue to influence voter preferences. The age-weights never return to zero, their value at age one.

No children were interviewed, leaving one to perhaps wonder how the model can determine the impression left by political events that occurred during childhood. To understand how this is possible, consider a year in a respondent’s childhood, say, at 14 years old. We know the age the respondent was interviewed and therefore the year in which the respondent was 14. From this we can obtain the political events at that time, as captured by the presidential approval rating. For example, a 45-year old who was interviewed in 2012 would have been born in 1967 and 14 years old in 1981. Then-president Ronald Reagan had an average approval of 66% in 1981. This is enough to “back out” what the impression left

by the events of 1981 must have been when the respondent was 14 in order to explain the voter’s choice 31 years later, in 2012.

### Importance by Race and Region

The right-hand panel of Figure 4 displays the *importance* of the age curve in forming the generational effect ( $\beta_g$  in Equation (2)). The generational effect is found to be over twice as large for non-Hispanic whites as for minorities as a whole. The estimates for each group—non-Southern whites, Southern whites, and minorities—are 11.1, 9.5, and 3.8, respectively.

This ordering was expected but not imposed on the model. Recall African Americans are consistent Democratic voters, and Hispanic American immigrants may not have been in the United States during peak socialization and therefore not experienced the political events captured by the Gallup series. In addition, naturalized citizens may self-select into political participation based on the salience of political activity among their community (Pantoja, Ramirez and Segura, 2001).

We reason the political socialization process for white voters does not apply for minorities. However, a rigorous investigation would separate minority subgroups, which, unfortunately, we are unable to do from the data.

### Period Effects

The left side of Figure 5 shows a time series plot with 50% and 95% credible intervals. The period effects vary by race/region, quantifying the polarization of political events over the past 50 years. Minorities are consistently more likely to vote Democratic, and Southern whites, Republican.

The right side shows a transformation of the  $\lambda$ ’s from Equations (4) and (5). Recall that these parameters reflect the variation of period effects by age, allowing us to determine whether the period effects are more pronounced during the formative years shown in Figure 4. However, interactions like the  $\lambda$ ’s are difficult to interpret (Gelman and Hill, 2007), and we do not examine them directly. Instead, we display the period effect ratio: the numerator of the ratio is the period effect for an 18-year old voter (one of the most impressionable ages as determined by the peak of the age-weight curve). The denominator is the effect at age 70 (one of the least impressionable ages as determined by the nadir).

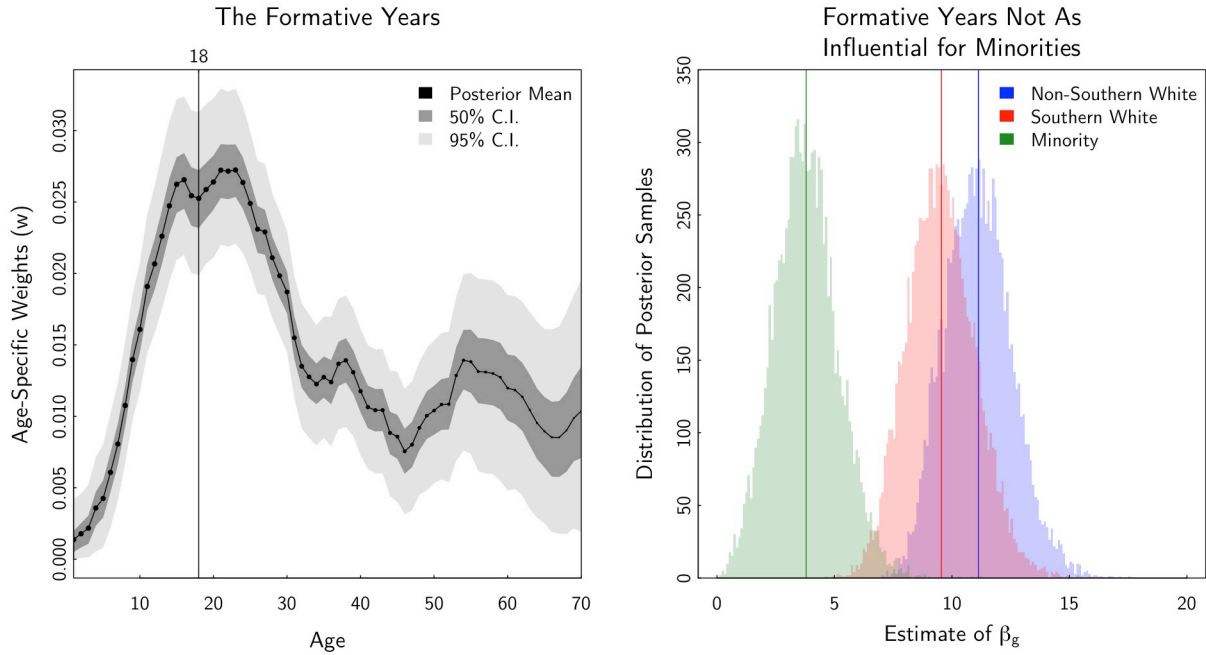


Figure 4: *Estimates of the generational effect. (L) We find the 14-24 age range is most important for the formation of long-term presidential voting preferences. Political events before 14 have little impact. After 24, the age weights decrease. (R) These weights, and the political socialization process implied by them, are substantially more important for non-Hispanic whites than for minorities as a whole.*

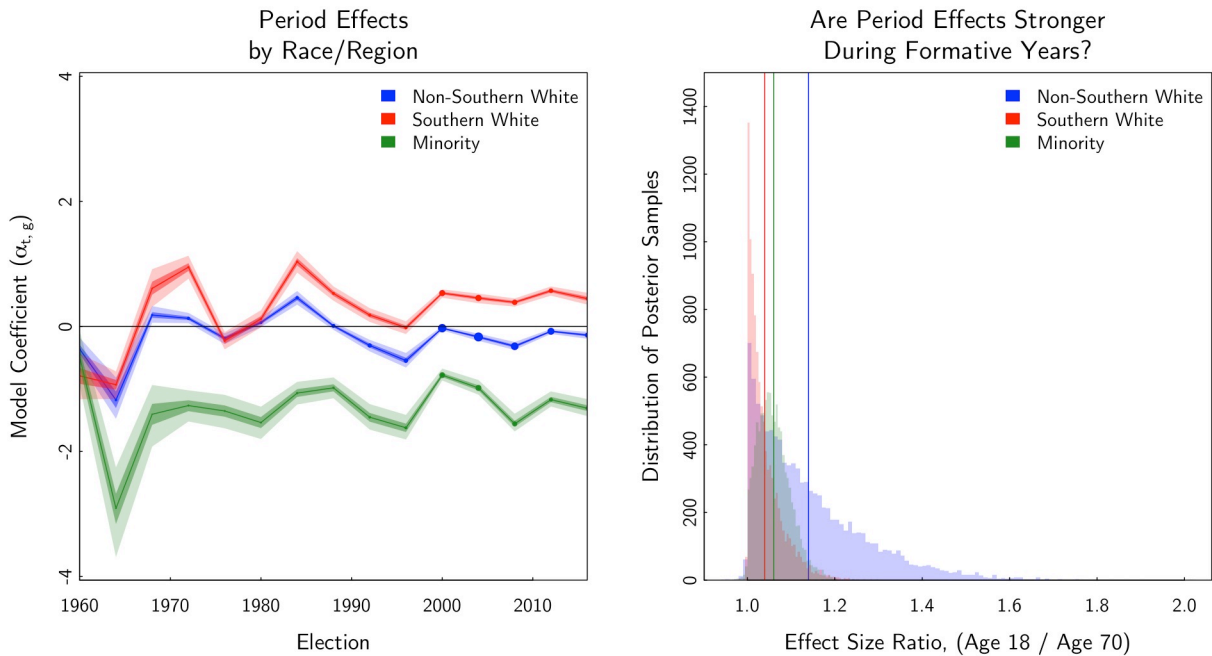


Figure 5: *Estimates of election-to-election period effects. (L) Minorities are consistently more likely to vote for Democratic presidents, and Southern whites have steadily trended pro-Republican over the past 50 years. (R) Period effects are similar between young and old minority voters and in the South. The evidence is inconclusive for non-Southern whites.*



## How Well Does the Model Explain Macro-Level Vote Choice?

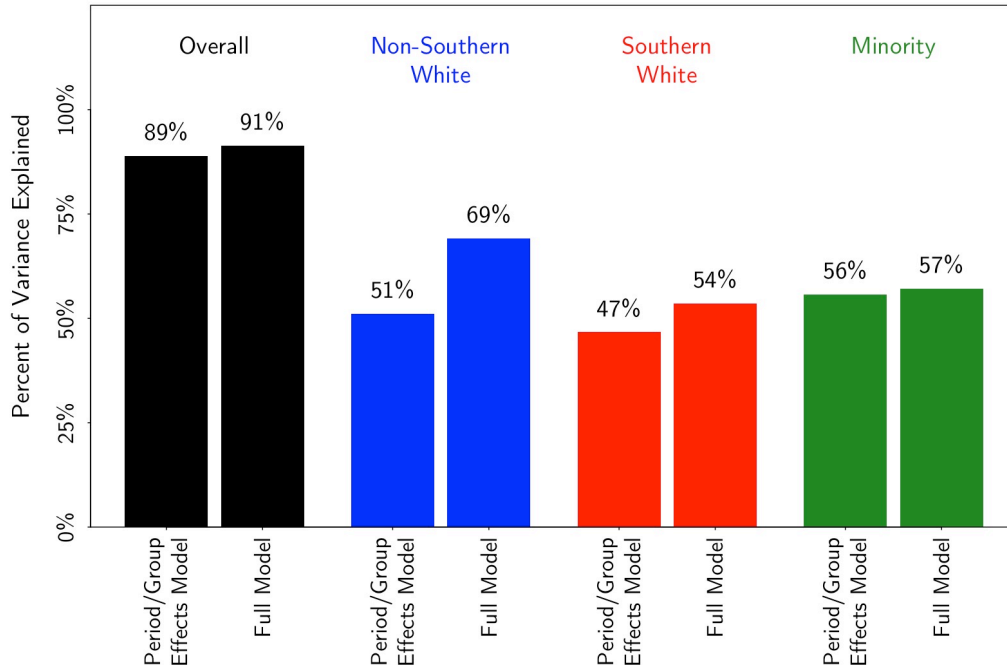


Figure 6: *The model accounts for 91% of the macro-level variance in voting trends over the past half century, more than the simpler model incorporating only period/group effects. The model fits considerably better within race/region groups, particularly among non-Southern whites.*

We find no clear evidence that period effects vary by age. For Southern whites and minorities, the mode of the ratio gathers at the boundary 1.0, implying no difference. For non-Southern whites, however, the effect is rather uncertain, centering around 1.14 and having substantial mass from 1.0 to 1.4. That is, the model indicates that period effects for non-Southern whites are between 0% and 40% greater for young voters than old voters.

### Explanatory Power

We now demonstrate the explanatory power of the model. We calculate the sample  $R^2$ , weighted by the size of the  $J$  cells. This statistic measures the percent of the variation explained by the model.

The *overall* results are shown in black. The model explains 91% of the variance in the data. Much of this variation, 89%, is also explained by a simple model incorporating only period and race/region effects. However, that merely reflects the enormous difference in voting preferences between minori-

ties and non-minorities, and between elections.

When the sample  $R^2$  is calculated *within* race/region groups, our model is found to explain considerably more variation—although the improvement is not equal across all groups. For non-Southern whites, the fit increases nearly twenty percentage points, from 51 to 69%. For Southern whites, it improves a modest seven, from 47 to 54%. For minorities, there is little difference.

We conclude that our model accounts for a substantial portion of the variation in presidential voting over the last half century. It is a demonstrable improvement over a model with only period and race/region, suggesting a single defining political event is less important in the formation of voter preferences than the prolonged impression left by a lifetime of events, at least for non-Hispanic white voters.

### Generations of Presidential Voting

We now demonstrate how the model aids the study of elections. We provide a narrative of the presidential approval

time series, recounting pieces of the historical record from the 1940s to present day. The purpose of this narrative is not to simply describe presidential history. Instead, we examine events through the lens of the model. We describe how major political events formed the preferences of five distinct generations: New Deal Democrats, Eisenhower Republicans, 1960s Liberals, Reagan Conservatives, and Millennials. Each are epitomized by birth years: 1930s or earlier (pro-Democrat), 1941 (Republican), 1952 (Democrat), 1968 (Republican), 1980s or later (Democrat).

The political socialization of minorities is an important topic. However, we focus exclusively on non-Hispanic whites, due to the noted strength of the model among whites and relative lack of strength among minorities.

## New Deal Democrats

For the first generation, born in the 1930s or earlier, we are short-handed in descriptive capabilities. First, this is a large and widely diverse group. Within the dataset, the earliest were born in 1855, so when considered as a whole their political life experiences are quite varied. Second, the analysis intentionally excluded the vast majority of this group, due to the lack of presidential approval data available for much of their lives. As a result, the model is not formally appropriate for this particular generation. With these caveats in mind, we can still take the general principles learned from the model and speculate as to how they might have affected this group.

In regards to understanding voting patterns in the latter half of the twentieth century, we can focus the narrative onto people born from roughly 1910-1940, because people born before 1910 comprise only a small minority of voters over this period. Fortunately, this makes the analysis relatively straightforward. There is a single towering figure that could have affected this group's presidential evaluations: Franklin Delano Roosevelt. FDR's achievements are monumental. He guided the country through the Great Depression and World War II, and in the New Deal he laid the foundation for the modern American welfare state. He served as president for twelve years, being elected four times, both more than any president in American history.

For voters born in the 1910s and 1920s, their peak formative years were spent during the Great Depression and World War II. They experienced Republican president Hoover's in-

ability to help the country through this difficult period, and as children and young adults they saw the country recover under the Democrat FDR. This was followed immediately by the greatest war in world history, where they saw FDR guide the country through and emerge as one of the world's superpowers. To this generation, then, the United States became the leaders of the free world under Roosevelt's watch. These events surely had an impact on their presidential voting preferences, and those preferences remain to the present day. Recall Figure 1, where these now elderly voters continue to have comparatively pro-Democratic preferences through the 2000-2016 elections.

For voters born in the 1930s, their exposure to FDR was limited compared to the earlier group. Their formative years occurred mostly after the country recovered from the Depression, and, for many, even after World War II. They were exposed to FDR's later years, though, and therefore experienced the tail end of his presidency, which remained enormously popular. Most of their peak years are spent with Truman at the helm. Truman had mixed and limited popularity over his two terms, ending his presidency at 36% approval. As such, this group's long-term voting preferences are mixed.

## Eisenhower Republicans

From this point forward, quantitative data can be used to aid the discussion. The Approval series is available for the full lifespan of the remaining generations, so we apply the model in full. The first graph is shown in Figure 7. This type of graph will be shown for each of the remaining four generations.

The top panel shows the Approval series, now highlighted to emphasize generational impact of each time period. The series is colored red to blue, with red reflecting pro-Republican approval ratings, blue as pro-Democrat, and shades of grey in between<sup>6</sup>. The width of the series reflects age-specific weights  $w$ , determined by the model. The graph thus emphasizes the peak formative years, where the events reflected in the Approval series were most powerful for this particular generation.

The bottom panel integrates over the weighted Approval series and is thus reflective of the *cumulative* generational effects from time of birth. This curve represents the sum presi-

<sup>6</sup>This coloring scheme perfectly reflects *Republican-directional* presidential approval, as was included in the model and described earlier.

## Birth Year = 1941

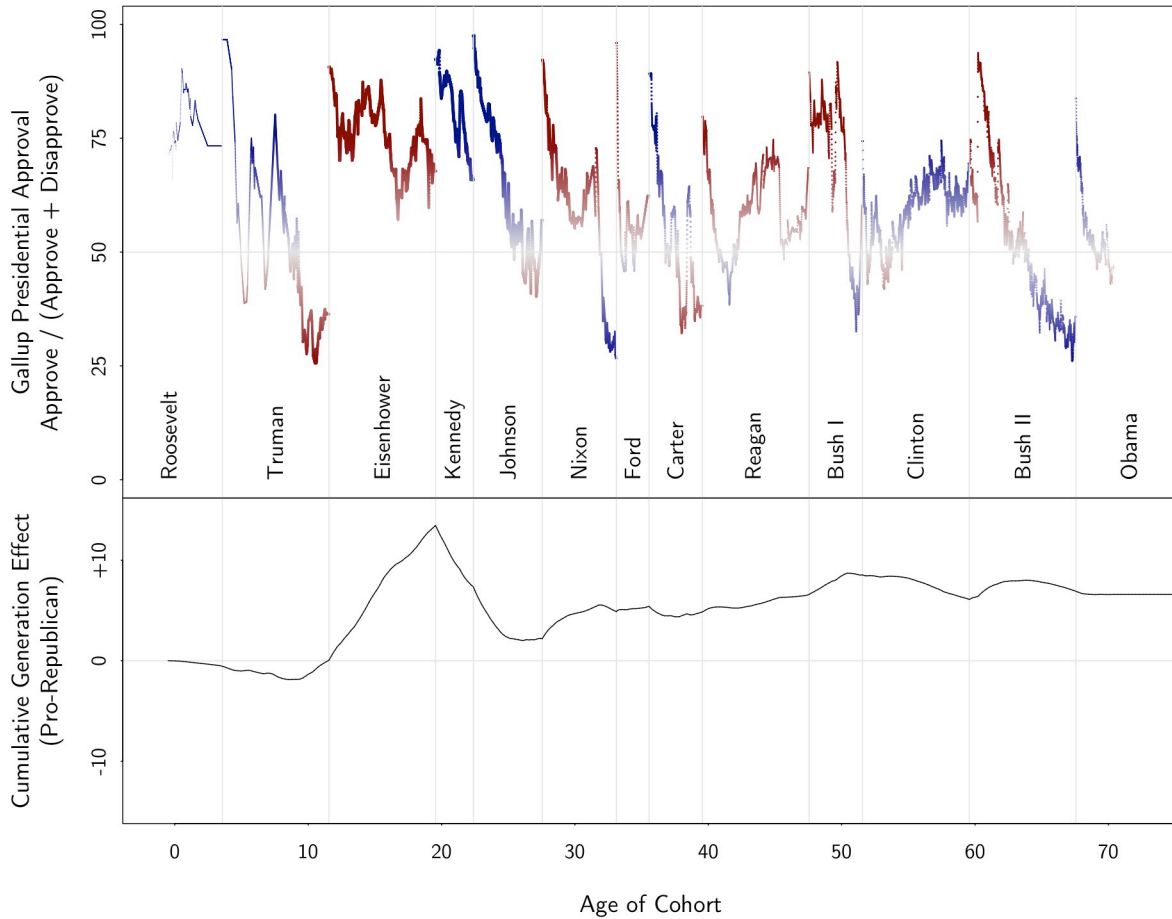


Figure 7: *Presidential approval, and the cumulative generational effects, for Eisenhower Republicans born in 1941. The graph emphasizes peak years of socialization, according to age weights found by the model. Blue indicates pro-Democratic years, red for pro-Republican, grey in between. This generation missed most of the FDR years and was socialized through 10 straight pro-Republican years (Truman and Eisenhower). Their partisan voting tendencies were drawn back towards the neutral grey line by the pro-Democratic 1960s, and they reached a rough equilibrium by the end of the Nixon presidency.*

dential voting tendencies of the cohort, at each particular age, as marked on the  $x$ -axis. The series starts on the middle grey line, because there have been no events to alter generational tendencies at age 0. Election-to-election *period* effects are intentionally excluded—this graph is not meant to be reflective of voting in particular elections, rather it encompasses the *general* partisan tendencies of the cohorts, independent of the particulars of each specific race.

With these data as the starting point, we can examine the roots of the 1941 cohort’s presidential preferences. These vot-

ers were too young to remember FDR’s many accomplishments, instead entering their years of peak socialization in anti-Democrat or pro-Republican times. In Figure 7 and those to follow, the most important times are the ones reflected with the darkest and widest bands. In this graph, the first such moment occurs when this generation is roughly 10 years old, in 1951. Truman, who had barely won reelection three years earlier, had sent American troops into Korea, and the war was turning into a disaster. After the unconditional victory of World War II, Americans were unaccustomed to

the apparent stalemate in Korea, and Truman's popularity plummeted.

When Eisenhower assumed office in 1953, his approval rating was enormously high, starting at 91%. Most presidential terms start out with high ratings (Erikson, MacKuen and Stimson, 2002), but unlike most, Eisenhower remained popular over the entirety of his presidency. The heroic World War II general had promised to end the Korean War during his campaign and quickly did so, ushering in an era of relative peace. Although he did not end the Cold War, as he desired, all international conflicts over his tenure were relatively minor. On the domestic front, the 1950s were a time of economic prosperity and progress.

The most prominent dip in Eisenhower's popularity came around 1957-1958. The country was in recession, the Soviet Union had launched Sputnik and appeared to be winning the space race, and Eisenhower was forced to send federal troops to Little Rock to enforce a federal desegregation policy, indicative of a wider tension over civil rights across the country. Yet his approval ratings dipped only a short while, reaching a bottom point of 57% in March, 1958, and rebounding quickly back to the 70-80% range. Eisenhower was able to navigate these problems, and in sum had an enormously popular presidency, leaving office with a 69% approval rating.

The 1941 generation, then, had experienced 10 straight years of pro-Republican presidential evaluations, much within the peak years of socialization. The impact of this period on their long-term presidential voting preferences is apparent in the bottom panel of Figure 7. The curve ascends steeply, peaking at the end of the Eisenhower administration. Continuing on this curve, the Kennedy and Johnson years (described next) moderate their voting tendencies to a degree. The cumulative generation effect comes to a rough equilibrium by the end of the Nixon presidency, with remaining events having relatively little impact.

The 1941 cohort can thus best be described as *Eisenhower Republicans*, though we should not take the term too literally. This generation and others are not the byproduct of a single year or of a single president. Rather their preferences reflect a weighted summation of their full life experience.

## 1960s Liberals

We turn to the 1960s, a decade filled with highly dramatic political events with long-lasting impact. According to the model, the generation most influenced by these events were those we generically refer to as *1960s Liberals*, and they in turn are epitomized by voters born in 1952.

As can be seen in Figure 8, the Eisenhower years occurred too early in their lives to have long-lasting influence. Instead, they came of age during the Kennedy, Johnson, and Nixon years. Kennedy, like Eisenhower, began his presidency with immense popularity, reflected in his 92% approval rating. He came into office at a time when the political mood of the country was at a liberal high-point (Stimson, 1991), and his bold "New Frontier" agenda reflected that mood. His domestic policy goals were wide-ranging and reflected optimism in America's abilities in the post-World War II era—an expanded government role in combatting poverty, increased federal aid to improve education, medical care for the elderly, progressing the cause of civil rights, and more. Famously, Kennedy emphasized the importance of science and technology and committed to sending a man to the moon by the end of the decade. At the same time, his short presidency was characterized by an unusually tumultuous series of foreign policy events. He was at the helm during the failed Bay of Pigs invasion, and the Cuban Missile Crisis was perhaps the closest the world came to seeing the Cold War turn hot.

Though he succeeded in passing a number of his domestic policy initiatives and averting war, Kennedy's short presidency was by no means an irrefutable success. Many questioned his strength as a leader in the face of the Soviet Union, and his liberal agenda was at times stalled in Congress. His approval ratings are thus characterized by a steady decline over his three year presidency, interrupted by a short positive burst following the Cuban Missile Crisis. Indeed, when an assassin's bullet ended his presidency near the end of 1963, his approval ratings were at their lowest point at 66%. Ironically, in some sense the tragic end to the Kennedy presidency may have helped cement his legacy. Historical counterfactuals are always a dubious proposition—but perhaps Kennedy would have been a relatively unpopular president, shackled with a declining approval rating, struggling to pass the remainder of his policies. Instead of this unflattering portrait, Kennedy is widely remembered for his charisma, his beautiful and so-

## Birth Year = 1952

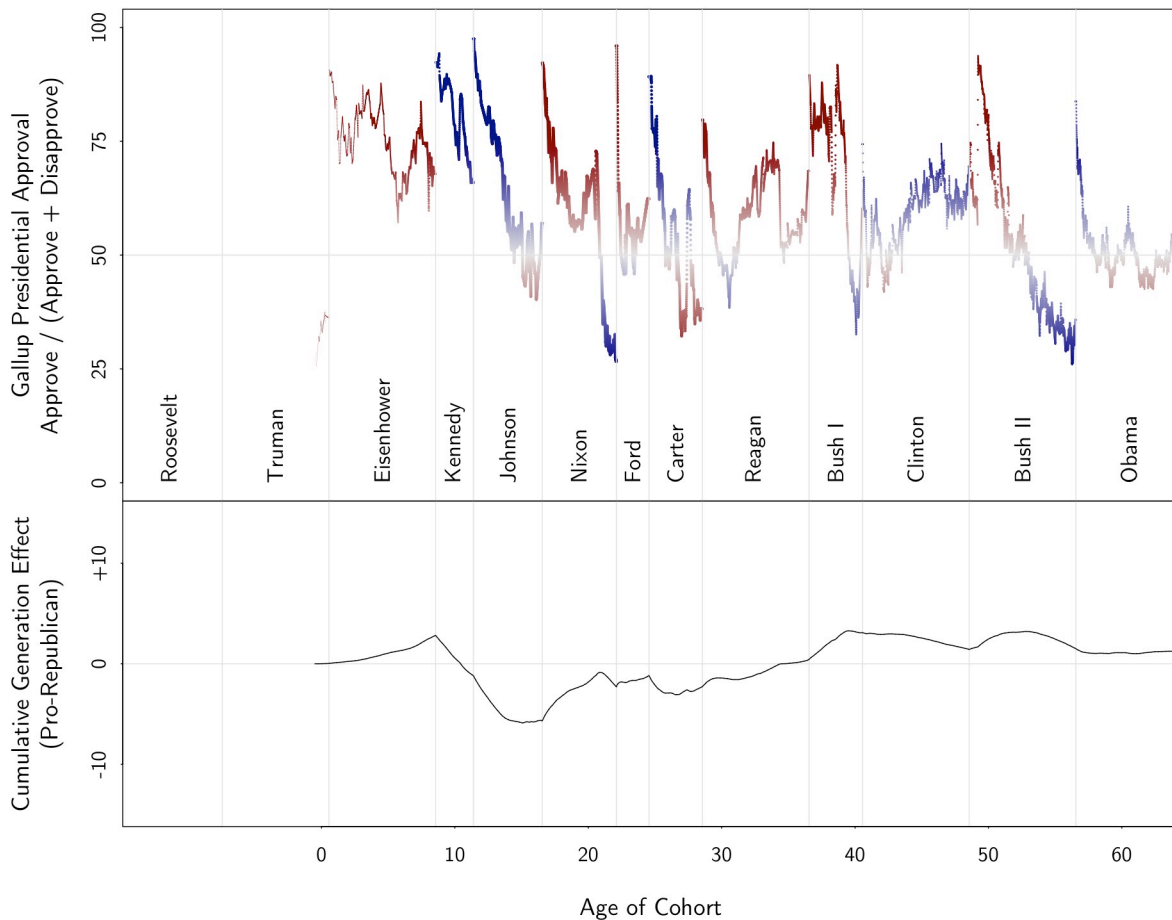


Figure 8: *The generation we refer to as 1960s Liberals are best epitomized by those born in 1952, whose presidential political events are emphasized here. Too young to be highly influenced by the Eisenhower years, they experienced an intense period of pro-Democratic sentiment during the 1960s. After 1968, however, roughly 25 years of near-consistent pro-Republican events neutralized their presidential voting preferences.*

phisticated family, and his optimistic vision of the future. For this generation, born in 1952 and roughly 11 years old at the time of his assassination, surely these are the stronger lasting memories.

*Quantitatively*, Kennedy’s assassination drove a unique occurrence in the Approval time series—two enormous popularity spikes in less than a three-year time span. When Johnson took the helm at the end of 1963, a second Democratic president jumped above the 90% range, this time to 97% approval, the highest in the series. Johnson took this opportunity, along with his singular abilities as the quintessential

Washington insider, to achieve Kennedy’s goals in the name of the fallen president. Building from Kennedy’s “New Frontier,” he wanted to not only pass a set of discrete policy proposals, but to build America into a Great Society, alongside a wide set of new programs.

He passed the Civil Rights Act of 1964 and the Voting Rights Act of 1965—the foundational pieces of federal legislation of the civil rights era—outlawing discriminatory policies in schools, public places, and the voting booth. He established landmark programs to aid low income families and the elderly—Medicare and Medicaid, the federal food stamp pro-

gram, the Department of Housing and Urban Development (HUD), and others. He focused on education through programs such as Project Head Start, expanded student loans, increased federal funding to universities, and the nongovernmental Corporation for Public Broadcasting. And he passed legislation to protect the environment, regulating pollution through the Water Quality Act and Air Quality Act, and establishing the national wilderness, rivers, and trails systems<sup>7</sup>. In sum, his legislative accomplishments were gargantuan, and the legacy of those programs is felt to this day.

Johnson enjoyed immense popularity for an extended period of time, as reflected in his high approval ratings and landslide election victory over Barry Goldwater in 1964. Johnson's presidency and legacy, however, were marred by the Vietnam War and increasing racial and social tension in the late 1960s. By 1967, his approval ratings had fallen, and by 1968 the once powerful president decided against running for reelection.

It is illuminating to reflect on how these events shaped the presidential voting tendencies of the *1960s Liberals* generation, as described here. The majority of these events actually took place before their years of peak socialization. The strong pro-Democratic years were 1961-1966, when these voters were roughly 9-14 years old. Although this is just before the peak years, recall from Figure 8 that these events still had a substantial cumulative impact on their presidential voting tendencies. As we stated earlier, the ages of 14-24 are the strongest, but they are not the only years that matter. The relatively large weights from age 9-14, in combination with the particularly high Democratic approval ratings of that era, were enough to sway these voters for many years to come.

The years after Johnson's decline, from 1967 onward, remain instructive. This was a particularly interesting time, especially for young people, due to the anti-Vietnam protest movement and the rise of the counter-culture. Johnson's approval rating "only" fell to about 50% at that time, implying, in the model, barely any positive or negative change in long-term presidential voting preferences. Thinking outside the model, though, it seems unquestionable that young people had negative feelings towards Johnson at the time. How can we account for this?

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<sup>7</sup>A list of these policies were pulled from the website [www.presidentialtimeline.org](http://www.presidentialtimeline.org).

There are two responses. First, we do not claim that the model perfectly captures all aspects of presidential history, only that the Approval series and the associated age weights are a good approximation to the historical events that shaped long-term preferences. In this regard, despite this apparent weakness in the model, the final results still seem on target, with this generation ending up relatively pro-Democratic.

Second, the Vietnam War and this generation's response to it is rather complicated. In 1967 and 1968, Vietnam was Johnson's war. But moving into the 1970s it became Nixon's war to many, and the protests shifted from anti-Johnson to anti-Nixon. It is plausible that this shift was pronounced amongst the 1952 generation. They were not yet 18 years old under Johnson and were thus at highest risk of being drafted by Nixon. And when Nixon won the 1968 election by speaking to the "silent majority," he did so by explicitly denouncing the political concerns of these particular voters, young people who protested in the 1960s (along with minorities).

The implications of this can be seen in part in Nixon's 1972 reelection campaign. The Twenty-Sixth Amendment had just passed, setting the national voting age to 18. According to the data, white voters under the age of 25 (first-time voters in 1972) supported Nixon at 53%, in comparison to 70% for white voters 25 or older. This 17 point gap is by far the largest in the dataset, never exceeding 9 points in any other election.

Despite this anti-Nixon sentiment, the cumulative curve of Figure 8 suggests that 1968 was the high point of this generation's pro-Democratic feelings. Nixon was a popular president for a time, and the start of his administration ushered in roughly 25 years of almost entirely pro-Republican presidential performance. Four of the next five presidents were Republicans, and with a few short-term exceptions, all of those years were in the Republicans' favor. As a result, the cumulative curve features a slow and steady incline over that period. By the time Bill Clinton came into office in 1992, this cohort, at 40 years of age, had reached a steady state slightly above the neutral grey line. Since then, their general leanings have been essentially neutral. This is in contrast to both the *Eisenhower Republicans*, described earlier, and the generation we describe as *Reagan Conservatives*, to which we turn next.

## Birth Year = 1968

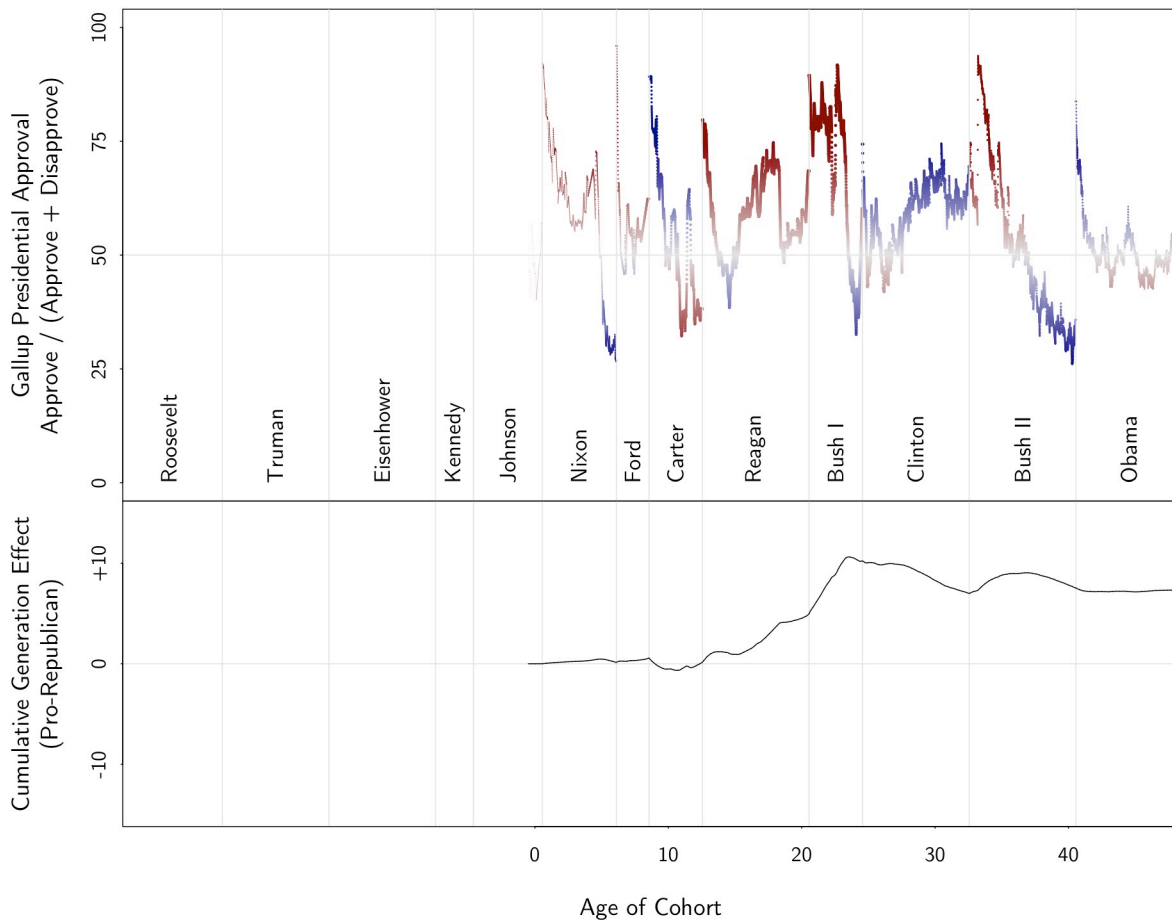


Figure 9: *The Approval series as seen by the generation we call Reagan Conservatives, best epitomized by those born in 1968. This generation missed the Kennedy and Johnson years entirely, and their peak socialization fell under the popular Republican presidents Reagan and Bush I. By the time the Democratic president Clinton reached his peak popularity in the late 1990s, they were already roughly 30 years old.*

### Reagan Conservatives

It is, in some sense, a coincidence that the next generation of voters is best described by those born in 1968, the year of such turmoil and change for the *1960s Liberals*. On the other hand, this particular birth year ensures no influence of the Kennedy and Johnson years on this Republican cohort's long term voting preferences, under the model. Their Approval series is shown in Figure 9.

For this generation, both the polarized Nixon presidency—characterized by years of high popularity followed by the depths of Watergate—and the middling Ford presidency had

little impact. Their political socialization seems to have started with president Carter. He began with high popularity, but his ratings quickly dwindled as adverse political events overtook his presidency. By the time he left office, an energy crisis, stagflation, and the Iran hostage crisis, among other events, left him in the 30-40% range.

This led into Reagan's campaign and his optimistic vision of America as a shining city on a hill. Though his early years were defined by a lack of economic recovery and the Republicans' defeats in the 1982 midterm elections, Reagan's popularity dipped below 50% for only a short period. The recovery

hit full swing shortly thereafter, and Reagan, whose campaign famously declared that it was “Morning in America” again, was reelected in a landslide. This powerful imagery and the apparently overwhelming support of the American people no doubt had a powerful impact on the young cohort, who, 16 years old at the time, were squarely in the middle of their peak years of socialization. Despite the Iran-Contra scandal and ballooning deficits near the end of his second term, Reagan’s “Revolution” ended with his presidency at a 68% approval rating.

President Bush I’s presidency seems to have extended pro-Republican sentiment in ways that are perhaps underestimated in the collective public memory. From a foreign policy perspective, Bush was enormously successful. The fall of the Berlin Wall and the end of the Cold War both came under his watch, not Reagan’s, and Operation Desert Storm was a testament to the power of American leadership in the post-Cold War era. As a result of these successes, Bush’s ratings rarely fell below 80% for over 2 years, only dipping below 50% right near the end of his term. But economic problems at home doomed his presidency. The Clinton campaign declared, “It’s the Economy, Stupid,” and with this as their focus, they won the presidency in 1992, ending over a decade of nearly continuous pro-Republican sentiment. The pro-Democratic Clinton years neutralized this generation’s long term preferences to a certain degree, but they were roughly 30 years old, past the age of peak socialization, by the time Clinton reached his peak popularity in the late 1990s.

## Millennials

For the last group, born in 1985, there is only 31 years of political experience by the 2016 elections, the latest in the dataset. But in Figure 10, the presidential influences that have shaped their voting preferences thus far are seen clearly. If the results of the model hold, it is likely that these years will remain influential over the remainder of their lives.

For this generation, the uncertainty of the Cold War is long gone, and the foreign policy successes of the Reagan and Bush administrations are memories of other generations’ lives, not of their own. Indeed, the first president to substantially influence their voting patterns is the Democratic president Clinton. Clinton’s biggest political defeat, in the face of the Republicans’ Contract with America, took place in 1994 when

these voters were only 9 years old. They entered their peak socialization years in 1999—the federal deficit had been eradicated, the country was experiencing a period of immense economic growth and prosperity, and America remained the leader of the free world and the globe’s lone superpower. Despite his impeachment and the Monica Lewinsky scandal, Clinton had garnered positive approval ratings for roughly four straight years, and he kept his popularity through the remainder of his term, ending his presidency with a 67% rating.

In 2001, the Republican Bush II took office, and thus began one of the most turbulent presidencies in American history. The terrorist attacks of 9/11 drove his popularity to 94%. But after these heights, he experienced a steady and calamitous decline. On the foreign policy front, his administration undertook costly and unpopular wars in two countries. Though some supported the president’s vision of America as a crusader for democracy around the world, others considered his policies, particularly the war in Iraq, as deeply problematic ventures which cost American lives and treasure, weakened America’s standing in the world, and produced little, if any, gains. In terms of domestic policy, Bush II’s most notable accomplishment—his 2001 tax cuts—ultimately resulted in massive federal deficits. On top of this, the end of his presidency was headlined by the largest financial crisis the country had faced since the Great Depression. Despite passing effective eleventh hour legislation in the form of the Troubled Asset Relief Program (TARP) to avert the crisis, many still lay this calamity at his feet.

Quantitatively, these problems are clearly reflected in his approval ratings. Bush II first fell below 50% approval in May of 2004. He barely won reelection that year, and in doing so received only a slight bump to his ratings. Falling below 50% again in March 2005, only two months after his second inauguration, his ratings stayed in negative territory for the remainder of his presidency—almost an entire four years, by far the longest such stretch in the series. His approval hit its low point of 26% in October of 2008, in the midst of the financial crisis, and was slowed, it seems, only by his departure from office three months later.

This brings us to the Democratic president Barack Obama and to the end of the series. Obama, like the other presidents, began with a high 76% rating—less than the 90% levels from earlier in the series, but in line with the more recent presidents



## Birth Year = 1985

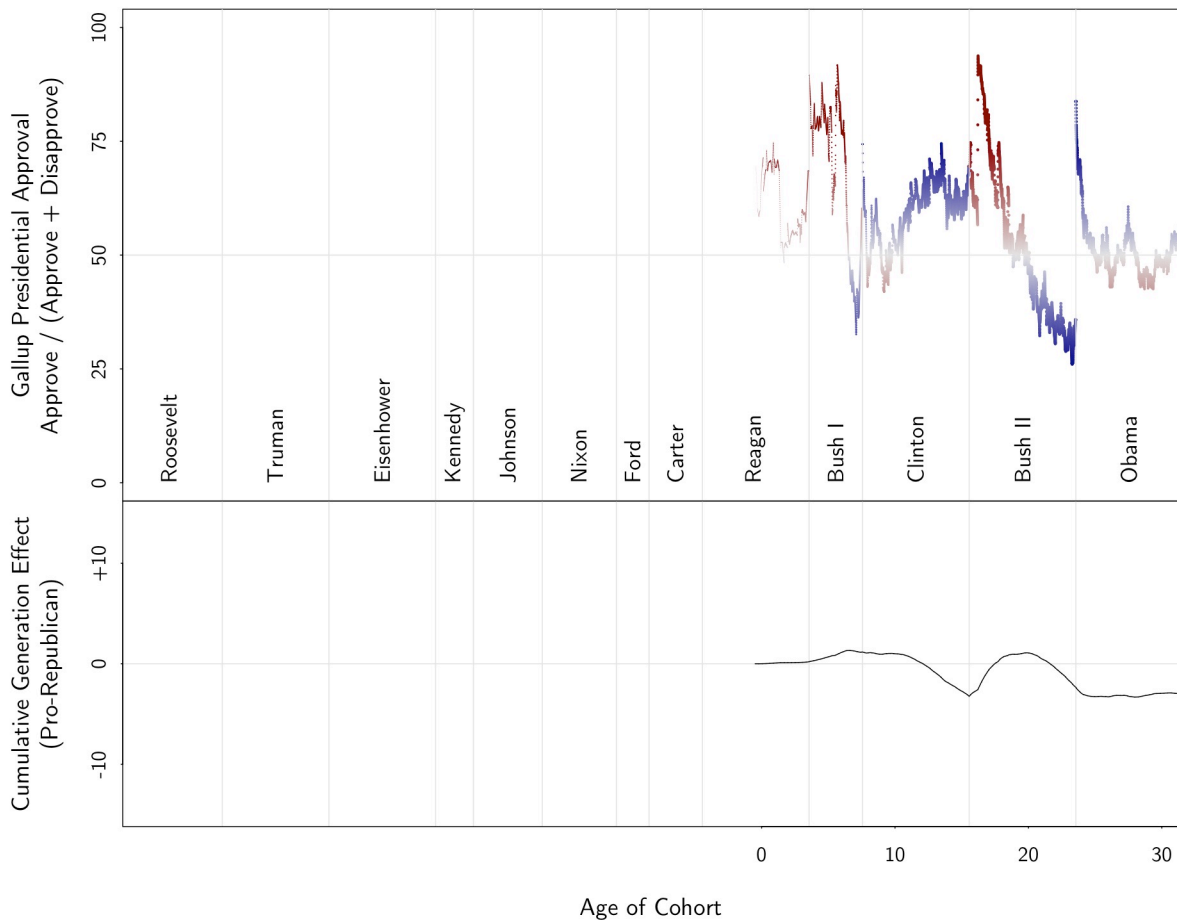


Figure 10: *The Approval series as seen by the last generation, the Millennials. Their experience had only lasted 31 years by the 2016 election, but the model indicates that these years should remain highly influential over the rest of their lives. Their formative years have been primarily characterized by the popular Democratic president Clinton and the unpopular Republican Bush II, resulting in their relatively strong pro-Democratic sentiment.*

Clinton and Bush II. His popularity quickly declined, dipping to 50% in February of 2010, and he remained slightly above or below 50% for the remainder of his presidency.

For the last generation of voters, their presidential voting preferences thus far seem to mostly reflect the popular Democrat Clinton and the deeply unpopular Republican Bush II, driving them to be the most Democratic group we've seen thus far. But consider the youngest voters, born in 1998 and 18 years old during the 2016 election. They were barely alive during Clinton's presidency and were only ten years at Obama's election, essentially missing both of these conse-

quential time periods, and thus they were socialized mainly during the relatively even Obama years (and now during the fairly unpopular Trump years). Referring back to Figure 1, we can see that they trended Republican compared to their slightly older counterparts, but their ultimate life-long voting patterns remain to be seen.

### The Changing White Electorate

Now that we have described each of the five generations separately, we examine their impact on the white vote overall. Figure 11 plots each of the cumulative generation curves from

## The Changing White Electorate As A Function of Presidential Approval

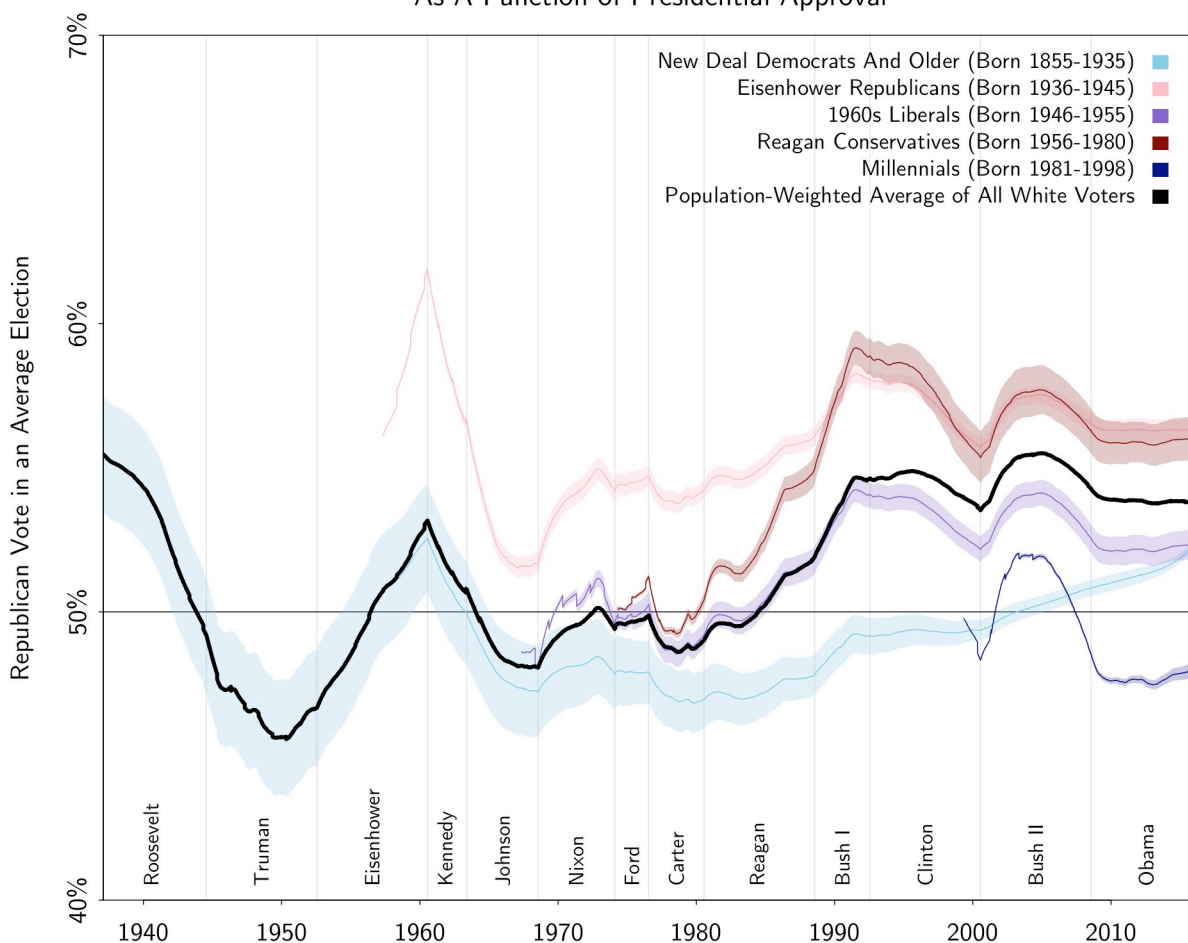


Figure 11: *The cumulative preferences of each generation is shown, along with the weighted summation of the full white electorate. The generations are loosely defined so that the entire electorate can be plotted at once. The width of each curve indicates the proportion of the white electorate that each generation reflects at any given time. The model—in this graph reflecting only the approval time series and the age weights—explains much of the voting tendencies of the white electorate over time.*

the earlier figures on a single graph, with a few modifications.

Earlier, it was helpful to follow the birth year most emblematic of each group. Now, we broaden each generation to the scale of decades, allowing us to monitor the entire electorate at once. The basic narratives remain the same—and indeed, overly specific definitions of generations are not supported by the evidence. The changing widths of each curve reflect the proportion of the electorate that each generation represents at any given time.

At the start of the series, the oldest generation comprises the entire white electorate. As time marches on, they become

a smaller and smaller portion, and by 2016 all five generations are represented.

Instead of plotting each generation's *full* curve from age zero onward, we only plot the curves from their first entry into the *voting* electorate. That is, from their first election onward. We have also included the *New Deal Democrats* and older voters in this graph, despite the fact that the statistical model did not explicitly include them<sup>8</sup>.

<sup>8</sup>To construct this group's curve, we apply the statistical model for the years covered by the time series, and apply an additional correction to account for the period of socialization that is not covered by the model.

From this graph, we observe the influence of each generation. The tendencies of the full white electorate are shown in black. Before the 1960s, the white electorate (around 90% or more of the voting population at that time) moved back and forth between Republican and Democratic, in response to the popularity of Roosevelt, Truman, and Eisenhower. The Kennedy/Johnson years moved the white electorate back down towards Democrats over the course of the 1960s. Thus began the long period of Republican ascendancy—slightly trending upward through the Nixon and Ford years, slowed in part by the entry of the *1960s Liberals*. But the onset of the Reagan administration moved all generations upward—the *New Deal Democrats* were too old at that point to have a large change, but the remaining generations, especially the *Reagan Conservatives*, moved dramatically, with the black curve crossing the 50% boundary line in late 1984. Those same *Reagan Conservatives*—now defined as a group going until the birth year of 1980—neutralized a bit under the Clinton presidency, but that change was not meaningful enough to largely move the electorate as a whole. Bush II’s 9/11 spike moved all groups slightly, and his slow and steady decline also served to move most groups once again. The *New Deal Democrats* are the one group not affected by the 9/11 spike. By this point, the main change for this generation is a result of the older people in the group, more likely to be Democratic, dying over time.

This graph does not in fact represent the complete opinion trends of each of these generations. After all, the model does not fit 100% of the variance in the data. But it does indicate that this relatively simple model can explain quite a bit about the voting character of the white electorate. Indeed, the graph is entirely driven by the presidential political events represented in the Approval series and the age weights. The white electorate moves in meaningful ways, and the familiar “parallel lines” of public opinion, in which different groups respond to political events in similar ways, are apparent (Page and Shapiro, 1992). In the model, changes which are in some senses “small” seem to have a big impact on policy and on the overall character of the electorate—the black curve, representing the full white electorate, spans only 10 percentage points altogether. In the grand scheme of presidential politics, however, a consistent 10 point swing is important.

## Discussion

We built a generational model of American presidential voting in which voters form their preferences from the cumulative impression left by the political events they have lived through. The size of the impression varies by voter, depending on their age at the time the event took place. We demonstrated the fitted model is both predictive—explaining a substantial portion of the voting trends observed over the last half century—and interpretable—dividing presidential voters into five main generations.

We believe our approach is an effective solution to the age-period-cohort problem, which continues to challenge researchers despite its discovery nearly half a century ago. For example, consider a variant of the problem, which puzzled pollsters after the 2012 presidential election: In 2008, 55% of white voters aged 18-29 voted for then-Democratic candidate Obama. In 2012, that advantage flipped to 54% in favor of Republican candidate Romney. Why did this happen? Was this a temporary shift in the preferences of young voters? Or, would young white voters support the Republican candidate in 2016?

Our model provides a clear answer. Heading into 2008, young, impressionable voters had only experienced the popular Clinton and unpopular Bush II years. The winds were in Obama’s favor. By 2012, however, the years of poor Bush II performance that had swayed the young voters of 2008 were replaced by the more recent, mediocre ratings of Obama himself. This shift of young, white voters to the Republican party was not temporary. In fact, our model predicted this in 2012, and it was confirmed by the 2016 election.

We could paint these events in a positive light for the Democrats. The year 2008 was special, similar to 1972, in that a strongly pro-Democratic cohort entered the electorate following a deeply unpopular Republican president. The impression left by the Clinton and Bush II years may be strong enough to keep an entire generation of voters pro-Democratic throughout their entire lifetime. Moreover, the Gallup presidential approval rating time series suggests 2020 will be similarly special year for the Democrats.

In general, the fitted model suggests that, when we think about generations of presidential voting, it is important not to think about a single defining political event. Rather, generations are formed through prolonged periods of presidential

excellence. FDR and the New Deal, Eisenhower, Kennedy and Johnson's Great Society, the Reagan/Bush conservative revolution, and the Clinton years are all characterized by long periods of high approval ratings, each of which steadily pushed the voting preferences of a generation in one direction or another. The only major exception appears to be the last—the Clinton years were aided not by an additional successful Democrat, but by the deeply unpopular Republican Bush II.

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