

Experiential Diversity and Performance in Public Organizations: Efficiency Evidence from U.S. Appellate Judge Panels

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Abstract. While the field of diversity research continues to grow in public administration, largely through work that draws from representative bureaucracy theory, we take an alternative approach. We use U.S. Appellate Court Circuits and panels to explore the influence of *experiential* (tenure, appointment background, prestigious schooling, ideology) and *visible* (race, gender, age) diversity on group conflict and organizational performance. Our results suggest that only gender diversity affects publicly manifested conflict and that this conflict significantly decreases judicial efficiency. Both visible (gender, race) and nonvisible (tenure, prior experience as a district judge, and law school quality) panel diversity affect judicial efficiency, even after controlling for manifest substantive conflict. Our findings also suggest that institutional, longer-term diversity can mitigate the negative impact of work group (panel) gender diversity on efficiency, but it augments the negative impact of race work group (panel) diversity on efficiency.

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Within public administration, group diversity has been a relatively recent but growing field of research. At the turn of this century, Wise and Tschirhart (2000) conducted a meta-analysis spanning 1961 to 1998 that explored the quality and quantity of diversity-related research. They concluded that public administration scholars “are not doing as much as they could to guide managing-for-diversity efforts” (393) by producing hypothesis-testing research that explains the impact of diversity. While many studies, particularly from business management and industrial psychology, have provided valuable insight into the effects of diversity we are mindful of scholars who warn against indiscriminately importing private sector findings into public settings. Indeed, Choi (2008) notes that in addition to being generally more diverse and committed to equality in the work place (Riccucci, 2002) public sector organizations are typically distinguished by environments of high politicization and reduced personnel autonomy. Choi concludes, “such environmental and structural differences are likely to affect the relationship between diversity management and employee outcomes in public organizations in different ways” (2008, 2). We leave comparative aspects of this interesting proposition to future studies, but begin here an exploration to enhance recent scholarship in the field of public administration exploring the implications of diversity in public organizations.

Diversity & Public Organization Performance

In this research we ask how experiential diversity matters to public organization performance. Public administration scholars have turned attention, often through the lens of representative bureaucracy (e.g., Andrews, Boyne, Meier, O'Toole, & Walker, 2005; Meier & Nicholson-Crotty, 2006; Meier & Nigro, 1976; Mosher, 1968; Selden, 1997; Selden & Selden, 2001), to understanding the importance of gender, race, and cultural workforce diversity in public organizations. More recently, public administration scholars have begun to explicitly examine the role of diversity in organizational performance (Choi, 2008; Moynihan & Landuyt, 2008; D. Pitts, 2005; David Pitts, 2009), with a special focus on the relationship between diversity, diversity management, and job satisfaction and turnover.

Andrews et al. (2005) found, for example, that an ethnically diverse or representative democracy is negatively related to organizational performance as perceived by the public, but unrelated to objective measures of public performance. Nevertheless, they did find some evidence diversity management strategies might mitigate the relationship between diversity and organization performance. Pitts (2005) also found mixed evidence on the relationship between ethnic diversity and performance. In his study of Texas school data, teacher diversity was positively related to student SAT performance, but negatively related to student TAAS (Texas Assessment of Academic Skills) pass rates. Managerial representation, a measure that explicitly accounts for how well target groups match constituencies, on the other hand, was negatively related to both measures of student performance. With similar data, Pitts and Jarry (2009) demonstrated that negative relationships between diversity and organizational outcomes are somewhat mitigated by time and teacher stability.

Choi (2008) examined another aspect of organizational performance by analyzing the relationship between race and turnover. Direct effects of Choi's study were that age and ethnic diversity are positively related to intent to leave one's position. Sex diversity, on the other hand, is unrelated to job turnover, but positively related to job satisfaction. Race diversity is negatively related to job satisfaction. Like Andrews, et al. (2005), however, Choi (2008) found evidence that management strategy mitigated these effects. Pitts (2009) elaborated some of these same

relationships in demonstrating that nonwhites and men are less likely to exhibit job satisfaction and positive perceptions of work group performance. But, Pitts concludes that diversity management strategies can significantly mitigate these relationships, particularly among nonwhite employees.

From this field of literature we glean several important points. First, there has been a consistent focus on demographic diversity (race and sex) with less attention paid to factors such as culture age, tenure, and training. In part, this may be the result of the heavy focus on representative bureaucracy as a theoretical framework. Regardless, several authors underscored the importance of multiple measures of performance *and* diversity. Second, the results between performance and diversity, however measured, are mixed. Even causality remains an open question as others (Brewer, 2005) suggest that high performing agencies strive for diversity. On this point, some conclude that many more organizational and institutional settings need to be explored. Finally, authors consistently find that diversity management strategies are important mitigating factors in the diversity-performance relationship.

While we do not address all of these points, our study augments the field's present focus on diversity and performance in three ways. First, we answer the call to provide additional evidence on the potential significance of diversity in a variety public work settings (Pitts, 2005, 628). Our research focuses on courts as public work settings providing justice as a public good. To do so we examine a sample of U.S. Courts of Appeals cases decided during calendar years 1971-1996 (see, Lindquist, Haire, & Songer, 2007). Second, while recognizing the influence of demographic diversity, we hope to draw attention to the importance of non-demographic, *experiential diversity*. Three-judge appellate panels often comprise a broad spectrum of training, specialization, and experience. Panel rosters frequently include judges visiting from district courts, other appellate circuits, or retirement. We examine the role that diversity in tenure, formal training (e.g., law school quality), issue expertise, professional (pre-judgeship) experience, and seniority plays in deciding cases. Taken together, we use these variables to reflect experiential diversity (see, O'Conner, 1998; O'Neill, 2007). Like the Pitts and Jarry (2009) study, this approach drives at more time-dependent features of diversity. We believe the concept of experiential diversity will be of some relevance to the broader study of public administration as public organizations become not only more demographically diverse (David Pitts, 2009, citing U.S. Bureau of Labor statistics) , but experientially disparate as supervisory groups exit civil service. Finally, we offer new measures of public organization performance: dissent and disposition times. The former is an intermediate output that assesses the relationship between diversity and expressed conflict (i.e., authoring a dissenting opinion). The latter is a measure of the number of days a judge panel takes to decide a case. In short, disposition time is a measure of whether the public organizations produce swift justice.

Our specific research question—whether experiential diversity precedes swift justice—is substantively important on its own because of the significance of courts as public organizations in our society (Kagan, 2004) and to public administrators (O'Leary & Wise, 1991). We see other important extensions, however. For example, diversity management efforts might—particularly in context of the 'quiet crisis' (e.g., Brewer, 2005; Lewis, 1991) of contemporary government where new and old generations are brought together to staff public work settings—reflect a better understanding of the potential performance impacts of experiential diversity.

Diversity, conflict, and performance: An alternative approach to representative bureaucracy

Justice Sonia Sotomayor's recent Supreme Court confirmation hearings seemed to hinge for a time on her observation that "I would hope that a wise Latina woman with the richness of her experiences would more often than not reach a better conclusion than a white male who hasn't lived that life" (Sotomayor, 2001). The statement has sparked intellectual debate, spawned popular controversy, and has even been used commercially, splashed across t-shirts (www.zazzle.com).

Our approach seeks to unpack some of the mechanics implicated in Sotomayor's observation that a diversity of experiences matters to organizational processes and outcomes. While researchers have explored gender- and race-based experience in this capacity, we are also interested in the notion that non-demographic experiences may matter. More specifically, what is the role of diversity of training, job experience, and tenure in organizational outcomes?

Our approach eschews the representative bureaucracy framework in favor of theories that more fully focus on dynamics *within* and *between* target groups (e.g., public servants), rather than the relationship between target groups and their constituencies (e.g., citizens).

Organizational behavior scholars have elucidated a detailed set of theories to explain the impact of diversity, particularly in work groups. We find this research on work groups useful because such groups are analogous to the three judge panels we examine in that they are a subset of members of a larger institution that work together on a short-term basis to complete a set of related tasks.

The link between the diversity of the group and the performance of the work group is the conflict that might positively or negatively affect the group's performance. Pelled explains the differing effects in the formulation of a theory to analyze group diversity by dividing the conflict created by diversity into two categories: "*Substantive conflict* is the perception among group members that there are disagreements about task issues including the nature and importance of task goals *Affective conflict* is the perception among group members that there are interpersonal clashes characterized by anger . . . and other forms of negative affect" (Pelled, 1996, 620).

Substantive conflict often results from the diverse perspectives that group members have, which in turn is posited as a function of prior experiences. Such conflict is expected to create a higher level of performance due to an increase in ideas and creativity (Page, 2007). Affective conflict, on the other hand, is expected to have the opposite impact on group performance. Van Knippenberg and Schippers (2007) suggest that these conflicts arise from stereotypes. These types of effects are often the result of demographic forms of diversity (Pelled, Eisenhardt, & Xin, 1999), like gender and race, since we are most likely to formulate negative stereotypes based on these types of differences from self.

While the two types of conflict are conceptually distinguishable, van Knippenberg and Schippers (2007) note that findings supporting these causal theories are mixed. Like critical mass theory, which may be context dependent, we believe our study examining the role of demographic and experiential diversity and conflict on judicial outcomes to be well justified. Figure 1 visually depicts how we conceptualize these relationships and it serves as a framework to organize the hypotheses below.

- Figure 1 -

In terms of our dependent variables (greater discussion under measures), extant studies focus on the nature of the judge/court decision, and not the time it takes the court to make the decision. Moreover, they do not examine the interactions between panel and institutional level diversity, or the role of conflict as a causal mechanism influencing organizational outcomes. In the following section we build on diversity and conflict theories to hypothesize how these may operate in the courts-as-public-organizations context.

The previous research on group behavior and group performance has not examined the role that demographic and non-demographic diversity in judicial panels may have on the length of time that it takes to decide a case. While most of the organizational behavior literature examines the role that diversity plays in increasing conflict in-group processes, depending on the type of conflict it will either improve performance and efficiency in the group or decrease it. In this regard the literature from the private sector shares many similarities with public administration's diversity literature: mixed findings between diversity and performance.

Experiential, or nonvisible, diversity attributes are frequently viewed as more job related (Pelled et al., 1999, who include functional background in this category but excludes age). Because of their pertinence to work tasks (Milliken & Martins, 1996), they are viewed (Pelled, 1996; Pelled, Eisenhardt, and Xin, 1999) to be positively associated with substantive or task-based conflict. So based on conflict theory, we derive the following hypotheses for the present study:

H₁: Three judge panels that are experientially diverse will exhibit higher levels of substantive/task conflict.

Substantive conflict, in turn, has demonstrated (Pelled, Eisenhardt, and Xin, 1999) a positive influence on task performance or organizational performance. We leave to future research whether substantive conflict leads to "better" decisions, but both types of manifest conflict should result in slower processing times by the courts—our outcome measure. We see this decreased efficiency as stemming from (1) the additional time necessary to reconcile/negotiate each judge's perspective, which may lead to substantive conflict, and (2) institutional characteristics, which may lead to affective conflict, to achieve the norm of consensus frequently recognized in the Courts of Appeals (see, Gerber & Park, 1997). Indeed, recent research (Szmer, Christensen, & Wemlinger, 2009) has demonstrated a negative relationship between efficiency (disposition time) and the presence of concurring and dissenting opinions.

H₂: There will be a negative relationship between manifest substantive conflict and panel efficiency.

We also recognize that in addition to impacting conflict, diversity may have direct effects on group performance. For example several scholars (Milliken & Martins, 1996; Pelled, 1996) find that factors such as tenure and breadth of organization experience are highly relevant to positive team performance. We therefore hypothesize that:

H₃: There will be a positive relationship between experiential diversity and panel efficiency.

Demographic, or visible, diversity is expected to cause two different types of conflict—either affective or substantive. Scholars from multiple disciplines (Kathlene, 1994; Pelled, 1996; Pelled et al., 1999) have identified the conflict caused by visible diversity to be more affective—conflict resulting from the presence of negative stereotypes. Indeed Pelled et al.'s (1999) own findings were that race led to higher emotional conflict, although gender diversity did not support a similar relationship. Kathlene (1994), on the other hand, finds that gender diversity in legislative committees does increase emotional conflict. In terms of performance affective conflict should slow down the decision making process of the work group without any corresponding benefits in terms of the quality of the output—as may be seen with substantive conflict. Nevertheless, a recent review of the organization studies literature (D. van Knippenberg & Schippers, 2007) suggests that demographic/visible diversity may also contribute to substantive conflict. Indeed, some (D van Knippenberg, De Dreu, & Homan, 2004) have suggested that scholars eschew diversity typologies and focus on individual effects of dimensions of diversity.

We do both. We have individual dimensions that we have also sorted into typologies (see Figure 1) to make our hypotheses more parsimonious. With evidence linking demographic diversity to both substantive and affective conflict, we hypothesize accordingly:

H₄: Three judge panels that are visibly diverse will exhibit higher levels of manifest substantive/task conflict.

For this study we do not have a readily available, direct measure for affective/emotional conflict. In Figure 1 we have substituted evidence from others' studies where they were able to obtain such a measure. For example, some (Kathlene, 1994; Pelled et al., 1999) observe a positive relationship between visible diversity and affective/emotional conflict. Others (Eisenhardt, Kahwajy, & Bourgeois, 1997) have found that emotional conflict reduces performance by impairing team processes. Similar to our experiential diversity approach in H₃, we proceed directly from visible diversity to performance. However, because visible diversity is less task-oriented than experiential diversity (Pelled et al., 1999), and because race, gender and age diversity involve complex biases and stereotypes that may be more difficult to overcome in a way that might contribute to positive work outcomes,¹ we hypothesize that:

H₅: Three judge panels that are visibly diverse will be less efficient.

Drawing on critical mass theory (see, Szmer et al., 2009), it is possible that visible,² circuit-level diversity could mitigate or augment the posited negative relationship between (1) panel demographic diversity and expressed substantive conflict, and (2) panel demographic diversity and judicial efficiency. For example, McCall (2008) suggests that token women judges are inhibited, relying in part on the implications of Thomas's (1994) study of state legislatures.

¹ While Pelled et al. (1999, 23) did not find compelling empirical evidence linking race and age to tenure, we maintain their original hypothesis as scholars continue to search for consensus on this point.

² Future research may also explore how a critical mass of nonvisible/experiential diversity might mitigate panel-level effects.

Following this logic, token women are less likely to challenge male judges and to express contrary opinions. This would then lead to less conflict on courts with token women, thus leading to more efficient panels.

The obvious implication of this reasoning is that as the circuit reaches a critical mass of a particular sex or race, individual minority judges may increasingly express true preferences, which would increase the probability of substantive conflict (H_6 below), which would lead to delays (H_7 below). (As mentioned previously, this substantive conflict may also lead to positive effects on the court's decisions that we are unable at this time to assess). For this study we hypothesize that:

H_6 : Visible circuit diversity will tend to increase the negative impact of visible panel diversity on manifest substantive conflict.

H_7 : Visible circuit diversity will tend to increase the negative impact of visible panel diversity on judicial efficiency.

Alternatively, it is possible that a critical mass of a particular demographic on the circuit could mitigate the negative effects of panel diversity on manifest substantive conflict and judicial efficiency. Kanter (1977) and Ely (1995) both suggest that a critical mass of women can diminish negative gender stereotypes. In particular, Ely (1995) found that diversity in the larger organization (law firms) could eradicate gender stereotypes held by the attorneys. However, the short-term interactions of the judges sitting on the panels (they typically meet a select number of days over a two week period) are probably too delible to eradicate long-held stereotypes.

On the other hand, the circuit itself is more analogous to the larger law firm. There, an institutional culture develops over a series of repeated interactions in a variety of contexts, including the aggregation of repeated interactions between men and women on diverse panels. This broader, long-term level of diversity is more likely to generate the changes in the beliefs that were responsible for the negative stereotypes. Insofar as substantive conflict is influenced by visible diversity stereotypes (D. van Knippenberg & Schippers, 2007), a critical mass of visibly diverse judges at the circuit-level may reduce the negative relationship between visible panel diversity and manifest substantive conflict (H_8 below). However, as noted above, negative stereotypes also present a mechanism linking group demographic diversity to affective conflict. As such, to the extent that the delay in case disposition times is a function of affective conflict, a critical mass of a particular demographic on the circuit could mitigate the perception of differences, leading to reduced levels of conflict, mitigating the negative relationship between visible panel diversity and efficiency (H_9 below). We hypothesize as follows:

H_8 : Visible circuit diversity will tend to decrease the negative impact of visible panel diversity on manifest substantive conflict.

H_9 : Visible demographic diversity will tend to decrease the negative impact of visible panel diversity on judicial efficiency.

Method

Data

We examine a sample of reported U.S. Courts of Appeals cases decided during calendar years 1971-1996.³ The case data were taken from the *U.S. Courts of Appeals Database* (Songer, 1996), which contains a sample of thirty cases per circuit, per year during that period.⁴ By focusing on reported cases we are, in effect, controlling for the impact of publication. We also controlled for panel size by eliminating en banc cases. Moreover, we chose to utilize the Songer database because it contained the identities of the judges, and could be linked to the *Multi-User Database on the Attributes of United States Appeals Court Judges, 1801-2004* (Zuk, Barrow, & Gryski, 2004) and the *A Multi-User Database on the Attributes of U.S. Courts of Appeals Judges, 1801-2000* (Gryski, Zuk, & Goldman, 2004), which contain judge demographic characteristics (including gender).

Measures

Our dependent variables are measures of substantive conflict and efficiency.

Dissent. We use whether a judge, sitting on a panel, issued a dissenting opinion as a dependent variable to model manifest⁵ substantive conflict (H1 and H4). We also use this as an important control in predicting efficiency (discussed below under controls).

Disposition Time. This dependent variable is a measure of the number of days it takes the panel to decide a case after the parties have submitted all of the written briefs to the court. Higher values indicate increasing delay, or deliberation time. The date the brief was submitted

³ We did not include cases beyond 1996 because the FJC did not contain the information necessary to allow us to construct the efficiency dependent variable. Moreover, we could not consistently find necessary information using WestLaw or Lexis. More than one third of the cases did not contain any information regarding the date the last brief was filed (the starting point for our dependent variable), and the missing data was systematic (in particular, it occurred more often in certain circuits and it occurred more frequently in later years).

⁴ Of the 8,588 cases, we analyzed 7,813. We excluded 189 bankruptcy cases, which often vary procedurally and are less likely to scale ideologically. We also excluded five outliers with unusually high values of the dependent variable—the time it took the panel to decide the case. Specifically, case processing times in excess of five years were considered outliers possibly resulting from key stroke error. The results of the hypothesis tests did not change when we included the bankruptcy cases and the outliers (or used different cut points to determine the outliers). Finally, we eliminated several hundred cases with missing data on one or more variables (see below for descriptions). Specifically, three cases had missing data on the oral argument variable, one on the concurrence variable, 28 on the ideology variable (see below), and 554 cases with missing data on the dependent variable. The latter cases appeared to be randomly distributed across circuits and time periods.

⁵ We posit two types of substantive conflict: manifest public conflict and private, intra-panel conflict. Judges publicly manifest conflict through dissenting votes and opinions. However, this likely underestimates the total amount of conflict on the panel, since circuit court norms encourage judges to join majorities even when their sincere preferences are at odds with the majority. Moreover, given that U.S. Supreme Court justices do negotiate after conference discussions to iron out substantive differences, thereby avoiding some potential dissents, we might expect that similar behavior exists on the Courts of Appeals. Given both the consensual norms and the possibility of resolving substantive conflicts through negotiation, the judges likely express some substantively conflictual viewpoints in conference and perhaps in memos, without actually publicly manifesting these views by dissenting.

was obtained from the Federal Judicial Center's (FJC) *Federal Court Cases: Integrated Data Base, Appellate Terminations, 1970-2000*.

Our independent variables of interest are measures of panel and circuit diversity.

Experiential/Nonvisible Panel Diversity. We use multiple measures to capture experiential diversity. Following the approach utilized by Pelled Eisenhardt, and Xin (1999) for continuous measures, we estimated *Panel Tenure Diversity* using the coefficient of variation (the standard deviation divided by the mean) to capture the variation of appointment dates between judges on a panel. Larger coefficients indicate greater diversity. *Panel Elevation Diversity* is a binary measure that when 1, indicates the panel some mixture of judges (1) appointed from outside the bench or (2) elevated from the district. *Panel Law School Quality Diversity* is likewise a binary variable that equals 1 when there is some mixture of judges who attended elite (Slotnick, 1983) versus non-elite law schools. Like other experiential experiential/nonvisible diversity, *Panel Ideological Diversity* increases dissensus (Hettinger, Lindquist, & Martinek., 2006), which then leads to longer disposition times (Cauthen & Latzer, 2008). We estimated *Panel Ideological Diversity* using the coefficient of variation. For each panelist, judge ideology was estimated using the Poole and Rosenthal presidential W-NOMINATE scores (which can be found at www.voteview.org), which are based on expressed presidential support of Congressional roll call votes. These scores were employed to measure the ideology of the president that appointed the judge, which estimates judge ideology to the extent that the president successfully appoints ideologically proximate judges. This is one of the standard methods of operationalizing U.S. appeals court judge ideology.

Demographic/Visible Panel Diversity. *Panel Gender Diversity* and *Panel Race Diversity* are dummy variables, coded '1,' if the three-judge panel was gender or race diverse--at least one woman and one man, or one white and one nonwhite judge. These variables were '0' if the panel was not diverse—all of one gender or race. *Panel Age Diversity* is calculated with a coefficient of variation, and continuously represents the diversity/spatial span of ages present on the panel. Larger coefficients indicate greater diversity.

Demographic/Visible Circuit Diversity and Multiplicative Variables. *Visible Diversity Multiplicative Terms* capture what we noted in hypothesizing that demographic diversity on the circuit will mitigate the negative impact of panel diversity on conflict and efficiency. To test these hypotheses, we included the multiplicative terms *Circuit Gender Diversity*Panel Gender Diversity* and *Circuit Race Diversity*Panel Race Diversity*. The *Circuit Gender Diversity* and *Circuit Race Diversity* moderators--also included as a stand-alone term in the model with the multiplicative term--is the proportion of women or nonwhites serving on the circuit during that calendar year. The circuit diversity measure was generated using judge background information contained in the Appeals Court Attributes (Zuk et al., 2004) dataset.⁶ In other words, the stand-alone term is the impact of panel diversity when the circuit has no diversity.

Control Variables. Unless otherwise noted, we expect that each of the coefficients for the control variables will be positive, indicating that higher values increase case processing times (judicial inefficiency).

⁶ The numerator is the total number of women serving on the circuit during the calendar year in which the case was decided; the denominator is the total number of active judges on the circuit during that calendar year. A judge was counted if he or she served at least six months during the year, or if the judge was replaced by someone of the same group and combined they served for at least six months.

The presence of an *Amicus Brief* in a case is a proxy measure for the salience (political and/or legal) of the case. We do not posit a directional hypothesis for amicus brief. On the one hand, we might expect more substantive conflict in salient cases. On the other hand, after controlling for measures of conflict (like dissenting opinions), as well as opinion length, we might expect that the perceived import of the salient cases leads to more attention, which leads to a timelier decision.

Complexity is a measure that reflects a combination of factors that might increase processing times -- length of opinion, number of substantive issues, and number of threshold issues (Lindquist et al., 2007).

As a move toward increasing efficiency, the U.S. Courts of Appeals frequently decide cases without oral arguments. Presumably, the *Oral Argument* variable coefficient will reflect both a direct effect on the amount of time it takes to process a case (oral arguments take time), and a surrogate measure of complexity (the criteria for determining whether the court will hear oral arguments is largely based on the complexity of the legal issues; more complex cases are more likely to require additional deliberation by the judges). The variable is coded '1' if there was an oral argument, '0' if there was no oral argument. The variable was constructed using the FJC database.

Most of the cases reviewed by the U.S. Courts of Appeals originated in a U.S. District Court. Only a small proportion of those cases are published by the District Court. The publication criteria for the District Court are based on the precedential value of the case, which reflects another aspect of complexity of the underlying issues (Songer 1988). Therefore, *Prior Publication* is a surrogate measure for complexity, which should increase deliberation time by the appeals court panel. The variable is coded '1' if the lower court decision was published by the U.S. District Court, '0' if it was not published.

We similarly expect that when a panel reverses, in whole or part, the lower court's decision (*Reverse Lower Court* = 1), another aspect of complexity is captured. This measure captures the potential to depart with precedent—presumably less efficient in the time it takes to defend such a decision.

Rights/liberties cases are those (when variable=1) that are substantively concerned with civil rights, first amendment issues, due process, and privacy. The legal salience of these cases may lead judges to deliberate more slowly/carefully, and may encourage greater conflict and disagreement because these cases represent values deeply held. Lindquist (2007) finds that the percentage of criminal cases and prisoner petitions terminated by a circuit in a calendar year positively affects the aggregate efficiency of the circuit, presumably because the criminal cases are less complex (or, perhaps additionally because the judges in the aggregate have a higher level of expertise in these cases). The *Criminal* variable is a dummy, coded '1' if the cases involved a criminal issue. Since we hypothesize that the panels spend less time deciding criminal cases as a function of high task routine, we expect to find a negative coefficient for this term.

Due to demanding caseloads and systematic understaffing, the circuits rely on judges who are not active members of that circuit to participate in a significant number of cases. These “judges sitting by designation” serve on a volunteer basis, and typically come from three pools: senior (retired) judges from that circuit (*Senior Judge*), active appeals judges from other circuits (*Visiting Appellate Judge*), and active district court judges (*District Court Judge*) from that circuit. Presumably, panels with outside help are slower. As such, these variables are coded '1' if at least one of the judges on the panel was a district court judge sitting by designation, '0' if all the judges were active members of that circuit.

Obviously, aggregate court efficiency is a function of caseload, or the size of the circuit's docket. In a specific case, the processing time will be a partial function of the other tasks (cases) for which the members of the work group are responsible. Therefore, we control for the size of the circuit's docket with the variable, *Circuit Docket Size*. Lindquist (2007) also finds that the number of active judges on a circuit during a year decreases the circuit's average disposition time during that year (though she notes that the variable's impact, while statistically significant, has little substantive significance in her model). Presumably, the number *Circuit Active Judges* increases conflict (Boyea, 2007), which increases inefficiency.

Control variables unique to efficiency model. Using U.S. Administrative Office of the Courts reports, we measured the caseload as the number of terminations by the circuit per three-judge panel during the corresponding fiscal year. Efficiency is also a function of the number of judges that can hear the case. With respect to a specific case, as the number of vacancies increases, that increases the workload of the panel members, thereby slowing down their ability to terminate the case. As such, for models of judicial efficiency we add the following controls. We control for the number of judge vacancies on circuit, *Circuit Judge Vacancies*, which is measured using the U.S. Administrative Office of the Courts reports. The variable is the total number of months during the year in which a statutorily created judge slot remained vacant on that circuit. The variable sums all of the values for each vacant slot on the circuit during the corresponding fiscal year. Presumably, physically larger and more populous circuits have built-in inefficiencies. In larger circuits, panelists live in multiple cities and states, thereby increasing the logistical difficulties in scheduling and traveling, which in turn increase inefficiency. *Circuit Area per Judge*. is operationally defined as the geographic area of the circuit divided by the number of active judges serving on the circuit during that year. *Circuit Population Density* is generated from Census data and is the population of all of the states in the circuit during the year, divided by the geographic area.

Both dissenting and concurring opinions take time to write. Moreover, they are measures of workgroup conflict (though dissents would indicate higher levels of conflict). Both elements should increase the time it takes the panel to decide the case. As such, we included two dummies. *Dissent* as a control variable in modeling efficiency (contrast with our use of dissent as a dependent variable measuring manifest substantive conflict) is coded '1' if there was a dissenting opinion in the case, and '0' if there were no dissents. The *Concurrence* variable is coded '1' if there was a concurring opinion, '0' if there were no concurrences.

Estimation and Results

Since our first dependent variable is a dichotomous count, we use logistic regression to estimate models of manifest substantive conflict. The underlying data generating process contemplates the factors that lead to cast a dissenting vote. To account for possible serial autocorrelation, we included fixed-effects dummies for all but the first calendar year in the analysis.⁷ We also calculate Huber-White robust standard errors to correct for potential bias resulting from additional possible correlations of the error terms across years and/or circuits. Table 1 displays the results of our analysis in two parts.

The first specification focuses on Hypotheses 1 and 4 and excludes circuit diversity effects. None of the experiential, or nonvisible, diversity measures (i.e., tenure, training, ideology, or

⁷ We do not report the coefficients for these year, fixed effects in our results; the complete results are available upon request

appointment background) show any relationship to whether the panel issued a dissenting opinion. We thus find no support for H1, that a panel's experiential diversity precipitates manifest substantive, work-specific conflict. One of Pelled et al.'s (1999) primary measures of nonvisible diversity was tenure. This variable was neither significant in their (1999) nor in our models. While Pelled et al. (1999) did find a positive relationship between functional diversity and task conflict our subjects, unlike theirs, all have fairly similar functional backgrounds—law and judging—so we do not have a way to test this particular aspect of experiential diversity with our data.

Among visible, or demographic diversity measures neither panel race nor age diversity bear a statistically significant relationship with substantive conflict. However, gender diverse panels are more likely to issue a dissenting opinion.⁸ More specifically, gender diverse panels are 23 percent more likely to issue a dissenting opinion than gender homogenous panels. While Pelled et al. (1999) found no relationship between visible diversity measures (race, age, gender) and substantive conflict, we note that their dependent variable measure was perceived/attitudinal task conflict rather than behavioral/observational (e.g., whether panel issued a dissenting opinion).

Our control variables behaved largely as expected with attributes like complexity, lower court reversal, and presence of amici increasing the likelihood of substantive conflict. We conclude from this specification mixed support for H4. Gender diversity contributes to increased manifest substantive conflict, but race and age diversity do not.

The second model specification in Table 1 considers the influence of circuit level gender and race diversity on substantive conflict. With this specification we are able to assess Hypotheses 6 and 8. This specification with multiplicative terms exhibits higher overall explanatory value (see Nagelkerke R-sq), but only slightly so. Our specific findings suggest that circuit level race and gender diversity do not mitigate, in either direction, the effects of panel race or gender diversity. We find no multiplicative effects and therefore no support for either Hypothesis 6 or 8. As discussed above, this aspect of our analysis is somewhat exploratory. The alternate direction of our hypotheses indicate no a priori assumptions about the effect of circuit-level race or gender diversity, so our null findings are not entirely surprising. From a critical mass perspective, we conclude that aggregate (i.e., collection of work groups) diversity does manifest a mitigating effect on substantive conflict that results from individual work group diversity. Interestingly, we do find a significant, positive coefficient (2.53) for the circuit race moderator variable. Given the inclusion of the race multiplicative term, this coefficient indicates that racially homogenous panels are more likely to dissent as the proportion of African-Americans on the circuit increases. There is no theoretical or logical reason to suggest that diverse circuits increase dissents on homogenous panels. As such, this is likely an anomalous finding.

Because our efficiency dependent variable is a count of the number of days a court took to dispose of a decision, we utilized negative binomial regression to estimate the population parameters. We did not employ Poisson regression because of the evidence of extremely high overdispersion (Hurwitz, Lanier, & 329-35, 2003; Long & Freese, 2006). Note that, while the dependent variable also is a measure of duration, we did not use a duration model technique because the data is not right-censored. Each case has a distinct termination date; there was no need to artificially censor any observations. Again, to account for possible serial autocorrelation, we included fixed-effects dummies for years, and calculate robust standard errors to correct for potential bias resulting from additional possible correlations of the error terms across years and/or circuits.

⁸ This relationship is based on a one-tailed test in the direction hypothesized (see H4).

Table 2 displays the results of how we modeled judicial efficiency, again in two parts. In general, these models are much better predictors of the overall variance in judicial efficiency (note Nagelkerke R-sq) than the variance of manifest substantive conflict.

The first specification focuses on Hypotheses 2, 3, and 5 and excludes circuit diversity effects. Three of our four experiential diversity measures bear a statistically significant relationship to how efficient the panel was.

We confirm H2. We measure manifest substantive conflict in terms of written concurring and dissenting opinions. Both of these variables are statistically significant and lead to longer processing times. Not surprisingly, as a stronger statement of task-conflict, dissents lead to longer decision times (23 percent higher expected count in processing days) than concurrences (20 percent higher expected count in processing days).

We find mixed evidence on H3. In support of this hypothesis, tenure and appointment diversity precipitate slightly faster decision times. However, if a panel was comprised of judges who were trained in elite and non-elite law schools the expected processing time is 14 percent longer. One possible explanation that seems to be supported by effect size, with prestigious training almost tripling other experiential effects, is that elitism is a firmly held perception that may be held more independent of task and that can consequently be difficult to overcome. Because social identity issues may be involved here, it is perhaps not surprising that law school elitism slows down processing times. Tenure and appointment diversity, on the other hand, are much more task related and may actually contribute to faster processing through the value of multiple work-related experiences brought together on a panel. We conclude with mixed support for H3. Of our experiential indicators, ideology diversity bears no impact on processing times, tenure and appointment diversity contribute to efficiency, and law school diversity actually slows down a panel's processing time.

We partially confirm H5. Race and gender diversity lead to slower processing times (8 and 5 percent longer expected counts, respectively).. Given that we control for public manifestations of substantive conflict, this suggests that both racial and gender diversity on panels lead to affective conflicts. However, given the possibility of unaccounted for intra-court, private substantive conflicts, it is possible that the delays resulting from racial and gender diversity are also a function of this type of conflict. Age diversity, however, exhibits no effects. Perhaps this is because of our three visible diversity measures age stereotypes are less deeply held. Additionally, age diversity may be less likely to result in private, intra-court conflict.

Our final model allows us to explore whether circuit race and gender diversity enhances (Hypothesis 7) or mitigates (Hypothesis 9) the negative effects of the corresponding panel-level diversity vis-à-vis critical mass mechanisms. This specification with circuit interactions is displayed in Table 2.

We begin by noting that there is some evidence of circuit level interactions, but in opposite directions. The *Circuit Race Diversity X Panel Race Diversity* multiplicative term is positive and statistically significant at the .1 level. The *Circuit Gender Diversity X Panel Gender Diversity* multiplicative term is negative and likewise significant. (Of course, we note that Brambor, Clark, & Golder (2005) suggest that the graphical approach we use below is the only proper way to identify interaction effects). In other words, circuit race diversity enhances negative impacts that panel race diversity has on processing time, while circuit gender diversity mitigates negative impacts that panel gender diversity have on processing time. For gender, this supports the theory that increasing levels of diversity in the larger, permanent institution, leads to a culture of acceptance that diminishes negative stereotypes. For race, it is conceivable that race-based

stereotypes are so deeply held that institutional-level diversity may only serve to reinforce these types of biases. We thus find that circuit-level race diversity mitigates panel diversity as hypothesized in H7, but that circuit-level gender diversity mitigates panel diversity as hypothesized in H9.

Moreover, with respect to gender diversity, this suggests that the causal mechanism connecting panel diversity to disposition times is affective conflict. First, we control for public manifestations of substantive conflict. Second, the extant theories suggest that institutional diversity should mitigate stereotypes, which result in affective, as opposed to substantive conflict. Third, extant theories also suggest that, to the degree that institutional diversity should affect substantive conflict, it should increase it, not decrease it.

With respect to racial diversity, the fact that diverse panels on more racially diverse circuits are slower on average than homogenous panels suggests that the underlying cause of the delay is a function of decreases in privately manifested substantive conflict. In other words, token African-Americans are less likely to express conflicting viewpoints than African-Americans in a more racially diverse institution.

The presence of significant interaction effects means the impact of panel race and gender diversity will vary for the different values of panel diversity (Brambor, Clark, & Golder, 2006). Since panel race and gender diversity are dummies, the conditional effects of panel race and gender diversity are best interpreted as the difference in the impact of diverse panels when compared to homogenous panels. The average conditional effects of the impact of visibly diverse panels (when the dummy is coded 1) are generated using the following equations:

Equation Race: Conditional Effects of Panel Race Diversity = $0.04(\text{Panel Diversity}) + 0.74(\text{Circuit Diversity})$

Equation Gender: Conditional Effects of Panel Diversity = $0.10(\text{Panel Diversity}) - 0.01(\text{Circuit Diversity})$

For example, the coefficient for the stand-alone Panel Gender Diversity term, 0.10, is the estimate of the impact of a diverse (as opposed to homogenous) panel when the circuit has no active nonwhite judges. Extending this example, for a circuit where five percent of the active justices are women, the impact of panel gender diversity, on average, would be $0.10 - 0.01(5) = 0.05$.

This leads to interesting statistical questions with important substantive implications: when is the conditional effect of panel gender or race functionally equal to zero? For gender diversity, at what point does circuit gender diversity reduce the negative impact of panel diversity on efficiency to the point where it no longer has a statistically observable negative effect? In short, we probe the effects and boundaries of critical mass theory in the Federal Courts of Appeals.

Figures 2 and 3 provide a graphical representation of the conditional effects of panel race and panel gender (the Y axes) for the different values of circuit race and gender diversity (the respective X axes). In each figure, the horizontal line is zero. The outside lines represent the bounds of the confidence interval (with 95% certainty).

Looking at Figure 2, the slope of the line is positive, indicating that as the circuit race diversity increases, panel race diversity leads to a larger increase in case processing times. This suggests that increasing as circuit racial diversity increases, negative panel-race stereotypes seem to be reinforced leading to conditional effects indicating longer processing times. Interestingly,

given that the impact of racial panel diversity is not significant when the circuit has minimal (under five percent) levels of diversity, this supports the theory that token African-Americans may be less likely to (privately) express substantive opinions that conflict with the views of the other judges on the panel. In Figure 3, the slope of the line is negative, indicating that as the circuit gender diversity increases, panel gender diversity leads to a smaller increase in case processing times. Also, as you can see, the lower confidence crosses the 0 point when the circuit diversity is about 11.5 percent. At this point, the impact of panel gender diversity is functionally zero. In other words, around that point, gender diverse and gender homogenous panels have statistically similar average processing times. In substantive terms, until the circuit reaches a critical mass that approximates between 10 and 15 percent gender diversity, panel diversity will have a negative effect on case processing times. This 11.5 percent critical mass cut point is consistent with thresholds identified by Kanter (1977) and others.

DISCUSSION AND CONCLUSION

While the field of diversity research continues to grow in public administration, largely through work that employs representative bureaucracy theory, we have taken a different approach. We have used the U.S. Appellate Court Circuits and panels to explore the influence of experiential (nonvisible) and visible (race, gender, age) diversity on group conflict and organizational performance. Our results suggest that only gender diversity affects publicly manifested conflict. We also find that dissenting opinions, as expected, significantly decrease judicial efficiency. This suggests an intervening relationship between panel gender diversity, substantive conflict, and judicial efficiency.

We also find that, even after controlling for public manifestations of substantive conflict, both visible (gender, race) and nonvisible (tenure, prior experience as a district judge, and law school quality) panel diversity affect judicial efficiency. Moreover, the findings also suggest that institutional, longer-term diversity can mitigate the negative impact of work group (panel) gender diversity on efficiency, but it augments the negative impact of race work group (panel) diversity on efficiency.

These findings contribute to our understanding of the impact in a variety of ways. First we moved beyond representative bureaucracy, which posits a causal mechanism connecting public institutions to constituents, to a set of theories that explain causal relationships within public institutions. In addition, we move beyond just demographic diversity, examining the impact of experiential diversity. We also indirectly and directly test the causal mechanisms that connect diversity to institutional performances. Finally, we also test the relationship between two layers of diversity—both short-term work group diversity and long-term institutional diversity—and both substantive conflict and efficiency. This also allowed us to test and provide some evidence in support of critical mass/token theories.

Clearly, more work is needed. In the future, we suggest looking at other key public institutions test these findings and theories. For example, legislatures similarly have two layers of institutional structures (the main body and the committee). Moreover, committee debate transcripts and votes would allow for direct measures of both substantive and *affective* conflict, while we fail to measure the latter. In addition, future studies might examine the impact of the Intersectionality (L. McCall, 2005) of race and gender on conflict and public organization efficiency.

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Figure 1

Hypothesizing diversity's impact on performance via conflicts mechanisms

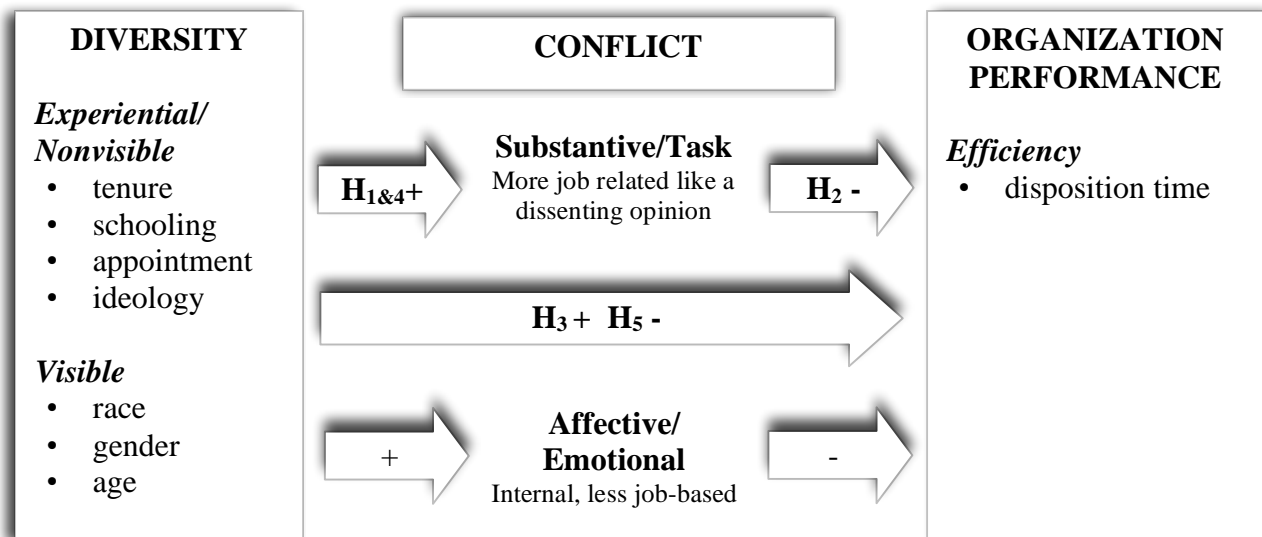


Table 1

Logit model of manifest substantive conflict: U.S. Court of Appeals panel dissents, 1971-1996

	<i>Without Circuit Diversity Effects</i>				<i>With Circuit Diversity Effects</i>				
	Coefficient	RSE	e ^b	%StdX	Coefficient	RSE	e ^b	%StdX	
Panel Diversity									
Tenure	-.07	.15	.93	-2.5	-.08	.15	.92	-2.7	
Elevated from district ct	.01	.09	1.01	.50	-.01	.09	.99	-.3	
Law school quality	-.03	.09	.97	-1.6	-.03	.09	.97	-1.2	
Ideology	.00	.00	1.00	-1.4	.00	.00	1.00	-1.9	
Race	.05	.12	1.05	1.6	-.36	.29	.70	-11.5	
Gender	.21 +	.11	1.23	7.9	-.03	.25	.97	-1.1	
Age	-.61	.64	.54	-4.2	-.56	.64	.57	-3.8	
Circuit Diversity									
Circ. Race X Panel Race					2.33	2.24			
Circ. Gender X Panel Gender					.02	.02			
Race					2.53 **	.78			
Gender					-.01	.01			
Controls									
Amicus Brief	.37 *	.17	1.45	7.9	.35 *	.17	1.42	7.5	
Complexity	.33 *	.13	1.39	18.2	.33 *	.14	1.40	18.4	
Criminal	-.05	.10	.95	-2.2	-.04	.10	.97	-1.6	
Oral Arguments	.83 ***	.18	2.30	32.5	.79 ***	.18	2.21	30.6	
Prior Publication	.29 **	.09	1.33	12.8	.28 **	.09	1.32	12.5	
Reverse lower ct	.41 ***	.08	1.50	22.3	.40 ***	.08	1.50	22.0	
Rights/Liberties	.18 +	.11	1.20	7.3	.19 +	.11	1.21	7.4	
Circuit Active Judges	.01	.01	1.01	3.7	.01	.01	1.01	4.2	
Circuit Docket Size	.00	.00	1.00	-3.3	.00	.00	1.00	3.0	
District Court Judge	-.07	.12	.94	-2.9	-.05	.12	.95	-2.2	
Senior Judge	.06	.10	1.06	2.8	.07	.10	1.07	3.2	
Visiting appellate judges	-.08	.17	.92	-1.9	-.05	.18	.95	-1.2	
Constant	-3.23 ***	.34			-3.37 ***	.34			
N	7332				7332				
Nagelkerke R-sq	.047				.051				

*Notes***RSE** = Robust standard error**e^b** = exp(b) = factor change in odds for unit increase in X; **%StdX** = percent change in odds for SD increase in X

Two-tailed significance: * p<0.05, ** p<0.01, *** p<0.001; One-tailed significance: + p <0.05

Table 2

Negative binomial model of efficiency: U.S. Court of Appeals panel disposition time, 1971-1996

	<i>Without Circuit Diversity Effects</i>				<i>With Circuit Diversity Effects</i>				
	Coefficient	RSE	%	%StdX	Coefficient	RSE	%	%StdX	
Panel Diversity									
Tenure	-.06 *	.03	-5.5	-2.0	-.05 +	.03	-5.1	-1.8	
Elevated from district ct	-.06 ***	.02	-5.8	-2.7	-.05 **	.02	-4.7	-2.2	
Law school quality	.13 ***	.02	14.0	6.4	.13 ***	.02	13.3	6.1	
Ideology	.00	.00	0	.7	.00	.00	0.1	1.0	
Race	.08 ***	.02	8.3	2.7	.04	.05	4.1	1.4	
Gender	.05 *	.02	5.0	1.8	.10 *	.04	10.2	3.6	
Age	.11	.12	11.8	.8	.06	.12	6.1	.4	
Circuit Diversity									
Circ. Race X Panel Race					.74 +	.45	110.5	3.3	
Circ. Gender X Panel Gender					-.01 +	.00	-.5	-2.9	
Race					-.98 ***	.16	-62.4	-6.0	
Gender					.01 ***	.00	.6	5.0	
Controls									
Amicus Brief	-.08 *	.03	-7.6	-1.6	-.08 *	.03	-7.8	-1.7	
Complexity	.09 ***	.02	9.3	4.6	.09 ***	.02	9.1	4.5	
Criminal	-.27 ***	.02	-23.5	-11.8	-.27 ***	.02	-23.5	-11.7	
Oral Arguments	.19 ***	.03	21.2	6.7	.20 ***	.03	22.4	7.1	
Prior Publication	.08 ***	.02	7.8	3.2	.08 ***	.02	8.1	3.3	
Reverse lower ct	.10 ***	.02	10.2	4.9	.10 ***	.02	10.4	5.0	
Rights/Liberties	-.01	.02	-0.5	-.2	.00	.02	-.3	-.1	
Circuit Active Judges	.02 ***	.00	1.5	8.3	.02 ***	.00	1.6	8.7	
Circuit Docket Size	.00 ***	.00	0.1	14.0	.00 ***	.00	0.1	14.4	
District Court Judge	.10 ***	.02	10.9	4.7	.10 ***	.02	10.5	4.5	
Senior Judge	.05 **	.02	5.3	2.5	.05 **	.02	5.5	2.5	
Visiting appellate judges	.00	.03	-0.1	.00	-.01	.03	-0.7	-.2	
Concurrence	.18 ***	.03	19.6	3.7	.18 ***	.03	20	3.8	
Dissent	.21 ***	.02	23.4	6.4	.22 ***	.02	24.3	6.6	
Circuit Area per Judge	.00 ***	.00	0	15.9	.00 ***	.00	0	15.3	
Circuit Population Density	.00 ***	.00	0	12.3	.00 ***	.00	0	14.0	
Circuit Judge Vacancies	.00 ***	.00	0.2	3.3	.00 **	.00	0.2	2.5	
Constant	4.21 ***	.07			4.21 ***	.07			
Alpha	.34 **	.01			.34 **	.01			
Inalpha	-	***			-1.07 ***				
N	7331				7331				
Nagelkerke R-sq	.216				.221				

Notes**RSE** = Robust standard error% = percent change in expected count for unit increase in X; **%StdX** = percent change in expected count for SD increase in X

Two-tailed significance: + p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001; One-tailed significance: + p < 0.05

Figure 2
 Conditional Effects of Circuit Race Diversity on Panel Race Diversity

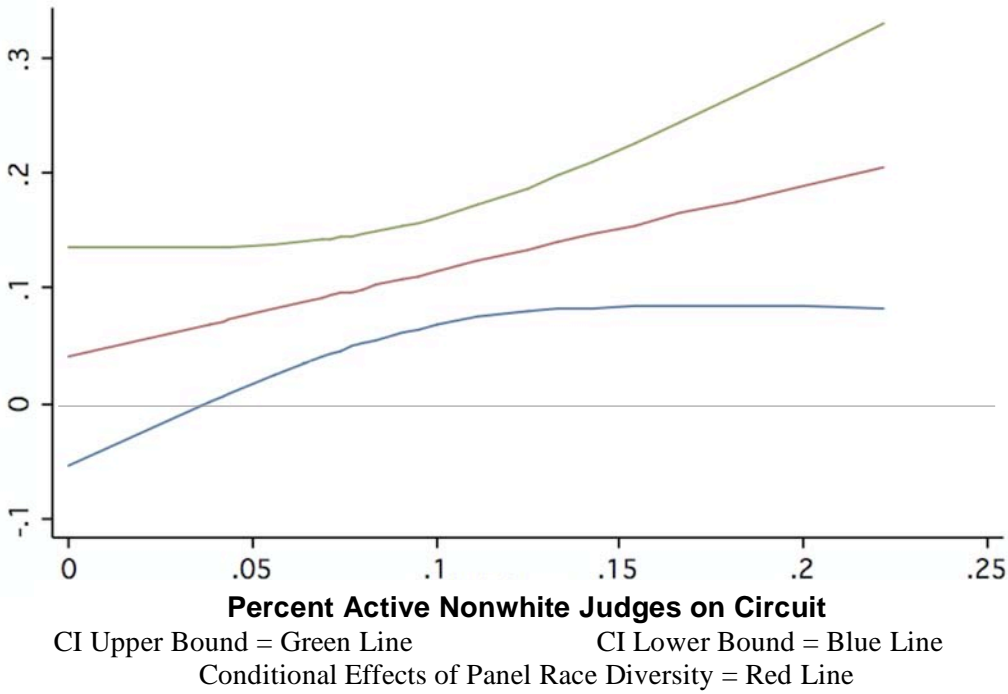


Figure 3
 Conditional Effects of Circuit Gender Diversity on Panel Gender Diversity

