

DISSERTATION PART 2  
Party, Income, and Legislative Activity since 1972

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## **Abstract**

Much attention has been placed on the phenomena of rising inequality in the United States. It has been well established that the rich enjoy an ever growing share of the country's wealth. A recent body of scholarship demonstrates that their influence currently extends into national political outcomes. Yet few studies lift the veil on how much influence the affluent had over policy in prior decades. I introduce a novel dataset on legislative outcomes which demonstrates that the influence of the affluent has been rising since 1972. I introduce a method to depict these changes over time in the face of the changing consequences of multicollinearity over time. I test whether this is a bipartisan trend or specific to a particular party. I find that Republicans produce more legislation when they represent high income districts in the modern era, while Democrats have always produced more legislation when they represent more educated yet poorer districts. I suggest that these changes reflect not only the increasing power of income, but the changing geographic base of each party. Legislators, particularly Republicans, produced more successful legislation when they represented high income districts. Finally, Southern Representatives have always tended to produce more legislation when they represent high income districts. As the Republican party gained power in the South and the nation, this has been reflected in legislation.

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# 1 INTRODUCTION

For the past decade or more, economic privilege has translated directly to privilege in a wide variety of political outcomes, including policy, party platforms, and legislative activity. In the first part of this dissertation of this dissertation I demonstrate one mechanism for this political privilege: the socioeconomicly advantaged are overrepresented in legislation because Republican representatives from socioeconomically underprivileged districts are disproportionately distracted by constituent service. Meanwhile, representatives from privileged districts disproportionately engage in legislation. These findings focused on the 113th Congress: 2013-2014. Yet it is unclear how long the influence of the affluent has persisted. It is clear that the economic power of the affluent has increased over the past fifty years, but few studies have systematically explored whether the political influence of the affluent has increased in a similar fashion.

There are indications that the power of the wealthy has increased in a variety of political realms. For one, we have seen that the disproportionate influence of the affluent is a modern phenomenon in certain instances, such as ideological congruence (Canes-Wrone & Gibson, 2016; Rigby & Maks-Solomon, 2018). For two, changing campaign finance laws have increased the ideological sway of the elite (La Raja & Schaffner, 2015). Donations are increasingly coming from the economic elite and the disproportionate influence of the wealthy on policy in the modern era is due to the preferences of the elites and donors (Canes-Wrone & Gibson, 2016; Ellis, 2012). These changing donation patterns should be reflected in legislation and policy outcomes that favor the wealthy. It is also true that politicians are increasingly from elite backgrounds (Carnes, 2012, 2013). Politicians are swayed by their inner circles and backgrounds and the increasing bias towards the wealthy may be partially due

to this trend (Fallows, 2000; Fenno, 1978; Butler, 2014). While all of these trends indicate that legislation should increasingly favor the wealthy, no study has been able to reveal this pattern on a yearly basis, with the ability to disambiguate partisan and regional differences.

This part of the dissertation shows that representatives from high income districts produce more legislation relative to representatives from less high income districts than they did in the past. The influence of affluence in legislative outcomes is undoubtedly increasing.

Yet the data introduced in this part of the dissertation also reveals the role of partisanship in the influence of affluence. Republicans have historically been the party of business interests and the economic elite. Democrats have been the party of the ivory tower, the working man and minorities (Anscombe, Rodden, & Snyder, 2006; Gelman, Kenworthy, & Su, 2010; McCarty, Poole, & Rosenthal, 2006). Thus, Republicans should be more sensitive to the relative economic power of their core constituents. Indeed, studies show that Republicans are responsive to the interests of the wealthy, while Democrats are either more responsive to the interests of the poor or show no effect either way (Carnes, 2013; Ellis, 2016, 2013; Brunner, Ross, & Washington, 2013). The findings in the first part of this dissertation show similar results. Republicans are disproportionately invested in legislation when they represent districts with relatively more socioeconomically privileged constituents. Thus, it is likely that Republican legislative behavior is primarily tied to the economic characteristics of their constituents, while Democratic legislative behavior has no apparent connection to a district's economic characteristics.

The role of partisanship and income is also evident in citizens' representational preferences. Republicans are increasingly turning towards a trusteeship version of

governance (Barker & Carman, 2012). This seems to promote a bias towards conservative ideology that is not connected to the preferences of Republican constituents (Broockman, Carnes, Crowder-Meyer, & Skovron, 2017; Broockman & Skovron, 2018; Clinton, 2006; Lax, Phillips, & Zelizer, 2018). They are also more likely to vote Republican (Gelman, 2009; McCarty et al., 2006). If it is true that the conservative ideology favors the interests of the economic elite, then this trend toward trusteeship should coincide with a trend towards favoring the interests of the wealthy for Republicans.

Indeed, I show that the increase in legislative productivity by representatives of high income constituents is driven by the resurgence of Republican power. Democrats have never produced more legislation when they represent more high income constituents. Instead, they produce more legislation when they represent highly educated, yet often poorer, constituents.

For all that it is widely theorized that the wealthy are more influential than they used to be, there is also a general sense that the socioeconomically elite have generally held more sway in politics. This is evident in legislative outcomes when elite status is measured according to educational attainment as well as income. While representatives of high income districts were not generally more legislatively successful prior to 1995, representatives of highly educated districts were. Thus, the socioeconomically elite were still favored, but the driving force came from representatives producing more legislation when they represented highly educated districts.

Evidence for the effects of time and partisanship on the influence of the affluent comes from a novel dataset covering forty years of legislative history. It reflects the amount and success of legislative activity in Congress from 1972 through today, then connects it with socioeconomic characteristics of their constituents. This

creates a historical profile of how members of Congress have represented different constituencies. The dataset includes legislative, personal and professional information for members of Congress, and political and demographic characteristics. It associates the legislative activity of members of Congress with the affluence of their districts, as well as other demographic district characteristics such as education and race. While previous studies have used piecemeal evidence to look at the historical influence of the wealthy, this datasets covers forty-two years using a consistent measure and controls. The depth and breadth reveals not just the history of affluence, but also the differences between Republicans and Democrats. It allows the results to be analyzed by region, which reveals some interesting patterns within Southern representatives.

Throughout, the magnitudes of these effects are substantial. In the modern era, Republicans from the districts in the top socioeconomic quartile sponsored an additional 0.37 successful bills per Congressional session compared to those representing the bottom quartile. The expected number of bills passed per Congressional session for a Republican representing a district in the bottom quartile in this time period was 1.44. This is a 28% increase in legislative success compared to representatives from less privileged districts. Between 1973 and 1980, Democratic members of Congress did not sponsor more successful legislation when they represented socioeconomically privileged districts. However, they did sponsor more successful legislation when they represented districts with high levels of education. A Democrat representing a district at the top quartile of the education distribution sponsored an additional 0.19 more successful bills than a Democrat representing the bottom quartile. The average number of bills passed for an similar member of Congress who represented a district at the bottom quartile of education in this time period was

1.55, a 13% increase in legislative success. Overall, I show that the increasing legislative productivity associated with the income of a representative's district is driven by changing Republican legislative behavior and by changing national trends that have given Republicans control over Congress. This is congruent with constituent preferences from the 1970s.

This dataset reveals the confounding influence of education prior to 1995, when Democrats were in control of the House of Representatives. Democrats are the party of Ivy League intellectuals while Republicans are the party of the business elites. Under this ideological framework, Democratic policies should be associated with the preferences of highly educated constituents, while Republican policies should be associated with the preferences of high income constituents. Yet of course income and education are strongly tied to each other. The effects of the collinearity between education and income occasionally clash with the need to avoid omitted variable bias. I demonstrate one useful method to untangle the disparate effects of income and education, and apply it to replications of McCarty et al. (2006) and Burden and Wichowsky (2014). I show that educational and economic characteristics of a district have different effects on legislative outcomes, partisan preferences, and representational preferences.

The strength of this dataset comes from the consistency of measures across 42 years, but this consistency comes at the expense of direct links to constituent preferences. This means that we are missing the explanation for why Republicans since 1994 produce more legislation when they represent high income districts, or why Democrats produce more legislation when they represent the highly educated. I explore a number of explanations derived from existing studies. We know that Republicans have increasingly preferred a trusteeship style of representation (Barker

& Carman, 2012) Wealthy constituents have started voting for Republicans more often (Gelman, 2009; McCarty et al., 2006). Finally, Republican ideology has become more conservative, which likely represents the interests of the wealthy (Carnes, 2016; McCarty et al., 2006).

The consistency of the measures presented in this part of the dissertation also comes at the expense of knowing the content of bills. Yet there is a strong connection between legislative content and constituent preferences (Brunner et al., 2013; Erikson, Wright, & McIver, 1993; Highton & Rocca, 2005). The association is particularly strong for, and often appears driven by, Republican legislation on economic issues and the preferences of wealthy Republican constituents (Broockman & Skovron, 2018; Gilens, 2012a; Lax et al., 2018; Rhodes & Schaffner, 2017). Additionally, Republican legislators tend to vote in favor of bills that benefit the wealthy (Carnes, 2016). Thus, it is reasonable to infer that when representatives of high income and educated districts produce more legislation, it reflects the preferences of the wealthy and educated. This part of the dissertation connects the Republican bias towards the wealthy to legislative outcomes, and examines whether this bias held in the past.

The Declaration of Independence holds that “all men are created equal,” but does this mean that all men (and women) should be equal in political representation? One prominent theorist, Robert Dahl, encapsulated a common answer: yes, governments ought to be responsive to the interests of all citizens, considered as political equals (Dahl, 1972, p. 1). That is, citizens should be represented equally, regardless of socioeconomic status. This part of the dissertation demonstrates that social status has mattered for political representation, but in different ways for Republicans and Democrats. As viewed through their focus on creating successful

legislation, Republicans in the modern era favor the wealthy and educated while Democrats tend to favor the educated yet less wealthy.

## 2 BUILDING THEORIES of TIME and PARTY DEPENDENCE

Economic inequality has been rising in the United States. The past two decades have featured a clear and dramatic spike in the level of economic inequality. The wealthy, particularly the top 1%, are earning over 20% of the country's income for the first time since 1930. Between the end of World War II and the beginning of Reagan's administration, the top 1% earned on average around 11% of the country's income (Saez, 2015). Meanwhile the poor have sunk into deeper poverty (Schlozman, Verba, & Brady, 2012, p. 73).<sup>1</sup> The level of income inequality today is equal to or worse than any time since the United States started tracking income in 1913. The question addressed in this part of the dissertation is whether the increasing power of the wealthy is reflected in policy.

For three decades, scholars studying the politics of class focused on political engagement. A wealth of evidence showed that, by and large, the wealthy were more engaged in the political process. They knew more, were more likely to contact their representatives, and were more likely to donate (McLeod & Perse, 1994; Verba & Nie, 1972; Schlozman et al., 2012). But the policy impact of this participation remained obscure.

Then, over the course of the past decade, political science gained the tools

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<sup>1</sup>This depth of poverty is obscured by the poverty line. Although the percent of the population below the poverty line has not increased dramatically, the number of those below the poverty line who live in deep poverty has increased.

necessary to manipulate and analyze larger datasets that could reveal the political impact of the wealthy. This was timely, because skyrocketing economic inequality implied that the wealthy should also be gaining political power, as did the theory that politicians should be swayed most by their core circle, which is increasingly likely to be wealthy (Fenno, 1978; Carnes, 2013). These studies resulted in clear evidence of political bias towards the wealthy across a host of political outcomes. When the preferences of the poor and the rich diverge, policy reflects the preferences of the wealthy, particularly in safe districts with high inequality (Gilens, 2012a; Ellis, 2013). Senators are more responsive to the ideological and policy preferences of the rich (Bartels, 2008). On foreign policy, most branches of government do not respond to the will of all constituents, instead focusing on the preferences of experts, business, and labor leaders (Jacobs & Page, 2005). In that study, the exception was the House, which has a history of being the most responsive branch of government to the will of the people. Without question, the rich are better represented than the poor. Looking at policy promises instead of policy outcomes, we can see the bias towards the rich in state party platforms (Rigby & Wright, 2013). From policy promises to policy outcomes, the influence of the affluent is evident.

The influence of the affluent is increasingly attributed to Republicans, not Democrats. The evidence indicates that Republicans do represent the interests of the wealthy better than Democrats, particularly on economic issues. Republicans are more likely to match the ideologies of their constituents when their constituents are wealthy, whereas Democrats are more likely to match the overall ideological preferences of less wealthy constituents. On specific issues, Republicans matched the issues of the very wealthy better than less wealthy respondents (Rhodes & Schaffner, 2017; Rigby & Maks-Solomon, 2018). Republicans are more likely to vote in favor

of bills that support the interests of the wealthy (Carnes, 2016; Brunner et al., 2013; Ellis, 2013). Republicans tend to nominate more extreme candidates (Broockman et al., 2017), and are less open to compromises with liberals that might push policy away from the ideological right (Clinton, 2006; Glaser & Berry, 2018). Under the assumption that extreme conservative policies are more likely to favor the economic interests of the wealthy, these biases will lead Republicans legislators to favor the interests of the wealthy. Democrats also sometimes represent the preferences of the wealthy, but it is less frequent and tends to revolve around moral issues instead of economic issues (Rigby & Maks-Solomon, 2018).

This line of research generally validates the connection between preferences of constituents and the actions of their representatives. Whether the measure is policy preferences or overall ideology, the votes by legislators tend to reflect the preferences of their constituents, particularly in the House (Brunner et al., 2013; Erikson et al., 1993; Highton & Rocca, 2005). The connection is not always perfect as Dahl's ideals demand. These exceptions tend to generate interest, but even the studies that show that the rich are more influential in policy show that this a matter of degree instead of kind. The preferences of people of all income levels are highly correlated with each other, and the preferences of the poor are reflected in policy even though the connection is stronger for the rich (Gilens & Page, 2014). Legislators tend to be more extreme on issues than their constituents (Bafumi & Herron, 2010) but this can coexist with a correlation between the policy preferences of constituents and their representatives. On foreign policy, the House as a whole votes in a manner that is tied to the preferences of the public (Jacobs & Page, 2005). For the Senate, which tends to be less closely tied to constituents than the House, Senators reflect the preferences of registered voters, albeit worse than they

reflect donor preferences (Barber, 2016). The tie between preferences of the poor or middle class and policy is the strongest for social policy (Gilens, 2012a). Overall, the predominance of evidence indicates that legislators tend to reflect the preferences of their constituents, although they are even better at reflecting the preferences of the wealthy.

The differences between Democrats and Republicans is becoming evident in how politicians represent the policy preferences of their constituents. Democrats match the ideology of their constituents much more so than do Republicans (Rhodes & Schaffner, 2017; Lax et al., 2018). Both parties tend to overestimate the ideological conservatism of their constituents, but the effect is much stronger for Republicans (Broockman & Skovron, 2018). Republicans are more likely to discount the preferences of constituents they disagree with (Butler, Volden, Dynes, & Shor, 2017). This does not indicate that Republicans politicians do not generally match the preferences of their constituents, merely that Democrats are better at it.

The representation of constituents through policy has been well established. So has skyrocketing inequality and the bias towards the wealthy. Yet the historical basis of the influence of the affluent has remained largely obscure.

There are many suggestions that the political power of the wealthy should have increased along with their economic power. Campaigns have become increasingly expensive, increasing the value of those who donate large sums. Since those who donate are generally wealthy, and the wealthy donate more, the relative value of rich donors increases along with the increase in campaign costs. The composition of the legislative body has switched from being plurality farmer to plurality lawyer over the past century (Carnes, 2013). This should increase the number of politicians whose inner circle is wealthy. As Fenno (1978) argued, politicians listen to their inner circle

more than other constituents, so this trend will bias them towards the interests of the wealthy. There are suggestions that the wealthy have become increasingly insular (Putnam, 2000). Since the legislative body is primarily drawn from the wealthy, they may have reduced visibility into the lives and needs of others. From the comparative perspective, more economically unequal societies tend to also be less politically equal (Rosset, Giger, & Bernauer, 2013). Although the increased economic power of the rich should track with increased political power, the empirical evidence has not yet been demonstrated systematically.

A few investigations have examined policy responsiveness from a historical perspective in the United States. They do not show clear evidence that the influence of the affluent is stronger today than it used to be. There is some evidence that responsiveness to the poor may have been stronger in the past. Gilens (2012a) covers four years of the 1960s, then almost all years between 1981 and 2006, showing that overall policy responsiveness has increased not just for the rich but also for the poor. There is also some indication that in the 1960s, policy responsiveness for the rich was dramatically reduced or nonexistent. This four year time period does not have statistically significant results, and there is no clear time trend in policy responsiveness to the wealthy (Gilens, 2012a).

Barker and Carman (2012) show changing legislative behavior that reflects changing ideologies. Over the past forty years, Republicans have started to behave as though their constituents prefer trusteeship representation. This style of representation prioritizes the best judgement of the elected official over the preferences of his or her constituents. In other words, the specific policy actions of Republican legislators do not necessarily need to reflect the interests of their constituents. Under trusteeship representation, a legislator merely needs to make the case that

they agree with the broad values of their constituents and are acting with their best interests in mind. Because Republicans tend to side with the interests of the wealthy anyways (Carnes, 2016; Lax et al., 2018; Rhodes & Schaffner, 2017), poor constituents could expect to see Republican politicians support fewer and fewer of the policies they would prefer. Grossmann and Hopkins (2016) tend to agree that Republicans prefer ideology and character to specific policy interests, although they do not find evidence that this has increased over time.

Gelman (2009) finds that although richer states tend to vote Democratic, richer individuals tend to vote Republican. This effect has increased over time, particularly since 1990. Thus, Republicans should be increasingly tied to the interests of the wealthy. He shows compelling evidence that something changed around 1990 with respect to partisan voting patterns, a finding that is reflected throughout this part of the dissertation.

Finally, McCarty et al. (2006) trace the impact of district socioeconomic characteristics on legislator ideology back over the past forty years. They find that wealthy districts are increasingly likely to have legislators who are more conservative. As part of this part of the dissertation, I replicate and expand on their findings. I find the same, but show that this is because the effect of district socioeconomics has increased for Republicans, not Democrats. Republicans are now voting to support conservative bills more often when they represent high income districts. Under the theory that conservative bills protect the interests of the wealthy, this is yet another way in which Republicans have become a party that favor the wealthy. It also provides one cause for the increase in the number of bills that legislators from wealthy districts create: Republicans from high income districts are more likely to support said bills.

The dataset I introduce is well suited to testing the historical bias toward the rich for Democrats and Republicans alike. The measure used in this paper, legislative activity, is drawn from studies of African-American representation (Rocca & Sanchez, 2007; Keane & Griffin, 2009; Tate, 2003). It does not tie specific issues to constituent preferences, which reduces the amount of detail visible. Yet when specific issues are isolated, fewer bills are available to analyze. The additional observations available when we look at all bills lends substantial power to my analysis. It captures the repeated effect of trying to change policy in every bill that becomes law. Additionally, the historical detail and depth of the data used here lets me uncover patterns between education, income, and political outcomes, as well as find the power of using a combined socioeconomic measure that unites education and income.

But income does not occur in a vacuum, and the timeframe and detail included allows me to untangle the confounding influence of other demographic factors. It is evident that income is tied to education and race in ways that are sometimes surprising. Including them without sufficient historical context and flexibility can lead to conflicting and messy results. Analyzing each on its own has been the standard, and has produced many useful results. Yet as I show with both the data on legislative success and a replication of the results in Burden and Wichowsky (2014) and McCarty et al. (2006), new insights can be revealed when education and income are included in the models with a better theoretical grounding on the conflicting requirements of multicollinearity and omitted variable bias.

Unlike income, race, and gender, education does not have a strong line of scholarly study. It is so closely tied to income, which has been rightly viewed as the predominant driver of political outcomes in the modern era, that it seems to have

been dismissed as inconsequential. Not many studies include it in their models, and when they do it is rarely analyzed in any detail. In two of the major studies that trace historical inequality and political outcomes, McCarty et al. (2006) and Dalton (2017) include education but do not analyze while controlling for income. Gilens (2012a) focuses solely on income. Including income and education together in my models produce results that are not surprising, but had not been examined. As noted earlier, Republicans have lost many educated voters (McCarty et al., 2006) over the past decade. This could imply that they have ceased to be responsive to the educated as well, and this is precisely what I find. Viewed from the perspective of national legislative outcomes, as the responsiveness of Republicans to the wealthy has increased, their responsiveness to the educated has decreased. That is, Republicans are more successful in legislation for richer districts, and less successful in educated districts.

There are theoretical grounds to believe that education and income will have disparate effects on policymaking. While Republicans tend to win the votes of the wealthy, Democrats are known as the party of Ivy League intellectuals (Anscombe et al., 2006; Gilens, 2012b). Republicans are thought to be more responsive to economic interests of the rich, while Democrats are more responsive to the intellectual elite. Therefore Democrats should respond to the highly educated more than Republicans. This would imply that Republicans should prioritize the wealthy over the educated. For example, in 2006 20% of Ohio's 8th district and Tennessee's 3rd district had a college degree. Both were represented by Republicans. Because Ohio's 8th district earned an average of \$9,000 more than Tennessee's district, and had 6% more high income residents, we would expect Ohio's representative to be more successful than Tennessee's. We see exactly this, with seven successful bills

in Ohio's district compared to Tennessee's single successful bill. Here, we see an example of a Republican from a median income district who passes more bills than a Republican from an equivalently educated but poorer district. District income was tied to better success.

It is also possible for education to be correlated with less success in legislation even as income is tied to more. This is exemplified by comparing Ohio's 8th district to New York 25th's equivalently high income but better educated district in 2006 and 2007. Despite the higher education and Republican representatives, New York's 25th district saw 4 fewer bills passed than Ohio's 8th district. Comparing three districts, Tennessee 3rd versus Ohio 8th versus New York 25th, we can see a place where income was tied to more legislative success, and education was tied to less. Thus, education causes less success in legislation while income causes more.

The party in control of Congress will also have an effect on legislative success. Members of Congress in the majority party are better equipped to create successful legislation. More than that, the majority party serves as an agenda setter. The kind of legislation the members of the minority party create will often reflect the agenda preferences of the majority (Ballard, 2018; Ramey, 2015). The minority party should create less successful legislation, but also see a lot of the majority party's ideology in the content of the bills sponsored by the minority party.

Legislative activity will trace the historical trend of political bias for the wealthy. But why would legislators from high income districts have more success in legislation in the first place?

The obvious answer is that legislators from high income districts have more financial resources to support policy creation. Yet there are a number of reasons to suspect this is not true once you get into the weeds of how policy is made. Members

of Congress get a set budget for expenditures on activities related to their job. In 2014 this was around \$940,000 per year to spend on staff, and around \$250,000 to spend on material support. This amount does not vary by district income and there are strict rules against using outside funds to support legislation. Legislators who use outside funds to support legislation face the serious threat of lawsuits (Ballard, 2018). So financial resources are not a likely explanation for why legislators from high income districts create more successful legislation.

Outside of financial backing, district demographics can influence legislation due to constituent preferences over representation that are tied to demographic factors. For example, the previous part of the dissertation shows that Republican legislators from rich districts devote more staffing resources to policy instead of constituent services or communication. Additionally, politicians themselves tend to be high income and are likely to have policy preferences that reflect that background. We have seen that politicians tend to discount the opinions of those they disagree with (Butler et al., 2017), so politicians who represent high income districts may feel more comfortable creating legislation simply because their own internal preferences coincide with their constituents. Finally, the wealthy care more about policy (Schlozman et al., 2012), and politicians are more likely to seek to create policy when their constituents care about it (Sulkin, Testa, & Usry, 2015).

Both constituent preferences and the ideological biases towards the wealthy are likely to be most evident for modern Republicans. As Grossmann and Hopkins (2016) show, Republicans are becoming a party less likely to reflect the concrete policy interests of all constituents. Yet they still represent the economic policy interests of the wealthy, which indicates that they have been freed from representing the preferences of the poor. I showed in part 1 of the dissertation that this is re-

flected in legislative outcomes: Republicans, but not Democrats, are more likely to create successful legislation when they represent high income and educated constituents in the modern era. In previous eras constituents who cared a lot about policy were less likely to be swayed by the ideological congruence of their member of Congress. Overall, there was a stronger preference for constituent service, which is more likely to increase bipartisan respect than is policy representation (Lapinski, Levendusky, Winneg, & Jamieson, 2016). Legislators from poor districts, at least in the modern era, should be less successful in legislation simply due to focusing on non-policy activities. Given that Republicans prefer trusteeship representation (Barker & Carman, 2012) and are more likely to value personal character (Jarvis & Jennings, 2017), this effect should be amplified for Republican legislators in the modern era.

### 3 DATA

I introduce a novel dataset that traces records of legislative activity and demographic data from 1973-2014. It uses the House of Representatives alone, which offers at least 435 observations per year of a wide variety of rich, poor, educated, and less educated districts.<sup>2</sup> Of the various branches, the House is also the most closely tied to the preferences of constituents. The connection between legislative behavior and constituent opinion tends to be the strongest in reelection years (Kuklinski, 1978; Canes-Wrone & Shotts, 2004), and the House offers the most frequent election cycles of the various branches of government. The House also has the smallest constitu-

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<sup>2</sup>Nearly all years have slightly over 435 members of Congress because some members leave in the middle of a Congressional session and have to be replaced. In order to account for the members who only served a partial term, I weight the regressions by the percent of the term each representative served.

cies of the federal government, averaging around 750,000 people per district in the modern era. The goal is to tie legislative activity to constituent characteristics, both of which are tied to constituent preferences.

I collected data from multiple sources covering legislative activity, legislator characteristics, Congressional session information, district political characteristics, and district demographics. The variables included in this novel dataset are summarized in Table 1. The dataset is available from Harvard’s DataVerse (Foster-Molina, 2017). I summarize the variables available in the dataset in Table 1. Definitions of each variable listed are available from DataVerse. I provide explanations for those variables used in this analysis as they become relevant.

The unit of observation is one representative in one congressional session. This yields 9,194 observations across 42 years and 73 variables. The number of unique representatives in this dataset is 1,833.

Table 1. Dataset Variables

legislative activity	legislator characteristics	Congressional session characteristics	district political characteristics	district demographics
sponsored	DW-Nom 1	maj party	Cook scores	median income
passed house	DW-Nom 2	maj percent		mean income
enacted	partisan extremity	Dem seats		% over income \$x k
cosponsored	committees	Rep seats		Gini
% successful	party ID			socioeconomic
	# of committees			% unemployed
	powerful coms			% not employed
	committee chair			% BA degrees
	ranking member			% HS degrees
	days served			% white, black
	% days served			% asian, multi
	state and district			% not hispanic white
	ICPSR ID			% not hispanic white, black
	GovTrack ID			% old
	name			median age
	age			% ex aliens
	gender			% foreign
	hispanic			% recent arrival
	black			% abroad
				total populations

I drew this information from a variety of sources. Census data for the 1990s, 2000s,

and 2010s comes from a government website. Census data for the 1970s comes from the ICPSR, and the data for the 1980s comes from <https://www.nhgis.org/>. In total I collected all publicly available censuses: 93rd, 98th, 99th, 106th, 109th, 110th, 111th, 112th, and 113th Congresses.<sup>3</sup> Thus, my analysis for the 1970s draws entirely upon data from the 1970 census. The data for the 1980s is similar. The natural consequence of this is that my estimates are less precise for later parts of each decade. The census data for the 2000s and 2010s are updated almost every year, and therefore all of my demographic estimates for each Congressional session should have the same level of precision for the last 13 years of my analysis.

The legislator activity and characteristics data come from govtrack.us, an open source website that scrapes the government legislation pages regularly and produces various .xml and .json files for every bill introduced and every member of Congress since the first Congress met in 1789. This also supplies committee membership for the 109th-113th Congress, which I supplement with committee information from the Legislative Effectiveness Project (Volden & Wiseman, 2014) for the 93rd-108th Congresses. I augment these data with nominate ideology scores from Keith Poole's website. I found district partisanship from Cook scores, available for the 109th to 113th Congresses, and calculated Cook scores from census district vote data for the 1970s. Legislator minority identification comes from people.house.gov, and is hand coded for each Congressional session.

I choose to focus on the number of bills a member of Congress sponsors that are approved by the entire House of Representatives. This captures a type of policy representation. Sponsoring successful bills requires effort from both the represen-

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<sup>3</sup>The 99th Census data is used to update the district information for the following ten states that had court ordered redistricting between 1980 and 1984: California, Hawaii, Louisiana, Maine, Mississippi, Montana, New Jersey, New York, Texas, and Washington.

tative and their staffers. Few sponsored bills are ever reported out of committee, the first major hurdle in the legislative process. Of those, even fewer pass the first chamber. From 1973-2014 only 8.3% of all sponsored bills were approved by the House. Bill sponsorship does not necessarily capture the amount of effort a representative is putting into policy representation. All one has to do to sponsor a bill is tell the House clerk that you want to sponsor a bill. They are useful to claim credit for policy congruence without actually doing the work to deliver the policy,<sup>4</sup> but the vast majority never make any progress at all through the legislative process. It is safe to say that many of these bills were never intended to make progress, but were simply cheap talk. Indeed, text analysis can clearly distinguish these cheap talk bills from their counterparts that get reported out of committee (Ballard, 2018). A bill that progresses through the House is likely to be more than cheap talk. The process of deciding the kind of bill that will likely be passed, then lobbying colleagues to ensure its passage, is much more involved than simply sponsoring a bill. There is also the danger that if a poorly thought out bill is enacted into law, an opponent will use it as leverage in a future campaign. Legislation that passes the House serves as a useful proxy for the time and effort a member of Congress devotes to policy representation.

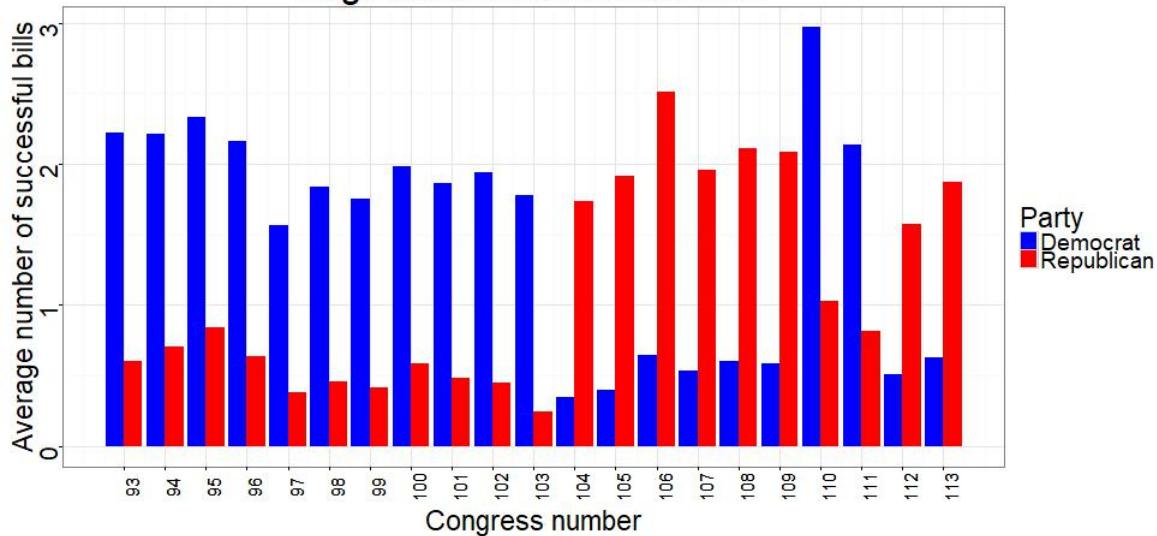
Figure 1 shows the average number of bills each member of Congress sponsored that passed the House in a given Congressional session, from the 93rd House in 1973-74, through the 113th House from 2013-2014. The average number of bills passed ranges from a high of 2.97 bills per Democratic member of Congress in the 110th House (2007-2008) to a low of 0.24 bills per Republican member of Congress in

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<sup>4</sup>Anecdotally, constituents contact regarding policy are often reassured by evidence of sponsored bills waiting to be voted on. They are less likely to track what happens to a bill, or to blame their representative for failure to progress. It is very easy for members of Congress to shift blame to the rest of Congress, and there are plenty of anecdotal reports of exactly this.

the 103rd House (1993-1995). Naturally, the party in the majority has much more successful legislation than does the party in the minority. On average, members of the majority party passed 2.026 bills per Congress, although the median number of bills passed was 1. Member of the minority party passed only 0.562 bills per Congress, although the median number was 0.

Figure 1: Descriptive Statistics  
**Legislative success over time**



Legislation that passes the House is one way to influence policy outcomes. Any biases toward the wealthy in legislation will be reflected in policy. There is evidence that Republican legislators from high income areas vote for and sponsor bills that favor the interests of the wealthy (Carnes, 2016). If legislators from privileged areas are also more productive legislatively, then we can expect more overall policies that favor the interests of the privileged. This is exactly what happens. I show that the time periods in which legislators from socioeconomically privileged districts are more active in legislation are the same as those time periods that policy reflects the preferences of the wealthy in Gilens' data (Gilens, 2012a, 2012b). While it would

be ideal to only look at the number of bills a member of Congress sponsored that became law, there are two strong reasons not to. For one, a member of Congress can be expected to influence the legislative process much more within their own chamber. Two, the Senate is often controlled by a different party than the House. As I showed in the previous part of the dissertation, Democrats and Republicans behave differently with respect to how they represent the socioeconomically privileged and those who are not. For these reasons, the impact of district privilege will be obscured once a bill gets to a Senate controlled by the opposing party. Neither of these problems hold for how many bills pass the House, so I choose to focus on this measure.<sup>5</sup>

The primary independent variables are district wealth, district education, and a combined measure of district socioeconomic status. The methods section will discuss the ways I deal with the multicollinearity present between these measures. District income is measured as the percent of a legislator's district that earned over \$75,000 per household per year in 2016 dollars. This captures the percent of the district that is wealthy. The cutoff for this is not always perfectly \$75,000, as the value changes according to inflation and the income brackets used by the census. It is always in the range of \$65,000-\$75,000 in inflation adjusted 2016 dollars, and always falls above the median income of the nation at the time. The results are consistent across a variety of income measures. The secondary independent variable is district education, which is measured as the percent of the district with

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<sup>5</sup>The results are consistent with a variety of other measures, including the percentage of sponsored legislation that was successful and the probability that any given bill passes based on who sponsored the bill. Results for the amount of legislation that was successfully enacted into law produces weaker results that are in the same direction as the results presented here, with larger standard errors. This is to be expected; I speculate that if the ideology of the Senate and president were included in the analysis, the results would be stronger. I also ran these models with a legislative effectiveness score (Volden & Wiseman, 2014). The results remain essentially the same.

at least a bachelor's degree. All parts of the analyses separate Republicans from Democrats because the ideologies of each party create different kinds of responses across district economic and educational levels. The socioeconomic variable is a linear combination of education and income based on factor analysis. This helps deal with the collinearity between district income and education, especially when they are both positively correlated with more successful legislators. The methods section discusses the method for dealing with each variable when district income is negatively correlated with legislative success and district education is positively correlated. These opposing effects of education and income happen throughout the 1970s and 1980s.

I examine these variables not just for an individual congressional session, but to look at the changes over time and by party control of Congress. Therefore, I control for the year the Congressional session started, and the party in control of the House of Representatives in the models that incorporate the entire dataset. For the purpose of presentation, I also use the time periods and partisan control of Congress to create graphics depicting the changes over time.

I control for the following seven variables that are commonly used and thought to have independent effects on legislation. These are black population size, the party of the member of Congress, their ideology, seniority, racial identification, and two measures of committee membership. As I show, this dataset has many more measures than the ones I chose to include in this model. I chose the variables that were theoretically significant. A few proved to only add noise to the model, including the Cook scores, how far the member of Congress was from the ideological mean of their party, and the median age of the district. Because none of these three variables provided any independent explanatory power, I omitted them from the

final model. Each of the controls I do include have strong effects on the legislative activity. For example, a committee chairperson successfully sponsors an average of 2.68 bills. This is nearly a 100% increase over a someone who is not a committee chair, who sponsors an average of 1.36 bills.

In order to account for the changing impact of being black in Congress on legislative activity, I include an interaction term between Congressional Black Caucus membership and the year.<sup>6</sup> Specifically, prior to 1988, black members of Congress were less legislatively successful than white members of Congress, controlling for district socioeconomics and partisanship. This magnitude of the effect was substantial. The average number of successful bills sponsored per congressional session is 1.4. Black members of Congress sponsored 0.61 fewer successful bills than other Democratic members of Congress with similar district demographics and institutional power. Their similar white counterparts sponsored 1.7 bills total per congressional session. This effect reverses after 1995. Black members of Congress sponsor an extra 0.60 successful bills than similar counterparts. Their white counterparts sponsored 1.21 total bills.<sup>7</sup> This means that in the 1970s and 1980s they were 36% less legislatively successful than the average member of Congress, while after 1995 they were 50% more successful.

## 4 THEORY

This new dataset allows me to examine the influence of partisanship and time on legislative success.

Existing work produces conflicting expectations over whether the influence of

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<sup>6</sup>All black members of Congress belong to the Congressional Black Caucus

<sup>7</sup>Post-1995 Democrats sponsored fewer successful bills because they were less often in the majority than Democrats prior to 1988

the affluent in policy has increased over the past forty years. I expect that the wealthy have become more powerful in almost all regards, and that this will be visible in legislative behavior.

Since the time of Roosevelt, crystallizing under Reagan, the Republican party has been viewed as the party of the upper middle class and business interests. Democrats now represent the interests of the working class and ivory tower. Moreover, in modern times Republicans face a larger disparity than Democrats between the preferences of their high income constituents and the preferences of the less wealthy. Thus Republicans, especially in modern times, may attempt to satisfy the preferences of their less wealthy constituents through non-policy avenues, such as constituent service. The null findings of Gilens (2012a) mentioned in the second section could easily be due to (1) the confounding influence of education and (2) the time units focused on. It is regularly said that the economic preferences of Republicans prior to Reagan were more in line with economic preferences of modern Democrats than with modern Republicans. We should see this reflected in how active legislators are when they represent the wealthy.

**THEORY 1:** The effect of income has increased over time. Over the past forty years, representatives of high income districts are increasingly likely to produce more legislation than representatives from poorer districts.

Republicans and Democrats are not merely mirror images of each other (Grossmann & Hopkins, 2016). Republican ideology, especially in the modern era and untempered by the influence of Southern Democrats, tends to reflect the interests of the wealthy. They currently produce legislation that favors the preferences of the wealthy. As I showed in the prior part of the dissertation, Republicans are more

likely to reflect the representational preferences of the high income and educated. Aggregating to the district level is likely to reveal the same: Republicans who represent high income districts should produce more legislation than when they represent poor districts.

THEORY 2: The effect of income on legislative productivity will be larger for  
Republicans.

I find that the legislators who represent affluent and educated districts are more likely to create successful legislation than they were prior to 1995. This effect is driven by the fact that Republicans favor the wealthy and have controlled the House for most of the past 20 years. Yet the effect is not as simple as Republicans favoring the elite. Democrats also favor the elite, but it is rooted in their connection to the interests of the education. Democrats do produce more legislation when they represent district with more highly educated citizens. Because the tie between income and education is strong, this often means that when income is analyzed without accounting for education, it appears that Democrats favor the wealthy. Yet the clear reason that high income districts represented by Democrats have representatives who produce more legislation is because Democrats favor the interests of highly educated people, who tend to have higher incomes.

The last sections of this part of the dissertation seek to explain why we have seen these changes. I examine changes within each party over time, changing regional power, and changing ideological relationships.

With regards to changes within each party over time, Barker and Carman (2012) make a compelling case that Republicans have turned towards an ideology that reduces the need to reflect the preferences of all constituents. They have also faced a more rapidly changing base of supporters (Gelman, 2009; Grossmann &

Hopkins, 2016), including a larger evangelical base (Leege & Kellstedt, 2016). Thus, I expect to see that the increasing influence of the affluent is being channeled through changing Republican behavior.

I find that the increasing bias toward the affluent is, in part, driven by the changing geographic base for Republicans and Democrats (Gelman, 2009). I look to see if this is reflected in the ways Democrats and Republicans behave in four regions of the country: the Midwest, South, Northeast, and West. Democrats were powerful in the South prior to the 1980s, but they have been replaced by Republicans. Because Southern representatives always produced more legislation when they represented high income districts, Republicans became more likely to behave in the same manner as they took power in the South. Yet it is also partially driven by the changing behavior of Midwestern Republicans. They did not produce more legislation when they represented high income districts prior to 1994, but they have ever since 1994. This is similar to Gelman (2009)'s finding that partisan affiliations starting changing after 1990. Overall, the changing influence of affluent districts in legislative outcomes is based on party power, regional influence, and time.

Finally, I examine the connection between the ideology of a member of Congress and their district demographics. Many of the patterns revealed in the study of legislative success are also evident in the study of representatives' ideologies. Namely, Democratic ideology has had a consistent tie to district demographics over the past forty years. Democratic members of Congress have always been more liberal when they represent high income and educated districts. Yet the tie between district demographics and Republican ideology has changed. Ever since the Republican revolution of 1994, they have been more conservative when they represent high income and educated districts. I hypothesize that this is part of the reason high in-

come districts produce more legislation. Conservative Republicans from high income districts sponsor bills that are more likely to be approved in a House vote.

Overall, I show multiple facets of the increasing influence of the affluent in legislation. Their new influence has been caused by: (1) Republicans taking control of the House and the South, (2) Midwestern Republicans starting to create more successful legislation when they represent the affluent, and (3) the increasing tie between conservative ideology and district demographics. Yet it is important to remember that Democrats also reflect the influence of the elite in legislative success. They produce more legislation when they represent districts with many highly educated constituents.

## 5 METHOD

This section presents the methodology required to disentangle the conflicting demands of collinearity and omitted variable bias. Education and income are highly collinear, which sometimes obscures their independent effect because it can inflate their estimated standard errors. One traditional fix to a collinearity problem is to omit one of the collinear variables from the model. Yet high levels of collinearity can exacerbate an omitted variable bias problem, so this is not always an ideal solution. A second traditional fix is to create a combined variable for income and education. Yet this can obscure the independent effect of each component. A third fix, ridge regression, meets these two solutions in the middle: compared to using a principle component it reduces the standard errors of collinear variables while inducing bias (Obrien, 2007; Vajargah, n.d.).

I show that the appropriate solution is contingent on the magnitude and direction of each variable in the model. I compare the coefficients for measures of income

and education in four models:

1. Including both education and income in the same model.
2. Including income while omitting education.
3. Including education while omitting income.
4. Including a socioeconomic status variable created from income and education through principle component analysis.

When education and income have opposing effects in the model, it is appropriate to focus on Model 1, which includes both income and education. When they have the same effect and collinearity artificially obscures the statistical significance of that effect, it is appropriate to omit one variable or combine them into a single variable, as in Models 2-4. This approach has many applications to collinearity and omitted variable bias problems across a wide range of scenarios in social science.<sup>8</sup>

I choose not to use a ridge regression for multiple reasons. For one, it is not needed to demonstrate statistically significant and substantively meaningful results. The benefit of using ridge regression over principle components is that it is not as prone to inflated standard errors. In the models I run, the principle component, which I refer to as socioeconomic status, frequently achieves statistical significance and has a meaningful substantive effect. For another, ridge regression induces biased estimates that do not easily unpack the different effects of education and income. Because of this bias, computing standard errors and p-values is not recommended

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<sup>8</sup>For example, education and income have disparate effects in constituent service preferences, on partisan identification (McCarty et al., 2006), and turnout based on county unemployment rates (Burden & Wichowsky, 2014). Omitting education from any of these analyses biases the predicted effect of income. In the case of Burden and Wichowsky (2014), omitting education creates a statistically significant yet artificially negative coefficient for county unemployment on turnout rates. Including education reveals a statistically significant positive coefficient. I describe these results in the appendix.

for ridge regression or related techniques (Park & Casella, 2008).<sup>9</sup> Finally, the coefficients in the four models I focus on are comparable because they all range between 0 and 1. The coefficients from a ridge regression are not because, by design, all coefficients are shrunk.

This section serves the additional purpose of describing the graphics that will be used throughout the paper. They are designed to reveal differences between groups of observations even when multicollinearity impacts the analysis for each group in different ways. For those not interested in the details about multicollinearity, I recommend skipping the next subsection, labeled “Collinearity: Omitted Variable Bias and Artificially Obscured Results,” which provides a detailed methodology for accounting for collinearity. The subsequent section briefly overviews the methods. It then describes the graphics used in the rest of the paper. They have been designed to concisely summarize the results from the four models used to account for collinearity, while highlighting trends as well as the effect of multicollinearity.

### **Collinearity: Omitted Variable Bias and Artificially Obscured Results**

Multicollinearity is well known to distort the effects of variables when two or more collinear variables are included in a model.<sup>10</sup> Less well known are the limitations of that distortion. Multicollinearity can obscure the true effect of a variable by artificially inflating the standard errors. It cannot create false statistically significant results. Unfortunately, the standard methods for dealing with artificially inflated standard errors is to combine the variables into one, or omit at least one variable. This can obscure the independent effect of each collinear variable when

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<sup>9</sup>Ridge regressions are typically used for prediction, where standard errors are not as valuable.

<sup>10</sup>The manual for the statistical package NCSS says: “Multicollinearity can create inaccurate estimates of the regression coefficients, inflate the standard errors of the regression coefficients, deflate the partial t-tests for the regression coefficients, give false, non-significant, p-values, and degrade the predictability fo the model (and that’s just for starters).” (NCSS, n.d.)

they each have a meaningful effect on the model.

One misconception is that the  $\hat{\beta}$  estimator, ie the regression coefficients, can be biased by collinearity. This is false. The proof that  $\hat{\beta}$  is unbiased does not require the dependent variables be uncorrelated. It will require that the error terms have a mean of 0, are identically distributed, and are uncorrelated, but it will not put any requirements on the collinearity of the matrix of independent variables,  $X$ . That is, the expected value of  $\hat{\beta}$  is identical to the true value of  $\beta$  regardless of collinearity.

The confusion about collinearity's effect on regression estimates comes from a separate yet potentially confusing proof: the least squares distance between the true values of  $\beta$  and the  $\hat{\beta}$  values is inflated when collinearity is present. It is an artifact of calculating distance, which involves squaring the difference between the true value beta and the estimated beta hat coefficients. This can be interpreted as indicating the unsquared  $\hat{\beta}$  is too large, but it is not. Multicollinearity does not cause  $\hat{\beta}$  estimates to be biased.

There can be a connection between the sizes of the coefficients, because it becomes very unlikely to get a certain combination of beta hat coefficients. Thus, if the covariance between two variables is negative, an overestimation of the magnitude of one variable is likely to cause an underestimation in the magnitude of the other. Note that, this does not create an overall bias in the estimation of  $\hat{\beta}$ .

The primary influence of multicollinearity is on the confidence intervals. This affects the precision of the estimates, not the accuracy.

In effect, severe multicollinearity inflates the variances of the regression coefficients, and this increases the probability that one or more regression coefficients will have the wrong sign (Montgomery, Peck, & Vining, 2012, p. 121).

Of course, the prediction about a coefficient having the wrong sign is only valid when the variances are inflated. That is, the coefficient may be both not statistically sig-

nificant and have the wrong sign. Collinearity alone will not produce a statistically significant coefficient with the wrong sign. If the results are statistically significant, then it is at least as correct as any effect seen in the absence of multicollinearity. As Belsley succinctly put it:

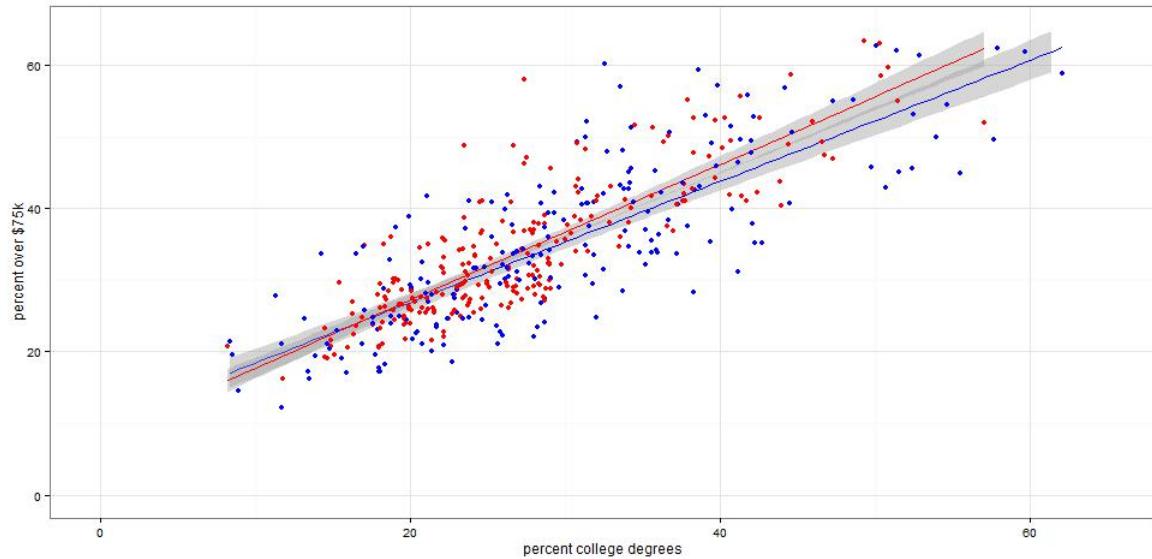
Thus, if an investigator is only interested in whether a given coefficient is significantly positive and is able, even in the presence of collinearity, to accept that hypothesis on the basis of the relevant t-test, then collinearity has caused no problem. Of course, the resulting forecasts or estimates may have wider confidence intervals than would be needed to satisfy a more ambitious researcher, but for the limited purpose of the test of significance initially proposed, collinearity has caused no practical harm. These cases serve to exemplify the pleasantly pragmatic philosophy that collinearity doesn't hurt so long as it doesn't bite (Belsley, 1991, p. 73).

### **Accounting for Collinearity between Education and Income**

This section examines how to capture the disparate effects of income and education when they can be disentangled, and how to capture the overall effect of income and education when the independent impact of each cannot be disentangled. The graphs that I present are designed to reveal changes between groups even when there is a change in the consequences of multicollinearity for the analysis from one group to the next.

As can be seen in Figure 2, income and education are strongly correlated. The graph plots the district income and education for each representative in the 113th Congress. Other Congresses have very similar correlations. Red dots represent districts represented by a Republican, and blue represents Democrats. The regression line is also depicted, in blue for Democrats and red for Republicans. Clearly, there is a strong correlation between district education and income for both Democrats and Republicans. This collinearity affects the ways omitted variable bias appears. As discussed in the prior section, it fortunately cannot artificially create statistically significant results.

Figure 2: Collinear Relationship between Education and Income, 2013-2014



The short methodological summary in this paragraph is further expanded in subsequent sections. Because of collinearity, the effects of district income and education must be treated differently based on whether they have opposing or similar effects on the dependent variable. Education and income have opposing effects on the dependent variable prior to 1995. Because of these opposing effects, the model will be less biased when both income and education are included together in the same model. Including either on their own will induce bias due to the omitted variable. However, this approach does not work when education and income have the same effect on the dependent variable, as often happens after 1995. In that case, they need to either each have their own model, or a combined socioeconomic score should be used. The combined socioeconomic score has benefits because it captures the additive effect of income and education, as well as not excluding any additional valuable information due to an omitted yet useful variable. However, I cannot simply use one set of variables prior to 1995 and another after 1995 because

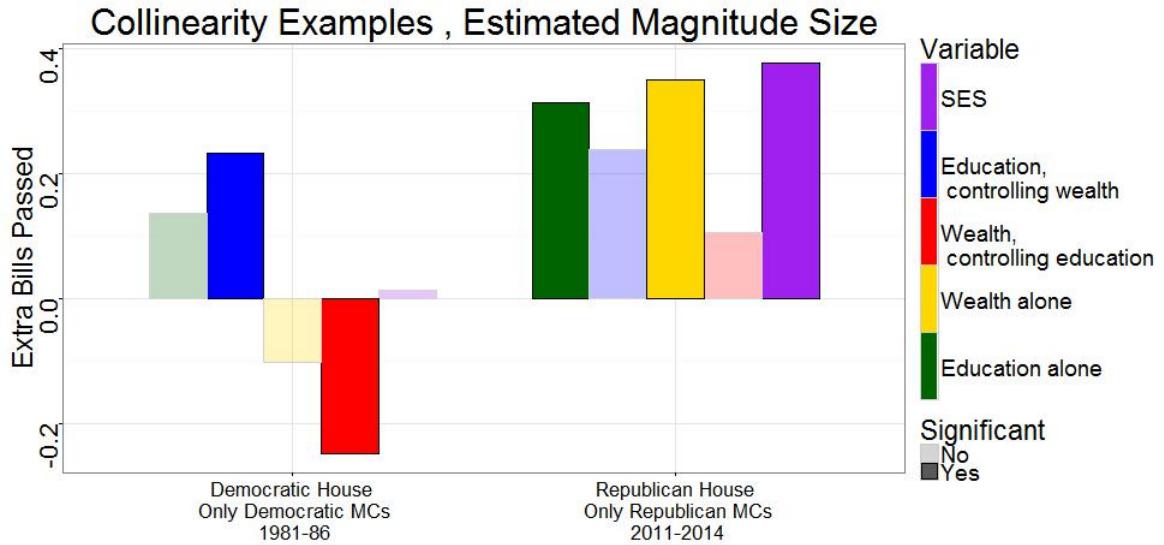
the effect sizes would not be comparable. Thus, the following analysis will present the results of four models and five coefficients, each using different socioeconomic variables: income and education in the same model, income alone, education alone, and a combined socioeconomic measure.

Figure 3 graphically summarizes two examples of the effects of collinearity. The y-axis shows the estimated number of extra bills passed by an individual member of Congress based on the socioeconomic characteristics of their district. This magnitude is estimated by comparing the number of successful bills sponsored by a legislator who represents the top quartile of the independent variable versus the number of successful bills sponsored by a legislator who is statistically identical except for representing a district at the bottom quartile. For example, the purple bar on the far right of Figure 3 shows that Republicans in the Republican controlled House between 2011 and 2014 who representative a district at the top quartile of the socioeconomic distribution sponsor 0.36 more successful bills than an equivalent representative from a district at the bottom quartile of the socioeconomic distribution. The effect is statistically significant, so the bar is bolded and outlined in black.

Each bar represents the magnitude for one of five coefficients: district education without controlling for income (green), education controlling for income (blue), income without controlling for education (yellow), income controlling for education (red), and a combined socioeconomic measure (purple). Note that the education variables are blue and green. The income variables are yellow and red. The socioeconomic variable is purple, which is the color wheel result from combining of blue and red.

The colors are faded when they are not statistically significant at the  $\alpha = 0.05$

Figure 3: Effects of Collinearity



level, and bolded with a black outline when they are statistically significant. For example, for Democrats in the Democratic Houses between 1981 and 1986, the coefficient for education when income has been controlled for, in blue, is statistically significant. So is the coefficient for income when education is controlled for, in red. The other three bars are not statistically significant. Specifically, the coefficients for education without controlling for income (green), income without controlling for education (yellow), and overall socioeconomic status (purple) are not statistically significant. The opposite is true for Republicans in Republican Houses of 2011-2014.

Each group of five bars was chosen as a case study in the two main ways collinearity can effect the results. The left hand group of five bars shows the magnitude of the effect for each of the five coefficients for 1981-86, focusing on Democrats. The House was controlled by Democrats at this time. The right hand group of five bars shows the magnitudes of each coefficient for 2011-14, focusing on Republicans in the Republican controlled House.

The take away from Figure 3 is that for some datasets one set of coefficients will capture an effect, and for others that same set of coefficients will obscure the true effect. Fortunately, when these effects reach the level of statistical significance they are accurate in so far as the model is otherwise well specified.<sup>11</sup>

The left hand of Figure 3 illustrates the effects of district socioeconomic characteristics for Democrats in the Democratically controlled House from 1981-1986. This is an example of when collinearity does not artificially obscure the independent effect of income and education when the model includes both at the same time. Only the coefficients for education, controlling for income (blue), and income, controlling for education (red), are statistically significant. Notably, they have opposing effects on legislative success. These results can also be seen in the first column of Table 2, which reports the results of the full model. Despite their collinearity, their independent effects are clear. This is primarily due to the fact that they pull in opposing directions; one counters the effect of the other.

The other three variables are not statistically significant, two due to obvious omitted variable bias, and the third due to the countering influences of education and income. For the income (education) variables, this is due to omitted variable bias induced by education (income). For example, when education is omitted from the model and income is included, omitted variable bias will reduce the effect size and increase the standard errors. This is because the collinearity between education

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<sup>11</sup>Collider bias or omitted variable bias are two ways in which the model could be poorly specified, but they are both unlikely based on current theoretical expectations within the field. The model is a negative binomial model, which is appropriate for this kind of overdispersed count data. Thus, the model type is well specified. The results are robust to the controls I have available to me. It is possible that there is some other omitted variable that would substantially change the results, or that there is a complicated causality story inducing collider bias. However, this is unlikely based on current knowledge. The included controls are typical to those used in other studies, and to my knowledge the field has not uncovered another variable that would induce substantial omitted variable bias in this model.

Table 2. Collinearity Examples for the Number of Successful Bills

	Democrats, Democratic House 1981-86				Republicans, Republican House 2011-14			
	Income	Education	Income	Education	Income	Education	Income	Education
income	-0.015*	-0.006	(0.005)	0.014	0.004	(0.009)	0.016	0.016*** (0.005)
education	0.025** (0.009)			(0.008)	0.016 (0.010)		(0.010)	0.020*** (0.005)
conservativeness	-0.730* (0.305)	-0.820** (0.307)	-0.601* (0.299)	-0.603* (0.280)	-0.534 (0.278)	-0.534 (0.278)	-0.615* (0.279)	
seniority	0.112*** (0.012)	0.110*** (0.012)	0.114*** (0.012)	0.026* (0.012)	0.024* (0.012)	0.024* (0.012)	0.027* (0.011)	
percent black	-0.068* (0.031)	-0.061* (0.031)	-0.057 (0.031)	-0.212*** (0.052)	-0.207*** (0.053)	-0.207*** (0.053)	-0.213*** (0.052)	
Black Caucus	-0.375 (0.216)	-0.420 (0.217)	-0.330 (0.216)					
comm. chair	0.591*** (0.163)	0.575*** (0.165)	0.600*** (0.165)	0.901*** (0.144)	0.911*** (0.145)	0.911*** (0.145)	0.896*** (0.144)	
powerful comm.	-0.673*** (0.112)	-0.687*** (0.112)	-0.678*** (0.112)	-0.231* (0.116)	-0.204 (0.115)	-0.204 (0.115)	-0.237* (0.115)	
Observations	768	768	768	480	480	480	480	
Akaike Inf. Crit.	2,550,349	2,555,514	2,553,602	1,614,676	1,615,063	1,615,063	1,612,844	

\*p&lt;0.05; \*\*p&lt;0.01; \*\*\*p&lt;0.001

Note: Negative Binomial models,

and income means that income will capture part of the effect of education. Since education actually has a negative effect on legislative success, the apparent effect of income will be reduced by that negative effect of education. This negative effect will be treated as statistical noise, so the standard errors will also increase. Thus, both the green and yellow bars, education and income without controlling for the other, are statistically insignificant and have lower magnitudes than the red and blue bars. This statistical insignificance is not a necessary outcome of the opposing effects of income and education, but it is a common effect. If either or both had a large enough effect with low enough variance, all four coefficients (income controlling education, education controlling income, income alone, education alone) could be statistically significant. However, the variables without the controls will always have lower magnitudes than the variables including the controls, so long as education and income have opposing effects. The purple bar is both small in magnitude and low in statistical significance. As discussed later, this is due to the effects of income and education canceling each other out when they are combined.

The accuracy of the coefficients for Democrats between 1981 and 1986 are clear in the diagnostics for multicollinearity shown in Table 3 and Table 4. These tables depict three different diagnostics for collinearity. The first is the condition index, which is a measure of the degree to which the principle components of a variance-covariance matrix are unequal (Montgomery et al., 2012). Different sources provide slightly different cutoff values: Montgomery et al. (2012) sets the cutoff for high collinearity at 100, while the R package Perturb sets it at 30. Collinearity affects those variables that have a high variance decomposition proportion, set at 0.50 by Belsley (1991), or 50% of the variance inflation. These values are bolded in Table 3. While the condition index does rise above the cutoff values, it does not affect both

education and income at the same time. Therefore, education and income do not have sufficient collinearity for Democrats between 1981 and 1986 to obscure the results. Instead, the high condition index is influenced by the intercept and the year. Collinearity between the intercept and year has no meaningful effect on this analysis.

The variance inflation factor is calculated from the correlation matrix (Montgomery et al., 2012). Again, the threshold for high collinearity varies, but it is common to set the cutoff at values higher than five or ten. None of the variance inflation factors exceeds this cutoff. This supports the conclusion that the collinearity in the model does not meaningfully obscure the results.

The most useful diagnostic comes from the Perturb package in R. This package induces small changes to the variables to see if they unduly influence  $\hat{\beta}$ . It is considered the best test to see how much collinearity affects regression results. The results are presented in Table 4. It presents the lower bound of the 95% confidence interval for each coefficient, as well as the upper bound. If the coefficient does not change signs, it is a strong indication that collinearity does not affect the direction of the coefficients. For this group of observations, Democrats between 1981 and 1986, collinearity does not appear to influence the direction of the effects of income or education, nor meaningfully change the magnitude of the coefficient.

The opposite situation is shown in the right hand grouping of five bars from Figure 3. It is common in the modern era, which I define as starting after 1995. Here, district income and education both are associated with increased legislative success. This time, because the directions of the effects are the same, no omitted variable bias obscure the effects. However, this time the effect of income (education) controlling for education (income) are artificially obscured by the inherent collinearity between

Table 3. Democratic 1981-1986 Collinearity Diagnostics: Condition Index and Variance Inflation Factor

Condition Index	Variance Decomposition Proportions					Weights	
	intercept	income	education	year	conservativeness	seniority	percent black
1.000	0.000	0.001	0.002	0.000	0.003	0.005	0.005
3.390	0.000	0.010	0.007	0.000	0.001	0.007	0.668
4.483	0.000	0.012	0.027	0.000	0.000	<b>0.850</b>	0.002
6.701	0.001	0.000	0.144	0.001	0.347	0.028	0.002
7.066	0.000	0.016	0.200	0.000	<b>0.645</b>	0.102	0.188
10.272	0.000	<b>0.830</b>	0.255	0.001	0.000	0.005	0.121
43.091	0.026	0.002	0.034	0.062	0.003	0.000	0.902
123.566	<b>0.973</b>	0.129	0.332	<b>0.937</b>	0.000	0.002	0.001
Democratic 1981-1986 Variance Inflation Factor							
income	education	year	conservativeness	seniority	percent black		
1.320129	1.510961	1.288464	1.087829	1.021415	1.099920		

Table 4. Democratic 1981-1986 Collinearity Diagnostics: Perturbations

Impact of Perturbations on Coefficients				
	mean	std deviation	minimum coefficient	maximum coefficient
Intercept	1.843	0.074	1.674	2.035
income	0.018	0.001	0.016	0.019
education	-0.016	0.001	-0.017	-0.014
year	-0.023	0.001	-0.025	-0.022
conservativeness	-0.299	0.006	-0.312	-0.284
seniority	0.103	0.000	0.102	0.103
percent black	-0.003	0.000	-0.004	-0.003

the two variables. This is evident in Table 2. The fourth column of regression results shows that the standard errors on income and education are well above the cutoff for traditional levels of statistical significance.

The impact of collinearity can be seen in the diagnostics for Republicans between 2011 and 2014, shown in Table 5 and Table 6. While the variance inflation factor does not signal any major issues for the coefficients on income and education, the condition index and the perturbations do. For the condition index of 24.271, both education and income have very high variance decomposition values, well over the 0.50 or 50% threshold. This is reflected in the values of the coefficients when small perturbations are introduced, as described by Table 6. Here, the sign of the coefficient on income in the model that has a control for education flips between -0.005 and 0.008. Thus, collinearity can be expected to effect the sign of the coefficient for income in addition to inflating the standard errors.

If the full model including both education and income does not have statistical significance, it is appropriate to either not include one of the two variables or to create a socioeconomic index based on factor analysis. Any of these solutions will

Table 5. Republican 2011-14 Collinearity Diagnostics: Condition Index and Variance Inflation Factor

Condition Index	Variance Decomposition Proportions					Weights
	intercept	income	education	year	conservativeness	
1.000	0.000	0.000	0.000	0.001	0.005	0.000
3.829	0.000	0.000	0.000	0.001	0.392	0.456
4.477	0.000	0.002	0.003	0.007	<b>0.533</b>	0.001
8.405	0.000	0.055	0.088	0.000	0.079	0.009
12.983	0.000	0.000	0.008	0.000	0.863	0.045
24.271	0.000	<b>0.936</b>	<b>0.898</b>	0.000	0.017	0.011
30.667	0.001	0.004	0.000	0.001	0.031	0.000
848.367	<b>0.999</b>	0.002	0.001	<b>0.999</b>	0.001	0.000
Variance Inflation Factor						
income	education	year	conservativeness	seniority	percent black	
1.958373	1.939159	1.003454	1.023099	1.034675	1.010547	

Table 6. Republican 2011-14 Collinearity Diagnostics: Perturbations

Impact of Perturbations on Coefficients				
	mean	std deviation	minimum coefficient	maximum coefficient
Intercept	-18.229	0.188	-18.632	-17.780
income	0.002	0.002	-0.005	0.008
education	0.013	0.003	0.006	0.021
year	0.166	0.002	0.162	0.169
conservativeness	-0.502	0.010	-0.526	-0.480
seniority	0.050	0.000	0.050	0.051
percent black	-0.025	0.000	-0.025	-0.024

account for the joint impact of education and income, instead of their separate effects. This is inevitable, yet still informative. The overall impact of income and education, especially when they are inducing similar effects, is a useful measure of the influence of the socioeconomically privileged.

Therefore, when collinearity obscures the results of the model that includes controls for both income and education, I focus on the results from the other three models; one that includes income with no control for education, another that includes education with no control for income, and a final one that controls for the combined socioeconomic status variable. Each of these three coefficients are statistically significant for Republicans between 2011 and 2014, supports the results of the others, provides an extra interesting dimension of interpretation.

A word of caution is in order. The only way to discover which is the right model is to run a few different specifications. This lends itself to accidental p-hacking if not used carefully. To counter this tendency, I always report the results for all four models and theoretically ground why I choose to focus on certain results but not others.

Socioeconomic privilege in a district is the combined effect of education and income, depicted by the purple bar in Figure 3. Both have been clearly shown to impact constituent preferences over representation. This is a standard solution for highly correlated variables when both lend useful information to the model even though their collinearity leads to artificially statistically insignificant results when both are included in the model. Factor analysis creates a latent variable that is a linear combination of the impact of income and education (Belsley, 1991; Montgomery et al., 2012).<sup>12</sup> This common latent variable captures between 85.1% and 91% of the variation between district education and income, depending on the year it is calculated for. When district education and income have opposing effects, the socioeconomic factor captures whether educated and high income districts are overall represented by legislatively successful politicians, or if the effects cancel each other out. Prior to 1995 the effects cancel out. After 1995, in Republican Houses, the effects add on each other to create a magnitude of effect that is often larger than either income or education alone. A district with moderate levels of education and income tends to have less legislatively successful representatives than a district with the same level of income but slightly more education. This is an effect that cannot be captured by looking at either income or education alone.

### **Implications for the Models on Tradeoffs between Constituent Service and Policy**

In the prior part of the dissertation I showed that Republicans were more focused on policy when they represented socioeconomically privileged districts. In this

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<sup>12</sup>Different kinds of data lend themselves to different measures of socioeconomic status. A factor analysis approach is appropriate when the dimensionality of the data is substantially reduced in a factor analysis, one dimension captures a large fraction of the variance, and the geographic level makes sense (Krieger et al., 2002; Shavers, 2007). This is the case for my data.

part of the dissertation I show that the choice of measure for capturing socioeconomic status matters. The direction of the effects of all measures of socioeconomic status were similar for the prior part of the dissertation. I suspect this similarity is because the main effect was evident for Republicans, not Democrats. Observationally, Republicans tend to respond to education and income in similar ways, while Democrats are more likely to find that education and income have opposite influences on political outcomes. Thus, the influence of socioeconomic status was more often obscured when both income and education were controlled for at the same time in the part of the dissertation on constituent service. So I did not use a model that included both variables at the same time. Using income alone, education alone, or the factor for socioeconomic status all produced similar effects. For parsimony, I focused on one measure: the socioeconomic factor that captured the combined impact of income and education.

## 6 INCREASING INFLUENCE of AFFLUENCE

The power of the affluent, as reflected in how much of the nation's wealth they control, has risen over the past forty years. Theory 1 predicts this will be reflected in legislative behavior; legislators produce more legislation when they represent affluent and educated districts.

In order to depict the evidence for Theory 1, I base the graphic in Figure 4 on legislative control of Congress. The legislative behavior of a member of Congress is strongly influenced by who controls Congress (Ramey, 2015; Ballard, 2018). Figure 1 in the data section showed that minority members do not produce much successful legislation. For the visualizations, I create six time blocks based on party control of the House and Senate. Each block presents the results for a regression performed

solely on the group of legislators in that time period, unified by the same parties in control of the House and Senate.<sup>13</sup> For example, the first time period focuses on 1973-1980, when the House and Senate were both controlled by Democrats. The second block presents the legislators serving between 1981 and 1986 under the Reagan administration. In that second block the House is still controlled by Democrats, while the Senate is controlled by Republicans. Figure 4 provides visual evidence that the influence of affluence in legislative outcomes has increased over the past forty years.

Each time block has the five bars described in the methods section. The blue and green bars represent two measures of district education. The red and yellow bars present measures of district income. The purple bar presents a unified measure of district socioeconomic privilege, created using factor analysis. The statistically significant results are bolded, while the statistically insignificant results are faded. For example, all coefficients except for the effect of socioeconomic status are statistically significant for 1973-1980. The coefficients for the two measures of district income are statistically significant and negative, while the coefficients for the two measures of district education are statistically significant and positive.

Grouping the data in this manner allows the reader to easily see the changes over time while minimizing the clutter in the graphic. Showing all five bars together allows the reader to see the changes that occur over time with respect to the influence of income and education on legislative success, even though there is a change in

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<sup>13</sup>I carefully validated that members of one party tend to have similar connections between district demographics and legislative activity under the same legislative majority in Congress. One exception is the year of 2001-2002. This was a single session of Congress that had a number of peculiarities. For one, it was the session that was meeting when 9/11 happened. This had a chaotic effect on American politics. For another, partisan control over the Senate was not consistent. Rather than include it as a time period on its own, I folded it into the time period from 1995-2006, which otherwise saw unified control of Congress by Republicans. The results do not meaningfully change if I simply omit 2001-2002, nor if I include those two years on their own.

the consequence of multicollinearity on the bias and statistical significance in the variables. It highlights the differences in the reported effects based on the party in control of the House and the Senate, as well as the changing influence of district income and education on legislative success.

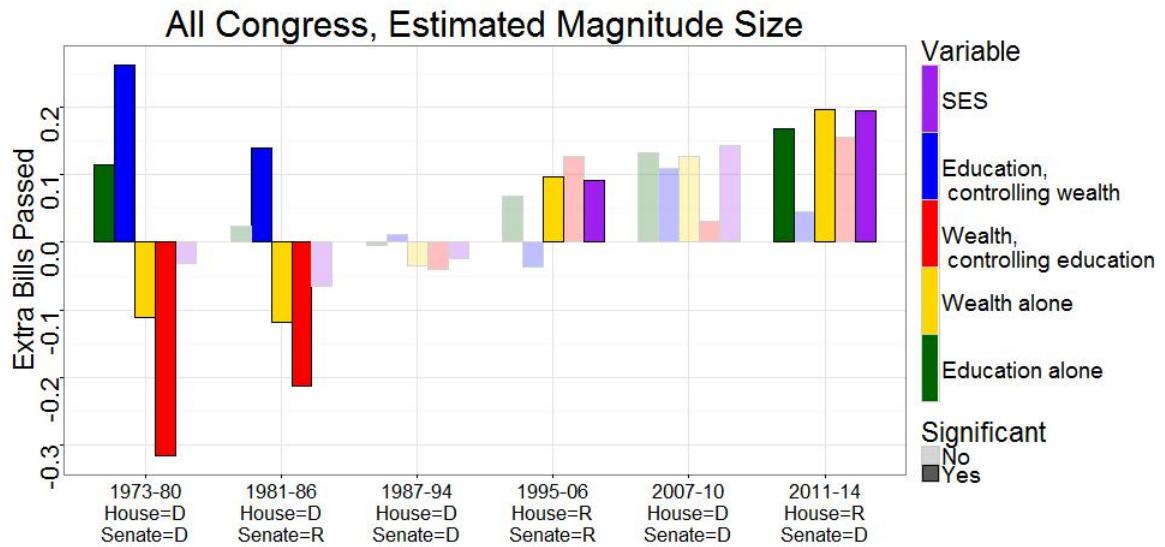
Theory 1 is supported by Figure 4. Representatives from high socioeconomic status districts produce more successful legislation than they used to. Indeed, prior to the Republican revolution of 1994, legislators from high income districts produced *less* legislation. After 1995, they produce more. This effect is consistently statistically significant for the effect of income in the model that does not control for education, represented by the yellow bars. Recall that the yellow bars are bolded when they are statistically significant. Here, the yellow bars are statistically significant for the following time periods: 1973-80, 1981-86, 1995-2006, and 2011-2014. Between 1973 and 1980, a legislator from a high income district would be expected to produce 0.11 fewer bills in each Congressional session than an equivalent low income district. This is seen in the first yellow bar in Figure 4<sup>14</sup>. The direction of this effect remains between 1981 and 1986. By 1994, the effect becomes positive and is generally statistically significant. Between 1995 and 2006, a legislator from a high income district could expect to sponsor 0.11 additional successful bills as compared to a legislator from a poor district. I will validate the statistical significance of this trend over time in Table 7.

In order to compare effects across time, I focus on the measure of income from the model that controls for education, shown in the red bar in Figure 4. This measure produces statistically significant results for 1972-1980, and is unbiased throughout

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<sup>14</sup>I define a high income district to be in the top quartile of income. A low income district is at the bottom quartile of income. Calculating the change in legislative success between two such districts gives a strong indication of how big the effect is in practical terms.

Figure 4: Estimated Magnitude of Socioeconomic Variables across Time



the entire time period. Thus, it is preferred to the measure of income that does not control for education (yellow), which is biased by the omitted highly collinear education variable. Yet while the measure of income controlling for education (red) is unbiased after 1994, it is often affected by inflated standard errors caused by multicollinearity. Indeed, the red bars are all faded after 1994 because the standard errors are too large for statistical significance. Thus, the measure of income controlling for education (red) is not preferred after 1994, particularly between 2011 and 2014. Yet I use it for the entire time period because it is better than using the measure of income that is biased by omitting education (yellow).

Between 1972 and 1981, a member of Congress representing a district in the top quartile of the income spectrum could expect to pass 0.32 fewer bills (first red bar in Figure 4) than a member of Congress who represented a district in the bottom quartile. This bar is bolded because it is statistically significant. The average number of bills passed was 1.668, so this represents an 18.9% decrease

in the number of successful bills passed by a representative from a high income district. Meanwhile, between 2011 and 2014 a representative of a high income district could potentially expect to produce 0.156 additional pieces of legislation relative to a similar representative from a less high income district. The confidence on this number is weak because the coefficient is not statistically significant, as indicated by the fact that the red color is faded instead of bold. The average number of bills passed in each Congressional session in that time period was 1.19, so a representative from a high income district tended to create around 13.1% more successful bills than a representative from a poor district. Thus, between 1972 and 2014, the effect of income almost entirely reverses to favor districts that have many high income constituents.

Figure 4 also shows that prior to the Republican revolution of 1994, legislators representing highly educated districts produced more legislation (green and blue bars). Between 1972 and 1981, a representative of a district in the top quartile of income could expect to produce 0.26 additional pieces of successful legislation as compared to a representative from a less educated district. This is a 15.7% increase, relative to the average of 1.688 bills passed per member of Congress per Congressional session. After the 1994 Republican Revolution, the effect of education was usually smaller but rarely statistically significant.

Prior to 1994 the combined impact of income and education, as reflected in the purple socioeconomic measure, was negative and not statistically significant. That is, socioeconomically privileged districts did not have legislators who were overall more legislatively productive. This null effect prior to 1995 is caused by the effects of income and education canceling out in the coefficient for the combined socioeconomic measure. After 1994 the effect of the combined socioeconomic status

variable is consistently positive. It is also statistically significant for both Houses that were controlled by Republicans.

The graphics show the statistical significance for each of the five measures of socioeconomic status in each time period. The time trends are visually evident, but it is unclear how strong they are. Specifically, the graphics cannot show whether the time trends are statistically significant. I present the full results of a model that examines time trends in income and education for all members of Congress between 1972 and 2014. I do not control for partisan identity or who controls the House, as the goal is simply to reveal whether the influence of affluence has increased over time. The next section introduces the effect of partisanship as it influences how a district's socioeconomics changes the number of bills a legislator successfully sponsors.

The statistical significance of the time trend and other effects are presented in Table 7. The models in this table feature a number of interactions. The full regression is for the model that controls for both income and education is specified below.

$$\begin{aligned} \text{successful legislation} \sim & \text{income} + \text{income} * \text{year} + \text{education} + \\ & \text{education} * \text{year} + \text{year} + \text{MC conservativeness} + \\ & \text{MC seniority} + \% \text{ black population} + \text{Black Caucus MC} + \\ & \text{Black Caucus MC} * \text{year} + \text{committee chair} + \text{powerful committee} \end{aligned}$$

The remaining models modify this model mildly by including or excluding education and income variables, as shown in Table 7.

The benefit of Table 7 is the precision of the estimates and the inclusion of time and the differences between the parties. The downside to that they are difficult to interpret thanks to the multiple interaction terms included. For example, it is clear from the visuals that income had a negative correlation to legislative success

Table 7. All Bills Passing House 1972-2014, No Partisan Controls

	SES	Income, Education	Income	Education
SES	-1.162*** (0.295)			
SES*year	0.011*** (0.003)			
income		-0.092** (0.032)	-0.098*** (0.022)	
income*year		0.001** (0.0003)	0.001*** (0.0002)	
education		0.006 (0.040)		-0.069* (0.028)
education*year		-0.00001 (0.0004)		0.001** (0.0003)
year	0.009** (0.003)	-0.019** (0.007)	-0.018** (0.007)	-0.006 (0.006)
conservativeness	-0.089* (0.036)	-0.094** (0.036)	-0.092** (0.036)	-0.088* (0.036)
seniority	0.069*** (0.004)	0.069*** (0.004)	0.069*** (0.004)	0.070*** (0.004)
percent black	-0.087*** (0.011)	-0.090*** (0.011)	-0.089*** (0.011)	-0.085*** (0.011)
Black Caucus	0.677 (1.088)	0.489 (1.100)	0.451 (1.094)	0.960 (1.085)
Black Caucus*year	-0.007 (0.010)	-0.006 (0.010)	-0.005 (0.010)	-0.010 (0.010)
comm. chair	1.248*** (0.057)	1.246*** (0.057)	1.246*** (0.057)	1.251*** (0.057)
powerful comm.	-0.355*** (0.034)	-0.356*** (0.034)	-0.353*** (0.034)	-0.356*** (0.034)
Observations	9,194	9,194	9,194	9,194
Akaike Inf. Crit.	27,903.930	27,902.010	27,901.190	27,909.640

Note: Negative binomial models, \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

in the 1970s and a positive one after 1990. In the full model this can be inferred by combining the coefficient for income with those for the coefficient on the interaction between income and year, but it is far easier to see in the graphics. The effect of party and education are similarly difficult to interpret in the full models. The visuals are based on regressions run separately by six blocks of years, which is an effective way to interpret interaction terms with discrete variables.

The interaction effect between year and the measures of income and overall socioeconomic status are positive and statistically significant. For example, the interaction effect between socioeconomic status and year in the first column, second row of Table 7 is 0.011. It is statistically significant at the  $\alpha = 0.001$  level. Not only did the impact of affluence increase over that time period, but as shown in Figure 4 the effect completely flipped for income when education is not controlled for. Prior to 1994, the coefficient for both income measures was negative and usually statistically significant. After 1994, the effect became positive, with statistical significance when the House was controlled by Republicans.

Of note, the interaction term between education and year is negative when income is controlled for. That is, the independent effect of education on legislative productivity has decreased over time. It never entirely flips direction, but it does become statistically negligible.

The effect of multicollinearity and omitted variable bias are evident in Figure 4. At no point after 1994 are the effects of education or income statistically significant when the other is controlled for. This is due to multicollinearity inflating the standard errors when both variables create a similar effect on legislative productivity. On the other hand, prior to 1986 the magnitude of both income and education without controlling for the other are artificially reduced due to omitted

variable bias. For example, look at the effect of income without controlling for education (yellow bar). It is much smaller in magnitude than the red bar, which is income after education has been controlled for. This is because the income variable captures a lot of the effect of education, which is trying to create the opposite effect on legislative productivity.

A few other results are worth highlighting in Table 7. Committee chairmen tended to produce more legislation, as seen in the consistently positive and statistically significant results in the second to last line of the table. Members of powerful committees tended to produce less legislation, as seen in the last line of the table. One explanation for this is that members of powerful committees get to directly influence the language of important legislation, so policy inclined members focus more on getting the language right on other bills than on producing independent legislation. That is, they gain power through means other than creating successful legislation.

The overall goodness of fit of the model is reported with Akaike's Information Criterion (AIC). This criterion is used to evaluate nested models against each other. The magnitude of the AIC is irrelevant, but the relative size to other models helps determine how good the model is at capturing variation. A smaller AIC mean a better model. Here, the models are all have similar AICs. The best fitting model is the one that includes only income, but it fairly similar to the others. Thus, there is no reason to discard any of these four models as inappropriate based on their relative AIC.

These results indicate clear support for the theory that the influence of affluence has increased over time. In particular, the coefficients for the connection between district wealth, legislative success, and time are both statistically signif-

icant and substantively meaningful. On average, a legislator representing a high income district produced 18.9% fewer successful bills between 1972 and 1980, while a legislator in the modern era produces 13.1% *more* successful bills. The changes in the effect of income drive an increasing impact of overall socioeconomic status as well.

## 7 INFLUENCE of AFFLUENCE by PARTISAN-SHIP

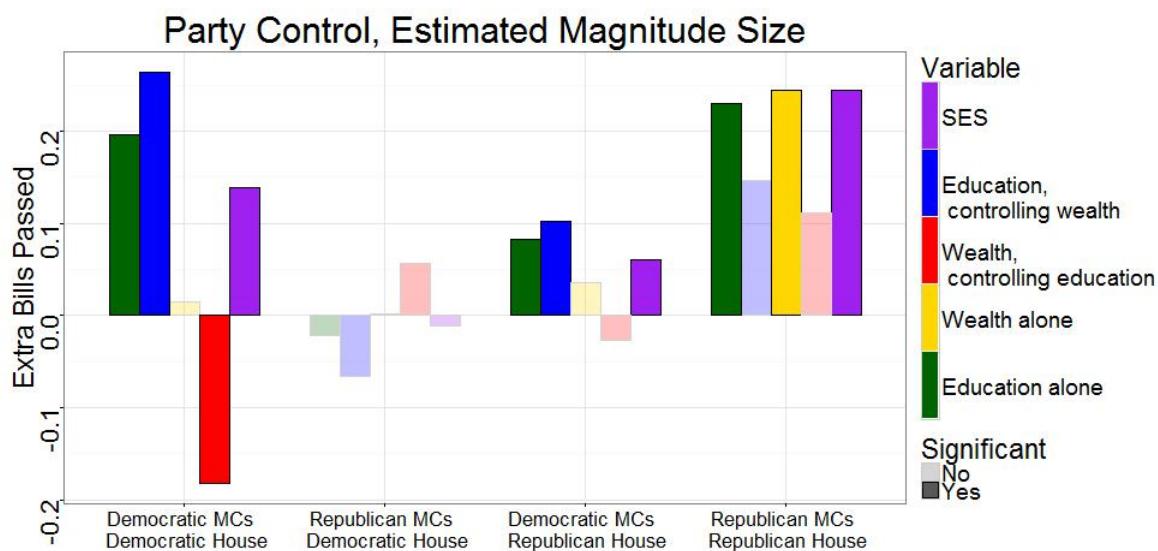
The results from Figure 4 indicate that there is a substantial difference in the coefficients based on whether Democrats or Republicans control the House. This section explores the effects of partisanship on legislative productivity. Figure 5 shows the expected magnitude of the effect. Table 8 tests Theory 2, that the effect of income on legislative productivity will be larger for Republicans. The figure and table both show that the effect of district income on legislative success is stronger for Republicans in Republican Houses than it is for Democrats in Democratic Houses.

Figure 5 groups the data according to the party of the member of Congress and which party controlled the House. As with Figure 4, each bar represents the magnitude of the effect for that measure of socioeconomic status and that group of legislators. Yet this graph highlights the differences between Republicans and Democrats instead of changes over time. The biggest difference between Democrats and Republicans involves income. This provides similar, but more precise evidence than Figure 4. Specifically, it highlights just how much less likely Democrats are to produce more legislation when they represent high income district.

The height of each bar still represents how many extra successful bills an in-

dividual member of Congress could expect to sponsor based on the socioeconomic characteristics of their district. For example, the last bar, in purple, represents how many extra bills a Republican member of Congress in a House controlled by Republicans could expect to create when they represent a socioeconomically privileged district.

Figure 5: Magnitude of Effects Based on Partisanship and Party Control in the House



Here, a Republican legislator in a Republican House could expect to sponsor an extra 0.23 pieces of legislation when they represent a district at the top of the socioeconomic spectrum instead of one at the bottom. This is a substantial effect. The average number of successful bills sponsored by a Republican in a Republican House is 1.96, so 11.7% more bills are passed by legislators from socioeconomically privileged districts.

The magnitudes of the effects for all statistically significant results are in the same general range, all of them substantively meaningful. They represent a 5% to

15% increase in successful legislation, depending on the measure, for any member of Congress in a House controlled by their own party.

The magnitudes of the effects are largest for majority members of Congress. This is unsurprising. As demonstrated in Figure 1 from the data section, the minority party passes many fewer bills than the majority party. The magnitude of the effect when the member of Congress does not have the power to effectively shepherd a bill through to passage must necessarily be low.

The results in Table 8 demonstrate that the differences between Republican and Democratic members of Congress visible in Figure 5 are generally statistically significant. For this model, I only included individual legislators who were in the majority party. So for 1973-1994 and 2007-2010, I excluded all Republicans as they were the minority party. For 1995-2006 and 2011-2014 I excluded all Democrats, who were the minority. The goal is to remove the more scattered influence of members of the minority party. They tended to not produce much legislation. As we will see in the next section, they also often reflect the patterns of the majority party instead of their own unique pattern.

It is clear that for both measures of income, Republicans produced more successful legislation when they represented a high income district than did Democrats. The overall effect of district income is driven by who is in the majority. This implies that part of the changing effect over time seen in the previous section is caused by the Republicans taking control of the House in 1994, and retaining control for all years but 2007-2010.

In fact, the overall effect of income, once education is controlled for, is negative. This is clearly driven by the fact that Democrats controlled the House for more of this time frame, and Democratic legislators in Democratic Houses produce less legislation

Table 8. Bills Passing House 1972-2014, Only Majority Party Legislators

	SES	Income, Education	Income	Education
SES	0.084*** (0.025)			
SES*Republican	0.019 (0.039)			
income		-0.009*** (0.002)	0.0001 (0.002)	
income*Republican		0.010* (0.005)	0.007* (0.003)	
education		0.017*** (0.002)		0.012*** (0.002)
education*Republican		-0.008 (0.006)		-0.001 (0.004)
Republican	0.481*** (0.087)	0.316** (0.116)	0.387*** (0.107)	0.425*** (0.112)
conservativeness	-0.485*** (0.093)	-0.526*** (0.093)	-0.551*** (0.093)	-0.462*** (0.091)
seniority	0.092*** (0.004)	0.091*** (0.004)	0.091*** (0.004)	0.092*** (0.004)
percent black	-0.098*** (0.012)	-0.111*** (0.012)	-0.097*** (0.012)	-0.104*** (0.012)
Black Caucus	-0.063 (0.077)	-0.117 (0.077)	-0.090 (0.077)	-0.071 (0.076)
comm. chair	0.725*** (0.051)	0.727*** (0.051)	0.715*** (0.051)	0.731*** (0.051)
powerful comm.	-0.489*** (0.036)	-0.496*** (0.036)	-0.489*** (0.036)	-0.494*** (0.036)
Observations	5,274	5,274	5,274	5,274
Akaike Inf. Crit.	18,630.140	18,599.020	18,643.150	18,608.470

Note: Negative binomial models, \*p<0.05; \*\*p<0.01; \*\*\*p<0.001

when they represent high income districts. Yet the net effect of socioeconomic status is still positive, indicating that both Democrats and Republicans produce more successful legislation when they represent high income and highly educated districts. Although Figure 5 shows that Democrats are generally more influenced by district education levels than are Republicans, the difference is not statistically significant. The net effect of education is also positive and statistically significant. Both parties tend to produce more legislation when they represent highly educated districts.

Overall, Republicans behave differently from Democrats, particularly when it comes to the income of their districts. Republicans produce more legislation when they represent high income districts (yellow and red bars), while Democrats produce less (red bars). Thus, the changing effect of district income over time is at least partially due to the Republican take over of the House. This supports Theory 2.

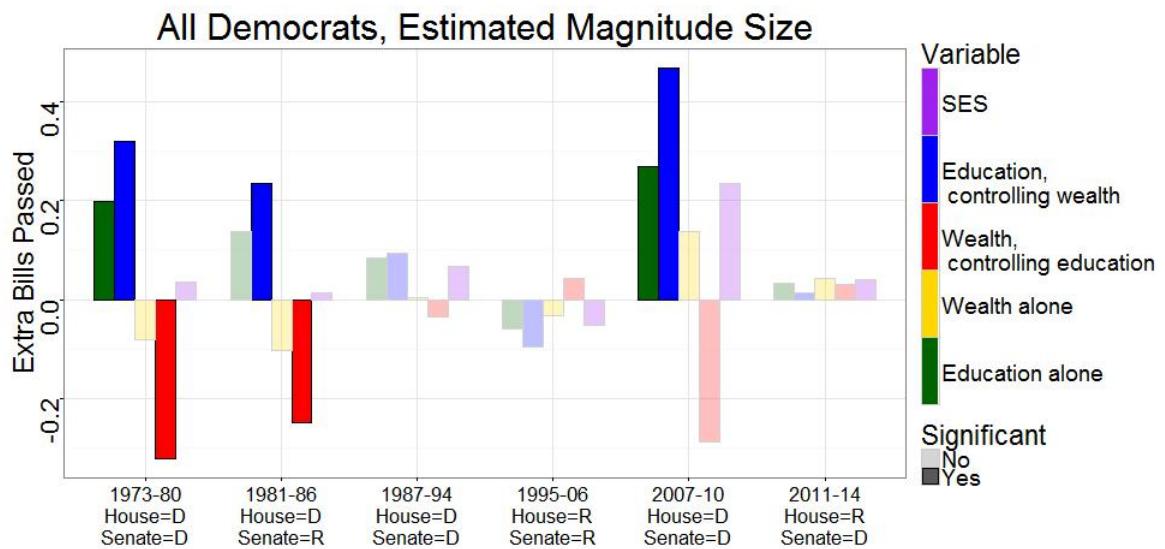
## **8 INFLUENCE OF AFFLUENCE by PARTISANSHIP over TIME**

The prior two sections of this part of the dissertation discussed and provided support for the two theories being tested: the influence of the affluent has increased over time, and Republicans are more likely to be influenced by the affluent. I showed that legislators are increasingly producing more legislation when they represent high income and socioeconomically privileged districts. Prior to 1986, legislators from districts with large numbers of high income constituents created less successful legislation than those with many low income constituents. After the Republican revolution

of 1994, they produce more. Republicans took over the House in 1994, and only Republicans tend to produce more legislation when they represent high income districts. A logical conclusion is that the new influence of high income districts in legislative success comes directly from the Republican takeover of the House.

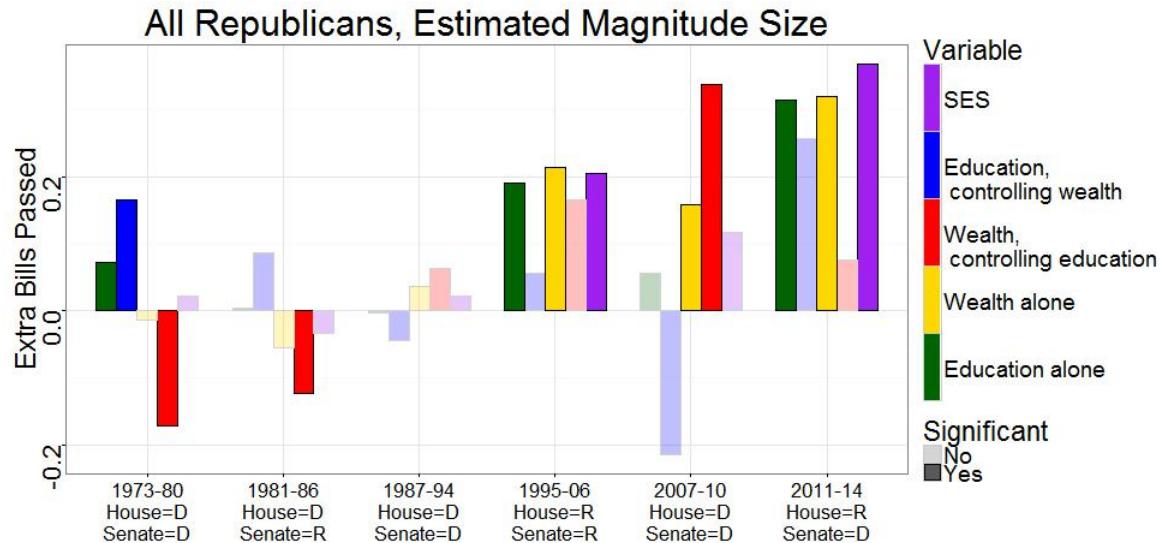
This section explores how well this conclusion fits with the changing behavior of the Republican and Democratic parties over time with respect to the income and educational attainment of the constituents in their districts. The results support the conclusion that recent influence of the affluent is caused by Republicans. However, it also reveals that Republican legislative success has seen substantial changes in its tie to district income and education. Democrats, on the other hand, have behaved consistently with respect to legislation and their district socioeconomic measures whenever they hold the majority in Congress.

Figure 6: Estimated Magnitude of Socioeconomic Variables for Democrats Across Time



To show this, I once again use graphics highlighting the magnitudes of the effects of each socioeconomic variable of interest. As before, I separate them into

Figure 7: Estimated Magnitude of Socioeconomic Variables for Republicans Across Time



groups based on time, but this time I also separate them by party in Figures 6 and 7. As before, the magnitudes associated with statistically significant coefficients are bolded. So for Democrats between 2007 and 2010, the magnitudes for both education measures (blue and green) are bolded because they are both statistically significant. However, the magnitudes for the income measures (yellow and red) and socioeconomic status measure (purple) are faded because they are not statistically significant. I then show full regression results that test statistical significance of changes over time and by party in Table 9.

Figures 6 shows that Democrats behave remarkably consistently over time, particularly when they are in control of the House. All three statistically significant bars representing the effect of education when income is controlled for, shown in dark blue, are positive and from three of the four time periods when Democrats controlled the House. The effect sizes are meaningful. The first blue bar, representing education after income has been controlled for, shows that between 1973 and

1980 representative from a highly educated district is expected to pass 0.32 extra bills in every session of Congress. The average number of bills passed between in this time period was 2.23, so this represents a 14.3% increase. Similarly, a Democratic legislators from a district with high income, controlling for education (red bar), can expect to create 0.32 fewer bills as compared to a similar legislator representing a poor district. This is a 14.3% decrease. The effect was slightly smaller between 1981 and 1986, and slightly bigger for education between 2007 and 2010.

Republicans, on the other hand, have seen very different correlations between district education, income, and legislative success over time. As seen in Figure 7, prior to 1994 Republicans and Democrats had very similar ties between district socioeconomics and legislative success. This reflects Gelman (2009)'s finding that something changed about partisan behavior after 1990. In legislative outcomes after 1994, Republicans began to behave as we saw in the prior section. That is, Republicans after 1994 created more successful legislation when they represented both high income (red and yellow bars) and high socioeconomic status (purple bars) districts.

The effect sizes for the statistically significant coefficients are substantively meaningful. Indeed, they are particularly large relative to the number of bills passed in a Congressional session for Republicans between 1973 and 1980, which was 0.68. Recall that Republicans were in the minority party at the time, so they sponsored vastly fewer successful pieces of legislation than did Democrats. Of note is the fact that a Republican between 1973 and 1980 could expect to pass an extra 0.17 extra bills when they represented a district with many highly educated constituents (blue bar), as opposed to a Republican who did not. This is an additional 25% more bills. Similarly, a Republican representative would create 0.17 fewer bills when they

represented a district with many high income constituents (red bar), a 25% decrease. Again, these effects are in the same direction as the effects for Democrats in this time period. The magnitude of effect is much smaller, but the percentage change is much larger for Republicans.

Although Republicans and Democrats are similar prior to 1994, they are very different after. Between 2011 and 2014, a Republican representing a district with many high income constituents could expect to produce an additional 0.32 bills (yellow bar) as compared to a similar Republican representing a poorer district. This represents 18.6% more successful legislation produced by representatives of high income districts. The effect of education for that time period was similar. This makes sense, as the green, yellow, and purple bars all capture the effect of income and education together. In the case of the green and yellow bars, which capture the effect of education (income) without controlling for income (education), the magnitudes capture the effect of both variables due to omitted variable bias. The magnitude of effect for district socioeconomic status captures the effect of both income and education by design. For Democrats in this time period, there was no clear relationship between district demographics and legislative success.

As is often the case throughout this analysis, when income and education have the same effect on successful legislation, the effects of the coefficient for income when education is controlled for is statistically insignificant due to multicollinearity. Thus, for Republicans between 2011 and 2014, I cannot disentangle the separate effects of income and education. However, I can say that in this time period districts with many highly educated and high income constituents have Republican legislators who produce unusually high amounts of successful legislation.

One possible explanation for the changing behavior of Republican representa-

tives is the changing coalitions of the Republican party. Republicans are supported by different groups of lobbyists than they used to be (Grossmann & Hopkins, 2016). They are increasingly influenced by the evangelical base (Leege & Kellstedt, 2016). It is also possible that Republicans are increasingly from areas that favor the rich, such as the South. I show some support for this in a subsequent section.

Table 9 shows whether the patterns evident in the graphics are statistically significant. I use two interaction terms in this table to uncover the effects of both partisanship and time: one interaction between year and the measures of socioeconomic status, and another interaction between the party of the member of Congress and the measures of socioeconomic status.<sup>15</sup> For example, the interaction between the income of a district and time<sup>16</sup> is positive, 0.001, and statistically significant. As time goes on, the impact of the income of a district on the number of bills that representative produces goes up. This is true for both models that include income. Note that the interaction term between district income and the party of that district's representative is negative and statistically significant in both models that include income.<sup>17</sup> This is initially counterintuitive, because Republicans clearly produce more successful legislation when they represent high income districts. Yet it makes sense when considering the effect of time. As time goes on, representatives produce more legislation when they hail from high income districts. As time goes on, Republicans have gained control of the House. Thus, the interaction term for time and income

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<sup>15</sup>A more appropriate model would include a triple interaction term between party, year, and the measures of socioeconomic status. However, the regression fails to run when that triple interaction is used in the model that controls for both education and income. The results of the model with a modification of the triple interaction term for the model that includes income and education at the same time are consistent with the analysis presented here.

<sup>16</sup>This interaction is on the fifth row of Table 9

<sup>17</sup>This is on the sixth row of Table 9. The interaction term for the model with both income and education included is -0.29, while the interaction term for the model that excludes education is 0.009.

Table 9. Bills Passing House 1972-2014, Controlling for Time and Party

	SES	Income, Education	Income	Education
SES	-0.267 (0.297)			
SES*year	0.003 (0.003)			
SES*Republican	-0.008 (0.037)			
income		-0.070* (0.032)	-0.052* (0.022)	
income*year		0.001* (0.0003)	0.001* (0.0002)	
income*Republican		-0.029*** (0.004)	-0.009** (0.003)	
education		0.060 (0.040)		0.024 (0.028)
education*year		-0.001 (0.0004)		-0.0002 (0.0003)
education*Republican		0.040*** (0.005)		0.013*** (0.003)
year	-0.028*** (0.004)	-0.032*** (0.008)	-0.042*** (0.007)	-0.023*** (0.006)
Republican	-12.001*** (0.595)	-9.266*** (0.678)	-11.872*** (0.563)	-11.198*** (0.628)
Republican*year	0.117*** (0.006)	0.091*** (0.007)	0.119*** (0.006)	0.107*** (0.007)
majority	-0.184*** (0.037)	-0.284*** (0.038)	-0.191*** (0.038)	-0.208*** (0.037)
conservativeness	-0.377*** (0.090)	-0.395*** (0.090)	-0.383*** (0.090)	-0.380*** (0.089)
seniority	0.065*** (0.004)	0.066*** (0.004)	0.066*** (0.004)	0.065*** (0.004)
percent black	-0.097*** (0.011)	-0.105*** (0.011)	-0.097*** (0.011)	-0.101*** (0.011)
Black Caucus	-3.757*** (1.078)	-4.051*** (1.082)	-3.977*** (1.081)	-3.670*** (1.075)
Black Caucus*year	0.036*** (0.010)	0.039*** (0.010)	0.038*** (0.010)	0.035*** (0.010)
comm. chair	1.153*** (0.054)	1.120*** (0.054)	1.149*** (0.054)	1.145*** (0.054)
powerful comm.	-0.361*** (0.033)	-0.379*** (0.033)	-0.365*** (0.033)	-0.362*** (0.033)
Observations	9,194	9,194	9,194	9,194
Akaike Inf. Crit.	27,430	27,317	27,420	27,401

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

is capturing the increasing power of Republicans over time. Once you account for that changing effect of time, the model indicates that Republicans produce less legislation when they represent high income districts than do Democrats. Yet because Republicans have gained power in the House over time, ever since 1994 they have produced more successful legislation when they represent high income districts.

Overall, the time trends evident in Figures 6 and 7 are validated by Table 9. As time goes on, the importance of district income for legislative success has increased. The increasing power of Republicans over time drives the evident increase in the connection between Republicans creating successful legislation and the number of high income constituents in their districts, seen in Figure 7.

Yet it is valuable to examine the influence of partisanship by separating Democrats and Republicans in the regression results instead of including an interaction term. By separating the two parties from each other, the regression results will highlight the effect of time for each party with fewer complicated nuances in the analysis. These results are presented in Tables 10 and 11. These results clearly support the time trends evident in Figures 6 and 7.

The regression results for Republicans in Table 10 substantiate the statistical significance of the changing influence of district income on legislative success. The time trends on both district socioeconomic status and income are statistically significant and positive.<sup>18</sup> Unsurprisingly, the coefficients in the model that includes both education and income are statistically insignificant. This is, once again, due to collinearity inflating standard errors when both education and income are included. Yet the time trend on education does not itself have an effect on legislative success, as seen in the fourth column of Table 10. Thus, we can infer that the educational at-

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<sup>18</sup>These interaction effects are apparent in rows two and four of Table 10

Table 10. Republican Bills Passing House 1972-2014, Controlling for Time

	SES	Income, Education	Income	Education
SES	-0.920*			
	(0.445)			
SES*year	0.010*			
	(0.004)			
income		-0.055	-0.083*	
		(0.048)	(0.032)	
income*year		0.001	0.001**	
		(0.0005)	(0.0003)	
education		-0.016		-0.063
		(0.063)		(0.043)
education*year		0.0003		0.001
		(0.001)		(0.0004)
year	0.026***	0.004	0.003	0.012
	(0.006)	(0.012)	(0.011)	(0.010)
majority	1.061***	1.008***	1.073***	1.024***
	(0.056)	(0.060)	(0.057)	(0.056)
seniority	0.063***	0.063***	0.063***	0.063***
	(0.005)	(0.006)	(0.006)	(0.005)
conservativeness	-0.620***	-0.624***	-0.610***	-0.626***
	(0.117)	(0.117)	(0.117)	(0.117)
percent black	-0.109***	-0.113***	-0.108***	-0.112***
	(0.017)	(0.017)	(0.017)	(0.017)
comm. chair	0.847***	0.847***	0.846***	0.849***
	(0.076)	(0.076)	(0.076)	(0.076)
powerful comm.	-0.290***	-0.298***	-0.287***	-0.296***
	(0.046)	(0.047)	(0.046)	(0.046)
Observations	4,146	4,146	4,146	4,146
Akaike Inf. Crit.	11,230.340	11,228.700	11,235.010	11,226.840

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

tainment of residents of a district does not substantially effect the changing amounts of successful legislation their representatives produce. Republicans have increasingly created more legislation when they represent high income and high socioeconomic status districts.

The regression results for Democrats confirm what was evident in Figure 6: there is no evident interaction between time and socioeconomic variables for Democrats. That is, none of the interactions terms for the measures of socioeconomic status and time are statistically significant.<sup>19</sup> Their behavior is remarkably consistent over time. What is evident in Table 11 is the fact that Democrats produce less legislation when they represent high income districts, as reflected in the coefficient of 0.056 in the third row, for income in the model that does not control for education. All the other measures of socioeconomic status do not reach statistical significance, which is to be expected when including an interaction term that does nothing to explain the variation in the model. That is, including the interaction term for time with Democrats increases standard errors, obscuring the effects of a district's socioeconomic status, income, and education.

Intriguingly, the best fitting model as seen in Akaike's Information Criterion is different for Republicans and Democrats. For Republicans, the best fitting model is the one that focuses on education and omits income. For Democrats, the best fitting model is the one that incorporates both income and education together.

Note that the effect of being a black Democrat is evident in Table 11. Black legislators have become more legislatively productive over time. In fact, the effect size of being black on legislative success is statistically significant and negative for the 1970s, but statistically significant and positive in the 1990s and 2000s. This is

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<sup>19</sup>These interaction terms appear on the second, fourth, and sixth rows of Table 11

Table 11. Democratic Bills Passing House 1972-2014, Controlling for Time and Black MC Interaction

	SES	Income, Education	Income	Education
SES	-0.610 (0.371)			
SES*year	0.006 (0.004)			
income		-0.038 (0.041)	-0.056* (0.028)	
income*year		0.0003 (0.0004)	0.001 (0.0003)	
education		0.011 (0.048)		-0.009 (0.034)
education*year		-0.00003 (0.0005)		0.0001 (0.0003)
year	0.014** (0.004)	-0.001 (0.009)	-0.001 (0.009)	0.007 (0.007)
majority	-1.310*** (0.054)	-1.339*** (0.056)	-1.317*** (0.055)	-1.311*** (0.054)
seniority	0.077*** (0.004)	0.077*** (0.004)	0.076*** (0.004)	0.077*** (0.004)
conservativeness	-0.416*** (0.125)	-0.437*** (0.125)	-0.464*** (0.125)	-0.354** (0.122)
percent black	-0.108*** (0.013)	-0.112*** (0.013)	-0.111*** (0.013)	-0.106*** (0.013)
Black Caucus	-3.901*** (1.041)	-4.014*** (1.063)	-4.078*** (1.051)	-3.749*** (1.037)
Black Caucus*year	0.038*** (0.010)	0.039*** (0.010)	0.039*** (0.010)	0.037*** (0.010)
comm. chair	0.852*** (0.066)	0.852*** (0.066)	0.848*** (0.066)	0.860*** (0.066)
powerful comm.	-0.516*** (0.043)	-0.522*** (0.043)	-0.517*** (0.043)	-0.516*** (0.043)
Observations	5,060	5,060	5,060	5,060
Akaike Inf. Crit.	15,281.450	15,275.450	15,278.230	15,281.320

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

one result that deserves extra attention. The results for the modern era have been known for a while,(Rocca & Sanchez, 2007) but as far as I am aware no one has explored the fact that black Democrats in the 1970s and 1980s were not successful in creating legislation.

Overall, we can see that Republicans are the reason that high income districts tend to have legislators who produce more successful legislation after 1994. Yet this is not just because they took power after the 1994 Republican revolution. It is also because Republicans increasingly produce more successful legislation when they represent high income and socioeconomically privileged districts.

## **9 PARTISANSHIP and SOCIOECONOMICS**

Throughout these two parts of the dissertation I have focused on the differences between Republicans and Democrats. In the first part of the dissertation I showed the Republicans focused more on policy than did Democrats. In this section I will statistically validate the second theory: Republicans, who are thought to represent business elites, are more engaged than Democrats in legislation when they represent the high income constituents.

In order to determine whether there is a significant difference between Democrats and Republicans, I use an interaction term between the three socioeconomic measures and party. This shows whether the magnitude of the effect is significantly different between Republicans and Democrats. The excluded variable is Democrats, so a positive interaction term indicates that Republicans are more responsive to socioeconomic status relative to Democrats.

I refer to the results from Table 12 to validate the statistical difference between Republicans and Democrats. In this table I do not control for time, as I want

to isolate the differences between Republicans and Democrats independent of the fact that Republicans have gained power in the House over time. This table shows that the interaction effects between party and almost all socioeconomic measures are statistically significant. For example, the coefficient for the interaction between Republican identification and socioeconomic status, seen on line three of Table 12, is positive (0.133) and strongly significant. Thus, across all forty years, Republicans tend to be more successful than Democrats in creating policy when they represent socioeconomically privileged districts. The effects are similar for the income and education variables. Intriguingly, it is clear that the time trend on income is being driven by the time trend on education. We can see this in the fact that the interaction between Republican identification and education is statistically significant and positive in both the second and fourth column, ninth row. Yet the interaction between Republican identification and income is not statistically significant once education is controlled for. That is, because Republicans produce more successful legislation than Democrats when they represent highly educated districts, they also produce more successful legislation than Democrats when they represent districts with many high income constituents.

Of course, it is difficult to fully interpret an interaction effect based on a table of regression results. To improve ease of interpretation, Figures 8 and 9 break down the interaction effect by party, party control, and time.

Figure 8 graphs the coefficient for this interaction term according to which party was in control of the House. The model used to estimate the coefficient on the interaction term that is shown in each bar is a minor modification of those already presented in Section 6.

$$\text{successful legislation} = \text{income} + \text{income} * \text{Republican MC}$$

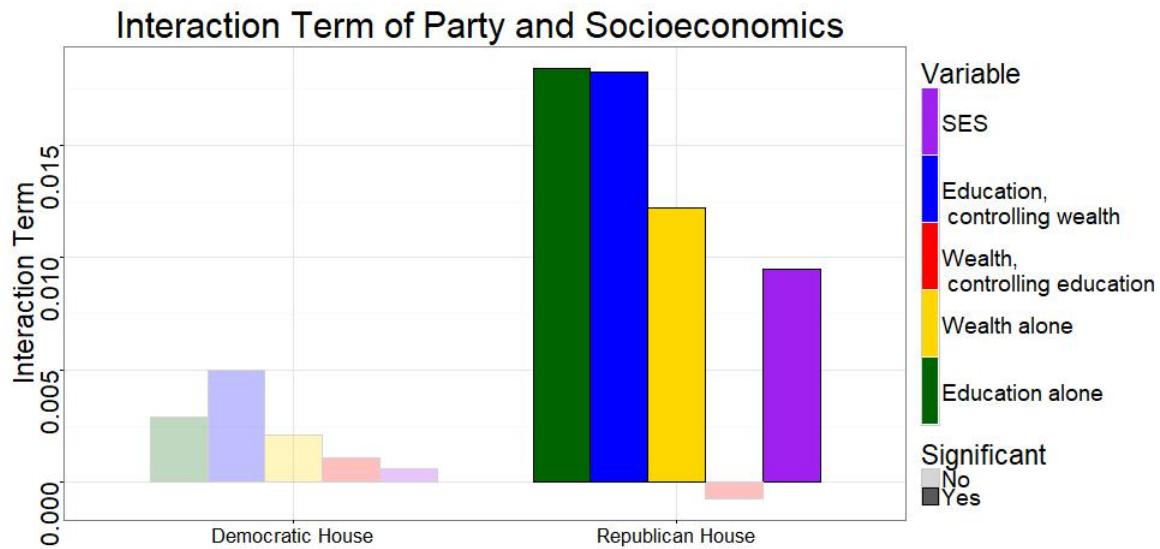
Table 12. Bills Passing House 1972-2014, Controlling for Partisanship

	SES	Income, Education	Income	Education
SES	0.003 (0.027)			
SES*majority	-0.061* (0.035)			
SES*Republican	0.133*** (0.035)			
income		-0.007*** (0.002)	-0.003 (0.002)	
income*majority		0.007 (0.004)	-0.002 (0.003)	
income*Republican		0.002 (0.004)	0.009*** (0.003)	
education		0.011*** (0.003)		0.005** (0.002)
education*majority		-0.015*** (0.005)		-0.010*** (0.003)
education*Republican		0.012*** (0.004)		0.013*** (0.003)
majority	-1.318*** (0.052)	-1.144*** (0.099)	-1.304*** (0.087)	-1.083*** (0.097)
Republican	-0.783*** (0.064)	-1.043*** (0.094)	-1.046*** (0.094)	-1.024*** (0.076)
Republican*majority	2.426*** (0.067)	2.364*** (0.076)	2.475*** (0.068)	2.364*** (0.069)
year	0.016*** (0.003)	0.007* (0.004)	0.018*** (0.003)	0.010** (0.004)
conservativeness	-0.443*** (0.080)	-0.456*** (0.080)	-0.449*** (0.079)	-0.425*** (0.080)
seniority	0.073*** (0.003)	0.073*** (0.003)	0.073*** (0.003)	0.073*** (0.003)
percent black	-0.108*** (0.010)	-0.112*** (0.010)	-0.109*** (0.010)	-0.108*** (0.010)
Black Caucus	-3.590*** (0.992)	-3.718*** (0.994)	-3.532*** (0.993)	-3.639*** (0.991)
Black Caucus*year	0.035*** (0.009)	0.036*** (0.009)	0.034*** (0.009)	0.035*** (0.009)
comm. chair	0.857*** (0.050)	0.855*** (0.050)	0.853*** (0.050)	0.861*** (0.050)
powerful comm.	-0.418*** (0.032)	-0.424*** (0.032)	-0.418*** (0.032)	-0.421*** (0.032)
Observations	9,194	9,194	9,194	9,194
Akaike Inf. Crit.	26,502.920	26,485.430	26,510.460	26,489.740

Note:

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

Figure 8: Difference between Republicans and Democrats for the Effect of Socioeconomic Status on Bill Passage by Partisan Control of the House

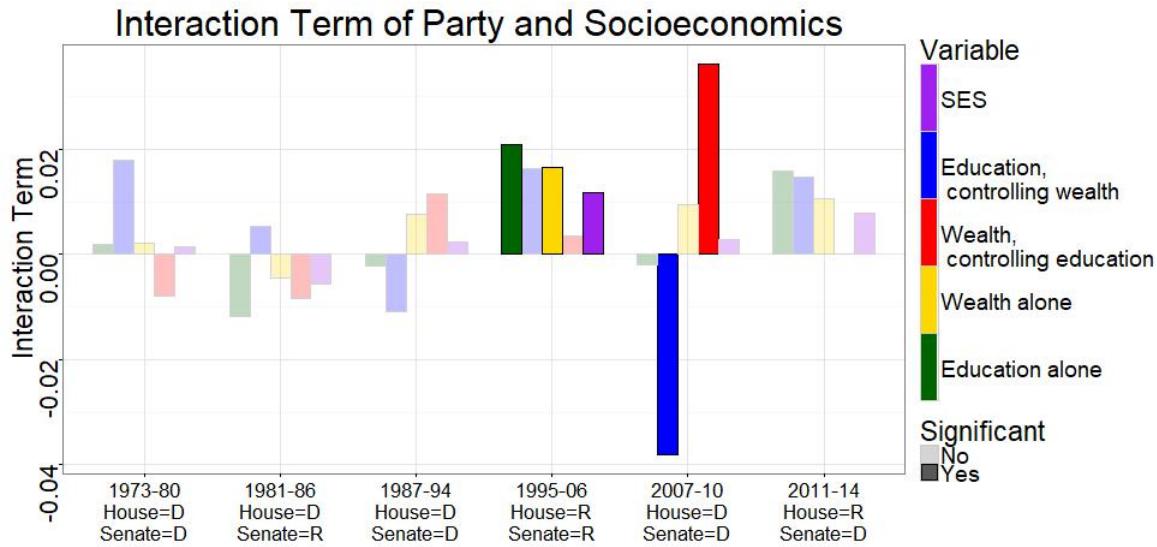


$\text{education} + \text{education} * \text{Republican MC} +$   
 $\text{MC conservativeness} + \text{MC seniority} +$   
 $\text{percent black population} + \text{Black Caucus MC} +$   
 $\text{Black Caucus MC} * \text{year} +$   
 $\text{committee chair} + \text{powerful committee member}$

Each bar in the graphic shows the size of the coefficient for the interaction term between Republican partisanship and the relevant income or education variable. Using the same model for both parties allows the interaction term between the district's socioeconomic status and the legislator's party affiliation to be estimated for each group of legislators. If the interaction is statistically significant and positive, the number of extra bills a Republican successfully sponsors because they are from a high income district can be expected to be higher than the number of extra bills a Democrat would expect to produce because of being from a high income district.

Republicans are more influenced by socioeconomic status than are Democrats. This is what we see happening in Figure 8. Republicans produce more legislation when they represent highly educated and socioeconomically privileged districts than do Democrats. That is, Republicans favor socioeconomically elite districts through legislation.

Figure 9: Difference between Republicans and Democrats for the Effect of Socioeconomic Status on Bill Passage Over Time



Yet we saw in the previous section that the differences between Republicans and Democrats changed over time. Therefore Figure 9 breaks the interaction effect apart by time. As was evident in prior sections, Republicans behavior was not very different from Democrats until after the Republican Revolution of 1994. Unsurprisingly, the clearest differences between Democrats and Republicans are evident after 1994. Intriguingly, the importance of who controls the House is highlighted. Between 2007 and 2010, Democrats controlled the House and therefore controlled the agenda. Here, Republicans behaved almost exactly in the opposite manner of

Democrats. Not only did they do a better job than Democrats of producing more legislation when they represented high income districts, but they produced much less legislation than Democrats when they represented district with highly educated constituents. Between 1995 and 2006, Republicans controlled the House. Here, the differences simply reflect the fact that Democrats had very minimal connections to the socioeconomic characteristics of their districts while they were in the minority. So the interaction terms reveals the same pattern of behavior for Republicans seen in Figure 7 in the previous section.

Republicans are more legislatively successful in districts with high levels of economic privilege than are Democrats between 1995 and 2010. That is, Republicans favor the socioeconomically privileged more than do Democrats since they took control of Congress. As seen in Figure 8, the effect is statistically significant for all Congresses combined. This supports the second theory, that Republicans are more likely to produce more legislation when they represent highly districts with many high income constituents, particularly since 1994.

## **10 EXPLORING REGIONAL CAUSES of POLITICAL PRIVILEGE**

One potential explanation for the changing influence of the affluent is that the parties are now affiliated with different regions of the country (Gelman, 2009). For example, Democrats used to be control the South, which is now a Republican bastion. If certain regions have constant preferences over legislation and legislative activity reflects the behavior of representatives from the more powerful areas, then the transition of the Republican party from a Midwestern party to a Southern party

could explain why the tie between district socioeconomics and legislative success has changed for Republicans. The results are suggest intriguing insights into regional variations in politics.

The changing power of the South is reflected in the number of legislators from the South in each party, as seen in Table 13. Prior to 1988, the regional power of Democrats was concentrated in the South. After 1994, that power transitioned to the Northeast. Instead, Southern Republicans now had the bulk of the premium committee seats. I focus on committee power here, but these results are very similar for the total number of Republican and Democratic seats held in each region as well as the number of members from each region who chair a committee. The base of power has diminished for Republicans in the Midwest and Northeast. Instead, Republican power has settled in the South.

Table 13. Percent of Legislators in Powerful Committees

	before 1988		after 1994	
	Democrats	Republicans	Democrats	Republicans
Midwest	23.8%	38.2%	17.7%	23.9%
Northeast	22.8%	19.3%	30.3%	10.6%
South	37.5%	29.6%	29.1%	46.7%
West	15.7%	12.9%	22.9%	18.8%
Observations	1,925	1,200	1,783	1,798

Figure 10 allows some inferences for whether the changing behavior of Republican legislators is driven by their geographic base. Figure 11 does the same for Democrats. Each figure has four graphics, one for each of the following regions: Northeast, Midwest, West, and South. Each graph shows the same information depicted in the graphs in sections six and seven. Namely, the far left hand grouping of coefficients in each graphic shows the magnitude of the effect of each variable for

legislators between 1973 and 1980. Using the example of Midwestern Republicans between 1973 and 1980, we can see that a Midwestern Republican produced 0.11 more successful bills when they represented a highly educated district (in blue), but created 0.13 fewer bills when they represented a district with high average incomes (in red).

Figure 10 and Figure 11 show that Southern representatives consistently produce more legislation when they represent high income and educated districts, especially when they are in the majority party. All of the statistically significant bars are positive. Republicans have taken over in the South, and Southerners produce more legislation when they represent high income districts. This has contributed to the overall trend that all Republicans increasingly produce more legislation when they represent high income districts.

Yet there are also indications that the increasing influence of affluence is due to changes in behavior within regions. Specifically, the changing patterns between legislation and socioeconomic characteristics for Midwestern Republicans reflect the patterns visible when Republicans are looked at as a whole. Prior to 1995, when Republicans were in the minority party, Midwestern Republicans from high income districts produced slightly less legislation than their counterparts in poorer districts. After the Republicans took over the House after 1995, Midwestern Republicans produced more legislation when they represented high income districts. Thus, the increasing power of high income districts is also being driven by the changing behavior of Midwestern Republicans.

Two other patterns are worthy of mention. The first is that Southern Democrats and Southern Republicans both have similar patterns of legislative productivity with respect to their district socioeconomic characteristics when they are in the majority

Figure 10: Republicans, Successful Legislation by Region and Time

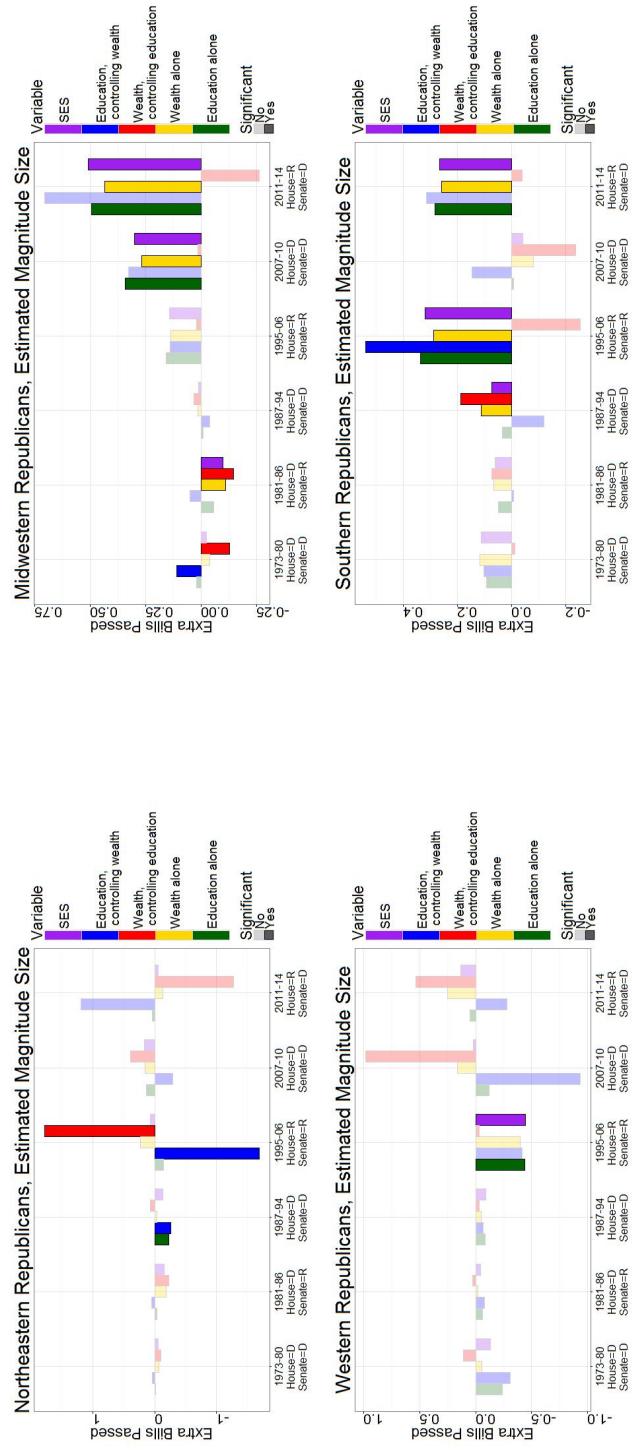
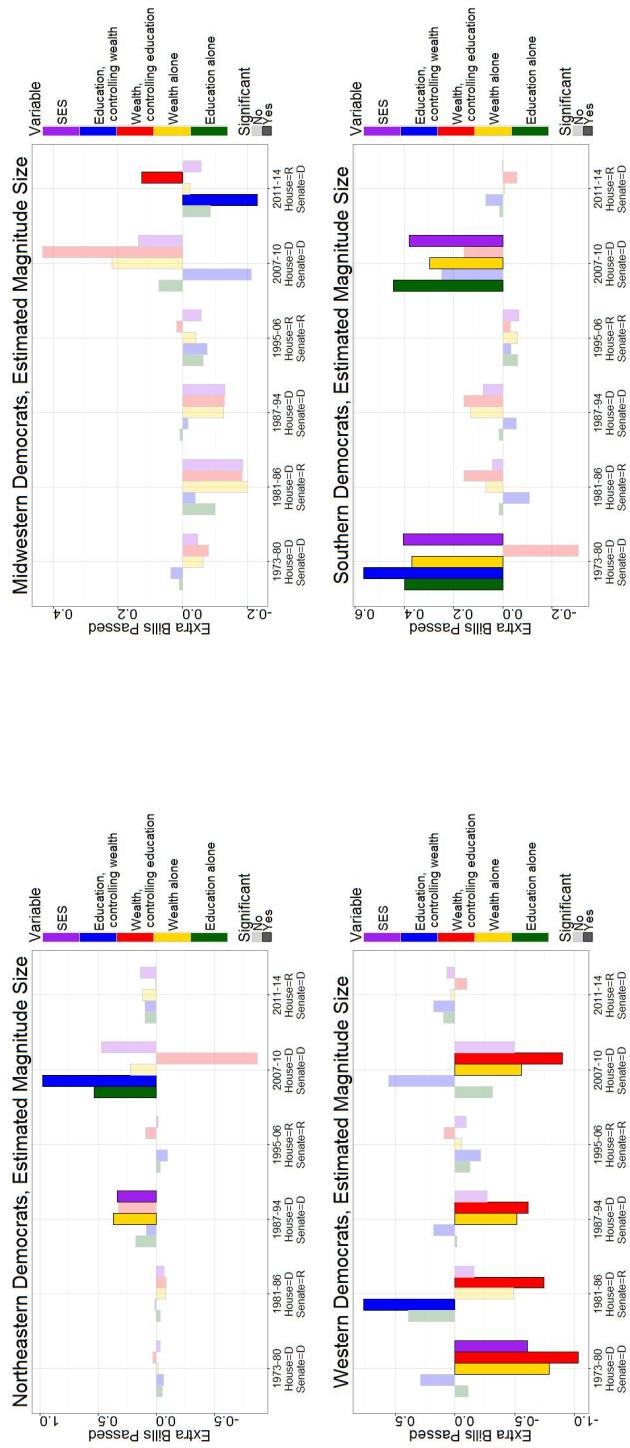


Figure 11: Democrats, Successful Legislation by Region and Time



party. They both tend to produce more legislation when they represent highly educated (blue and green bars) and socioeconomically (purple bars) elite districts. Yet the effect of income once education is controlled for (red) is negligible, and often negative. Midwestern Democrats and Republicans also appear have similar patterns of legislative success relative to their district demographics, although the effect sizes for Midwestern Democrats are rarely statistically significant. But both parties in the Midwest produced mildly less legislation when they represented high income and educated districts prior to 1994. After 1994, their behavior started to diverge a little more, although both parties produced a bit more legislation when they represented high income districts (yellow bars). Northeastern and Western Democrats, on the other hand, have very different patterns of legislative success relative to their district demographics than do Republicans. The consistency of behavior relative to district demographics, especially for Southern representatives, indicates that there is some merit to the idea that regional ideologies influence legislative behavior.

The second pattern of note is that the positive influence of education and negative influence of income for Democratic representatives appears to be caused by a confluence of behavior by Western and Southern Democrats. Namely, Western Democrats tend to produce more legislation when they represent poor districts (red and yellow bars), while Southern Democrats tend to produce more legislation when they represent educated districts (blue and green bars). As is evident in Figure 6 in Section 8, Democrats overall produce more legislation in high income districts with relatively low educational attainment.<sup>20</sup>

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<sup>20</sup>Note that the statistical significance of the effect of education for Democrats in that graphic is sometimes driven by the combination of statistically insignificant coefficients for education in each region except for the Midwest. That is, Democrats in the South, Northeast, and West all produce more legislation when they represent highly educated districts. This is sometimes statistically significant, but combined they produce statistically significant effects for all Democrats.

The evidence presented here is primarily exploratory. There are some intriguing similarities between Southern Democrats and Republicans, as viewed through the graphics. The idea that Southern legislators have a significantly different interaction with legislative success and district demographics effects is supported by the full regression analysis, so long as time is not controlled for. As seen in the appendix, the interaction effects between district income and educational measures, partisanship, and the South are generally statistically significant. Yet the effect of region and partisanship is not consistently statistically significant when time is controlled for. This is partially due to the fact that splitting representatives by time as well as region and party substantially reduces the numbers of available observations, so the power of the model is reduced. However, it could also be the case that time is not a relevant factor in the regional analysis. The appropriate model to account for regional variation needs better theoretical grounding in order to fully account for the impact of regional partisan affiliations. However, there appear to be an intriguing difference between regions, and consistent behavior within some regions. This provides an interesting avenue of additional study.

## 11 INFLUENCE of AFFLUENCE on IDEOLOGY

The last section of this dissertation explores a different view of the changing impact of affluence on legislative behavior. This time, I examine how members of Congress vote on all bills by examining their first dimension DW-Nominate scores. DW-Nominate scores are a measure developed in Poole and Rosenthal (1997), and are commonly used to capture how conservative or liberal a member of Congress is. This section replicates and expands on results from McCarty et al. (2006). As they show, income and education have clearly distinguishable effects on voting behavior

and the influence of income on voting behavior has increased over the past 40 years. I show that this effect is due to Republicans taking control of Congress and because Republicans now have lean more conservative when they represent a highly educated district. I hypothesize that this may contribute to the changing legislative success of Republican legislators who represent high income districts.

The dependent variable is the ideology of legislators, as measured by first dimension DW-Nominate scores. The more conservative a legislator, the closer his or her ideological score is to 1. The more liberal legislators have ideological scores close to -1. The economic and educational independent variables all range between 0 and 1, so their coefficients can be compared relatively directly.<sup>21</sup>

McCarty et al. (2006) show that connection between district income and legislator conservativeness has increased over the past 40 years. They argue that this is partially due to an increase in magnitude of the coefficient, but also because districts themselves are facing larger inequality.

Tables 14 and 15 show this is also due to the fact that Republicans are now more conservative when they represent districts with high socioeconomic status, not because all legislators have become more conservative when representing districts with high socioeconomic status. Democrats are still more liberal when they represent high socioeconomic status districts, just as they were in the 1970s and 1980s.<sup>22</sup>

Figure 12 highlights the changing effects of income, socioeconomic status, and education. As in the prior graphics, each bar in the graphics represent one measure of socioeconomic status from a regression that looked at that group of legislators.

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<sup>21</sup>The combined factor for socioeconomic status, SES, was normalized to range between 0 and 1. Education and income are both percentages that inherently are bounded between 0 and 1. Education reflects the percent of the district that has a college degree, and income reflects the percent of the district that earns over ~\$75,000 in 2009 inflation adjusted dollars.

<sup>22</sup>The effect has declined somewhat for Democrats, but it is still strongly negative.

Table 14. Republican Ideology by District Demographics 1972-2014

	SES	Income, Education	Income	Education
SES	-0.015*** (0.003)			
SES*year	0.0001*** (0.00003)			
income		0.015* (0.006)	-0.015*** (0.004)	
income*year		-0.0001* (0.0001)	0.0001*** (0.00004)	
education		-0.051*** (0.008)		-0.036*** (0.005)
education*year		0.0005*** (0.0001)		0.0003*** (0.0001)
year	0.029*** (0.001)	0.024*** (0.001)	0.025*** (0.001)	0.022*** (0.001)
Republican majority	0.021** (0.007)	0.015* (0.007)	0.022** (0.007)	0.020** (0.007)
seniority	-0.008*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)	-0.008*** (0.001)
percent black	-0.010*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)
comm. chair	-0.003 (0.014)	-0.001 (0.014)	-0.003 (0.014)	-0.002 (0.014)
powerful comm.	-0.021*** (0.006)	-0.023*** (0.006)	-0.021*** (0.006)	-0.022*** (0.006)
Observations	4,146	4,146	4,146	4,146

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 15. Democratic Ideology by District Demographics 1972-2014

	SES	Income, Education	Income	Education
SES	-0.016*** (0.002)			
SES*year	0.0001*** (0.00002)			
income		-0.037*** (0.004)	-0.022*** (0.003)	
income*year		0.0003*** (0.00004)	0.0002*** (0.00003)	
education		0.015** (0.005)		-0.010* (0.004)
education*year		-0.0002** (0.0001)		0.0001 (0.00004)
year	0.0003 (0.0005)	-0.007*** (0.001)	-0.007*** (0.001)	-0.001 (0.001)
Republican majority	-0.033*** (0.005)	-0.031*** (0.006)	-0.043*** (0.006)	-0.022*** (0.006)
seniority	-0.005*** (0.0005)	-0.005*** (0.0005)	-0.005*** (0.0005)	-0.005*** (0.001)
percent black	0.019*** (0.002)	0.017*** (0.002)	0.017*** (0.002)	0.022*** (0.002)
Black Caucus	-1.530*** (0.111)	-1.653*** (0.113)	-1.611*** (0.112)	-1.447*** (0.113)
Black Caucus*year	0.012*** (0.001)	0.014*** (0.001)	0.013*** (0.001)	0.012*** (0.001)
comm. chair	-0.024** (0.009)	-0.024** (0.009)	-0.024** (0.009)	-0.023* (0.009)
powerful comm.	-0.032*** (0.005)	-0.032*** (0.005)	-0.034*** (0.005)	-0.032*** (0.005)
Observations	5,060	5,060	5,060	5,060

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

This time, the height of the bar reflects the size of the coefficient instead of the magnitude of the effect. For example, the green bar for Democrats between 1973 and 1980 shows the coefficient for education on Democrats ideology in that time period, controlling for the all non-economic or educational variable in Table 15.<sup>23</sup> So between 1973 and 1980, Democrats who represented highly educated districts were more liberal.

Just like with legislative success, the impact of district demographics on Democratic ideology is highly consistent across time. Democrats who represent districts with many constituents who are of high socioeconomic status are consistently more liberal, whether socioeconomic status is measured by wealth, education, or both. The one exception is the effect of education when controlling for income in 1973-1980. For that time period and that measure, Democrats were more conservative when they represented districts with high education levels relative to their income level. The effects are almost always statistically significant. The increasing impact of income on conservative ideology is not due to Democratic behavior.

Once again reflecting the trends in legislative success, the impact of district demographics on Republican ideology is less consistent over time. In fact, prior to the 1994 Republican take over of the House, district socioeconomics had almost no impact on Republican ideology. The fact that high income districts overall create more conservative legislators is entirely driven by the changes over time for Republicans, as well as their newfound control over the House of Representatives. Note, however, that while income (yellow bar), education (green bar), and the combined socioeconomic status variable (purple bar) are always positive and usually statistically significant, the effect sometimes becomes negative when education or income

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<sup>23</sup>Majority party is also not controlled for, as this time period was always controlled by Democrats.

are controlled for. Between 1995 and 2006, the independent effect of education (blue bar) for Republican ideology was negative. That is, for two districts with similar numbers of high income inhabitants, the district with more educated inhabitants would be expected to have a legislator who was more liberal. Similarly, between 1987 and 1994, and between 2011 and 2014, the independent effect of income (red bar) was associated with more liberal Republican legislators. This discrepancy is currently unexplained, and merits future investigation.

Overall, the increasing association between district socioeconomics and legislator ideology is driven by Republicans, not Democrats. We can see this in Figure 12. This graphic highlights the differences between Democrats and Republicans. This is a very similar pattern to the one revealed in the analysis of legislative success, and is consistent with the theory presented by (Barker & Carman, 2012) and the voting patterns described by (Gelman, 2009). Republicans have changed their ideological grounding, particularly since 1990, and that appears to be reflected in the demographic ties to how they vote and how they create legislation.

Figure 13 highlights the differences between Republicans and Democrats when it comes to how district socioeconomics are correlated with legislator ideology. Democrats are more liberal when they represent high income and educated constituents, while Republicans are generally more conservative. As shown in the appendix, the interaction terms for Republicans are statistically significant, so there is a statistically significant difference between Republicans and Democrats.<sup>24</sup>

Note that yet again the disparate effects of income and education for Republican ideology are highly relevant. Generally, Republicans are more conservative when they represent socioeconomically elite districts. Yet the opposite effect can

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<sup>24</sup>Except for the socioeconomic status variable, likely because the effect of partisanship is captured by the effect of time.

Figure 12: Over Time, Impact of Socioeconomic Characteristics on Ideology

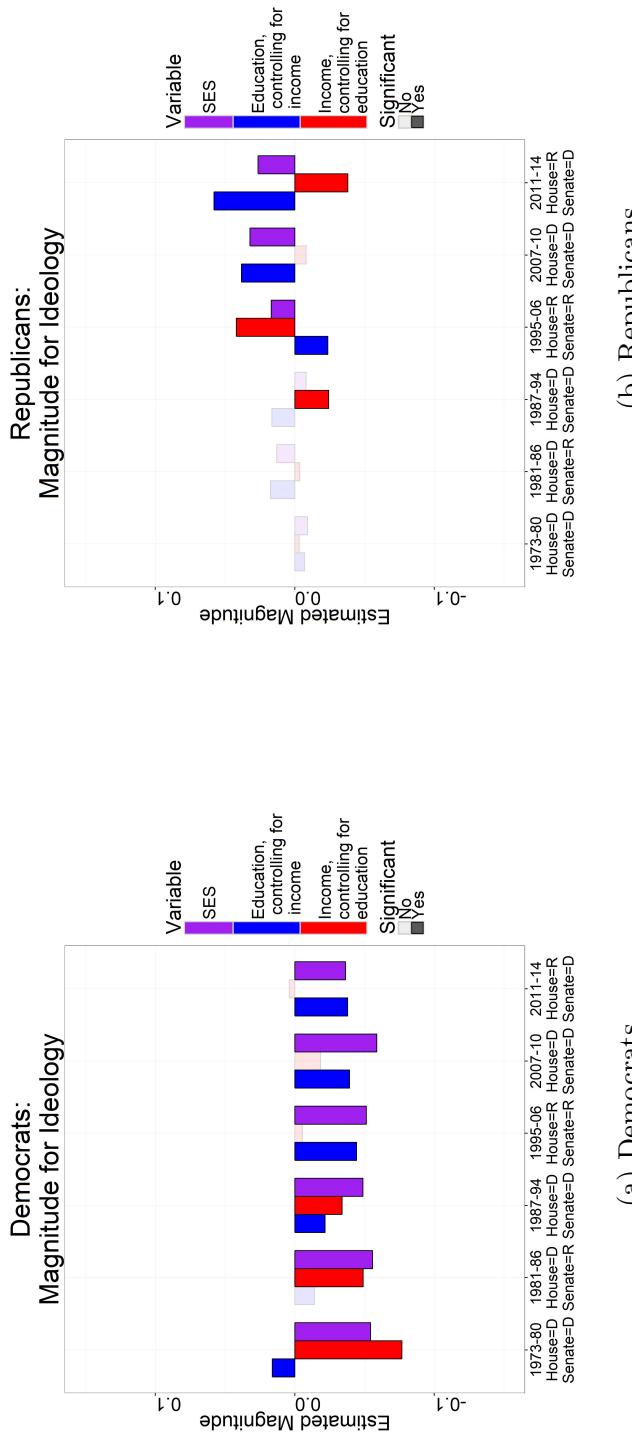
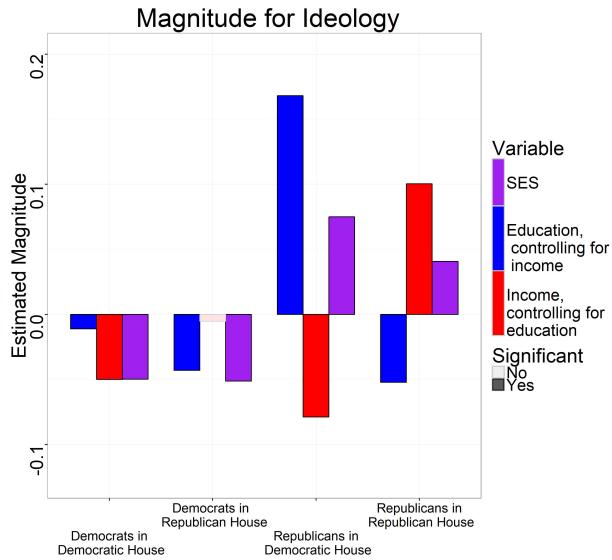


Figure 13: By Partisanship and Party Control, Impact of Socioeconomic Characteristics on Ideology



be obscured if they are not examined both together and separately. For example, look at Democrats in a Republican House, as seen in Figure 13. It is impossible to tell whether the effect of income when controlling for education is obscured by collinearity or if the apparent effect of income is entirely due to the collinearity with education. Yet we can see that overall socioeconomic status, as well the stand-alone impact of wealth, are both tied to more liberal Democrats. As another example, focus on the impact of income for Republicans in a Democratic House. Here, the independent effect of income once education is controlled for shows a correlation with more liberal members of Congress. Yet if income is looked at alone, without controlling for education, it would appear that the district income is correlated with more conservative Republicans. The problem is lower for this data than it was for the data on legislative success, as the primary point about that Republicans from socioeconomically privileged districts are more ideologically extreme, while Democrats are more moderate still stands. With the legislative analysis, the point that Repub-

licans produce more legislation when they represent socioeconomically privileged districts could be entirely obscured without the correct model specification.<sup>25</sup>

A few other results from these tables stand out. The first is that Republicans with large numbers of black constituents tend to be more liberal, while Democrats with large numbers of black constituents tend to be more conservative. This is an unexpected finding. Future work could examine whether this effect is due to Southern Democrats prior to the Republican revolution of 1994. However, a black Democratic member of Congress is, as expected, more liberal than a white Democrat.<sup>26</sup>

In general, Republicans have become more conservative over time. The trend for Democrats is less clear, as it depends highly on which demographic variables are controlled for. Intriguingly, when facing a Republican majority Democrats become more liberal while Republicans become more conservative.

A potential cause of the increasing importance of income in legislation may be through how sympathetic the ideological platform of each party is to the wealthy. Republicans have lost votes from the highly educated over the past forty years as they gain votes from the wealthy. This change has happened along with a shift in the ideology of the Republican party against increased funding for public schools and increased rhetoric against the ivory tower. As the demographic characteristics of the base have changed (Gelman, 2009), so too has their legislative behavior.

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<sup>25</sup>The effect of district economics on Democratic legislative success could also be obscured using the wrong model.

<sup>26</sup>This result may be strongly influenced by whether the number of black constituents in the district is controlled for.

Figure 14: Republicans, Ideology by Region and Time

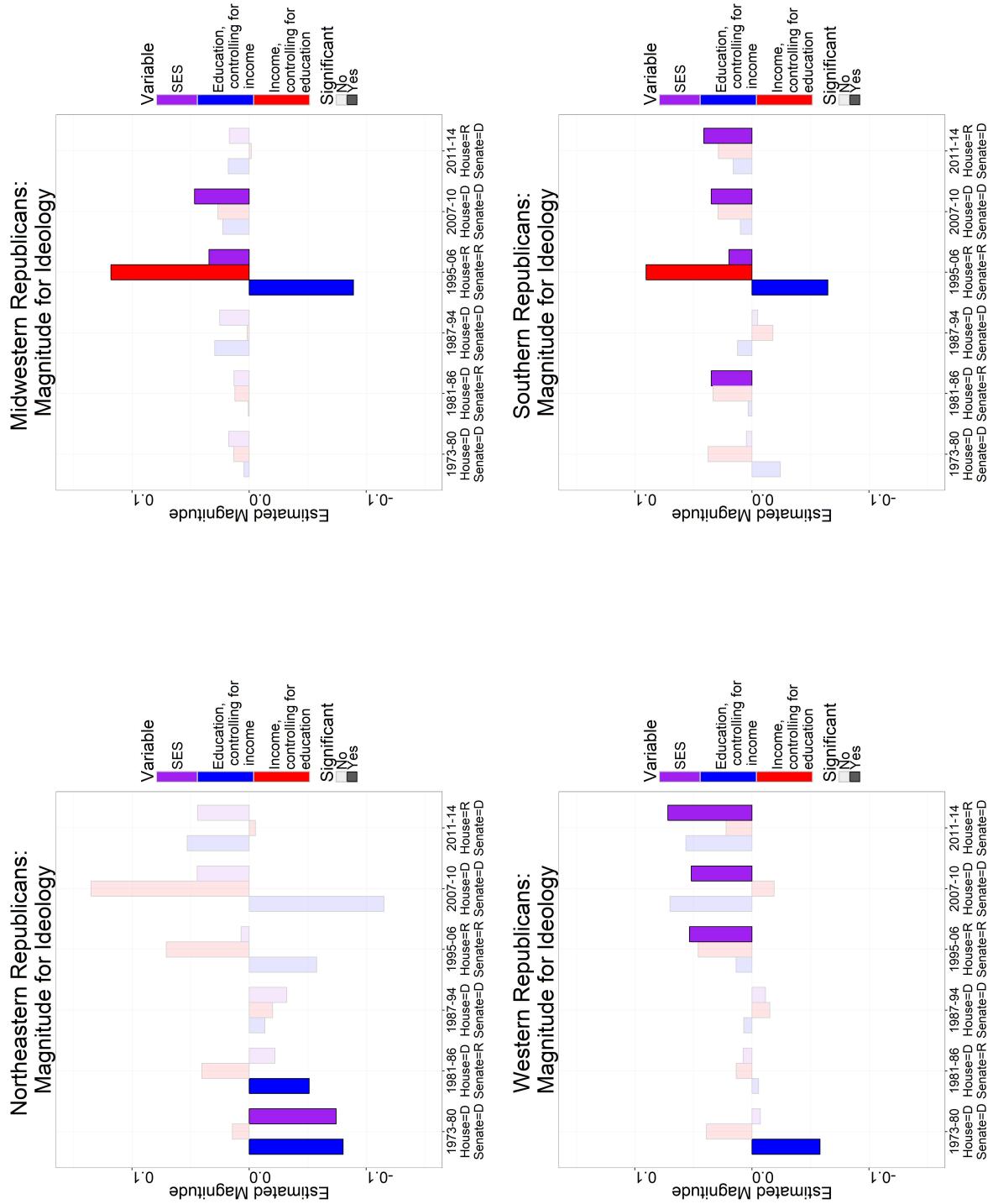
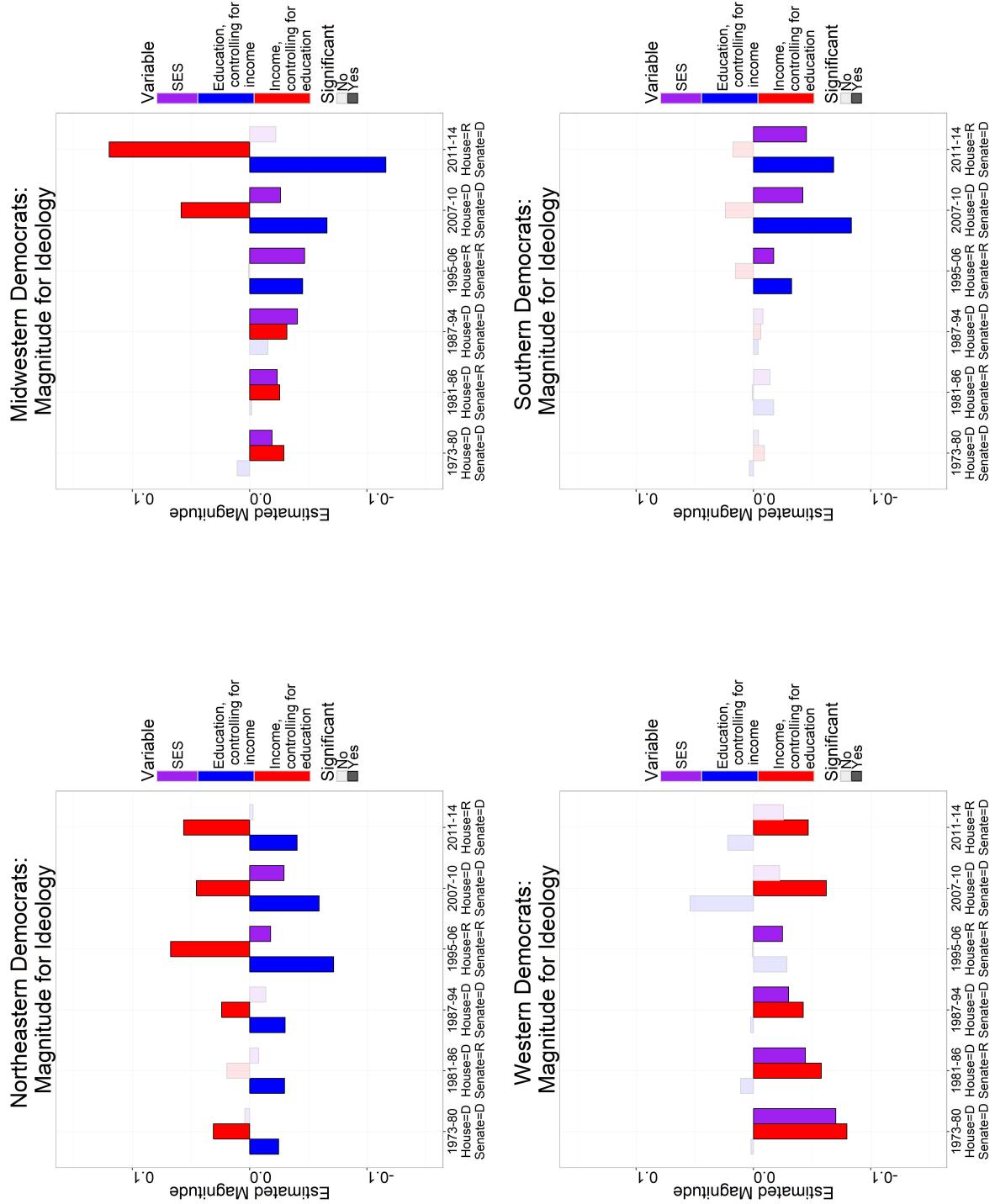


Figure 15: Democrats, Ideology by Region and Time



## 12 CONCLUSION

Just as the influence of the affluent has increased in the economic sphere, I show that legislators who represent high income districts are more likely to produce legislation that favors the high income and to produce higher amounts of successful legislation. Asymmetric politics are clearly evident in these findings. Republicans are the politicians who are more responsive to the economic characteristics of their districts. The increasing influence of the affluent in legislation seems to be tied to the increasing power of Republicans, which is in turn tied to the increasing power of Republicans in the South. As Gelman (2009) shows for citizen partisanship, that change happens just after 1990. I show that for legislative outcomes, the changes occurred just after the Republican revolution of 1994.

Yet Democrats also respond to the elite. Instead of being responsive to high income constituents, they are more likely to be legislatively productive when they represent highly educated districts. Unlike Republicans, they have been equally responsive to well educated districts whenever they have been in control of the House, regardless of time.

Throughout this paper I demonstrate a methodology to account for the conflicting demands of multicollinearity over time. For some measures of the time trends and differences between Republicans and Democrats, multicollinearity does not obscure the effect by inflating standard errors. The change over time, without controlling for partisanship, is statistically significant. This statistical significance occurs despite the fact that the unbiased measures used in the 1970s and 1980s are obscured by multicollinearity in the 2000s, which would tend to inflate the standard errors. That is, the effect of this trend of time is strong enough and consistent enough to overcome the problems with multicollinearity. As Belsley (1991) said, the

effect of multicollinearity does not bite.

Yet multicollinearity does bite in the time trends for Republicans alone, as seen in Table 10. When income and education are both included in the same model, the effect of either variable is obscured even though an F-test on their joint significance reveals they are statistically significant when considering their combined impact. In order to understand the time trends for Republicans, I avoid interpreting the model that controls for both income and education. Instead, I focus on the impact of socioeconomic status, which combines the two by design. The results show that Republicans increasingly produce more legislation when they represent districts with high levels of socioeconomic status. This is in line with the results from the models only include one of education or income, while omitting the other. Both models are biased, yet the time trend is still meaningful. The distinct impact of both income and education can not be observed due to multicollinearity, but it is clear that district income and education both increase the number of bills a member of Congress successfully sponsors.

The graphics used throughout this paper highlight these trends while accounting for the problems induced by multicollinearity. They report the results of many different regressions and five different coefficients. This provides a richness of detail that allows the reader to see time trends and differences between Democrats and Republicans even when the relevant variables are different for different groups.

It would be interesting to apply this method for analyzing of multicollinearity to constituent preferences, especially as they relate to Republican and Democratic identification. McCarty et al. (2006) indicate that highly educated constituents increasingly lean Republican, while high income constituents increasingly lean Democratic. Accounting for the potential for conflicting demands of multicollinearity on

partisan identification could reveal more about these changes over time.

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# 13 APPENDIX

## 13.1 Collinearity in Voter Turnout

The confounding effect of education is not just apparent in the results presented in this dissertation. This section replicates the results of Burden and Wichowsky (2014) to reveal the confounding influence of education and income on voter turnout. These results point to the importance of adequately accounting for both collinearity and omitted variable bias when trying to understand how education and income affect politics.

The following two tables demonstrate the effect of collinearity between income and education in voter turnout rates. The analysis in the original paper refutes conventional wisdom that county unemployment rates have a negative relationship to voter turnout, and provides a theoretical grounding for the opposite effect. I replicated these results and focused on the impact of education, unemployment, and income.

Table 16 reveals one potential origin of conventional wisdom. Namely, when education is not controlled for as in Model 4, it appears that there is a statistically significant negative correlation between unemployment rates and voter turnout. However, controlling for education reveals that this effect was driven by education rates, and once education is controlled for, as in Models 1-3, the effect of unemployment reverses while remaining statistically significant. That is, counties with high unemployment rates do have lower turnout for voting, but this effect is driven by the fact that counties with low high school graduation rates have both high unemployment rates and low turnout rates. Low educational attainment drives low voter turnout, while high rates of unemployment help increase turnout once educational

attainment has been controlled for.

Of note, the effect of the collinearity between education and unemployment is not explicitly addressed in Burden and Wichowsky (2014). They acknowledge that their findings oppose tradition wisdom, but do not explain that traditional wisdom was confounded by omitting the influence of education. No other variable reversed the effect of county unemployment when omitted from the model; for this analysis, the most important collinear variable is education.

Table 16. Voter Turnout by Unemployment, Education, Gubeneratorial Election (1980-2008)

	<i>Voter Turnout</i>			
	(1)	(2)	(3)	(4)
County unemployment	0.146*** (0.019)	0.187*** (0.018)	0.191*** (0.019)	-0.290*** (0.019)
High school graduation	1.506*** (0.107)	4.475*** (0.060)	4.510*** (0.060)	
Concurrent gubernatorial race	5.328*** (0.299)	1.747*** (0.141)		
State unemployment	0.510*** (0.035)			
Percent black	0.031 (0.017)			
Median income	-0.389 (0.215)			
Competitive presidential race	0.010*** (0.002)			
Concurrent senatorial race	0.634*** (0.060)			
Year fixed effects	Yes	No	No	No
County fixed effects	Yes	No	No	No
AIC	167704.3	203835.5	203986.1	209162.5
Observations	27,899	27,901	27,901	27,901

*Note:*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Additional analyses show that this effect is primarily created by counties with the lowest rates of educational attainment, as shown in Table 17. The interaction effect between unemployment and educational attainment is statistically significant.<sup>27</sup> Counties with the lowest education levels produce higher turnout when they face high unemployment rates. The effect of unemployment disappears for counties in the top half of educational attainment.<sup>28</sup>

Yet their primary independent variable is unemployment, not income. To demonstrate that the effects are similar to the results in this dissertation, these results must be very similar when the analysis focuses on income instead of unemployment. In this case, because median income and county unemployment should produce similar effects on turnout rates, median income and unemployment rates should produce interchangeable statistical results. Table 18 shows that this effect holds when unemployment rates are omitted, instead focusing primarily on income. Namely, low income counties have overall lower turnout rates, but only when education is not accounted for. Low income counties of similar education levels have higher than expected turnout rates.

As the results from Table 16 show, when both income and unemployment are included in the model, only unemployment shows up as statistically significant.

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<sup>27</sup>Model with the interaction effect is not shown.

<sup>28</sup>Note that multiple variables change magnitude substantially based on educational attainment. County unemployment and median income both become smaller as educational attainment goes up. Larger black populations are associated with reduced turnout in low education counties, and with increased turnout in high education counties. Competitive presidential races are associated with lower voter turnout in low education counties, but are associated with higher voter turnout in high education counties. One possible theory that explains this rests on the educational attainment of Democrats versus Republicans. Highly educated counties will tend to be more Democratic. Democrats tend to promote the participation of the less wealthy and minorities, so highly educated Democratic districts should see an increase in voter turnout when they have more poor and minority members. Yet Republicans tend to fan the anger of unemployed white males, so counties with high unemployment, particularly white male unemployment, should see higher levels of turnout relative to other similar counties.

Table 17. Voter Turnout by Educational Attainment

	<i>Turnout based on county educational attainment quartiles</i>			
	Lowest quartile	2nd lowest quartile	2nd highest quartile	Highest quartile
County unemployment	0.173*** (0.032)	0.109** (0.042)	0.052 (0.041)	0.085 (0.045)
High school graduation	2.169*** (0.270)	1.322*** (0.384)	1.811*** (0.438)	0.983** (0.302)
Concurrent gubernatorial race	4.755*** (0.569)	5.197*** (0.553)	4.387*** (0.593)	3.516*** (0.794)
State unemployment	0.646*** (0.075)	0.708*** (0.076)	0.379*** (0.064)	0.331*** (0.067)
Percent black	-0.037 (0.033)	-0.181*** (0.042)	0.281*** (0.037)	0.420*** (0.040)
Median income	-2.283*** (0.688)	-2.610*** (0.611)	-1.501** (0.457)	0.421 (0.348)
Competitive presidential race	-0.010* (0.005)	-0.0002 (0.005)	0.018*** (0.004)	0.027*** (0.004)
Concurrent senatorial race	0.651*** (0.138)	0.672*** (0.125)	0.540*** (0.098)	0.414*** (0.105)
Year fixed effects	Yes	Yes	Yes	Yes
County fixed effects	Yes	Yes	Yes	Yes
AIC	43092.7	42571.7	39231	40248.8
Observations	6,979	6,975	6,978	6,979

*Note:*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 18. Voter Turnout by Income, Education, Gubernatorial Election (1980-2008)

	<i>Voter Turnout</i>			
	(1)	(2)	(3)	(4)
Median income	-0.599** (0.213)	-4.433*** (0.127)	-4.513*** (0.127)	1.894*** (0.113)
High school graduation	1.493*** (0.106)	5.723*** (0.069)	5.774*** (0.069)	
Concurrent gubernatorial race	5.335*** (0.300)	1.504*** (0.139)		
State unemployment	0.657*** (0.029)			
Percent black	0.037* (0.017)			
Competitive presidential race	0.010*** (0.002)			
Concurrent senatorial race	0.641*** (0.060)			
Year fixed effects	Yes	No	No	No
County fixed effects	Yes	No	No	No
AIC	167876.9	202901.6	203017	209276.8
Observations	27,919	27,921	27,921	27,921

*Note:*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

That is, unemployment does a better job of explaining turnout than does median income. In more precise terms, unemployment captures almost all of the variance in voter turnout that would otherwise be attributed to median income. Thus, for Burden and Wichowsky, unemployment is a more important explanatory variable than is median income.

The results in Burden and Wichowsky point to yet another example of income related variables creating opposing political effects to education. I suggest that income and education frequently create opposing effects in politics. Any time that the impacts of education and income oppose each other, omitting one will dramatically obscure the true effect of the other.

## **13.2 Regression Results for Bill Success with Regional Controls**

This section provides the regression results for bill success based on party, time, and region, Tables 19, 20, 21, 22, 23. Note that the influence of the South for Republican bills depends on how it is included. When it is included with as a dummy variable without a control for time trends, it is strongly statistically significant across most measures. When it is included as one of four regions—South, Midwest, Northeast, and West—it shows significantly different results from the omitted region of the Midwest. However, when it is included just a dummy variable on its own while controlling for time, it does not demonstrate any statistical significance. This is an intriguing distinction, and one that reverses itself for Democrats. Further study should examine why this is happening. Until then, it is clear that the South has influenced legislative behavior, but it is not clear how that is affected by time.

Table 19. Bills Passing House 1972-2014, Controlling for Southern States and Party

	SES	Income, Education	Income	Education
SES	-0.052 (0.031)			
SES*South	0.102 (0.070)			
SES*Republican	0.189*** (0.046)			
SES*South*Republican	-0.064 (0.094)			
income		0.007** (0.003)	0.004 (0.002)	
income*South		0.022*** (0.007)	0.013* (0.006)	
income*Republican		-0.042*** (0.004)	-0.009** (0.003)	
income*South*Republican		-0.037*** (0.010)	-0.005 (0.008)	
education		-0.011*** (0.003)		-0.009*** (0.002)
education*South		-0.014* (0.007)		0.00004 (0.006)
education*Republican		0.072*** (0.005)		0.042*** (0.004)
education*South*Republican		0.027** (0.010)		-0.004 (0.008)
South	-0.122 (0.063)	-0.324* (0.131)	-0.399** (0.130)	-0.150 (0.096)
Republican	-0.706*** (0.074)	-0.530*** (0.124)	-0.471*** (0.125)	-1.362*** (0.096)
South*Republican	0.242** (0.080)	0.329 (0.193)	0.266 (0.192)	0.334* (0.158)
majority	0.035 (0.035)	-0.186*** (0.043)	0.045 (0.035)	-0.030 (0.038)
seniority	0.086*** (0.004)	0.085*** (0.004)	0.088*** (0.004)	0.084*** (0.004)
conservativeness	0.540*** (0.088)	0.090 (0.090)	0.602*** (0.087)	0.310*** (0.090)
percent black	-0.089*** (0.012)	-0.082*** (0.012)	-0.080*** (0.012)	-0.094*** (0.012)
comm. chair	1.150*** (0.062)	1.067*** (0.060)	1.160*** (0.062)	1.114*** (0.061)
powerful comm.	-0.375*** (0.037)	-0.411*** (0.037)	-0.383*** (0.037)	-0.381*** (0.037)
Observations	7,880	7,880	7,880	7,880
Akaike Inf. Crit.	23,784.470	23,470.390	23,796.150	23,658.080

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 20. Republican Bills Passing House, Controlling for Time and Region

	SES	Income, Education	Income	Education
SES	-3.334*** (0.923)			
SES*year	0.033*** (0.009)			
SES*NE	-0.063 (1.328)			
SES*South	4.630*** (1.182)			
SES*West	1.856 (1.364)			
SES*year*NE	-0.001 (0.013)			
SES*year*South	-0.043*** (0.011)			
SES*year*West	-0.020 (0.013)			
income		-0.011 (0.104)	-0.245*** (0.069)	
income*year		0.00000 (0.001)	0.002*** (0.001)	
income*NE		-0.060 (0.149)	0.040 (0.099)	
income*South		0.304* (0.152)	0.362*** (0.091)	
income*West		0.098 (0.145)	0.205* (0.102)	
income*year*NE		0.001 (0.001)	-0.0004 (0.001)	
income*year*South		-0.003 (0.001)	-0.003*** (0.001)	
income*year*West		-0.001 (0.001)	-0.002* (0.001)	
education		-0.311* (0.129)		-0.279*** (0.084)
education*year		0.003* (0.001)		0.003*** (0.001)
education*NE		0.039 (0.201)		-0.055 (0.126)
education*South		0.083 (0.182)		0.347** (0.109)
education*West		0.049 (0.184)		0.109 (0.124)
education*year*NE		-0.001 (0.002)		0.0003 (0.001)
education*year*South		-0.001 (0.002)		-0.003** (0.001)
education*year*West		-0.001 (0.002)		-0.001 (0.001)
year	0.049*** (0.009)	-0.021 (0.022)	-0.019 (0.022)	-0.007 (0.017)
NE	2.000 (1.239)	1.163 (3.382)	1.554 (3.370)	1.424 (2.591)
South	5.008*** (1.058)	-5.675* (2.879)	-5.712* (2.876)	-1.576 (2.213)
West	2.432* (1.120)	-3.198 (3.332)	-2.992 (3.351)	-0.754 (2.525)
year*NE	-0.017 (0.012)	-0.006 (0.033)	-0.012 (0.032)	-0.008 (0.025)
year*South	-0.045*** (0.010)	0.055* (0.027)	0.055* (0.027)	0.017 (0.021)
year*West	-0.016 (0.011)	0.043 (0.032)	0.038 (0.032)	0.020 (0.024)
majority	1.044*** (0.055)	1.021** (0.060)	1.053*** (0.056)	1.040*** (0.055)
seniority	0.066*** (0.005)	0.067*** (0.005)	0.067*** (0.005)	0.065*** (0.005)
conservativeness	-0.796*** (0.124)	-0.790*** (0.125)	-0.785*** (0.124)	-0.809*** (0.125)
percent black	-0.059** (0.022)	-0.054* (0.022)	-0.065** (0.022)	-0.064** (0.022)
comm. chair	0.823*** (0.073)	0.822** (0.073)	0.823*** (0.074)	0.824*** (0.073)
powerful comm.	-0.311*** (0.046)	-0.312*** (0.046)	-0.305*** (0.046)	-0.311*** (0.046)
Observations	4,146	4,146	4,146	4,146
Akaike Inf. Crit.	11,061.200	11,057.210	11,079.920	11,053.760

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 21. Republican Bills Passing House 1972-2014, Controlling for Time and Southern States

	SES	Income, Education	Income	Education
SES	-1.577* (0.683)			
SES*year	0.016* (0.007)			
SES*South	0.694 (1.323)			
SES*year*South	-0.006 (0.013)			
income		-0.067 (0.067)	-0.106* (0.047)	
income*year		0.001 (0.001)	0.001* (0.0005)	
income*South		0.070 (0.184)	0.033 (0.102)	
education		-0.082 (0.096)		-0.153* (0.070)
education*year		0.001 (0.001)		0.001* (0.001)
education*South		-0.012 (0.226)		0.058 (0.128)
education*year*South		0.0002 (0.002)		-0.0004 (0.001)
year	0.035*** (0.009)	0.003 (0.017)	0.003 (0.017)	0.011 (0.014)
South	1.647 (1.208)	0.387 (3.020)	0.061 (2.946)	1.293 (2.449)
year*South	-0.015 (0.012)	-0.006 (0.029)	-0.002 (0.028)	-0.014 (0.024)
majority	1.114*** (0.066)	1.120*** (0.074)	1.144*** (0.068)	1.077*** (0.066)
seniority	0.074*** (0.007)	0.074*** (0.007)	0.074*** (0.007)	0.074*** (0.007)
conservativeness	-0.625*** (0.135)	-0.627*** (0.136)	-0.617*** (0.135)	-0.627*** (0.136)
percent black	-0.117*** (0.023)	-0.117*** (0.023)	-0.120*** (0.023)	-0.115*** (0.022)
comm. chair	0.803*** (0.089)	0.804*** (0.089)	0.800*** (0.089)	0.809*** (0.089)
powerful comm.	-0.318*** (0.052)	-0.317*** (0.052)	-0.315*** (0.052)	-0.322*** (0.052)
Observations	3,481	3,481	3,481	3,481
Akaike Inf. Crit.	9,150.283	9,157.820	9,152.026	9,151.639

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 22. Democratic Bills Passing House, Controlling for Time and Region

	SES	Income, Education	Income	Education
SES	-0.678 (1.039)			
income		-0.033 (0.096)	-0.049 (0.081)	
year	0.017* (0.008)	0.004 (0.023)	0.001 (0.023)	0.012 (0.016)
NE	0.227 (1.028)	-0.247 (3.015)	-0.316 (2.962)	0.892 (2.118)
South	1.538 (1.028)	-1.188 (2.684)	-1.472 (2.653)	1.385 (1.951)
West	1.851 (0.998)	4.003 (3.056)	3.908 (3.036)	3.747 (2.083)
education		0.013 (0.100)	0.007 (0.087)	
majority	-1.315*** (0.054)	-1.348*** (0.056)	-1.320*** (0.055)	-1.315*** (0.054)
seniority	0.082*** (0.004)	0.082*** (0.004)	0.082*** (0.004)	0.082*** (0.004)
conservativeness	-0.277* (0.135)	-0.283* (0.135)	-0.303* (0.135)	-0.229 (0.135)
percent black	-0.068*** (0.015)	-0.067*** (0.015)	-0.071*** (0.015)	-0.067*** (0.015)
black caucus	-4.070*** (1.049)	-3.772*** (1.074)	-4.094*** (1.059)	-3.923*** (1.046)
comm. chair	0.828*** (0.065)	0.834*** (0.065)	0.829*** (0.065)	0.841*** (0.065)
powerful comm.	-0.534*** (0.043)	-0.544*** (0.043)	-0.531*** (0.043)	-0.536*** (0.043)
SES*year	0.006 (0.010)			
SES*NE	-0.021 (1.274)			
SES*South	0.916 (1.262)			
SES*West	-1.218 (1.301)			
income*year		0.0003 (0.001)	0.0004 (0.001)	
income*NE		0.034 (0.120)	0.008 (0.098)	
income*South		0.243 (0.133)	0.084 (0.098)	
income*West		0.0003 (0.126)	-0.068 (0.101)	
education*year				-0.00005 (0.001)
education*NE				-0.070 (0.109)
education*South				-0.009 (0.112)
education*West				-0.123 (0.109)
year*NE	-0.002 (0.010)	0.002 (0.030)	0.003 (0.029)	-0.008 (0.021)
year*South	-0.013 (0.010)	0.010 (0.027)	0.013 (0.026)	-0.014 (0.020)
year*West	-0.014 (0.010)	-0.032 (0.030)	-0.031 (0.030)	-0.031 (0.021)
SES*year*NE		-0.0001 (0.001)		
SES*year*South		-0.079 (0.132)		
SES*year*West		-0.227 (0.152)		
education*year1		-0.134 (0.132)		
education*NE1	0.039*** (0.010)	0.036*** (0.010)	0.039*** (0.010)	0.038*** (0.010)
education*South1	0.001 (0.012)			
education*West1	-0.007 (0.012)			
black caucus*year	0.011 (0.013)			
income*year*NE		-0.0003 (0.001)	-0.00004 (0.001)	
income*year*South		-0.002 (0.001)	-0.001 (0.001)	
income*year*West		-0.0001 (0.001)	0.001 (0.001)	
education*year*NE		0.001 (0.001)		
education*year*South		0.002 (0.001)		
education*year*West		0.001 (0.001)		
education*year*NE1			0.001 (0.001)	
education*year*South1			0.0002 (0.001)	
education*year*West1			0.001 (0.001)	
Observations	5,060	5,060	5,060	5,060
Akaike Inf. Crit.	15,208.590	15,213.140	15,206.900	15,216.240

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

Table 23. Democratic Bills Passing House 1972-2014, Controlling for Time and Southern States

	SES	Income, Education	Income	Education
SES	-1.124*			
	(0.560)			
SES*year	0.011			
	(0.005)			
SES*South	1.067			
	(1.266)			
SES*year*South	-0.009			
	(0.012)			
income		-0.087	-0.100*	
		(0.057)	(0.042)	
income*year		0.001	0.001*	
		(0.001)	(0.0004)	
income*South		0.392*	0.136	
		(0.159)	(0.103)	
income*year*South		-0.004*	-0.001	
		(0.002)	(0.001)	
education		0.026		-0.021
		(0.065)		(0.050)
education*year		-0.0002		0.0002
		(0.001)		(0.0005)
education*South		-0.386*		-0.048
		(0.176)		(0.118)
education*year*South		0.004*		0.001
		(0.002)		(0.001)
year	0.020***	-0.008	-0.010	0.011
	(0.006)	(0.014)	(0.014)	(0.010)
South	1.630	-2.964	-2.631	1.802
	(1.204)	(2.415)	(2.430)	(1.854)
year*South	-0.015	0.027	0.023	-0.019
	(0.012)	(0.024)	(0.024)	(0.019)
majority	-1.325***	-1.372***	-1.326***	-1.333***
	(0.063)	(0.070)	(0.065)	(0.063)
seniority	0.088***	0.088***	0.088***	0.088***
	(0.005)	(0.005)	(0.005)	(0.005)
conservativeness	-0.494***	-0.479***	-0.510***	-0.451**
	(0.144)	(0.143)	(0.143)	(0.144)
percent black	-0.104***	-0.101***	-0.104***	-0.103***
	(0.015)	(0.015)	(0.015)	(0.015)
black caucus	-6.050***	-5.894***	-6.305***	-5.658***
	(1.333)	(1.359)	(1.342)	(1.331)
black caucus*year	0.059***	0.057***	0.061***	0.055***
	(0.013)	(0.013)	(0.013)	(0.013)
comm. chair	0.784***	0.787***	0.781***	0.798***
	(0.071)	(0.070)	(0.070)	(0.071)
powerful comm.	-0.552***	-0.549***	-0.548***	-0.553***
	(0.047)	(0.047)	(0.047)	(0.047)
Observations	4,399	4,399	4,399	4,399
Akaike Inf. Crit.	13,519.870	13,514.420	13,514.160	13,524.830

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

### **13.3 Regression Results for Ideology with Party Interactions**

Table 24 shows that the difference between Republicans and Democrats is statistically significant for education and income dependent variables. That is, Republicans and Democrats face different ideological consequences when they represent highly educated or high income districts. The interaction is not statistically significant for the combined socioeconomic variable. This is likely because the effect of partisanship is captured by the effect of time.

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Table 24. Democratic Ideology by District Demographics 1972-2014 (with party interaction terms)

	SES	Income, Education	Income	Education
SES	-0.018*** (0.002)			
SES*year	0.0001*** (0.00002)			
SES*Republican	0.004 (0.004)			
SES*year*Republican	-0.00001 (0.00003)			
income		-0.044*** (0.005)	-0.026*** (0.003)	
income*year		0.0004*** (0.00005)	0.0002*** (0.00003)	
income*Republican		0.064*** (0.007)	0.013** (0.005)	
income*year*Republican		-0.001*** (0.0001)	-0.0001 (0.00005)	
education		0.020*** (0.006)		-0.010* (0.004)
education*year		-0.0002*** (0.00001)		0.0001 (0.00004)
education*Republican		-0.076*** (0.009)		-0.026*** (0.007)
education*year*Republican		0.001*** (0.0001)		0.0003*** (0.0001)
year	-0.005*** (0.001)	-0.008*** (0.001)	-0.009*** (0.001)	-0.001 (0.001)
year*Republican	0.029*** (0.001)	0.032*** (0.002)	0.035*** (0.002)	0.023*** (0.001)
Republican	-2.364*** (0.127)	-2.694*** (0.161)	-2.936*** (0.161)	-1.684*** (0.130)
majority	-0.007 (0.004)	-0.009* (0.005)	-0.013** (0.004)	-0.001 (0.004)
seniority	-0.007*** (0.0004)	-0.007*** (0.0004)	-0.007*** (0.0004)	-0.007*** (0.0004)
percent black	0.007*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.009*** (0.001)
Black Caucus	-1.526*** (0.122)	-1.677*** (0.124)	-1.625*** (0.124)	-1.429*** (0.123)
Black Caucus*year	0.012*** (0.001)	0.014*** (0.001)	0.013*** (0.001)	0.012*** (0.001)
comm. chair	-0.005 (0.008)	-0.006 (0.008)	-0.004 (0.008)	-0.006 (0.008)
powerful comm.	-0.025*** (0.004)	-0.026*** (0.004)	-0.026*** (0.004)	-0.025*** (0.004)
Observations	9,194	9,194	9,194	9,194

Note:

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001