

Abstract

Political science has long considered congressional approval at the aggregate level and explained fluctuations as a function of macro-level political factors. This paper provides new insight into the variability and stability of congressional approval at the individual-level through a novel panel survey dataset that collects individual-level congressional approval data over a period of 60 months. We are able to test longstanding hypotheses regarding the role presidential approval, partisan control, and policy congruence have in relation to congressional approval using a novel-to-political-science latent curve model. This methodological technique allows the model to account for random intercepts and random slopes, permitting each individual in the sample to have her own trajectory of approval over time. This innovation ensures that the results are not a function of measurement error but instead a function of real change over the period under investigation. The results demonstrate that even at the individual level the approval of both the president and Congress are tightly connected.

“According to a new poll, Congress is now less popular than head lice, Nickelback, and Donald Trump. In a related story, head lice is insulted that it’s being lumped in with Donald Trump and Nickelback.”

--- Conan O’Brien, 1/8/2013

For much of the past fifty years, congressional approval is nearly always negative in the aggregate. As the Conan O’Brien joke suggests, feelings toward Congress have only become worse in recent years: opinion of the federal legislature has been particularly low within the past decade, as approval has remained consistently at or below twenty percent.¹ The joke also possesses a great deal of prescience. Although told more than two years before his candidacy, the late night comic drew a tight connection in the approval of both legislature and the future president. Presidents may enjoy consistently higher levels of approval than Congress, but by employing novel applications of hierarchical measurement models to unprecedented individual-level data, we are able to demonstrate a strong relationship between the two political actors. More specifically, we are able to demonstrate that presidential approval and congressional approval are positively linked in the minds of the public, even in periods of divided government. This finding has important implications for the study of accountability of political institutions.

Congressional approval has received political science attention at both the aggregate and individual level. With respect to the former approach, most studies have focused on the dynamic nature of the national opinion polls and explained what drives shifts (e.g. Durr et al. 1997, Ramirez 2013, Lebo 2008). Individual-level studies tend to restrict their analysis to the cross-section, but they provide essential insight into the micro- and macro-level pressures placed upon the individual when she appraises the government (Parker and Davidson 1979, Hibbing and Theiss-Morse 1995, Kimball and Patterson 1997, Bernstein 2001, Rudolph 2002). Unfortunately, few studies have been able to unify these approaches to determine the long-term dynamic relationships that explain the micro-level stability of congressional approval. Without empirical evidence regarding the shifts

¹http://news.gallup.com/poll/223598/2017-congressional-job-approval-average-remains-low.aspx?utm_source=alert&utm_medium=email&utm_content=morelink&utm_campaign=syndication

in individuals' perceptions of Congress, we lack the ability to draw conclusions regarding citizens' longitudinal relationships with the federal government. Analyses examining these dynamics are essential to provide insight into how democratic accountability evolves over a long period of time.

We posit one key limitation for this previous absence of convergence between longitudinal and micro-level studies: lack of adequate data. In this paper, we leverage a 60-month nationally representative, online panel data set that tracks citizens' opinions of Congress from 2011 to 2016. Contemporaneously, we also measure citizens' opinions of the president and their policy preferences. In this way, we are able to test longstanding theories regarding the dynamics of congressional approval at the individual level. Furthermore, we implement an estimation strategy that allows us to identify individual level change in congressional approval that is distinct from measurement error. In this way, we are able to dispel a few key myths from popular media coverage of congressional approval. First, while aggregate opinion of Congress is consistently low, there is significant movement at the individual level. Second, in a period of divided government, we find a positive relationship between opinions of Congress and the presidency, suggesting that shifts in approval are not explained entirely by partisanship. Finally, when correcting for measurement error, we are unable to say that evaluations of Congress are explained by policy preferences.

Explaining Shifts in Congressional Approval

Political scientists discuss congressional approval as an amorphous concept. Citizens typically maintain low levels of knowledge about congressional activity and they are unable to identify its policy outputs (Fenno 1975). One explanation put forth for the low approval is the lack of a personal connection between the citizen and the legislature. Whereas an individual member of Congress is able to foster a constituency through their charisma, casework abilities, and credit-claiming, the legislature as a whole is associated with institutional gridlock (Parker and Davidson 1979). In the abstract, Americans are very favorable to the idea of a democratically elected legislative body that can serve as a check upon the other branches of government, but

they draw negative associations between Congress and the legislative procedural obstruction that characterizes it (Hibbing and Theiss-Morse 1995).

What drives variations in congressional approval? Congressional approval is consistently low, but polling finds that the public's perceptions of Congress demonstrate short-term and long-term fluctuations (Patterson and Magleby 1992). To be sure, much scholarship has been conducted to understand these changes. On the one hand, congressional approval has been linked to overall public satisfaction with the nation's trajectory. Many studies have found a significant relationship between support for Congress and objective measures of and subjective perceptions of economic performance (Patterson and Caldeira 1990, Durr et al. 1997, Box-Steffensmeier and Tomlinson 2000, Rudolph 2002). Others expand this notion to explain the level and change in congressional approval as a more general response to differences in public satisfaction with government. Mainly, the presidency is the most focal position in the federal government. When citizens evaluate the government, their evaluations are primarily of the president; evaluations of Congress are merely through the "prism of the presidency" (Davidson, Kovenrock, and O'Leary 1968, 62). Empirical evidence suggests this finding has merit, as lagged and current period presidential approval predicts current period congressional support in the aggregate (Patterson and Caldeira 1990, Lebo 2008, although see the results from Durr et al. 1997 regarding lagged presidential approval).

In a polarized environment, however, this residual approval may have a conditional nature. For example, Durr et al. (1997) hypothesize that in a period of unified control of the legislature, we should expect a positive relationship between the two positions, but in divided government, positive affect toward the president should be related to negative feelings towards the opposite party controlled Congress. When empirically testing this hypothesis, the authors find little evidence that divided government conditions the relationship between the legislature and the executive. The general-cynicism hypothesis, as presented by Bernstein (2001), suggests that rather than evaluate Congress in a partisan direction, Americans' judgement of the presidency will be in a unified direction, regardless of partisan control. That is, positive feelings of the president will still be associated with positive feelings of Congress, even when a Democratic president deals

with a Republican dominated Congress, as we witnessed between 2011 and 2016, the period of this study. Lebo (2008) provides strong empirical support for this hypothesis contending that congressional approval is positively associated with presidential approval. Rather than delegate credit and blame between the two, overall aggregate movement is in the same direction.

Since our data set covers a period of divided government, we are unable to directly test the hypothesis that individual relationships between congressional and presidential approval shift with a change in partisan control. Nonetheless, we can test whether a connection exists and what that direction of a potential relationship is under divided government.

In addition to general attitudes about government, studies have suggested a policy and legislative performance relationship between Congress and the individual citizen. Some research suggests that passage of major legislation should be associated with higher levels of congressional approval (Mondak et al. 2007). Yet, others argue that simple tests of policy passage may be a misguided attempt to explain congressional approval. For one, major legislation, even in polarized, relatively homogenous congressional parties, requires votes from the minority party or compromise within the majority party (Durr et al. 1997, Curry and Lee 2018). This policymaking phenomenon led Durr et al. (1997) to predict a negative relationship between congressional approval and major legislation because both parties' faithful would be disappointed. Others find evidence that such shifts do not occur. Rather, those pleased with legislative victories are typically cancelled out by those upset with laws they find unfavorable (Binder 2003, Ramirez 2009, Jones 2013).

Rather than focus on passage and obstruction of major legislation, the individual, who typically is unaware of congressional process (Hibbing and Theiss-Morse 1995) may evaluate Congress on a policy dimension relative to perceptions of how well the legislature matches her own ideal preferences (Jones and McDermott 2009). Using time-series error correction models, Ramirez (2013) demonstrates that as Congress' policy direction diverges from that of the aggregate public mood, congressional approval worsens. As the policy outputs differ from the median citizens' preferences, the average evaluations of the legislature decrease.

When we apply this approach to the individual, we are somewhat limited in that all individuals are exposed to the same policy treatments in magnitude and direction. Rather, we take advantage of our panel data to determine if shifts in the individual's own ideological preferences are associated with corresponding shifts in the evaluations of Congress. Since the House, and later the Senate is controlled by a Republican party during the period of our study, we expect that as individuals become more conservative, they will display greater approval of Congress. Conversely, individuals will update liberal policy preferences with more negative evaluations of Congress.

Before we conduct our empirical tests of these hypotheses, however, we must first identify if congressional approval demonstrates any real change at the individual level. From 2011 to 2016 in the aggregate it would appear the approval remained static at a nadir. It is quite possible that individuals did not exhibit any real change over the second Obama term. If that is the case, we will be hard-pressed to find any systematic dynamic relationships with our data. Thus, we will also test the hypothesis that variation in congressional approval exists at the micro-level. Previous studies on changes in congressional approval have been limited to macro-level investigations mainly due to a lack of data. This paper exploits unprecedented monthly panel data to provide the first individual-level longitudinal study of changes in congressional approval. This design is important because it provides insight into the relationship between presidential approval and congressional approval while controlling for individual heterogeneity. We employ an autoregressive latent trajectory (ALT) model to explain movement in congressional approval that is explained in the next section. Novel to political science, mainly due to the scarcity of long-term panel studies within the discipline, ALT models maintain several key advantages over the commonly-used multi-level models (MLM) for panel studies. While overcoming previous modeling and research design limitations, this paper demonstrates the shared fates of the president and Congress in the eyes of individual citizens.

Modeling Individual-Level Congressional Approval

Autoregressive latent trajectory (ALT) models derive from a family of structural equation modeling approaches and are specifically designed to examine changes in inter-individual differences over time while controlling for time-varying and time-invariant covariates (Bollen and Curran 2004; Duncan, Duncan, and Strychker 2006; Fan 2003). These models provide “an intersection between variable-centered and person-centered analysis.” (Curran and Willoughby 2003). ALT models solve the problem for how to best model individual-level deviation from a linear trend; that is, ALT models explicitly model this process as autoregressive. When ALT models are applied to panel data, they distinguish individual-level change from measurement error. Moreover, ALT is particularly well-suited for handling missing data (Bollen and Curran 2006). Other strategies such as differencing the data, estimating multi-level models, or estimating time-series models where variables are functions of their previous value in a prior panel wave fail to model individual-level deviations from a trend in a systematic way or fail to exploit the full granularity of individual-level panel data.

While variation may exist in the wave to wave movement for panelists’ congressional approval, it is possible that observed change may be the result of measurement error. To identify real change while accounting for measurement error, we first employ a univariate unconditional autoregressive latent trajectory (ALT) model. An ALT model is a hierarchical model that integrates structural equation modeling. In our application, we treat congressional approval as a latent variable that is measured as a constant based upon the multiple waves from each panelist i . Additionally, we assume that for each individual has their own linear trajectory for congressional approval over the period of the analysis. This model can be summarized more formally as:

$$\begin{aligned}
 y_{it} &= \alpha_i + \lambda_t \beta_i + \rho_{y_t, y_{t-1}} y_{i, t-1} + \epsilon_{it}, & \epsilon_{it} &\sim N(0, \sigma_{y_t}) \forall t \neq 0 \\
 \alpha_i &= \mu_\alpha + \zeta_{\alpha i}, \\
 \beta_i &= \mu_\beta + \zeta_{\beta i}, \\
 y_{i, t=0} &= \mu_{y_{t=0}} + \zeta_{y_{t=0}}
 \end{aligned}
 \quad \left(\begin{array}{c} \zeta_{\alpha i} \\ \zeta_{\beta i} \\ \zeta_{y_{t=0}} \end{array} \right) \sim N(0, \Sigma) \tag{1}$$

where μ_α , μ_β , and $\mu_{y_{t-1}}$ are the estimated means for the distribution of individual constants, slopes, and initial measurements respectively.

The model estimates that each individual maintains a latent constant level of support for the legislature, α_i , which will influence their affect towards the legislature at any given moment. While each individual has a “true” average level of approval towards Congress, the model assumes that a panelist may stray from this latent level of approval. Modeling such an assumption requires the inclusion of a trend term β_i which represents the overall average trajectory, or direction and magnitude of movement from $t = 0$ to $t = n$. While we constrain this trend in the aggregate to a linear trend, as represented by $\lambda = [1, 2, \dots, T]$, the linearity does not necessarily imply that predicted values of the dependent variable will all move in the same direction for all subjects. Rather, by allowing for previous levels of congressional approval to predict current levels, these trajectories may stray from the strict linear path. These lagged autoregressive values of congressional approval ($y_{i,t-1}$) estimate an effect for the previous period’s congressional approval on that of the current period.

To determine if individuals display significant, deterministic variation from their latent mean, we first estimate a model in which we assume that each panelist’s individual trajectory does not change ($\mu_\beta = 0$). We then estimate a similar model in which we relax the trend assumption by allowing for each individual’s trend in congressional approval to deviate from zero. From here, we compare the fit of the two models to determine if the inclusion of the individual slopes significantly improves the model fit.

In the ALT model, each individual panelist’s unique error term remains for the estimated latent variable constant and slope, but time-specific error terms exist for each period of observed values. The term ϵ_{it} indicates that the model estimates a level of variance that is different for each period of the measurement. The advantage of this adjustment should be clear. Within a longitudinal analysis, the model’s predictive power may vary with respect to the time period. By estimating time-period residuals, the ALT model is able to determine if variance in the relationship between congressional approval and the covariates exists for the average person over various

waves. Within a traditional MLM, each individual's predicted level of congressional approval is assumed to have a unique error term. Yet, this error term is constant over all periods. It is tempting to model the stated relationship using a multilevel model with random intercepts for each individual, as well as fixed effects for each time period covered. Yet, most multilevel models rely on an assumption that error in the outcome variable remains constant across all observed waves. Since we are interested in observing time-specific effects, it is essential to allow greater movement across any given wave.

Since this model is used to estimate patterns in panel data, survey panel data specifically, the problem of missing data must be addressed. In addition to typical item-non-response, a panel survey is subject to significant wave-non-response caused by natural panelist attrition. While multiple imputation is one approach to missing data problems, it is often difficult to meet the conditions upon which a researcher can impute reliable values (Rubin 1987). Additionally, in an autoregressive model such as this, it would be necessary to impute outcome variables since future period covariates are estimated as current period outcomes. The ALT model in this analysis uses full information maximum likelihood estimation to incorporate missing values (Allison 2000) By using all available values for each observation, the model fits a likelihood to whatever missing values exist. From here, the estimated likelihoods are assigned weights and summed over all waves, resulting in parameter estimates and standard errors. Using this approach, the ALT model is able to estimate the effects on congressional approval for those individuals who answered a sufficient number of waves of data rather than all of the waves. In this way, researchers are able to overcome attrition biases that limit their estimates to those individuals who remain in the panel for every wave. ²

²Nonetheless, like most survey data sets, we do encounter small amounts of item non-response on certain covariates. While the ALT model improves inferential abilities by resorting case-wise deletion within repeated measurements of the dependent variable, it remains susceptible to common missing data issues within explanatory variables (Rubin 1981). It should also be noted that no one variable contributes to substantial missingness within our model; each time-invariant covariate included in the models displayed missingness for less than 10 percent of all cases.

Data and Findings

Data are provided by the American Panel Survey (TAPS), a nationally-representative panel survey that conducts an online poll of up to 2,000 adult respondents monthly.³ Collection began in November 2011 and continued through November 2016, spanning 60 collection periods. Each month the survey includes measures for both presidential and congressional approval, measured on a five-point scale from strongly disapprove (−2) to strongly approve (+2). “Not sure” serves is treated as a midpoint value (0) in this analysis. TAPS randomly assigns each panelist to one of two groups and questions regarding approval of government elites are alternated each month between these two groups, with questions being asked to both groups in the same month on very rare occasions.⁴ Each group consists of more than 1,300 individuals.

Does Congressional Approval Move at the Individual Level?

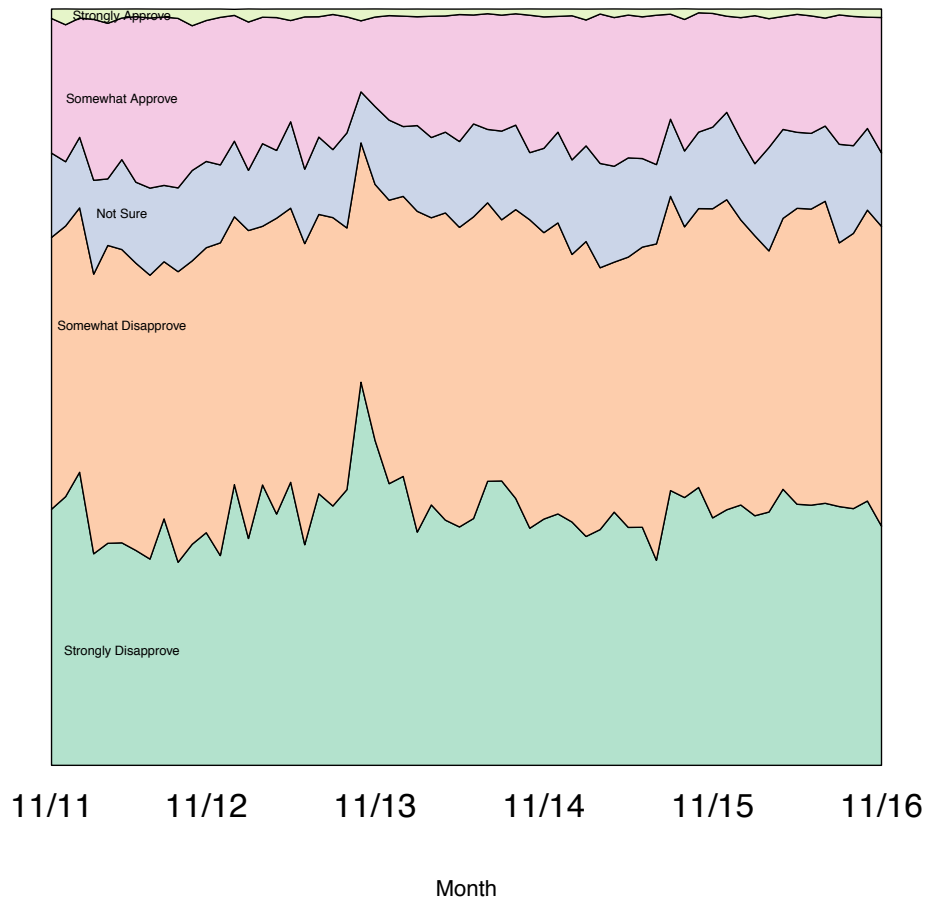
Unsurprisingly, in the aggregate, reported levels of congressional approval in our sample are consistently negative. Between 65 percent and 85 percent of the sample responded that they either “somewhat disapproved” or “strongly disapproved of the way Congress was doing its job each month. At the same time, levels of approval are consistently low. Nearly all months witness between 10 percent and 20 percent of the panelists responding that they strongly approve or somewhat disapprove of the legislature. This level of stability is not just restricted to the three point category scaling of the measure. Figure 1 displays the proportions of response for each month from the initial wave (November 2011) through the final wave of this analysis (November 2016). It would appear that in the aggregate, there is remarkable stability from month to month at each category. The percentage of panelists strongly approving of Congress hardly ever inches above 2 percent. Over the course of the study, we also find very few seismic wave-to-wave shifts. In fact, the only month in which we witness a greater than 10 percentage point shift from one

³More technical information about the survey is available at <http://taps.wustl.edu>.

⁴Since the panelists are asked these questions at separate times, we estimate the ALT model on both groups separately rather than pool the questions into two-month intervals. This strategy allows us to maintain more precise wave-specific error terms.

category to another occurs in October 2013, coinciding with a federal government shutdown.

Figure 1. Congressional Approval Over Time



While we see great stability in the aggregate, the advantage of this data set is to identify any potential individual-level movement. A cursory analysis would suggest that, like its aggregate counterpart, congressional level at the panelist level remains rather fixed. Across each wave to wave period, the majority of panelists participating in each provide the same response. This phenomenon holds for both a five and three point categorization. Although we do not find overwhelming shifts in individual subjects, we do witness some rather surprising variation in responses, at least in the short-term. From month to month, the average percentage of panelists

displaying movement on the 5-point scale is 38.3% for those in Group 1 and 37.7% for those in Group 2. Movement is not necessarily common, but it appears to occur. Within both groups, the mean number of month-to-month changes in response is 6.96 and 6.73.⁵ Restricting the sample by participation waves understandably increases the average level of observed change. In fact, total stability at the individual level is very rare. On the five-point scale, when restricting our analysis to those participating in at least half of the survey waves, we find that over 95% of panelists changed their level of approval at least once.

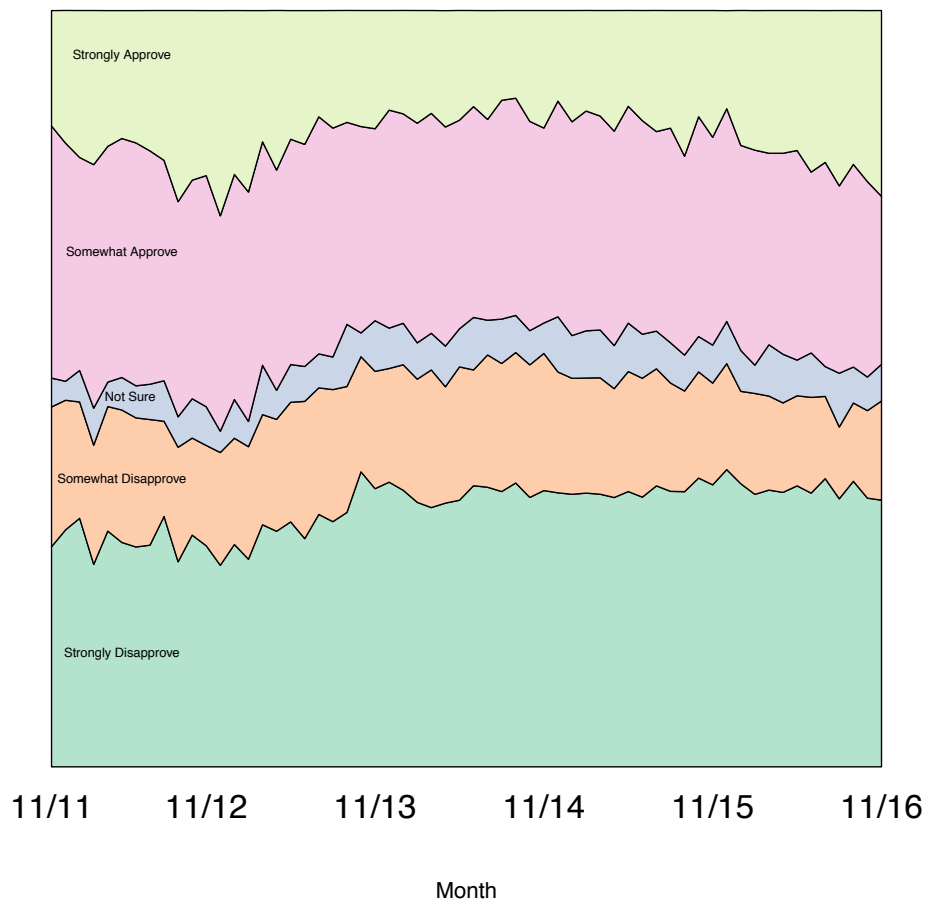
In terms of long term change, a slight majority, 50.5% of panelists exhibit the same level of approval from their initial to final response. Among those who did change from their initial to final position, it appears that roughly equal change occurred in both directions. We find that slightly more (approximately 52.0%) of those panelists who did change their opinion of Congress did so in the positive direction. That is, among those who changed, the majority, albeit a slim one, moved from the disapproval direction toward the approval direction.

The key explanatory variable in our analysis is presidential approval. This variable is measured in the same manner as congressional approval on the five point scale ranging from -2 to +2. Figure 2 displays the proportions of presidential approval over the same 60 month period. In the cross-section, some clear differences exist. For one, we have more even splits in approval and disapproval. Of course, a sizable portion of the public approved of Obama's job performance in each month. Similarly, we observe far fewer Americans with no opinion on the presidency relative to Congress. The percentage of those who are not sure of their presidential evaluations never rise above ten percent. Longitudinally, once again, we find relatively stable month-to-month differences. We do see a slight curvilinear movement in approval of President Obama over the final years of his presidency. For example, as the 2012 election approached, the president's approval increased and slightly decreased over the first three years of second term, slightly improving over 2016.

We also gathered demographic control data when subjects entered the panel. The summary

⁵When we restrict our response scale to 3 points, understandably, the result is fewer month to month changes, but they still exist. The mean number of dyadic switches is 3.78 and 3.59 for both groups.

Figure 2. Presidential Approval Over Time



statistics for these covariates may be found in Table 1 for each group. The group means are statistically indistinguishable for all covariates using a two-sample t-test and an alpha of .05. We find that on average, both groups have a mean party identification on the Democratic side. Additionally, both groups are slightly more female than male, and overwhelmingly white. Education is measured on a 15-category scale which we treat as a continuous variable in the modeling strategy. Both groups have means of roughly 11, meaning the average panelist in each group had some post-secondary school education. Income is measured on a 16-point scale. The mean in both groups suggests panelists' average income is between \$50,000 and \$60,000.

Table 1. Summary of Variables

Variable	Group 1			Group 2		
	Mean	Min	Max	Mean	Min	Max
7-Point Party Identification (Strong Rep.=7)	3.599	1	7	3.716	1	7
Female	0.529	0	1	0.536	0	1
White	0.703	0	1	0.712	0	1
Hispanic	0.126	0	1	0.126	0	1
Black	0.103	0	1	0.094	0	1
Years of Education	10.979	2	15	10.995	3	15
Political Interest	3.121	1	4	3.140	1	4
Income	6.386	1	16	6.539	1	16

The results of this first analysis of significant individual change in congressional approval over the sample period while accounting for measurement error may be found in Table 2.⁶ In columns 1 and 3 we present the findings for the models in which the individual slope terms are constrained to zero for each individual for groups 1 and 2. Here we find that over both sets of waves the average panelist displays a latent mean of congressional approval that is on the whole negative and roughly close to the “somewhat disapprove” point on the 5-point scale. While the confirmatory fit index is above 0.90 for both groups, indicating relatively reliable measurement, we find significant levels of variance.

In columns 2 and 3 of Table 2 we produce the results for models that allow individuals to deviate from their individual latent constants of congressional approval. While these models still

⁶All models were estimated using maximum likelihood estimation in MPlus.

indicate negative attitudes towards Congress, the inclusion of the individual slope suggests that over time, in the aggregate levels of approval slightly trended positively. For group 1, the average slope was significantly distinct from zero and positive. While the same figure was marginally positive for group 2, it was not statistically distinct from zero.

These slight movements in the aggregate may suggest little real change in approval. To be sure, the findings confirm popular opinion that attitudes towards Congress, even if they encounter a long-term positive secular trend, will almost assuredly remain negative. Still, our interest in this analysis is the identification of individual and not aggregate change. When we allow for individual slopes in the model, the confirmatory fit indices and adjusted root mean squared errors, while admittedly impressive for models without slopes, improve. Furthermore, when we compare the χ^2 fit statistics for the models with and without individual trajectories, we find significant improvement once we adjust for the scaling correction factor as recommended by Satorra and Bentler (2010) for nested measurement models. Thus, while we may not witness huge shifts in congressional approval at the aggregate level, our approach suggests that individual, deterministic changes do occur at the individual level. When we attempt to identify those factors associated with short and long term changes in congressional approval, we must account for latent slopes.

The Congressional Approval-Presidential Approval Connection

We model individual-level congressional approval by capturing the relationship between a survey respondent's reported affect towards the legislature with both time-variant and time-invariant covariates, while controlling for short-term fluctuations as well as autoregressive effects of previous responses using an adjustment to the previous autoregressive latent trajectory (ALT) model.⁷ Taking inspiration from structural equation modeling (Bollen and Curran 2004, 2006), the relevant ALT model of an individual's congressional approval at any given time, y_{it} can be found below.

⁷Plainly, we model the change in individual-level congressional approval that is unique from measurement error.

Table 2. Autoregressive latent trajectory models of congressional approval with and without linear trends

	Group 1		Group 2	
	Column 1 No Slopes ($\beta = 0$)	Column 2 With Slopes ($\beta \neq 0$)	Column 3 No Slopes ($\beta = 0$)	Column 4 With Slopes ($\beta \neq 0$)
<i>Hierarchical component</i>				
Mean of individual intercepts (μ_α)	-0.642* (0.021)	-0.731* (0.029)	-0.656* (0.022)	-0.719* (0.028)
Variance of individual intercepts (σ_α)	0.423* (0.019)	0.625* (0.159)	0.449* (0.020)	0.562* (0.034)
Mean of slopes (μ_β)		0.002* (0.001)		0.001 (0.001)
Variance of individual slopes (σ_β)		0.001* (0.000)		0.001* (0.000)
Covariance of intercepts and slopes ($\sigma_{\alpha\beta}$)		-0.007* (0.001)		-0.004* (0.001)
Covariance of initial CA and intercepts ($\sigma_{\alpha y_{t=0}}$)	0.058* (0.026)	0.002 (0.033)	0.036 (0.025)	-0.022 (0.034)
Covariance of initial CA and slopes ($\sigma_{\beta y_{t=0}}$)		0.000 (0.001)		0.003* (0.001)
<i>Model fit statistics</i>				
CFI	0.933	0.957	0.948	0.972
RMSEA	0.030	0.024	0.028	0.021
χ^2 Fit	1804.170	1443.205	1514.86	1153.513
Deg. of Freedom	818	814	739	735
χ^2 Difference	288.136 (DF=4, $p < 0.001$)		χ^2 Difference	248.661 (DF=4, $p < 0.001$)
<i>N</i>	1324	1324	1313	1313

* indicates statistical significance at the $p < 0.05$ level. Standard errors are in parentheses.

$$\begin{aligned}
 y_{it} &= \alpha_i + \lambda_t \beta_i + \rho_{y_t y_{t-1}} y_{i,t-1} + \rho_{y_t X_{t-1}} X_{i,t-1} + \epsilon_{it}, & \epsilon_{it} &\sim N(0, \sigma_t) \\
 \alpha_i &= \mu_\alpha + \gamma_\alpha \mathbf{Z}_i + \zeta_{\alpha i}, & \zeta_{\alpha i} &\sim N(0, \sigma_\alpha) \\
 \beta_i &= \mu_\beta + \gamma_\beta \mathbf{Z}_i + \zeta_{\beta i}, & \zeta_{\beta i} &\sim N(0, \sigma_\beta),
 \end{aligned} \tag{2}$$

Since we test whether individual perceptions of both the president and Congress are related, the time-varying congressional approval covariate is regressed onto the time-varying covariate of presidential approval, $X_{i,t}$. In other words, the current period value of presidential approval is

used to predict the panelist's current period congressional approval.^{8 9}

In addition to time-varying covariates, the ALT model estimates the relationship time-invariant covariates have on the average level and trajectory of the latent variable. Certain constant traits of individuals should be related to the average affect they feel towards Congress. Likewise, it is possible that heterogeneity exists among the population in the change in feeling towards the legislature. Both the slope and the constant term are regressed onto a matrix of demographical covariates, \mathbf{Z}_i . Simply, the model estimates the effect of a set of variables that are assumed fixed on the level and change of congressional approval at any given time.

The findings for conditional ALT model may be found in Table 3. First, consider the time varying predictors relationship to current period approval ratings of Congress. The modeled estimates report an individual's previous level of congressional approval has a positive and significant effect on the value in the current period. Yet, the most recent measured value does not entirely explain one's attitude towards Congress. For both groups, a positive effect can be found for lagged presidential approval. That is, higher evaluations of Barack Obama were associated with higher evaluations of Congress. Such a finding suggests that changes in attitude towards one branch of the government tend to move in concert with another. Even though the two may have maintained a combative relationship over the four year period, the perceptions of the president and Congress are interlinked. The fact that this occurs during a period that spans entirely divided government makes the results particularly surprising. When controlling for partisanship of the individual, the average respondent's affect towards Congress and the President did not move in opposite directions. While we find significant effects for group 1, the small, positive effect for group 2 is not as precise. Nonetheless, the results still suggest that updates in the positive direction

⁸While the ALT model is flexible in that a researcher can estimate period-specific effects for each time-variant covariate on the outcome variable, we have chosen to constrain the estimates of current period presidential approval to one value. In this way, the model is much more easily interpretable by providing the average effect of presidential approval on congressional approval.

⁹It may be tempting to regress the change in congressional approval from wave to wave on concurrent change in presidential approval. While this first difference approach may prove fruitful in a limited wave analysis, we believe it to be less informative for two reasons. First, by employing this approach we would necessarily reduce our number of waves and potentially observations by dropping the first period. Second, limiting the scope to wave-to-wave analysis through differencing hinders our ability to identify individual-level trends in congressional approval. Rather, by differencing we would only be able to determine the trend of the acceleration of approval.

for evaluations of Obama were associated with slight positive updates towards Congress.¹⁰

¹⁰We also estimated models in which current period evaluations of Congress were regressed upon current period evaluations of the president. In these models, for both groups, the effects of presidential approval on congressional approval were positive and significant, suggesting that models that do not account for current period biases confirm similar findings as those found in Table 3. Those findings may be found in the Appendix in Table 5.

Table 3. Determinants of individual-level congressional Approval: Conditional ALT model with time-invariant and time-varying predictors

	Group 1	Group2
<i>Time-varying predictors</i>		
Pres. App. _{t-1} → Cong. App. _t	0.035* (0.008)	0.014 (0.010)
Cong. App. _{t-1} → Cong. App. _t	0.095* (0.008)	0.103* (0.011)
<hr/>		
<i>Congressional Approval Constant</i>		
Intercept	0.672* (0.191)	0.986* (0.180)
White	-0.226* (0.093)	-0.307 (0.099)
Hispanic	0.121 (0.112)	0.011 (0.119)
Black	0.126 (0.111)	-0.076 (0.129)
Education	-0.058* (0.014)	-0.061* (0.013)
Political Interest	-0.217* (0.026)	-0.199* (0.029)
7 Point Party ID	0.005 (0.013)	-0.022 (0.014)
Female	0.242* (0.046)	0.082 (0.047)
σ^2_α	0.423* (0.025)	0.478* (0.026)
<hr/>		
<i>Congressional Approval Slope</i>		
Intercept	-0.022* (0.005)	-0.020* (0.007)
White	0.004 (0.003)	0.003 (0.004)
Hispanic	0.002 (0.004)	0.003 (0.005)
Black	0.006 (0.004)	-0.001 (0.005)
Education	0.001* (0.000)	0.001 (0.001)
Political Interest	0.000 (0.001)	0.000 (0.001)
7 Point Party ID	0.002* (0.001)	0.002* (0.001)
Female	-0.002 (0.002)	0.000 (0.002)
σ^2_β	0.001* (0.001)	0.001* (0.001)
<hr/>		
CFI	0.917	0.933
RMSEA	0.023	0.022
<hr/>		
N	1,335	1,341

The * indicates coefficients significant at the $p < 0.05$ level. Standard errors are in parentheses. Additional model parameters are suppressed for clarity.

With respect to the latent constant of congressional approval, many covariates have statistically significant relationships. Familiarity may breed contempt with the legislative body; higher levels of political interest are negatively related to approval. Such a finding would appear to be consistent with previous research: those who pay greater attention to the procedural function, or dysfunction, of Congress are less likely to approve of its behavior (Hibbing and Theiss-Morse 1995). Furthermore, more educated individuals have lower average levels of affect towards Congress. With respect to sex and gender, women and racial minorities reported higher values of the latent variable than their male and white counterparts. Finally, we investigate how partisan identities reflect attitudes towards Congress. The House of Representatives was Republican-controlled for the duration of this time period, while the final months include the Republicans maintaining power in both houses of Congress. Perhaps surprisingly, the predicted effect of party identification is not significant and not consistent across groups. Such a finding suggests that when controlling for trends, the difference in average attitudes towards Congress differs little between the two parties. Both appear to hold the institution in relatively low regard.

Whereas political attentiveness was significantly associated with the level of latent approval, there is little evidence that one's attentiveness or sophistication is related to the overall change in their approval. The effect of party identification, while demonstrating no apparent partisan divisions with respect to the latent constant, presents markedly different results when considering its effect on the latent trajectory. The estimated coefficient is positive for both groups and statistically significant for both groups. This result suggests that the trajectory of approval for Republicans was more positive than Democrats. Such a finding would seem plausible considering the Republicans gained more seats and took control of the Senate during the 2014 congressional election. Nonetheless, this effect is quite small.

Thus, we can conclude that at the individual level, secular and partisan explanations exist for shifts in congressional approval. On the one hand, general feelings towards the president are related to residual feelings towards the legislative chamber, even when controlling for partisanship of the panelist. This finding is of particular interest to a period of hyper-partisan, polarized politics

and divided government. We would expect that approval of one institution would be associated with negative attitudes of the other when the two are in constant and increasing conflict. Yet, our model suggests if anything, slight changes are harmonious. At the same time, our findings with respect to the latent trend suggest that even though the two institutions are positively connected in the eyes of the public, the specter of partisan politics still influences perceptions. That is, in the long-term, partisan attitudes were related to deterministic shifts in approval of Congress.

Policy Preference Updating

While we have demonstrated both presidential approval and party identification are related to changes in individual approval of Congress, we have yet to determine if policy preferences are connected to movements in the average citizen's evaluations of the legislative body. One key difficulty with identifying such movement at the individual level is that all subjects theoretically receive the same policy outputs from Congress. Tax bills, for example, are not randomly assigned to some citizens, while others are placed in a control group. While citizens may be theoretically uniformly exposed to the business of Congress, they may not be identical in the dynamic of their own policy preferences. That is, it is still possible to identify a connection between policy and approval of Congress at the citizen level by focusing on individual's changes in policy preferences in relation to shifts in their attitudes towards the legislature.

To model how citizens update their evaluations of Congress based upon their policy preferences, we include a lagged ideology score on the righthand side of the previous model. Ideology scores are calculated by summing responses to a thirteen-item policy preference battery asked to panelists at 7 different periods of the panel survey.¹¹ When respondents provided a liberal response to a policy question, they were scored with a +1. Conversely, conservative responses were scored as a -1, while no preference was scored as 0. The sum of these items provides an ideology score in which positive values represent more liberal panelists, while negative values represent more conservative panelists. In the same model we also include a lagged measure of

¹¹Items may be found in the Question Wording Appendix.

partisanship to account for any bias in the approval response (Bartels 2002). Since policy questions were only asked seven times, this model is limited to seven waves. For the sake of estimation, we also pooled the responses for congressional approval for the two waves that occurred nearest the incidence of the policy battery.

Table 4 presents the results for the reduced CALT model. The results of the model confirm the findings of previous analyses. Even when accounting for short term adjustments in policy preferences, the effect of lagged presidential approval on current period presidential approval is positive and significant. Furthermore, although we include a partisan term, short term adjustments in party identification appear to have no serious effect on changes in one's attitudes towards Congress.

When considering the effect of policy preferences on congressional approval, we find evidence of an effect. Nonetheless, we advise caution before concluding a strong relationship between policy and congressional approval. While the model suggests that short-term movements in the liberal direction with respect to one's policy preferences are related to negative movements in approval with the majority conservative legislature, this effect just misses the 0.95 threshold for the p value.¹² Although we are cautious to declare of aggregate level phenomena existing at the individual level, we must acknowledge that marginal evidence exists to suggest that when citizens update their policy preferences, their evaluations of Congress change slightly. This phenomenon is not necessarily a simulacrum of the supply-driven models suggested by Durr et al. (1997) and Ramirez (2009), but it is mostly consistent with their findings. While partisanship is not a great predictor of attitudes towards Congress in the short-term, policy (and from the demand perspective, policy preferences) is related to short-term fluctuations.

¹²We also estimated models that did not correct for measurement error. While the coefficient of lagged ideology in these models was essentially identical in its magnitude, its precision was slightly better, suggesting a reliable negative effect of policy preferences on congressional approval. These results may be found in Table 6.

Table 4. Determinants of individual-level congressional Approval: Conditional ALT model with time-invariant and time-varying predictors

<i>Time-varying predictors</i>	
Pres. App. _t → Cong. App. _t	0.038* (0.013)
PID _{t-1} → Cong. App. _t	0.015 (0.011)
Ideology _{t-1} → Cong. App. _t	-0.006 (0.003)
Cong. App. _{t-1} → Cong. App. _t	0.036 (0.019)
<hr/>	
<i>Congressional Approval Constant</i>	
Intercept	0.510* (0.147)
White	-0.193* (0.092)
Hispanic	0.264* (0.117)
Black	0.063 (0.119)
Education	-0.061* (0.012)
Political Interest	-0.199* (0.028)
Female	0.261* (0.047)
σ^2_α	0.442* (0.038)
<i>Congressional Approval Slope</i>	
Intercept	-0.018 (0.005)
White	-0.001 (0.019)
Hispanic	-0.025 (0.025)
Black	0.004 (0.024)
Education	0.005 (0.003)
Political Interest	0.008 (0.006)
Female	-0.016 (0.010)
σ^2_β	0.006* (0.002)
<hr/>	
CFI	0.937
RMSEA	0.023
<hr/>	
N	3,180

The * indicates coefficients significant at the $p < 0.05$ level. Standard errors are in parentheses. Additional model parameters are suppressed for clarity.

Conclusion

Long-term change in individual attitudes towards political actors and institutions is understudied. The main reasons for this neglect are twofold: first, frequent panel data are not available and most traditional multilevel models are not adept at addressing missing data problems. As a result, studies of long-term political change have been restricted to the macro-level. TAPS and ALT models provide researchers with unique opportunities to address these two problems. In this paper, we address a longstanding area of macro-level analysis, congressional approval. Using this new data set and a novel modeling strategy, we show individual level changes in presidential approval are associated with changes in congressional approval.

Methodologically, we hope this illustration encourages other scholars to move towards latent trajectory models. While it is true that many applications can be similarly studied with multi-level models, it is also the case that these applications would frequently benefit from the relaxed assumptions around the functional form of the autoregressive trend and structure of missing data. While individual-level panel data are relatively scarce in political science, the rise of big data gives great promise to increasing availability of such resources. Understanding the relationship between time-varying covariates and individual-level trends is a key frontier in establishing deeper insights into individual-level political persuasion. Put more simply, we need to understand differences between short-term variations and systematic individual-level change. ALT models allow us to engage in this enterprise.

The results of this paper have major implications for understanding how Americans view their government. A partisan-control theory of attitudes towards government argues that during periods of divided government feelings towards Congress and the Presidency should be negatively related (Bernstein 2001). Yet, as we demonstrate in this study, over a period consisting entirely of divided government these feelings are positively related. Without quality empirical research, we are unable to associate low approval numbers with anything specifically controlled by Congress -- low approval, for example, may be generated by nothing other than low levels of media coverage. Empirical investigations into the measurement and variability of congressional approval lead us

to ascertain the relationship between the citizens' approval of Congress and that of the president.

While the findings of this paper confirm what macro-level studies find, it is not necessarily intuitive at the micro-level. Current literature suggests that Americans continue to become more polarized in their political attitudes. Yet, this paper suggests that Americans do not assign credit and blame in opposite directions. It would appear that both President Obama and Speakers Boehner's and Ryan's Congresses were viewed similarly to the individual. To find that attitudes towards a Republican Congress and a Democratic president are significantly and positively linked, even in a period of divided government, is especially surprising.

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Appendix

Table 5. Determinants of individual-level congressional Approval: Conditional ALT model with time-invariant and time-varying predictors

	Group 1	Group2
<i>Time-varying predictors</i>		
Pres. App. _t → Cong. App. _t	0.165* (0.011)	0.162* (0.012)
Cong. App. _{t-1} → Cong. App. _t	0.092* (0.010)	0.097* (0.010)
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<i>Congressional Approval Constant</i>		
Intercept	0.672* (0.191)	0.756* (0.176)
White	-0.234* (0.093)	-0.292* (0.095)
Hispanic	0.100 (0.112)	-0.001 (0.114)
Black	0.041 (0.111)	-0.091 (0.126)
Education	-0.059* (0.014)	-0.069* (0.013)
Political Interest	-0.213* (0.026)	-0.202* (0.028)
7 Point Party ID	0.077* (0.013)	0.063* (0.013)
Female	0.231* (0.046)	0.084 (0.046)
σ^2_α	0.419* (0.024)	0.462* (0.025)
<i>Congressional Approval Slope</i>		
Intercept	-0.022* (0.005)	-0.016* (0.008)
White	0.004 (0.003)	0.003 (0.004)
Hispanic	0.002 (0.004)	0.003 (0.005)
Black	0.006 (0.004)	-0.002 (0.006)
Education	0.001* (0.000)	0.001 (0.001)
Political Interest	0.000 (0.001)	0.000 (0.001)
7 Point Party ID	0.002* (0.001)	0.002* (0.001)
Female	-0.002 (0.002)	0.000 (0.002)
σ^2_β	0.001* (0.001)	0.001* (0.001)
<hr/>		
CFI	0.944	0.959
RMSEA	0.019	0.017
<hr/>		
N	1,335	1,341

The * indicates coefficients significant at the $p < 0.05$ level. Standard errors are in parentheses. Additional model parameters are suppressed for clarity.

Table 6. Predicting Current Period Congressional Approval, Accounting for Policy Updating

Cong. App. $_{t-1}$	0.560*	0.505*
	(0.013)	(0.014)
PID $_{t-1}$	-0.000	0.010
	(0.009)	(0.009)
Pres. App. $_{t-1}$	0.029*	0.039*
	(0.012)	(0.012)
Ideology $_{t-1}$	-0.006*	-0.008*
	(0.003)	(0.002)
White		-0.095*
		(0.046)
Hispanic		0.074
		(0.059)
Black		0.051
		(0.066)
Education		-0.028*
		(0.007)
Political Interest		- 0.114*
		(0.015)
Female		0.079*
		(0.024)
Intercept	-0.243*	0.425*
	(0.048)	(0.107)
<i>N</i>	2,001	1,890
<i>R</i> ²	0.325	0.343

The * indicates coefficients significant at the $p < 0.05$ level. Standard errors are in parentheses. Additional model parameters are suppressed for clarity.

1 Question wording

Congressional & Presidential Approval Do you approve or disapprove of the way the following are doing their jobs?: [*Strongly Approve (coded 2), Somewhat Approve (coded 1), Somewhat Disapprove (coded -1), Strongly Disapprove (coded -2), Not Sure (coded 0)*]

- Congress
- President Obama

Party Identification (PID) Generally speaking, do you think of yourself as a ...? Would you call yourself a strong [party name] or not so strong [party name]? Do you think of yourself as closer to the Republican Party or to the Democratic Party? [*Strong Democrat; Not so strong Democrat; Lean Democrat; Independent; Lean Republican; Not so strong Republican; Strong Republican*]

Gender: Are you male or female? [*Male; Female*]. Coded as 1 if Female, 0 if Male.

Hispanic: This question is about Hispanic ethnicity. Are you of Spanish, Hispanic or Latino descent?

Race: Please check one or more categories below to indicate what race(s) you consider yourself to be?

- White
- Black or African American
- American Indian or Alaska Native
- Asian/Pacific Islander

Income: We want to know about the total income in your household. What was your household income in the past year? [*below \$10,000; \$10,000 to \$19,999; \$20,000 to \$29,999; \$30,000 to \$39,999; \$40,000 to \$49,999; \$50,000 to \$59,999; \$60,000 to \$69,999; \$70,000 to \$79,999; \$80,000 to \$89,999; \$90,000 to \$99,999; \$100,000 to \$124,999; \$125,000 to \$149,999; \$150,000 to \$199,999; \$200,000 to \$249,999; \$250,000 to \$299,999; \$300,000 or more*]

Education: What is the highest level of school you have completed? [*No formal education; 1st, 2nd, 3rd, or 4th grade; 5th or 6th grade; 7th or 8th grade; 9th grade; 10th grade; 11th grade; 12th grade NO DIPLOMA; HIGH SCHOOL GRADUATE –high school DIPLOMA or the equivalent (GED); Some college, but no degree; Associate degree; Bachelor’s degree; Master’s degree; Professional degree; Doctorate degree*]

Political Interest: How interested would you say you are in politics and current affairs? [*very interested; somewhat interested; not very interested; not at all interested*]. Coded as 4, 3, 2, All others coded as 0 or “low interest.”

Ideology: Indicate your level of agreement with each statement. [*Strongly Agree; Agree; Neither Agree nor Disagree; Disagree; Strongly Disagree*]. Coded as +1 if liberal response is provided, 0 if Neither Agree nor Disagree is provided, -1 if conservative response is provided. Ideology scores are calculated as aggregated sum of responses.

- Federal programs that provide health care benefits should allow funding for abortions.
- Federal spending for education should be reduced.
- Federal personal income taxes for individuals with incomes higher than \$250,000 should be raised.
- The federal government should recognize the validity of a same-sex marriage where state law does.
- Federal law should ban the possession of handguns except by law enforcement personnel.

- The federal government should adopt policies to address the problem of global warming.
- The federal health care reform program adopted in 2010 should be repealed.
- Medicare, the federal health insurance program for senior citizens, should be reformed
- The government should find a way to allow people who are in the U.S. illegally to stay in the U.S.
- The federal government should guarantee a higher minimum hourly wage for workers.
- The government should do more to regulate business in order to protect the interests of consumers.
- Medicaid should be extended to cover more people.
- The federal government should support programs designed to help minorities get better jobs and education.