Inequality in Policy Responsiveness?

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A large body of empirical work demonstrates a correspondence between public opinion and policy behaviour, in the US and elsewhere.[1] The research almost exclusively presumes that policymakers represent the average person. That is, scholars typically produce some measure of the central tendency of opinion in a population and assess whether the average opinion and policy behaviour match up at particular points in time, or whether they change together over time.

There is some basis in political theory for focusing on the average person. A long line of scholarship (beginning with Downs 1957) highlights the importance of the median voter, after all. The problem is that the average citizen and the median voter are not one in the same, and the differences can be meaningful (Griffin and Newman 2005). More generally speaking, it may also be that citizens or voters do not have equal weight in the policymaking process, i.e., it may be that the preferences of some people matter more than others. This is an old idea, but one that has been the subject of some recent and important empirical work, including Bartels (2005, 2008), Gilens (2005) and Jacobs and Page (2005). Each of these projects is discussed in more detail in the following sections. For now, we note that they show that policy in the US is related principally to the preferences of more privileged citizens – that is, each person (or voter) does not matter equally.

This paper explores inequality in policy representation over time within the US. The analyses focus on a set of spending domains of recurring political importance, about which we have similar questions and to which US governments have tended to be quite responsive to public preferences (Wlezien 1996, 2004). We are interested in seeing whether policymakers are more responsive to the preferences of some groups within society than others, particularly those reflecting differences in income, education and party identification. Our previous research has shown that spending preferences across these subgroups, especially income levels, are surprisingly similar at particular points in time and move together over time (Soroka and Wlezien 2008). Here we develop these findings. We show that, while they do move together over time, preferences across groups do also vary independently. Then we assess the underlying structure of preferences and reveal a high level of "thermostatic" public responsiveness to policy across all subgroups. Finally, we turn to representation, and this analysis demonstrates that the preferences of different groups have essentially the same impact on spending. Although there are some differences, especially across education levels, the overall story is one of striking equality. The results suggest that concerns about the inequalities in the representation of different income groups may be overstated. The concluding section

[1] The US literature is vast, but see, e.g., Miller and Stokes (1961); Weissberg (1976); McCrone and Kuklinski (1979); Monroe (1979); Bartels (1991); Page and Shapiro (1992); Hartley and Russett (1992); Erikson, Wright, and McIver (1993); Goggin and Wlezien (1993); Jacobs (1993); Stimson, MacKuen, and Erikson (1995); Wlezien (1996); Wood and Hinton-Anderson (1998); Hill and Hurley (1998); Smith (1999); Sharpe (1999); Erikson, MacKuen, and Stimson (2002); Soroka (2003); Wlezien (2004). For work on other countries, see, e.g., Petry (1999); Soroka and Wlezien (2004, 2005); Stimson (2005); Brooks and Manza (2008); Hobolt and Klemmensen (2008). For reviews of the literature, see Weakliem (2002), Burstein (2003); Brooks (2006); Wlezien and Soroka (2007).

considers the generality of the finding and its fit with research showing more pronounced inequality.

On Inequality

"Procedural equality" – where "the political preferences expressed by each citizen receive equal weight in the decision-making process" (Beitz 1990) – is a central tenet of democratic theory. Indeed, considerations of equality and democracy have been critically intertwined at least since Rousseau's treatises on government, in large part because while most versions of democracy require a certain degree of equality, exactly how much and what kind of equality is rather up for grabs.

The issue most pertinent to our current objective relates to the difference between "formal" versus "substantive" political equality (Brighouse 2002). In Rawlsian terms, it is the difference between "basic liberties" and their "worth", that is, the difference between simply having equal liberties and actually having equal means to make use of them (Rawls 1993). Formally speaking, citizens in most modern democracies are for the most part political equals, at least in the most fundamental way: everyone's vote is equal (taking into account the vagaries involved in the aggregation of votes within and across constituencies). Substantively speaking, however, there are of course many reasons to expect a good degree of inequality.

It is through this lens that an increasing number of scholars has begun to question the degree of homogeneity and heterogeneity in opinion-policy relationships – essentially, the degree of equality in modern democracies. The reaction has been particularly strong in the US. Indeed, concerns about rising inequality led to the American Political Science Association's 2003-5 Task Force on Inequality in American Democracy, and a resulting body of work chronicling the growing economic and political distance between the wealthy the rest of the American citizenry (e.g., Jacobs and Skocpol 2005; Bartels 2008). Similar concerns have been evident in work by Robert Dahl: his seminal 1961 work suggested a rather widespread, pluralistic distribution of power in 1950s New Haven Connecticut; in 2006, *On Political Equality* revealed real concerns about increasing inequalities in American politics.

What do growing concerns about inequality suggest about the exploration of opinion-policy relationships? In short, they suggest that we are missing part of the story. In the existing literature most scholars have regarded public opinion as a simple summary of the opinions of all citizens within the unit—country, state, or locality—of interest. That is, they have ascribed roughly equal weight to each individual, essentially invoking "formal" equality. In so doing, political scientists have ignored three related possibilities: (1) certain characteristics, demographic or otherwise, may predispose citizens towards being at one or the other end of the range of preferences, (2) opinion-policy links may be stronger for some groups than for others, and (3) because of 1 and 2, policy may be more representative of the (different) preferences of certain groups.

The first possibility, that levels of policy support vary across certain characteristics, requires little argument. There is a huge volume of work demonstrating such differences – that wealthier citizens are less supportive of redistributive policies, for instance (see Erikson and Tedin 2004). And people will have differing levels of support for policy in various domains for various reasons, and well beyond what would seem to be obvious self-interest. These differences are interesting and important unto themselves; they are in many cases of little

consequence for our examination, however. That is, consistently differing levels of support across groups matters not at all to the longitudinal relationship between preferences and policy. So as long as the preferences of different groups move in parallel over time, public responsiveness and policy representation will for them will be indistinguishable. Just as one group's preferences are increasing (or decreasing), so too are the others. Of course, differences in levels of support across groups may matter a good deal for levels of policy, but this is a slightly different subject, one that we consider in the concluding section of this chapter and also in the concluding chapter.

[Figure 1 about here]

The story is somewhat different if public support does not move perfectly in sync across different groups – that is, if there are not parallel publics. Figure 1 presents a hypothetical case, in which preferences for three income groups move perfectly in parallel until 1987, and then diverge — a consequence of (in this hypothetical case) a much stronger reaction by the middle and especially low-income groups. Here, the second and third possibilities become relevant: the magnitude of citizens' responsiveness to policy may differ across groups, as may policy representation itself. Indeed, as we have already suggested elsewhere, responsiveness and representation are fundamentally intertwined: politicians are likely to pay more attention to the opinions of those who are paying attention to them (Soroka and Wlezien N.d). Inequality in representation is thus to be expected, at least to the extent that attentiveness differs. This has been a central concern in the recent US literature.

Inequality in the Literature

Beginning with Converse (1964), scholars have depicted substantial heterogeneity in public opinion. Converse showed that some people have well-developed preferences and are attentive to, and therefore informed about, politics, but that most people fall far short of this ideal. When making political judgments, the latter rely instead on more primitive cues, such as party and social group identifications, or else short-term forces like economic performance. Various other scholars have confirmed large differences in political knowledge, including Delli Carpini and Keeter's (1996) extensive study. The differences constitute the starting point for much of the work on deliberative democracy (see for example Fishkin 1991, 1995; Gastil 2000).

Recent research argues that voters can rely on cues or heuristics to overcome their limited information (Lupia 1994; Lupia and McCubbins 1998; Popkin 1991; Sniderman *et al* 1991**).** In this way, and without knowing much about policy activities, the argument goes, most voters can hold politicians accountable. The research on cue-taking clearly is encouraging, as there is evidence that it works. That is, by relying on cues, less sophisticated citizens make more "correct" decisions, those that appear to be in their self-interest. We still do not know how well cue-taking works. Does it effectively equalize the more and less sophisticated voters? More importantly for our purposes, we do not know how well cue-taking helps citizens compensate for limited information about policy. Can the less attentive citizens mimic the more attentive ones? Do cue-taking function equally well across all issues?

Research indicates that there may be more similarity than difference. Of particular note is Page and Shapiro's (1992) classic book, *The Rational Public*, in which they document a striking pattern of opinion change over time. Page and Shapiro show that opinion change on a wide range of issues is effectively parallel across various demographic subcategories of the

American public. In effect, despite differences in the levels of preferences, people move together over time in the same liberal or conservative direction on particular issues. These results suggest that people generally react to new information in the same way (also see Stimson 1989; Ferejohn and Kuklinski 1990; Sniderman, Brody, and Tetlock 1991; Lupia 1994; see also Enns 2006; Enns and Kellstedt 2008; Soroka and Wlezien 2008; Ura and Ellis 2008).

But is opinion perfectly parallel over time? Across all subgroups? On all issues? Or are there aspects of difference? While it may be that people's reactions to other stimuli are very much the same, our primary interest is in whether thermostatic public responsiveness to policy differs across politically relevant subgroups. Do we observe negative feedback across all subgroups? Is the observed feedback equivalent across subgroups? Or are some, e.g., the more sophisticated and better informed, more responsive to policy than others? Is there variance across issues as well, say, reflecting their public salience?

Relatedly, we might ask whether the more sophisticated are also better represented. Inequalities in representation are of increasing interest in the discipline at present, though most research is focused less on sophistication and more on another dimension across which preferences may vary: income.[2] There is a good amount of research already on the subject, most notably by Bartels (2005) and Gilens (2005). Bartels (2005) relates average scores on the National Election Study (NES) ideology question, by income tercile, to U.S. Senators' roll-call votes, focusing on general tendencies across votes as well as a handful of specific votes. In doing so, he finds that Senators' roll-call voting records are better accounted for by variation in the ideological and policy preferences of upper-income citizens (across states) than by the ideological positions or policy preferences of middle- or lower-income citizens. Gilens (2005; 2004) examines the association between levels of public support for policy change—imputed for different income categories—and (binary) policy change (or stasis) within the following four years. His results from a large number of policy domains are similar to Bartels': policy change is better explained by variation in higher-income citizens' support for policy change than by variation in support from lower-income citizens.

Jacobs and Page (2005) explore a different, though related theme. They do not look specifically at the effects of public preferences across income categories, but examine the varying associations between U.S. foreign policy officials and those of business leaders, experts, labor leaders, or the general public. More so than others, however, they directly examine opinion dynamics, and find that the change in policy support amongst U.S. foreign policy officials most closely matches the change in the preferences of business leaders and experts, not the public per se. This provides further—albeit indirect—evidence of a representational bias toward upper-income citizens.[3]

While this work all provides evidence that policy in the US is related principally to the preferences of the wealthiest citizens, some very recent research suggests quite the opposite. Ura and Ellis (2008) examine how general tendencies in US Congressional roll call voting over

[2] Of course, education and income levels are not unrelated.

[3] Very recent research by Druckman and Jacobs (N.d.) shows that changes in the President Ronald Reagan's policy positions on economic policy tended to more closely follow the opinion of the rich. Interestingly, his positions on other issues tended to follow other types of subgroups, e.g., defense spending proposals were more responsive to the opinions of self-identified Republicans.

time relate to the general opinions of low, middle, and high income citizens. They find that the House of Representatives is very responsive to the opinions of all groups and not particularly those making high incomes—if anything, the House is more responsive to the poor. They find that the Senate, by contrast, is not very responsive to public opinion at all, let alone any particular group. The result is interesting but the finding is unclear. Are policymakers more responsive to the rich, the poor or not at all?

We effectively pick up where Ura and Ellis leave off. Our approach differs in a number of ways. First, we focus on actual policy, government spending, and not roll call votes—while roll calls are important we are most interested in actual policy. Second, we examine representation across various domains—while very global activity is important, what is happening in particular areas also is important, and perhaps more revealing. Third, we explore both public responsiveness to policy and policy representation of opinion—while the latter is of special importance, it is difficult to assess inequality of representation without taking account of public inputs themselves, as we will see. We begin with these public preferences.

Heterogeneity in Spending Preferences

Our focus is on public preferences for government spending. Our data are based on the following question, included regularly in the General Social Survey (GSS) surveys (and elsewhere):

> We are faced with many problems in this country, none of which can be solved easily or inexpensively. I'm going to name some of these problems, and for each one I'd like you to tell me whether you think we're spending too much money on it, too little money, or about the right amount. Do you think the government is spending too much, too little or about the right amount on [healthcare]?

Notice that the question asks about preferences for government spending in general, not at particular levels of government *per se*. It also asks about people's *relative preferences*—their preference for policy change—not their absolute preferences. Respondents are asked consistently about spending in other categories besides healthcare in the GSS in almost every year from 1973 to 1994, and then in alternate years until 2004, 24 years in total. Using responses to these questions, where question wording is identical over time and across domains, allows us to assess whether and to what extent differences are truly systematic and not unique to particular times and domains. We focus here on defense, the major social domains – welfare, health and education – and the environment.[4]

From the responses, we generate a standard summary measure – what we refer to as "net support" – for each domain across years. The measure is the percentage of people who think we are spending "too little" minus the percentage of people who think we are spending "too much" in each domain. It thus captures both the direction and magnitude of the preference for policy change.[5] That said, the measure has little utility as an indicator of the "direction" of preferences at particular points in time, that is, whether the public really wants more or less

[4] Results for the other areas for which questions have been asked on a recurring basis, including cities, crime, foreign aid, and space in the US, as well as transportation, present a similar story. Much the same is true for Canada. These results are available upon request.

[5] Using the mean response, which takes into account the "about right" responses, makes no difference to any of the analyses that follow.

spending. Most importantly, it is not clear what the 0-point represents (Soroka and Wlezien N.d.). The language used in survey questions can make a big difference. For instance, using "assistance to the poor" instead of "welfare" produces *fundamentally different* results (see Weaver, Shapiro and Jacobs 1995). Do people consistently want less or more spending? We simply cannot tell. The measures of net support consequently have questionable utility as indicators of preferences at particular points in time. They do have a great deal of meaning over time, however, as we can tell when aggregate support is increasing or decreasing. This is what matters most to us.

For our work here, we calculate net support separately for sub-aggregates of income, education, and party identification. For income, we separate respondents into income terciles, based on the income levels reported in the GSS.[6] For education, we divide respondents into three categories: (1) did not finish high school, (2) did finish high school, and (3) had some education beyond high school. This threefold scheme divides survey samples into three relatively equal groups.[7] For party identification, we rely on the standard 7-point party identification question, and net support is calculated separately for Democrats, Republicans, and Independents.[8]

[Figure 2 about here]

Figure 2 plots each of the series. Descriptive statistics for the separate series are included in Appendix Table A1. Let us consider differences in the levels of preferences across groupings, focusing first on income. In the first column of Figure 2 we can see relatively little heterogeneity in preferences across income levels in all domains but welfare. The difference in means between high and low income citizens is five points on average for the non-welfare domains, and none of these differences are even close to statistically significant. Things are different for the welfare domain. Here, the high and low income means differ by over 30 points. Notice however that the differences across income levels are not symmetrical: the mean preference for people with middling incomes is much more like the mean for people with upper incomes. This has important (and fairly obvious) implications where representation is

[6] Using terciles from the GSS has the advantage of keeping our three categories equal in size – that is, the number of respondents in each category is the same, and no one category is more (or less) susceptible to measurement error. (For income categories, and others, the total sample size is just over 1,100 on average. Approximately 5 percent of respondents do not answer the income question, leaving an average N of about 1050, or 350 in each income category.) Given that the income distribution reported to GSS always is lower than what we see in Census data, we also calculated using terciles from the US Census bureau. This makes virtually no difference to any of the results—specifically, using the Census distribution slightly expands the range of differences. To determine preferences by income tercile, we begin with preferences aggregated by whatever income response categories exist in the individual-level survey file. We then collapse these into income terciles. When survey response categories overlap the divide between two income terciles, the respondents in this category are assigned the mean score (in the category) and allocated to the two income terciles proportionally, based on where the tercile division lies.

[7] The sizes of the education groups do change over time, and in predictable ways: the percentage of people not finishing high school declines and the percentage of people have some college increases.

[8] Independents here include both the "pure" Independents and those who "lean" toward one of the parties. This serves to balance the N's in the three partisan subgroups.

concerned—in representing the preferences of one of the two groups, policymakers to a large extent represent the preferences of the other (see Soroka and Wlezien 2008).[9]

This does not mean that there is little heterogeneity in preferences. In the second column of Figure 2 we can see that dividing respondents by education generates larger differences on average. Consider the non-welfare domains. Here, the preference gap between those with at least some college education and those who haven't completed high school is more than three times the gap for upper and lower income terciles. The education gap is greatest for defense spending. It also is fairly large for welfare, but much narrower than we saw across income levels, implying that education levels are less reflective (than income) of differences in welfare self-interest. The gaps in preferences typically are greater still across categories of party identification, shown in the right column of Figure 2. This comes as little surprise given the well-known link between party support and issue preferences in many domains.

In the figure it also is clear that preferences across groups track each other over time. This is true regardless of differences in levels, as the mean alpha (summarizing the bivariate correlations between the three subgroups) exceeds .91 for income, education and party identification. In effect, there is substantial parallelism in preference change across segments of the population, as Page and Shapiro (1992) documented. This parallelism tells us a lot about the dynamics of public preferences over time – namely, that people tend to respond to many of the same things in similar ways (Page and Shapiro 1992; Wlezien 1995; Enns 2006; Soroka and Wlezien 2008; Enns and Kellstedt 2008; Ura and Ellis 2008).

[Table 1 about here]

Temporal movement matters at least as much as group differences. This is clear from Table 1, which shows analysis of variance (ANOVA) results for the different spending domains and subgroups. The results are the percentages of variance due to time and group differences. For instance, at the top of the first two columns we see that 96% of the total variance in defense spending preferences across years and income terciles is due to parallel temporal movement and only 0.3% is due to reliable differences across the groups. This is as we would expect given what we saw in Figure 1. The impact of income groups on preferences in other domains is larger, but only substantially so for welfare, and even here they account for just over half of the variance in welfare preferences. This is an important result, for it reveals that, where income matters most, the common temporal movement matters almost as much. In the other four domains, income accounts for only 3.4% of the total variance in spending preferences on average. Again, as we saw in Figure 1, education and, especially, party groups have more pronounced effects: education levels account for almost a quarter of the total variance on average and party groupings almost 40%. Time still matters most of all, however, and the change in preferences is strikingly parallel even for people of different partisan stripes.

[9] To the extent one takes the 0-points in the measures seriously, preferences rarely differ at all across income groups. That is, the "direction" of support for spending is almost always the same. For the five domains, preferences among the low and high income terciles are on different sides of 0 – where one group favors more spending and the other less – only 8 percent of the time (29 percent of the time for welfare). The percentage drops to less than 7 percent for the low and middle income terciles and below 2% for the middle and high income terciles. For health, education, and the environment, the direction of preference for the three groups never differs. The problem with all of this analysis, as we have already discussed, is that it is not clear what the 0-point represents.

Although there is thus strong evidence of parallelism in Table 1 (and Figure 2), we should not overlook the possibility that there is group-specific movement as well. Consider the case of health preferences across income levels, where 82.5% of the variance is common and 4.2% of the variance is group-specific. What of the remaining 13.3%? Part of this is sampling error and part is unique variance. It is possible to estimate the former, and by implication the latter, and this is described in some detail in Appendix B. That analysis of income groups suggests that the true unique variance for each subgroup is just less than 10 percentage points. The standard deviation of about 3 points implies real unique movement of plus-or-minus six points around the common trend, e.g., where those with high incomes become more a lot more favorable toward spending while those with middle incomes become a little more favorable and those with low incomes do not change. This is an important finding. It makes clear that there is unique movement across groups. It means that cross-group variations in responsiveness and representation are possible.

Public Responsiveness

The thermostatic model is a basic one. In the model, the public's preference for "more" or "less" policy—its relative preference, *R*—represents the difference between the public's preferred level of policy (*P**) and policy (*P*) itself:

$$R_t = P_t^* - P_t \,. \qquad (1)$$

Thus, *R* can change because either P^* or *P* changes; a change in P^* positively influences *R* and a change in *P* negatively influences *R*.

This theoretical model does not translate directly into practice. Most importantly, we typically do not observe P^*. Survey organizations rarely ask people how much policy they want. Instead, as we have noted, these organizations ask about relative preferences, whether we are spending "too little," whether spending should "be increased," or whether we should "do more." This, presumably, is how people think about most policies. (Imagine asking people how much health or education spending they want.) The public preference, however defined, also is necessarily relative. This is quite convenient, as we can measure the thermostatic signal the public sends to policymakers.

We know that the thermostatic model works well in certain spending domains in the US (Wlezien, 1995, 1996).[10] That is, the public adjusts its preferences in response to policy, other things being equal: when policy increases, relative preferences decrease; when policy decreases, relative preferences increase. We do not know how pervasive the tendency is within the US, however. Do different segments of the public respond to policy in similar ways? Or do the national-level patterns conceal the responsiveness of a portion of the broader public?

To begin to answer these questions, we estimate models of feedback across the different sub-aggregates. The model we estimate is a slightly revised version of equation 1, as follows:

$$R_t = a + \beta_1 P_t + \beta_2 W_t + e_t, \qquad (2)$$

where *a* and e_t represent the intercept and the error term, respectively and *W* designates the instruments for the public's preferred level of policy (*P**). In practice, these instruments are relatively hard to come by. We include a survey measure of US dislike of Russia in the defense

[10] It also works very well in the UK and Canada (Soroka and Wlezien, 2004; 2005).

models, as a indication of security threat;[11] for the major social domains, we include a linear counter to account for the gradual increase in preferences for spending over time.[12] Models also include a lagged value of the dependent variable (at *t-1*), to account for autocorrelation.[13]

Our measures of policy (P_t) rely on outlays drawn directly from the *Historical Tables* in the 2006 Budget. The specific definitions of the functions used are described in Wlezien (2004), and we create real-dollar valued measures using a deflator based on the GDP (Chained) Price Index, also from the *Historical Tables*. Following equation 1, levels of relative preferences are expected to be associated with current levels of spending; if the thermostatic model applies, the coefficient (β_1) relating the two (see equation 2) is expected to be less than 0. Equation 2 is estimated for each sub-group. Within each domain, then, there are nine separate estimations to account for the three income, education and partisan groups. We do not present the full models here — rather, we show just the feedback coefficients (β_1). If there are systematic differences in the responsiveness of different sub-aggregates, it will be apparent in these estimates.

[Table 2 about here]

Table 2 displays results for the different income, education, and PID subgroups. What is most noteworthy from this table is that every one of the spending coefficients is negative and almost every one is significantly different from 0—specifically, 40 of the 45 coefficients are significant. The public responsiveness established in previous studies clearly does not merely reflect the behavior of peculiarly attentive issue publics; rather, it holds generally across education and income levels and party identification. This is an important finding, for it indicates that people with very different backgrounds and circumstances respond in much the same way to changes in policy, on average. Each group receives and accepts basic information about the true direction and magnitude of policy change. The responsiveness of all the groups clearly does differ across domains, however: A one billion dollar increase (decrease) in defense spending leads to about a .25 point decrease (increase) in preferences for more spending, while an identical change in environmental spending has eight times of an effect on preferences. The differences tell us about differences in the spending preference metric across domains, where one point "means" a lot in spending on defense than it does in spending on the environment.

There also are hints of difference in responsiveness across subgroups within particular domains. Consider the first row of Table 2, which shows defense coefficients for the three income groupings – from low income in column 1 to high income in column 3. Here we can see that the magnitude of responsiveness increases as income increases, though the differences are not statistically significant. The pattern is similar in the domestic domains, and here some of the differences are significant, that is, people with middle and high incomes are more responsive to health and education spending than those with low incomes. Although there is substantial parallelism across these subgroups, then, there are real differences and these matter, at least to some extent. For the most part, however, the dynamics of preferences across

[11] For details, see Wlezien (1996).

[12] Defense spending preferences show no such trend. The over-time increase in welfare and healthcare preferences actually is non-linear, and so we use quadratic versions of the counter in those domains.

[13] For the regression analyses, we fill in the six (never consecutive) missing values in preferences series using linear interpolation. Doing so makes only a minor difference to results, though it does naturally tend to increase the coefficient on the lagged dependent variable. Note also that spending preferences are, both in theory and in practice, stationary.

education groups are very similar, a fact that should come as no surprise given how closely the series track together.

A similar pattern is evident across education groups. In each case, the coefficient is largest for those with high education, particularly for health and education spending domains. The extent to which these results parallel those for income suggests a possibly common source, e.g., that it is education that drives the differences across income groups. That the differences across education levels are more pronounced underscores the point. At the same time, the over-time flow of preferences across both income and education groups in the US is much more similar than it is different. All respond fairly equally to policy change and they seemingly react in like fashion to other events.

The pattern across partisan groups looks a little different. Democrats appear marginally more responsive to defense policy, though the difference is not statistically significant. There is a significant difference for both welfare and especially health spending, however, and in these cases Republicans are most responsive. A similar pattern is evident for the environment, if less clearly. The results are somewhat counterintuitive, in that they suggest that partisans are most attentive to what politicians do for "other partisans," that is, assuming that defense spending is more salient to Republicans and social spending more salient to Democrats.

Overall, the resulting story is predominantly one of similarity. There is evidence of negative feedback in almost every subgroup and the tendency is similar across most groups. Even where differences are apparent, they usually are not significant. Much as was heralded by the Figures, then, the main finding is parallelism across a range of socio-economic circumstances and political orientations. There still are real differences, however, and particularly across education levels – the better educated are more responsive than those with low levels of education. This is highly intuitive. Now let us consider whether it is consequential for what policy itself.

Inequality in Policy Representation

Is there inequality in representation? Descriptive statistics suggest that there is not much difference over time in the preferences of different groups. Even if policymakers represent one group more than another, the resulting pattern of policy change would be pretty much as we would predict using the preferences of other groups. Still, as we have seen, there are differences in the flow of groups' preferences over time, and these at least partly reflect differences in public responsiveness to policy. This is important, for it provides a possible basis for differential representation. Let us see what policymakers do.

Our basic model of policy representation is as follows (see Wlezien 1996; 2004; Soroka and Wlezien 2004; 2005). In the model, policy change in the current fiscal year (P_t) is a function of relative preferences for policy (R_{t-1}) and the partisan control of government (G_{t-1}) during the previous fiscal year. (The lag serves to reflect preferences and party control when the current year's budget is actually made.) The equation is:

$$\Delta P_t = \rho + \gamma_1 R_{t-1} + \gamma_2 G_{t-1} + \mu_t, \qquad (3)$$

where ρ and μ_t represent the intercept and the error term, respectively. This model captures both indirect and direct representation: the former — representation through election results and subsequent government partisanship — is captured by γ_2, and the latter — annual

adjustments to policy reflecting shifts in preferences — is captured by γ_1. The latter is the most critical coefficient for our purposes. It is the coefficient that captures policy responsiveness, the kind of dynamic representation that we expect (though to differing degrees) across policy domains.

Of course, we are interested here in the extent to which representation differs across subgroups. The most straightforward way to do this is to enter measures of preferences for different groups together in the same equation, as follows:

$$\Delta P_t = \rho + \gamma_{1A} R_{At-1} + \gamma_{1B} R_{Bt-1} + \gamma_{1C} R_{Ct-1} + \gamma_2 G_{t-1} + \mu_t, \quad (4)$$

where policy change is now modeled as a function of the relative preferences for three different groupings, say, of income. We would want to see whether the coefficients differ, in particular, whether policymakers are more responsive to those with higher incomes. Actually estimating such an equation does not work very well in practice, however, because of the strong similarities in preferences. Consider Table 3, which shows results of regressing spending in each domain on preferences for spending by income tercile.

[Table 3 about here]

In Table 3 nine of the fifteen coefficients are positive and only two are statistically significant – low income preferences for health spending and high income preferences for the environment. At the same time, the joint significance of the three preference variables in each equation is very high, with *p*-values of well below .01. These two results tell us that public opinion matters but that it is difficult to distinguish responsiveness to particular groups. If there is any indication from the results, it is that policymakers are most likely to follow the preferences of people with middle incomes – the coefficient is consistently positive, well above 0, and typically greater than the coefficients for low and high income preferences. Still, as the pattern is not statistically significant, we must stop short of drawing this conclusion.

An alternative approach to capturing potential inequality is to directly model spending change as a function of preferences for each of the different subgroups taken separately, as follows,

$$\Delta P_t = \rho + \gamma_{1A} R_{At-1} + \gamma_2 G_{t-1} + \mu_t,$$
$$\Delta P_t = \rho + \gamma_{1B} R_{Bt-1} + \gamma_2 G_{t-1} + \mu_t,$$
$$\Delta P_t = \rho + \gamma_{1C} R_{Ct-1} + \gamma_2 G_{t-1} + \mu_t. \quad (5)$$

We want to see whether the effect of preferences differs or is the same ($\gamma_{1A} = \gamma_{1B} = \gamma_{1C}$) – put more substantively, whether policy responds more to the preferences of some groups than others.

Results are summarized in Table 4. The table shows just the representation coefficients (γ_1)— full results are available upon request. Note first that there is substantial evidence of representation: every one of the opinion coefficients is positive and almost all (39 of the 45) statistically significant. Clearly, policy in these domains moves with the highly parallel flow of opinion across various groups. And importantly, budgetary policy does not appear to exclusively reflect the preferences of a particular group or set of groups.

[Table 4 about here]

Are policymakers more responsive to the opinions of some groups than others? The coefficients actually suggest that they may pay more attention to the preferences of people with

low and middling education and income levels; that is, the coefficients for these groups are consistently higher than for those with high education and income. Comparing the raw coefficients across groups is however complicated by the fact that the variance in preferences is in some cases quite different from one group to another. Take, for instance, results for defense representation across education levels. The variance in defense preferences for the high education group is roughly 21.4 points; for the low education group, it is 16.9.

We can of course consider results taking into account the variance in preferences by adopting a standardized measure of representation: a one-standard deviation shift in preferences as a proportion of the average level of spending over the period. Looking across education levels, for instance, the standardized coefficients for defense are, from low to high, 4.5, 4.3, and 4.7. So taking into account the variance in preferences, the apparent difference in raw defense coefficients across education levels disappears. This also is true for many of the other domains and groups, though some of the differences do remain.

Another way to calibrate the level of representation is to examine the *net effect* of estimated public responsiveness and policy representation. This tells us how effectively policymakers represent public opinion given public responsiveness—the degree to which the magnitude of representation is indexed to the magnitude of responsiveness.[14] It may be, after all, that representation is lower for those with high education and income levels because their responsiveness to spending is greater, i.e., that the one effectively balances out the other. It also may be that responsiveness and representation are positively related across certain subgroups in some domains, i.e., that representation is greater where responsiveness itself is greater. Just *looking at the representation coefficients alone thus can be deceiving*. The results in Table 4, for example, may understate the influence of the rich in government spending.

To produce the net effect statistics, we simply multiply the feedback and representation coefficients for each group in each domain from Tables 2 and 4. Table 5 shows the results. Understandably, these numbers are more comparable across domains. Most importantly, they allow us to assess effective representation across groups within domains. Generally, the results suggest that the net effect of representation and feedback across is very similar across sets of subgroups. This is no great surprise where there was little difference in representation and feedback in the first place, such as for welfare across income levels. For other domains and subgroups, apparent differences in feedback and representation effectively "net out." Consider defense across income groups. In Table 2 the largest responsiveness coefficient is for those with high education and in Table 4 the largest representation coefficient is for those with low education. The net effects of public responsiveness and policy representation are quite similar.

[Table 5 about here]

Net effects do not entirely erase differences apparent in Table 4. Real differences do remain, for instance, across income levels for spending on education and the environment—and the corresponding patterns are even more pronounced in Table 5. In some cases, new differences emerge. Consider the coefficients across income levels for spending on health. In Table 5 representation appears greater for the poor but, when taking into account public responsiveness, the pattern is reversed, and representation appears slightly greater for the rich. There is no clear tendency across domains, however. For defense there is substantial equality;

[14] Indeed, it provides an estimate of efficiency—how effectively a shock to preferences is converted into policy (Wlezien 1996; Soroka and Wlezien N.d.).

for welfare, there is hint that the middle and poor are better represented while for health, as we have discussed, the rich may do better. The real differences are in education, where spending best tracks the preferences of those with middling incomes, and the environment, where spending most closely follows high income preferences and to a lesser extent those in the middle. Even so, as the mean net effects values reveal, representation across income sub-groups is, overall, remarkably similar.

The differences generally are greater across education levels, though they also are not consistent. For instance, while the highly educated are better represented in health spending and, to a lesser extent, the environment, they are less well represented in welfare and education. Things are less pronounced but more consistent across party identification, as representation tends to be more efficient for Republican preferences. The differences are slight with the exception of health. What is most important from this analysis is that *there is little systematic difference in the representation of preferences of people with different income levels*. Although income matters for representation in some domains, the well-to-do do not matter consistently more than others.

Discussion and Conclusions

Is there heterogeneity in policy representation across population subgroups in the US? We began here by looking at whether there were differences in public preferences in the first place. Overall, our data suggest a great degree of over-time parallelism in public preferences for spending across groups based on income, education, and party identification. This parallelism implies a substantial amount of homogeneity in the structure of preferences – citizens respond to much of the same information, and in similar ways. Indeed, most subgroups adjust preferences almost identically in response to changes in actual spending over time. This is a striking finding, one that challenges the conventional wisdom about heterogeneity in interests and information. Preferences are not perfectly parallel, however. Perhaps most importantly, perhaps, some of the groups are more responsive than others to changes in the policy environment. This has possible implications for representation.

Not surprisingly, we observed a good degree of homogeneity in representation as well. Representation is evident across all subgroups, and – importantly – in most domains the differences between groups are marginal. More importantly, some of the apparent differences are a consequence of differences in the responsiveness of groups. The magnitude of representation coefficients is in effect indexed to the magnitude of responsiveness coefficients. The result is that, taking responsiveness into account, representation across groups generally is similar, particularly across income levels. The results imply that to the extent preferences across income levels drift independently over time, it does not register with policymakers taken as a whole. It is as if they respond to a broad summary of opinion change over time. Of course, representing opinion is not all that policymakers do, and party control of government matters for spending in important ways (Wlezien 1996; 2004; Soroka and Wlezien N.d.).

Our analyses address the relationship between preferences and policy *over time*. They do not directly address the relationship between *levels* of preferences and policy at any particular point time. To the extent that policymakers represent the preferences of certain groups at each point in time, however, they should be more responsive to those groups' preferences over time as well (recall Figure 1). That we have not observed large differences in longitudinal representation does therefore raise doubts about the likelihood of differences in representation

cross-sectionally. Of course, it may be that such differences are difficult to detect over time because preference change across groups is a relatively small portion of the movement that we do observe, i.e., we do not see differences in representation because policymakers do not distinguish subtle changes in the preferences of different groups over time.

It thus may be that *persistent* differences in levels of support across groups may matter for the levels of policy, e.g., whether we have a very large welfare state or a modest one. Consider the income-related differences on welfare spending preferences. Here we see a sizable gap between low-income people on the one hand and middle- and high-income people on the other. There is a gap between the middle- and high-income groups as well. Even this difference could matter a good deal. Assuming that policymakers represent high-income preferences and then substituting in middle-income preferences implies an almost 20% net increase in spending. This is how much spending is necessary to drive preferences down to the mean level we observe for high-income respondents.[15] The effect of representing low-income preferences could have a considerably greater effect in spending over the long term, up to a 50% increase. This is a substantial difference. While important as an indicator of the extent of inequality, it is not a realistic estimate of what we might expect in policy were people to have equal weight in the policymaking process. That is, there is little basis for representing the lower third of the income distribution in democratic theory or the theory of practical politics, i.e., the tercile does not contain the average person let alone the median voter, and does not have the power of money or organization.

Even to the extent that there is real inequality in spending representation across income groups, our analysis indicates that the consequences are exclusive to welfare. In the other domains, substituting the preferences of one income group for another makes virtually no difference – policy ends up in essentially the same place. *There simply is little basis for inequality in spending in the very general policy areas encompassed in our analysis.* This comports with Ura and Ellis' (2008) even more global analysis of Congressional roll call voting. It contrasts with what Gilens (2005) has shown across a range of policy areas, including many more particularized ones. His approach is different to ours in a number of ways, including measurement, and it may be that these differences produce the differences in the results. It also may be that both he and we are right. That is, it may be that there is a lot of equality in representation of preferences at highly aggregated levels of policy, i.e., that politicians do not pay particular attention to the preferences of any particular income group. These are salient to many citizens, at least more so than specific programs and policy decisions, and it may be in these latter areas that the well-to-do—and other special interests—have more say. This would not surprise given previous research (Kingdon 1972). It nevertheless remains to be seen.

[15] The estimate thus is a liberal one, as it presumes that the preference equilibrium would remain unchanged, i.e., not increase.

Appendix A

Spending Preference Descriptives

Table A1. Descriptive Statistics: Net Preferences for Spending, 1977–2005 (N=21)

By Income

	1st Tercile		2nd Tercile		3rd Tercile		Mean	Alpha
	Mean	SD	Mean	SD	Mean	SD	Diff	
Defense	-17.867	12.020	-17.858	13.323	-20.208	12.540	8.193	0.979
Welfare	-8.431	12.827	-31.303	14.669	-40.945	15.348	33.147	0.947
Health	61.665	7.313	61.836	8.328	57.333	10.275	6.967	0.919
Education	54.425	8.283	60.858	10.672	62.400	11.998	8.417	0.947
Environment	55.008	8.410	59.467	10.513	58.658	13.898	8.692	0.921

By Education

	Less than HS		HS		More than HS		Mean	Alpha
	Mean	SD	Mean	SD	Mean	SD	Diff	
Defense	-6.461	11.178	-15.597	11.966	-36.311	10.752	27.544	0.966
Welfare	-16.611	11.642	-32.171	12.752	-29.600	18.425	19.756	0.941
Health	58.420	6.262	61.159	7.702	56.706	11.317	8.229	0.890
Education	48.069	7.907	59.335	9.214	66.660	11.281	15.006	0.917
Environment	45.653	9.073	59.465	9.258	63.008	12.226	17.074	0.910

By Party ID

	Democrat		Independent		Republican		Mean	Alpha
	Mean	SD	Mean	SD	Mean	SD	Diff	
Defense	-23.993	15.133	-23.271	10.481	-3.215	12.235	23.509	0.966
Welfare	-14.293	15.476	-28.316	13.748	-44.842	12.622	31.617	0.952
Health	68.158	7.977	60.587	5.710	45.440	12.276	22.160	0.892
Education	64.388	9.464	58.069	8.186	50.003	13.492	18.028	0.958
Environment	61.065	10.743	60.952	8.467	45.517	14.594	20.343	0.896

Note: Data are based on un-interpolated preferences series. Some data are available before 1977, but we restrict the series here so that diagnostics include data only for those years for which we have both public opinion *and* spending series – that is, the years included in the regression models in Tables 1 and 2. Using these un-interpolated data, and a restricted time period, N=21.

Appendix B

A Decomposition of Variance for Spending Preferences

As noted above, the parallelism in spending preferences is not perfect. This is suggested in both Table 1 and Figure 2, but here we provide a more rigorous assessment. Table B1 decomposes the variance of spending preferences across income groups into different components, so as to isolate the true "unique" variance in preferences for each subgroup. The first column shows the average daily variance in preferences across income groups and years for each domain. The second column shows the amount of variance that is due to difference across groups. The remaining "Other" variance ("Total" minus "Group" variance) in the third column, is of special interest to us. We want to see how much of this is due to temporal movement and whether there is any remaining true variance that is unique to each group, i.e., where preferences for the different income groups vary independently over time. We thus need to subtract out the common temporal movement ("Year"), leaving the "Residual" variance, which is exactly the amount left unexplained from the corresponding income ANOVAs in Table 1.

Some of the residual variance in Table B1 is mere sampling error. Given the frequencies and sample sizes of the actual polls, the amount of observed variance that is due to sampling error is relatively easy to compute (Heise 1969).[16] The resulting estimates are shown in the sixth column of the table ("Error"). Now, we cannot produce the true unique variance by simply taking the residual from Table 2 and subtracting out the estimated error variance. This is because the error is shared in some unknown way between the common temporal component and the residual. (For instance, in over-representing the northeastern part of the country at one point in time, the preferences across all income groups would tend to become more liberal. See, e.g., Gelman et al. 2008). We cannot provide exact estimates of how much true preferences in the different groups vary independently over time, then. But we can provide lower and upper bound estimates by subtracting all of the error variance from the residual, and then subtracting none. The penultimate column of Table B1 gives this range of unique variance for each domain.

The numbers do vary, but the mean is just less than 10 points. Given the standard deviation of a little over 3, this implies real unique movement of plus-or-minus six points around the common trend, e.g., where those with high incomes become more a lot more favorable toward spending while those with middle incomes become a little more favorable and those with low incomes do not change.[17] The final column expresses the numbers as percentages of the "Other" variance. Here we can see that preferences across income groups clearly are much more similar than different, but there are differences and some of the differences are real.

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[16] The estimated error variance is the average yearly variance, and the yearly estimate is $\frac{p(1-p)}{N}$, where p is the percentage who prefer "more" spending rather than "less", and N is the number of respondents who select either "more" or "less" spending.

[17] Note that these are likely conservative estimates, since income group effects are usually not significant but we subtract out that variance. There also may be more sampling error in the common component than the residual.

Appendix Table B1: A Decomposition of the Variance of Spending Preferences across Income Groups

	Variance Components							
	Total	Group	Other	Year	Residual	Error	Unique	% Unique[a]
Defense	327.6	1.0	326.6	314.5	10.8	7.0	3.8-10.8	1.2-3.4
Welfare	372.5	197.8	174.7	157.9	16.8	6.6	10.2-16.8	5.8-9.6
Health	67.3	2.8	64.5	55.5	9.0	4.6	4.4-9.0	6.2-14.0
Education	134.0	6.8	127.2	116.0	11.2	4.8	6.4-11.2	5.0–8.8
Environment	107.2	4.5	102.7	87.8	14.9	5.1	9.8-14.9	9.5–14.5

[a] Calculated as a percentage of “Other” variance.

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Figure 1. The Time-Serial Roots of Inequality

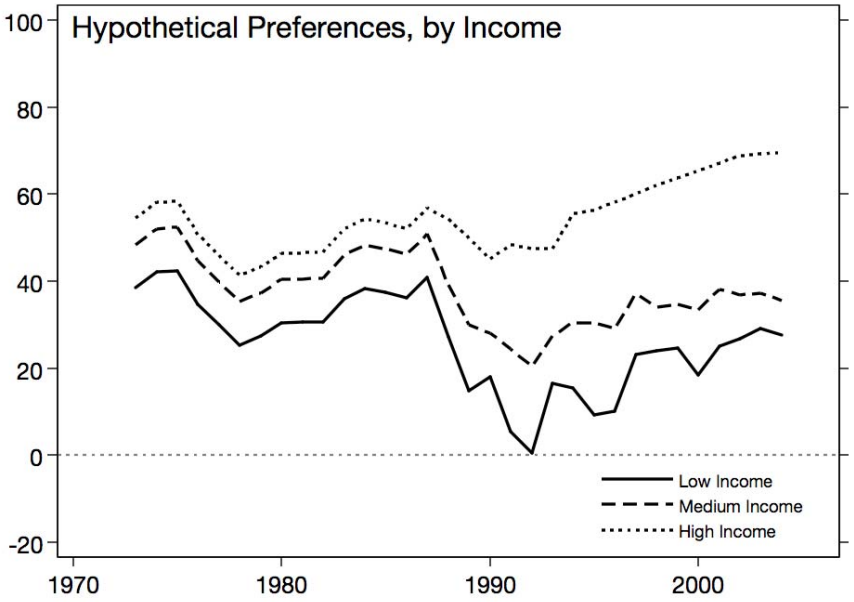

Figure 2. Preferences by Sub-Group, US

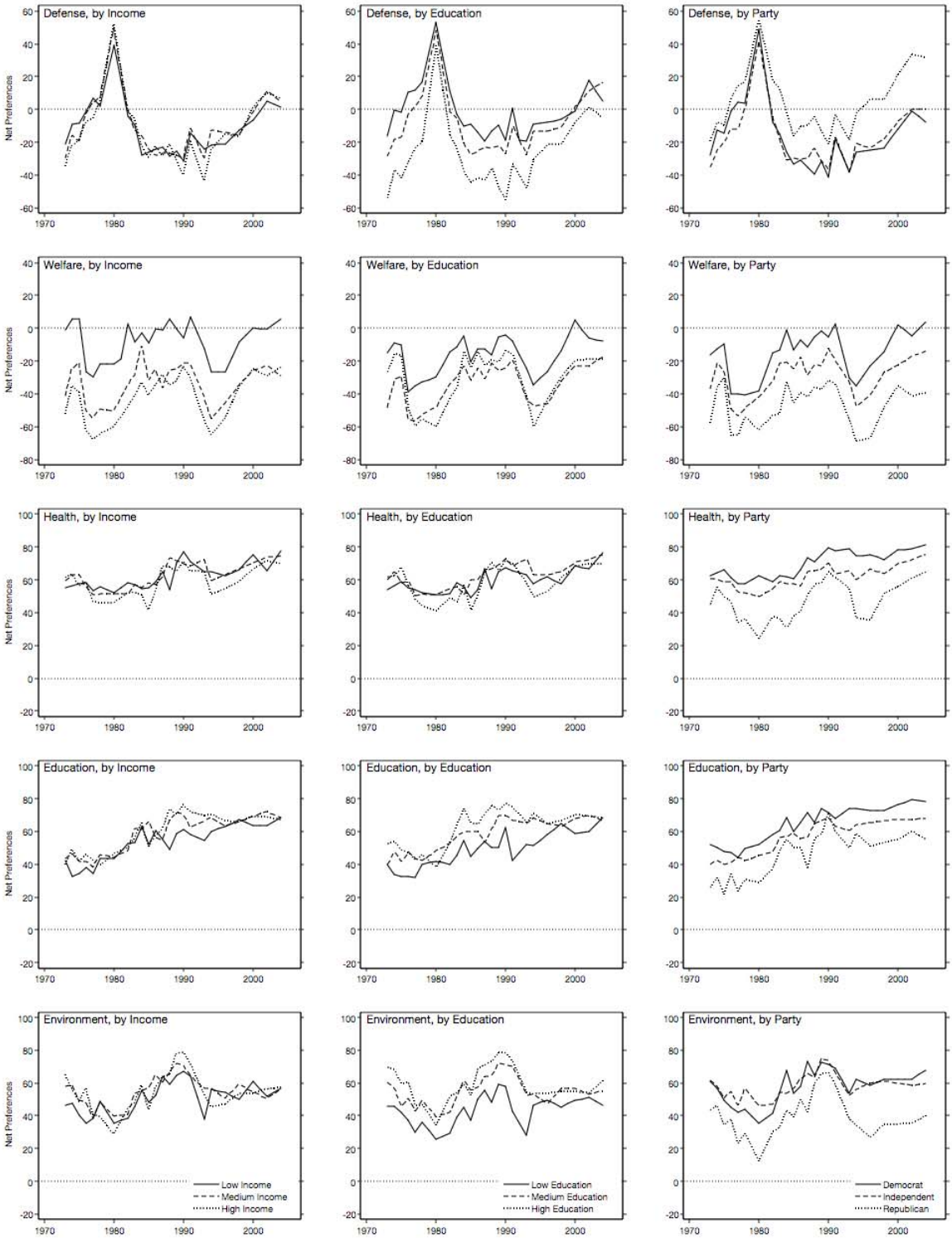

Table 1. ANOVA results, US Spending Preferences by Year and Group, 1973-2004

	by Income		by Education		by Party ID	
	Year	Group	Year	Group	Year	Group
Defense	96.0%	0.3%	67.4%	28.0%	72.8%	22.3%
Welfare	42.4%	53.1%	67.0%	25.1%	45.3%	50.3%
Health	82.5%	4.2%	78.0%	4.8%	39.4%	52.0%
Education	85.9%	5.1%	65.3%	23.8%	66.1%	28.3%
Environment	81.9%	4.2%	55.6%	34.5%	49.4%	40.3%
Mean	77.7%	13.4%	66.7%	23.2%	54.6%	38.6%

Note: Cells show the percent of total variance in preferences explained by year and group dummy variables**.**

Table 2. Public Responsiveness, by Sub-group

Income	*Low*	*Middle*	*High*
Defense	-.234**	-.270**	-.287**
Welfare	-.696**	-.707**	-.710**
Health	-.158	-.209**	-.299**
Education	-.146	-.302**	-.260*
Environment	-1.735**	-2.419**	-2.713**
Education	*Low*	*Middle*	*High*
Defense	-.230**	-.250**	-.308**
Welfare	-.674**	-.562**	-.718**
Health	-.101	-.163**	-.449**
Education	-.190	-.174*	-.301**
Environment	-1.893**	-2.148**	-2.992**
Party	*Dem*	*Ind*	*Rep*
Defense	-.289**	-.237**	-.277**
Welfare	-.599**	-.513**	-.915**
Health	-.124	-.130*	-.501**
Education	-.197**	-.193**	-.369*
Environment	-2.507**	-1.487**	-3.243**

Cells contain OLS coefficients, where * $p < .10$; ** $p < .05$.

Table 3. Policy Representation, All Income Sub-groups Included (Billions of 2002 Dollars)

	Defense	Welfare	Health	Education	Environment	Mean
Low Income	-.244	.110	.321*	-.054	-.027	.02
	(.539)	(.221)	(.168)	(.244)	(.048)	
Middle Income	.444	.308	.248	.433	-.014	.28
	(.637)	(.257)	(.215)	(.265)	(.063)	
High Income	.458	-.047	.054	-.177	.092*	.07
	(.528)	(.225)	(.203)	(.224)	(.049)	

Note: Cells contain OLS coefficients, where * p < .10, with standard errors in parentheses.

Table 4. Policy Representation by Sub-group (Billions of 2002 Dollars)

Income	*Low*	*Middle*	*High*
Defense	.824**	.749**	.662**
Welfare	.293**	.343**	.237*
Health	.563**	.523**	.463**
Education	.175	.216*	.126
Environment	.044	.061*	.065**
Education	*Low*	*Middle*	*High*
Defense	.820**	.719**	.682**
Welfare	.364**	.303**	.185*
Health	.556**	.541**	.424**
Education	.420**	.177	.119
Environment	.077**	.078**	.070**
Party	*Dem*	*Ind*	*Rep*
Defense	.685**	.742**	.746**
Welfare	.285**	.318**	.227*
Health	.554**	.640**	.361**
Education	.189	.226*	.161*
Environment	.056**	.083**	.051**

Cells contain OLS coefficients, where * p < .10; ** p < .05.

Table 5. Net Effects of Responsiveness and Representation, by Sub-group

Income	*Low*	*Middle*	*High*
Defense	-.193	-.202	-.190
Welfare	-.204	-.242	-.168
Health	-.089	-.110	-.139
Education	-.025	-.065	-.033
Environment	-.077	-.148	-.176
Mean	*-.12*	*-.15*	*-.14*
Education	*Low*	*Middle*	*High*
Defense	-.188	-.180	-.210
Welfare	-.246	-.170	-.132
Health	-.056	-.088	-.190
Education	-.080	-.031	-.036
Environment	-.146	-.167	-.210
Mean	*-.14*	*-.13*	*-.16*
Party	*Dem*	*Ind*	*Rep*
Defense	-.198	-.176	-.207
Welfare	-.170	-.163	-.208
Health	-.069	-.083	-.181
Education	-.037	-.044	-.060
Environment	-.141	-.124	-.165
Mean	*-.12*	*-.12*	*-.16*