

# Association of Voter Income and Education with Congressional Approval

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## Introduction

As of 2014, statistical analysis has indicated that economic elites have a significant independent influence on U.S. government policy, while average citizens have little or no impact (Gilens and Page 2014; cf. Bashir 2015). In light of these findings, we ask, how do the effects of voter income, political affiliation, and education level relate to public opinion on Congress? We situate our analysis amid existing scholarship modeling the factors associated with congressional approval. In previous research, scholars have associated public opinion toward Congress with the perceived efficacy of the institution, based on its policy action and discord (Durr et al. 1997). More recently, scholars have narrowed this model to focus on how specific individual-level variables, like the perceived alignment between individual voters' political ideology and the ideologies underlying congressional policy decisions, relate with congressional approval (Jones and McDermott 2011). In contrast to this policy-driven model, a second, citizen-level model, relates congressional approval with the interacting effects of voter demography (Algara 2021). In this paper, we aim to better assess the relationship between individual-level demographic variables and congressional approval. Using data from the American National Election Survey in 2020 on congressional approval ratings as well as sample population demographic information, we use multiple linear regression to compare and assess the influence of voter income versus education level on public opinion of Congress. After conducting our statistical analysis, we find evidence that voters' highest achieved level of education reflects a statistically significant negative relationship with lower congressional approval. In contrast, we do not have statistically significant evidence that voter income is associated with a similar outcome in congressional approval.

## Theory

Through an examination of existing literature on the factors associated with congressional approval ratings, we identify several general schools of thought. In previous research, scholars have favored a primarily policy-driven model of congressional approval where the actions of Congress principally dictate approval ratings. In their 1997 study, Durr, Gilmour, and Wolbrecht suggest that citizens' attitudes toward Congress are associated with congressional actions, such as the passage of major legislation, veto overrides, and discord (Durr et al. 1997). The results of this 1997 study suggest that public opinion of Congress relates closely with the perceptions of the institution's efficacy at carrying out its legislative and representative duties. Taking a narrower focus, Jones and McDermott have found evidence that congressional approval reflects a close association with individual perceptions of how well the majority party in Congress aligns with their political ideologies (Jones and McDermott 2011). Differing from these primarily policy-driven model, Algara's 2021 study using ANES data posits that voters assess the efficacy of Congress primarily through both an ideological and partisan lens (Algara 2021). Algara's analysis suggests that public opinion of Congress is more closely associated not only with voters' assessment of how well congressional policies align with their political ideologies but also voter identity, namely political affiliation. This second, interactive model, acknowledges that the explanatory variables associated with congressional approval are not mutually exclusive but can

operate hand-in-hand. In this study, we apply a similar citizen-level model that identifies how variables, such as voter income and education level are associated with congressional approval. More specifically, we compare the influences of voter income versus education on congressional approval. Both voter education and income remain under-researched topics in the scholarship on factors influencing congressional approval.

## Data

To conduct this study, we filtered the American National Election Survey (ANES) 2020 for data on Congressional approval ratings and on the sample population's demographic makeup. This dataset relies on a sample size ranging from 8,280 to 7,449 participants from a nationally representative sample of eligible US voters. We primarily interacted with data surrounding four main survey questions. The first question asked participants to rate Congress on a scale from 0 to 100 (a feeling thermometer or continuous scale). Another key question of interest in this study asked participants to identify their family income over the past twelve months as a numeric response ranging from "Under \$5,000" to "\$250,000 and above." This study also considered participants' self-identified political affiliation based on their registration as Democrat, Republican, Independent, or Other. To examine participant education levels, we included data on participants' highest degree received ranging from "Less than 1st grade" up to "Doctorate degree (for example: PhD, EdD)." In addition, we looked to survey data on sex and self-identified race and ethnicity. After assessing the spread of our data using scatterplots, we determined that no transformations were necessary. To more easily assess the impact of voter education levels, we reduced the sixteen tier survey response into a binary of "Bachelor's" degree and above versus "No Bachelor's." While this adjustment reduces the specificity of our data, we consider it a justified cost, as it allows us to more clearly model our data using multiple regression. Additionally, we chose to limit our statistical analysis to political affiliation data on Democrat and Republican voters, as we find these results more informative than those of other less dominant political affiliations.

## Methods

Multiple linear regression was used to test if voter income, party affiliation, and education level significantly predicted congressional approval. This method is appropriate as we are exploring how strong the relationship is between two or more independent variables (income, party affiliation, and education) and one dependent variable (congressional approval). In conducting our analysis, we also controlled for self-identified race/ethnicity and religiosity. All assumptions are met; there is a linear relationship between the dependent and independent variables, the independent variables are not highly correlated with each other, there is multivariate normality, and the variance of the residuals is constant (see Appendix).

## Results

Figure 1.0 shows our linear model of congressional approval over income filtered by party affiliation, while Figure 2.0 displays our second linear model with congressional approval over education level also filtered by party affiliation. From these two models we can compare the effects of these different citizen-level demographics on congressional approval. More specifically, Table 1.0 offers the individual coefficients used in our models as well as their t-statistics and p-values. From these results, we can identify the statistical significance of the associations between our explanatory variables and congressional approval. Most coefficients of the control variables (covering party affiliation, race, gender, and religiosity) are negative and statistically significant in both models, showing a lower degree of congressional approval especially for Hispanics and Republicans (see Table 1.0). From our first model, we identify that a one unit increase in income level (approximately \$5,000) is associated with a magnitude 0.09 decrease in predicted congressional approval. However, the model 1 data provide no statistical evidence that congressional approval depends on total family income as seen in Table 1.0 (p-value < 0.1). From our second model, we identify that a one unit increase

in education level (approximately one degree level higher) is associated with a magnitude 0.41 decrease in predicted congressional approval. The model 2 data are statistically significant ( $p\text{-value} < 0.05$ ), suggestive of an observable association between our explanatory variable (education) and congressional approval.

Figure 1.0: Model of Congressional Approval vs. Income

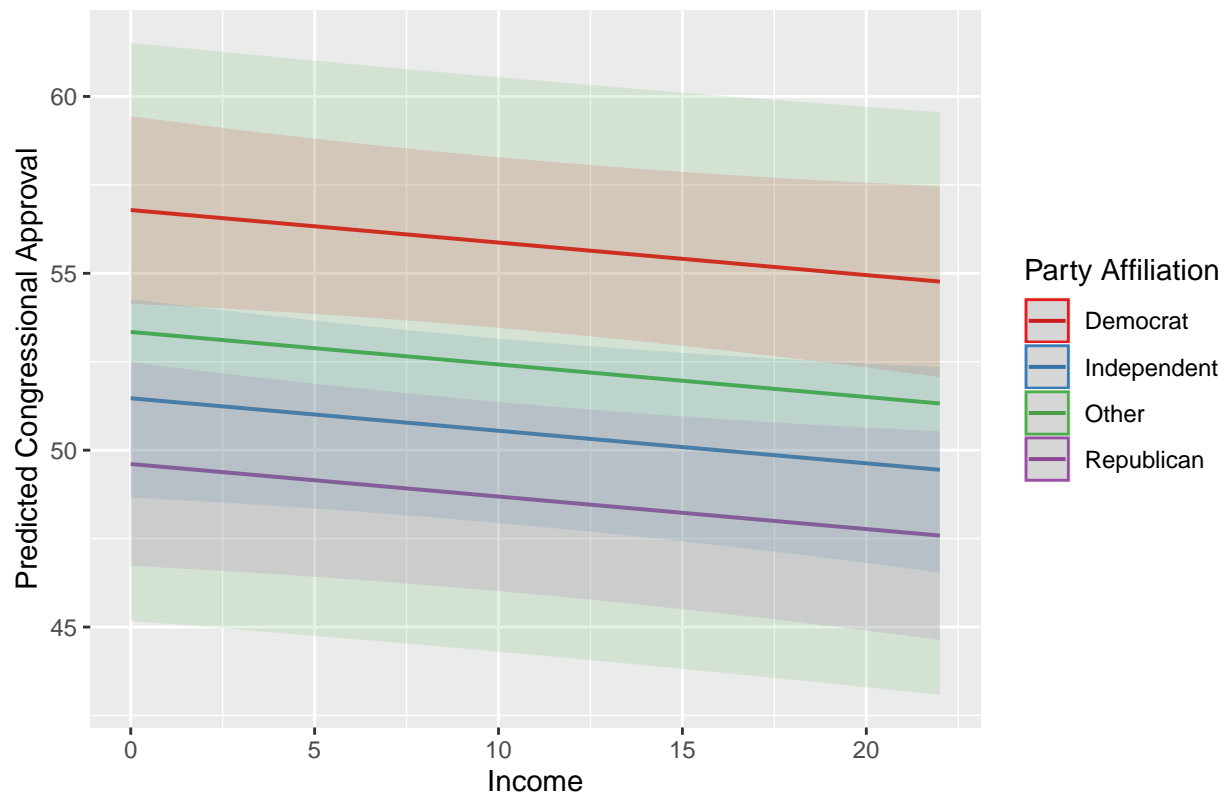


Figure 2.0: Model of Congressional Approval vs. Education Level

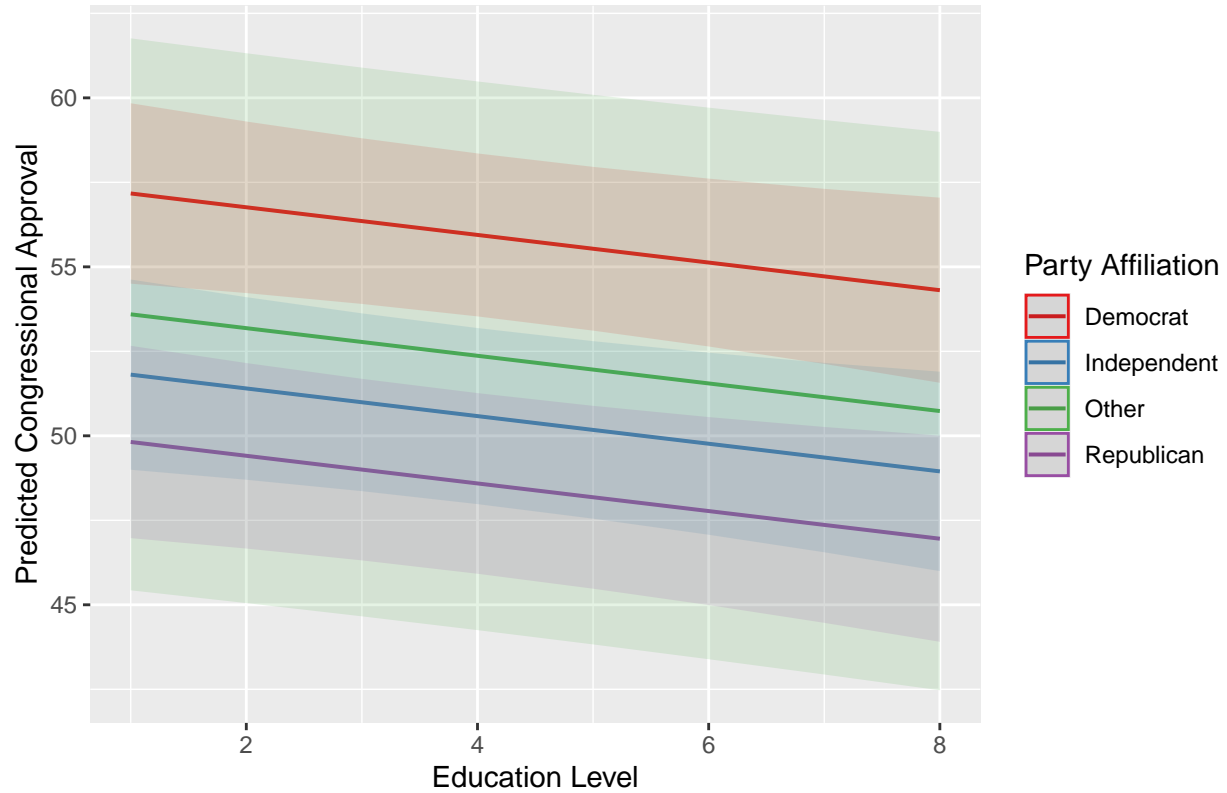


Table 1: Table 1.0: Summary Statistics for Models 1 and 2

	<i>Dependent variable:</i>	
	therm_congress	
	(1)	(2)
income	−0.09* (0.05)	
education		−0.41** (0.18)
race_fctBlack	−4.24** (1.71)	−4.13** (1.71)
race_fctHispanic	−9.31*** (2.66)	−9.11*** (2.66)
race_fctNative American	−0.43 (2.18)	−0.08 (2.19)
race_fctOther	−6.73*** (2.21)	−6.51*** (2.22)
race_fctWhite	−6.53*** (1.22)	−6.38*** (1.23)
sex_fctMale	−4.82*** (0.72)	−4.90*** (0.71)
party_fctIndependent	−5.32*** (0.90)	−5.36*** (0.90)
party_fctOther	−3.45 (4.02)	−3.58 (4.02)
party_fctRepublican	−7.18*** (0.89)	−7.35*** (0.90)
religiosity	−1.28*** (0.24)	−1.26*** (0.24)
Constant	60.53*** (1.53)	61.26*** (1.60)
Observations	3,590	3,590
R <sup>2</sup>	0.06	0.06
F Statistic (df = 11; 3578)	20.63***	20.86***

*Note:* \*p<0.1; \*\*p<0.05; \*\*\*p<0.01

## Limitations

In assessing the relative significance of our analysis and findings, we must recognize the inherent limitations in a study of this kind. First, this observational study relies on data acquired through a survey of a limited sample size. While the ANES has attempted to gather data representative of the national voting-age population, our ability to apply these answers to the American national population remains limited. ANES data is acquired through face-to-face interviews and web-based surveys. Both of these modes of data collection have their own limitations, such as the requirement of internet connectivity for web-based surveys and in-person interviews' requirement that respondents have a physical address. Secondly, this study relies on survey data limited by its question and response options. Our data on voter income level offers respondents a selection of responses only ranging up to \$250,000 and above. This grouping of highly elite voters has the potential to not fully account for the nuances in congressional approval between a voter with a \$250,000 income and a voter with a \$3,000,000 income. Thirdly, our data on party affiliation relies on party registration responses; although, in reality, party registration may not always align with individual voters' specific party affiliation. Overall, this study relies on a relatively limited sample population and a fairly uncomplex subset of the ANES dataset. Given that this study relies on this limited observational data, our scope of inference is severely restricted. Nonetheless, we can still identify statistically significant and substantive associations between congressional approval and individual voter income, party affiliation, and education level.

## Discussion

Our statistical analysis provides convincing evidence in support of a negative association between voters' highest achieved level of education and their approval of Congress. Alternatively, we do not find convincing evidence of a similar relationship between voters' total family income and congressional approval. Although we cannot make causal inferences surrounding these relationships, we can identify the statistically significant association correlation between voter education and congressional approval. Substantively, from these findings, we suggest that voter education seems to have a more significant effect on congressional approval than income. This result comes in contrast to our expectation that given the unequal influence of economic elites on government policy they would have a more positive opinion on Congress. Additionally, this finding emphasizes the multivariate nature of the association between voter demographics and political biases. Overall, our results suggest that a myriad of factors are associated with congressional approval. From this insight, we suggest that the interactive model of Algara (2021) offers a more useful theory for understanding congressional approval, but that we might also benefit from identifying how demographic factors (like education and income) correspond to different public opinions of Congress. In future research, it may be of use to investigate the relationship between congressional approval and other explanatory variables such as employment history, age, location of residence (urban versus rural). Moreover, combining variables (e.g., low income Republicans or religious males) may lend evidence toward additional associations of note for policymakers.

## References

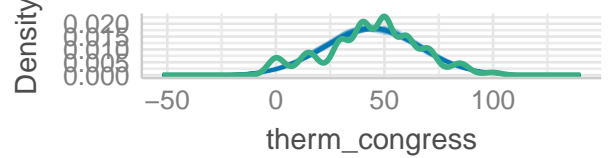
- Algara, Carlos. "Congressional Approval and Responsible Party Government: The Role of Partisanship and Ideology in Citizen Assessments of the Contemporary U.S. Congress." *Political Behavior*, Mar. 2021, <https://doi.org/10.1007/s11109-021-09678-x>.
- American National Election Studies. 2021. ANES 2020 Time Series Study Full Release [dataset and documentation]. July 19, 2021 version. [www.electionstudies.org](http://www.electionstudies.org)
- Bashir, Omar S. "Testing Inferences about American Politics: A Review of the 'Oligarchy' Result." *Research & Politics*, vol. 2, no. 4, Oct. 2015, <https://doi.org/10.1177/2053168015608896>.
- Durr, Robert H., et al. "Explaining Congressional Approval." *American Journal of Political Science*, vol. 41, no. 1, 1997, pp. 175–207, <https://doi.org/10.2307/2111713>. JSTOR.
- Gilens, Martin, and Benjamin I. Page. "Testing Theories of American Politics: Elites, Interest Groups, and Average Citizens." *Perspectives on Politics*, 2014/09/18 ed., vol. 12, no. 3, 2014, pp. 564–81. Cambridge Core, Cambridge University Press, <https://doi.org/10.1017/S1537592714001595>.
- Jones, David R. "Declining Trust in Congress: Effects of Polarization and Consequences for Democracy." *The Forum*, vol. 13, no. 3, 2015, pp. 375–94, <https://doi.org/10.1515/for-2015-0027>.
- Jones, David R., and Monika L. McDermott. "Ideological Distance from the Majority Party and Public Approval of Congress." *Legislative Studies Quarterly*, vol. 27, no. 2, May 2002, pp. 245–64, <https://doi.org/10.2307/3598530>.



# Appendix

## Posterior Predictive Check

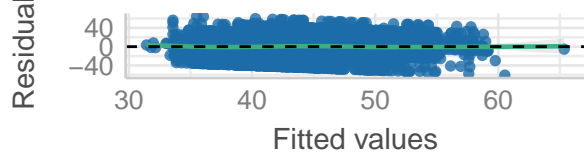
Model-predicted lines should resemble observed data



— Model-predicted data — Observed data

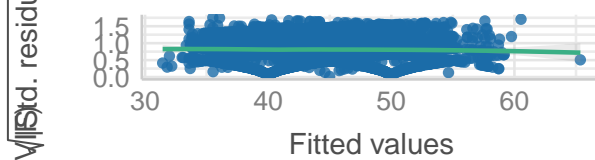
## Linearity

Reference line should be flat and horizontal



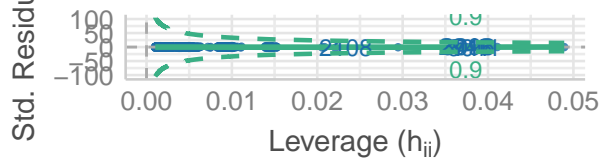
## Homogeneity of Variance

Reference line should be flat and horizontal



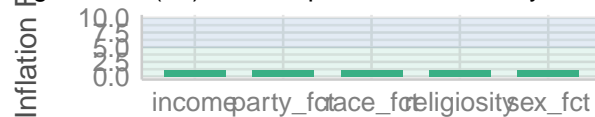
## Influential Observations

Points should be inside the contour lines



## Collinearity

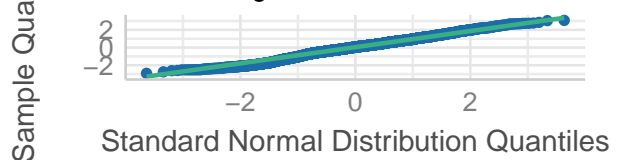
Higher bars (>5) indicate potential collinearity issue



low (< 5) moderate (< 10) high (> 10)

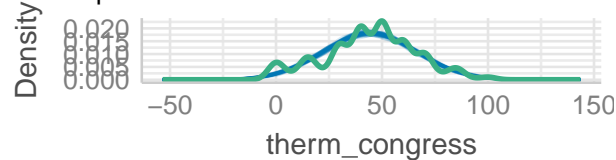
## Normality of Residuals

Dots should fall along the line



## Posterior Predictive Check

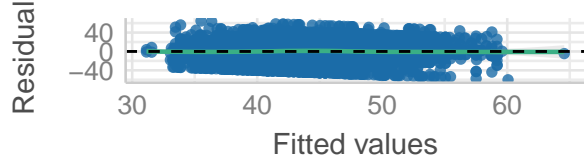
Model-predicted lines should resemble observed data



— Model-predicted data — Observed data

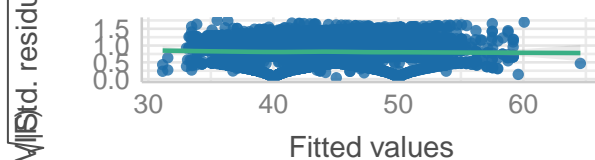
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Reference line should be flat and horizontal



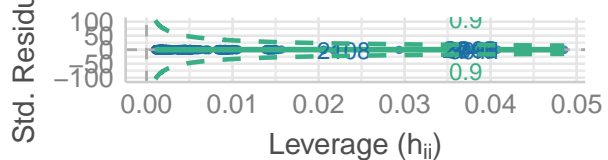
## Homogeneity of Variance

Reference line should be flat and horizontal



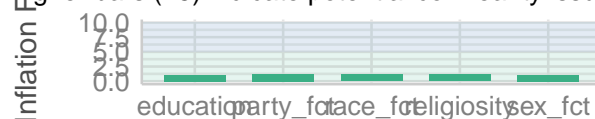
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Higher bars (>5) indicate potential collinearity issue



low (< 5) moderate (< 10) high (> 10)

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Dots should fall along the line

