

## **“Decision Making under Conditions of Complexity on the U.S. Courts of Appeals”**

By all appearances, the U.S. Courts of Appeals represent a unified front in creating national legal policy. They are governed by uniform rules of federal appellate procedure, Supreme Court precedent, Congress’ determinations about circuit size and jurisdiction, and legal norms of the adversarial and appellate process. Yet these twelve circuits differ substantially with respect to a number of organizational characteristics and practices that influence the legal outcomes they render. Because the majority of cases heard by the Courts of Appeals will not be heard by another court, these differences may impact thousands of litigants every year if they influence judicial decision making processes. This paper examines whether organizational characteristics of the circuits influence the legal clarity and consistency of aggregate circuit outcomes.

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## **Decision Making Under Conditions of Complexity on the U.S. Courts of Appeals**

“By virtue of jurisdiction and administrative independence, no two Courts of Appeals are alike.”

—Howard (1981, 8)

The United States Courts of Appeals were established pursuant to Congress’ Article III powers to establish a lower court system below the United States Supreme Court. Within this judicial hierarchy, the U.S. Courts of Appeals occupy the middle rung, situated between the federal trial courts and the Supreme Court. The power of these courts has grown steadily as legislation has increasingly limited the kinds of cases heard by the Supreme Court, while expanding the jurisdiction of the Courts of Appeals ([www.fjc.gov](http://www.fjc.gov)). Over time, as the number of federal filings has risen, new regional and specialized circuits have been added by Congress as a means of coping with scope and sheer volume of appeals [see Table 1]. Today, the regional courts of appeals hear appeals from the 94 federal district courts, tax court, and removal court, while the Court of Appeals for the Federal Circuit<sup>1</sup> oversees the Court of Veterans Appeals, Court of International Trade, and the Court of Federal Claims (Baum 2001, 26). Since the 1920s, the Courts of Appeals have utilized three-judge panels staffed by appellate judges to decide cases.

### **Similar yet Different**

By all appearances, the U.S. Courts of Appeals represent a unified front in creating national legal policy. They are governed by uniform rules of federal appellate

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<sup>1</sup> I exclude the Federal circuit from my dissertation study because of comparability problems with the other regional circuits. The Federal circuit’s jurisdiction is defined by subject matter, rather than by geography, making meaningful comparisons difficult.

procedure, Supreme Court precedent, Congress' determinations about circuit size and jurisdiction, and legal norms of the adversarial and appellate process. Yet these twelve circuits differ substantially with respect to a number of organizational characteristics and practices that influence the legal outcomes they render. As Howard wrote in his 1981 study of the Courts of Appeals, "[b]y virtue of jurisdiction and administrative independence, no two Courts of Appeals are alike" (8). Similarly, Lindquist observes that "a judge on the Ninth or Eleventh Circuit, for example, experiences a substantially different set of constraints than does a judge on the First or Tenth Circuit" (2007, 134). Examples of such constraints include the caseload faced by a circuit as well as the mix of cases that comprise a circuit's docket.

In addition to docket characteristics, the Courts of Appeals also vary substantially with respect to the judges who sit in each circuit. One quite obvious difference among the circuits, often highlighted in calls to break up the Ninth Circuit, is court size. The number of active judges on a circuit, from 1983 to 2002, ranges from a low of four judges (in the First Circuit) to a high of 28 judges (in the Ninth). The median number of judges in a circuit during this time period was 12.

The size of a circuit can also be conceptualized in terms of where cases are heard within a circuit. For example, the Ninth Circuit, the largest circuit in terms of judgeships, also utilizes four courthouses in San Francisco, Portland, Seattle, and Pasadena. In contrast, the Seventh Circuit hears cases exclusively at its courthouse in downtown Chicago<sup>2</sup>. However, this is not to say that judges in circuits with only one courthouse all retain home chambers in that city. For example, Cohen (2002, 154-5) observes that only

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<sup>2</sup> The only other circuit that utilizes multiple courthouses in different cities is the Eighth Circuit, which has a courthouse in St. Louis, Missouri, and St. Paul, Minnesota.

five of the ten active judges in the Seventh Circuit have their home chambers in Chicago, where the circuit seat is (the other five sit in Wisconsin and Indiana), and First Circuit judges are similarly scattered across Puerto Rico, New Hampshire, Massachusetts, Maine, and Rhode Island. Despite this dispersion, however, Cohen asserts that all circuits, save the Ninth<sup>3</sup>, arrange frequent gatherings at which all judges are present. In addition, technology has become increasingly important as a means to bridge geographic dispersion (Wasby 1987; Cohen 2002). But even when they all work in the same building, judges do not necessarily interact with each other more than if they worked in distant cities: “Judges on both the compact D.C. Circuit and the dispersed Ninth Circuit indicated that they rarely had face-to-face discussions about cases even with judges who maintain chambers in the same building” (Cohen 2002, 157)<sup>4</sup>.

In addition to court size, circuits also vary with respect to the diversity of the judges that make up their court. Despite the efforts to diversify the federal bench with respect to gender and race made by presidents from Carter to GW Bush, the vast majority of judges during this time period are white males. Table 2 illustrates the distribution of women and racial minorities in each circuit across time. In it, we can see that women (and, specifically, white women) have fared better than minority men in terms of both raw numbers as well as their overall proportion in a circuit. Ideological diversity is another factor that varies substantially across circuits (see Figures 1 and 2). No circuit (including the Ninth) is ideologically homogeneous, since each court is comprised of

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<sup>3</sup> Because arguments are held in the four courthouses in the Ninth Circuit, all the judges are not together at the same time in the same place, as they are in other circuits. Cohen does note that all the Ninth Circuit judges do gather occasionally for judicial conferences, however (2002, 155).

<sup>4</sup> It is for this reason that Cohen’s judges seem to consider geographical dispersion to be a “wash” in terms of its practical consequences for circuit business.

judges appointed by Democratic presidents as well as Republican presidents. Ideological diversity within a circuit is important because of the panel structure used in deciding cases; for example, some research suggests that the ideological mix of judges seated together on a given case influences the ideological direction of decisions rendered (e.g. Cross and Tiller 1998).

Finally, circuits' judicial diversity varies with respect to the use of visiting and senior status judges to decide cases. Pursuant to federal law<sup>5</sup>, the chief judge of a circuit, or the Supreme Court justice assigned to that circuit, may appoint judges who are not active in that particular circuit court to hear cases (Benesh 2006). The term "visiting judges" here includes active district court judges, active circuit court judges from another circuit, and senior status judges from other circuits. Similarly, retired judges from a circuit may opt to take senior status and continue to hear cases on panels in their former circuits. Reliance upon these "extra" judges is commonly attributed to workload factors (e.g. Benesh 2006) and varies substantially across the courts and across time.

Because the majority of cases heard by the Courts of Appeals will not be heard by another court (Davis and Songer 1989), these differences may impact thousands of litigants every year if they influence judicial decision making processes.

### **The Dissertation Study**

The dissertation project, from which this paper is taken, approaches the study of judicial behavior with the uncontroversial assumption that the environment in which judges make decisions structures the nature of the legal outcomes produced. This is not

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<sup>5</sup> The statutory provisions that address visiting and senior judges are 28 USC 291, 28 USC 292, and 28 USC 294.

to say that environmental factors are solely determinative, or that they are necessarily the most influential factor in every case, but rather that they do matter and in significant ways. A simple illustration of how institutional structure shapes judicial outcomes can be seen in a comparison of the federal district courts with the appellate courts above them; while district court judges sit alone to decide cases, the U.S. Supreme Court and the Courts of Appeals are collegial courts, requiring judges and justices to engage in negotiation and compromise to generate a majority opinion (Wahlbeck, Spriggs, and Maltzman 1998; Hettinger, Lindquist, and Martinek 2006). For instance, Howard quotes a former trial judge who had been elevated to circuit court judge as noting the difficult transition because of the “autocratic position” of the district court judge: “He [the trial judge] is the sole decider. He decides as he sees fit, and files the decision in a form as he sees fit. A Court of Appeals decides by committee” (1981, 135).

The central argument, then, of this research is that variation in organizational characteristics of the circuits influences the clarity and consistency of the legal outcomes they render. In particular, I am interested in how such organizational characteristics serve to mitigate or exacerbate complexity in the circuits’ decision making environment. By providing a more comprehensive account of factors that influence legal outcomes, this study connects and expands upon earlier studies of the U.S. Courts of Appeals (Lindquist, Hettinger, and Martinek 2006; Cohen 2002; Klein 2002; Songer, Sheehan, and Haire 2000; Howard 1981). Furthermore, it seeks to contribute to a better understanding of how organizational and structural features in the decision-making environment affect the function of political institutions in general, and judicial institutions in particular.

Before proceeding, a word about definitions is in order. I use the term “complexity” to characterize the decision-making environment of the circuits. From organizational theory, Anderson characterizes complexity as “a structural variable that describes both organizations and their environments” (1999, 216). Organizational complexity refers to the number of subsystems or components within an institution, while environmental complexity means “the number of items or elements that must be dealt with simultaneously by an organization” (Scott 1992, 230)<sup>6</sup>. For the purposes of this project, then, I am primarily interested in environmental complexity, since I argue that clarity and consistency of legal outcomes are, in part, driven by the organizational context in which decision making takes place.

### **Court as Institutions**

In this paper, I consider how organizational characteristics shape legal outcomes in the aggregate, by looking at circuit level processes. (Later chapters in the dissertation examine this question at the panel and individual levels as well as through interviews with circuit judges.) In so doing, I follow Lindquist, Haire, and Songer (2007) by examining courts as institutions.

Institutional-level studies of courts in political science have tended to utilize strategic theoretical frameworks to analyze the behavior of institutions as actors. In strategic models, the most commonly asserted motivations for courts’ behavior are, in no particular order, self-preservation, public legitimacy, and policy preferences (e.g. Murphy 1964; Marks 1989; Epstein and Knight 1998). Though the strategic account appears quite intuitive at first glance, a number of limitations exist when it comes to testing its

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<sup>6</sup> Similarly, in management science, complexity has been measured as the number of units per time and the amount of information per unit (Miller 1960).

expectations empirically, particularly in the case of models that look at interactions among or between institutions at the same level of government (e.g. Marks 1989; Eskridge 1991; Gely and Spiller 1990).

Segal (1997) details a laundry list of complaints about the underlying assumptions of such models in his 1997 empirical test of Brian Marks' separation-of-powers game<sup>7</sup>. Among these is the assumption that all players possess complete and perfect information, the assumption of exogenous judicial preferences (when justices are nominated by the President and confirmed by the Senate), the assumption that the Court relies only on statutory bases for its decisions (when it can make it far more difficult for Congress to retaliate by "upping the ante" and deciding a case on constitutional grounds), and finally that Congress is assumed to have limited veto points, to pass legislation without transaction or opportunity costs, and to have the last move in the separation-of-powers games (Segal 1997, 31-33)<sup>8</sup>.

However, these criticisms do not pose significant problems for my analysis of circuit courts as institutions, since this study does not attempt to model interactions between or among political institutions, but rather variation across one particular type of institution. Furthermore, because the analysis in this section does not attempt to explain individual judge behavior using aggregate measures, I avoid committing the ecological fallacy (Babbie 2001), another common pitfall of institution-level analysis.

## **Court as Organizations**

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<sup>7</sup> Marks' unpublished 1997 dissertation is frequently cited as the first incorporation of the judiciary into a game theoretic separation-of-powers model.

<sup>8</sup> It should also be noted that neither Segal (1997) nor Sala and Spriggs (2004) find empirical support for the Marksian strategic account of inter-institutional behavior.

Rather than approaching the question of institutional behavior from a formal modeling perspective, I argue that circuit courts as organizations and institutions may behave in a manner consistent with the bounded rationality (“satisficing”) model and the “garbage can” model of decision-making. In using these perspectives to explain variation in legal clarity and consistency in the federal appellate courts, I am proceeding from the assumption that courts are, in fact, organizations. While I am not alone in this characterization (e.g. Fiss 1983; Lindquist, Haire, and Songer 2007), others, like Mohr (1976), prefer to conceptualize courts as decision-making systems, rather than as organizations. However, I follow Rainey (1997, 15) in defining an organization as “a group of people who work together to pursue a goal...[,] do so by attaining resources from their environment,” and use tasks and technologies to achieve effective performance of their goals. Under these general criteria, the federal appellate courts may be considered to be organizations.

The first approach, the bounded rationality model, predicts that decisions will tend to be made by coalitions, rather than by a single individual, because of both individuals’ cognitive limitations as well as difficulties in prioritizing and defining goals. Under the bounded rationality model, decision makers engage in “satisficing” behavior, or selecting a satisfactory rather than ideal outcome in order to satisfy several goals at once and to satisfy all members of the decision making coalition. They then search in the immediate environment for quick solutions (Daft 2001, 412-413). Given the practice of deciding cases via three-judge panels, the Courts of Appeals fit the model’s description of coalition-based decision making. Based on the infrequency of dissent in the circuits, group decision making processes certainly appear, on their face, to produce norms of

consensus and compromise (i.e. satisficing behavior). Finally, with the rapid increases in caseload per judge and caseload per panel (Cohen 2002, 7), judges have an increasingly limited amount of time to conduct extensive searches for information that might influence or strengthen the opinions generated. Consequently, if complexity in the circuit's environment leads to satisficing behavior by judges, then we should expect to see more consensus and compromise, as evidenced by fewer separate opinions.

The second kind of decision making model is the so-called "garbage can" model, developed by Cohen, March, and Olsen (1972) to describe decision making processes in organizations characterized by "rapid change and a collegial, non-bureaucratic environment" (Daft 2001, 420). The garbage can model (hereafter, GCM) is perhaps best characterized as a macro-level theory about organizational choice, and is often discussed in contrast to rational choice theory and bounded rationality theory. Some note that the GCM may be best understood as an offshoot of bounded rationality theory (see Bendor, Moe, and Shotts 2001); however, for the purposes of this discussion, they will be treated as distinct theories.

Cohen, March, and Olsen begin their discussion of the garbage can model<sup>9</sup> by talking about organized anarchies. These "organized anarchies" are "a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work" (Cohen, March, and Olsen 1972, 2). Organizations or decision situations that are organized anarchies exhibit the three following features:

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<sup>9</sup> Bendor, Moe, and Shotts (2001) distinguish between two variants of the GCM laid out in Cohen, March, and Olsen's (1972) article, which they claim are incompatible. They term the first variant, the "verbal" or "informal" theory, which is to be distinguished from the computer simulation version. Consistent with Olsen's (2001) reply, I rely on upon the first, or "verbal," formulation of the garbage can to generate testable hypotheses about circuit judges.

problematic preferences, unclear technology, and fluid participation. Problematic preferences mean that an organization more closely resembles a loose collection of ideas than a coherent structure, and tends to discover its preferences through action (and not the other way around). Unclear technology is explained to mean that the organization's members do not understand its own processes, but instead operate by learning from the past and "pragmatic inventions of necessity" (Cohen, March, Olsen 1972, 1). Finally, fluid interpretation means that participants' involvement and investment varies widely, and the relevant audiences and decision makers for any given kind of choice also change frequently.

Cohen, March, and Olsen never explicitly say how many of these characteristics are necessary in order to classify an organization as an organized anarchy (see Bendor, Moe, and Shotts 2001, 173-4). Further, they argue that the garbage can model may take many forms, each of which is dependent on the load and the organizational structures to influence behavior (Cohen, March, and Olsen 1972, 11).

In applying these characteristics to the U.S. Courts of Appeals, two out of the three appear to fit the circuit courts relatively well. Fluid participation is the most obviously applicable given the practice of rotating panel assignments and the variation in the courts' audiences. The second criterion of unclear technology also fits insofar as courts, by relying upon precedent, learn from past experiences and "pragmatic inventions of necessity" (Cohen, March, and Olsen 1972, 1). The first characteristic, problematic preferences, arguably does not apply to the federal appellate courts, as they are certainly a "coherent structure" more than a "loose collection of ideas."

The GCM also argues that decisions are the outcome of several relatively independent streams within an organization. The four streams consist of problems, solutions, participants, and choice opportunities. The “garbage can” moniker is derived from the idea that a choice opportunity is like a garbage can where different problems and solutions are dumped by participants as they are created. Outcomes are dependant upon the combinations of problems and solutions “dumped,” how many garbage cans there are, and how quickly existing garbage is taken away. It is not a rational process by which a problem is identified, possible solutions are considered, and participants make a choice about the best solution to correct the problem. Indeed, the authors claim that decision makers and problems tend to track each other through choices.

As applied to the circuit courts, we might identify judges and litigants as the participants, and cases and opinion authoring as choice opportunities. Problems, defined by Cohen, March, and Olsen as “the concern of people inside and outside the organization” (1972, 3), in this context refer to broader issues related to interpreting the law and balancing interests in a democratic society; for example, the tension between crime control and individual liberties, or weighing the government’s interest in regulation against economic freedom. Solutions might include legal rules, circuit and Supreme Court precedent, or even new jurisprudential doctrines not yet tried out by judges in a given circuit. Any and all of these examples of solutions may be colored by a judge’s ideological predisposition (i.e. liberal or conservative) and style of jurisprudence (i.e. original intent, plain meaning, etc.). Thus, if circuit courts behave consistent with the GCM, judges develop an affinity for certain kinds of problems and have preformed solutions waiting for when they are chosen to hear a case, or when they author an opinion

(majority, concurring, or dissenting). This is not to say that judges have completely made up their minds prior to hearing a case, but rather that they do not come to each case with a blank slate.

Consequently, if complexity at the circuit level leads to a garbage can style of decision making, then the result might be less stability in the law. This could manifest itself as randomness in legal outcomes, leading to an increased number of en banc panels. It might also cause the district courts to make more errors, resulting in a high reversal rate in circuits with high levels of environmental complexity.

## **Data**

To test whether these models of institutional behavior bear out empirically, I utilize data from the Federal Judicial Center, the federal court judges dataset (Zuk, Barrow, and Gryski 1997; Gryski and Zuk 2006), the Multi-User Databases on the U.S. Courts of Appeals (Songer 1997; Haire and Kuersten 2006), and the Administrative Office of the Courts on the First through Eleventh circuits from 1983 to 2002<sup>10</sup>. Again, it bears repeating that the variables represent an aggregate level view of the courts and should not be interpreted to reflect on judges' behavior at an individual level.

## **Dependent Variables: Legal Clarity and Consistency**

Legal clarity and consistency offer a number of benefits. As Klein (2002, 17) explains, citing Merryman (1954): “[C]onsistency helps not only potential litigants, who can undertake actions with greater certainty about outcomes, but also judges themselves,

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<sup>10</sup> I would like to acknowledge Susan Haire, Stefanie Lindquist, and Donald Songer for graciously sharing previously compiled datasets with me.

whose work becomes easier as an area of law becomes more settled.” Indeed, one of Klein’s circuit judges remarks that “[Y]ou should measure circuit excellence by the uniformity of the law it promulgates...There are lots of good judges all over—some who make no effort to get attention, others who do lots to. I evaluate by asking if the circuit stays fairly current and generates a coherent, consistent, cohesive body of law” (Klein 2002, 17). In addition, one might imagine that maintaining a reputation for clarity and consistency would bolster the institutional legitimacy of the courts in the eyes of the public (see Johnson and Canon 1984).

But while Klein’s study is concerned with consistency and coherence, his focus is primarily on how these concepts relate to the adoption of legal rules. Because I am primarily concerned with how organizational characteristics shape such legal outcomes, I will operationalize legal clarity and consistency somewhat differently, using multiple measures of each concept. Taking clarity first, I operationalize this variable as (1) mixed outcomes and (2) dissent rates. Both of these measures represent fragmentation of a court’s decision in some way, either in the court’s holding itself or in the consensus of the judges. Mixed outcomes are measured as the proportion of published decisions to affirm in part and reverse in part, for each circuit in each year. The dissent rate is calculated as the raw number of dissenting opinions (obtained from Westlaw and the Federal Judicial Center) divided by the number of merits terminations per circuit per year.

For legal consistency, I also use two different proxies. The rate of district court reversal will be measured as the percent of merits terminations that reversed district court judgments in a circuit in one year<sup>11</sup>. This measure reflects the circuit court’s supervisory role in overseeing the lower courts in its circuit for consistency both with circuit

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<sup>11</sup> This information was obtained from the Administrative Office of the Courts.

precedent as well as Supreme Court precedent. It should be noted here that since 1960, the rate of lower court reversals has been in a steady decline. One explanation for this phenomenon may be the increases in caseload for the circuit courts during this time; under this view, when there is less time, judges may reverse less and affirm more.

Another explanation is that the proportion of the courts' docket that is devoted to criminal appeals and prisoner petitions has increased substantially since 1960, and these are often easier to dispose of, since many are meritless (Posner 1996, 58-64). During the period of this study, the mean reversal rate for all circuits ranged from around 16 percent in the early 1980s falling to closer to 9 percent during the last half of the period (see Figure 3).

Individually, the average reversal rate for each circuit ranges from a low of 8.7 percent in the Second Circuit to a high of 13.8 percent in the Fifth Circuit, with the median circuit value at 11.5 percent. Table 3 shows the yearly fluctuation in lower court reversals for each circuit from 1983-2002, illustrating trends in both circuits and across time.

The second proxy for consistency is the frequency of en banc review in a circuit in a given year (see Table 3). En banc review differs from the regular practice three-judge panels because it convenes all active judges in a circuit to rehear a case. According to the Federal Rule of Appellate Procedure 35, en banc review should be granted under any of three conditions: conflict with a Supreme Court decision, conflict with circuit precedent, or an issue of extreme importance. In 1998, the rule was amended to include intercircuit conflict as grounds for en banc review (McKenna, Hooper, and Clark 2000).

Clearly, consistency of law is the goal behind en banc review; however, it should be noted that the reality is that it is relatively infrequently granted<sup>12</sup>.

In Figure 4, the box plots show the distribution of en banc rehearings across the circuits. The Ninth Circuit has the widest range, though its median value is actually below those of the Fourth and Fifth circuits and roughly equivalent with the Eleventh Circuit. The First and Second circuits utilized en banc rehearings the least during the 1982-2002 era.

### **Independent variables**

#### *Demographic composition of circuit*

In general, increasing diversification of the bench, with respect to gender, race, and ethnicity, characterizes the period of this study, which includes the presidencies of Ronald Reagan, George H.W. Bush, William J. Clinton, and George W. Bush. Spill Solberg (2006) suggests a number of mechanisms by which a circuit may become diversified. Perhaps the two most often studied are the president's appointment goals (e.g. Clinton's pledge to appoint more women and minorities as judges) and the ideological composition of the Senate (both the Judiciary Committee as well as the body as a whole). However, neither of those factors makes a difference in the absence of positions to fill, so the presence of vacancies and the creation of new seats are also important<sup>13</sup>. For example, Presidents Reagan, G.H.W. Bush, Clinton, and G.W. Bush

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<sup>12</sup> En banc review requires all active sitting judges to sit together to rehear a case decided previously by a three-judge panel of that circuit. However, the 1978 Omnibus Judgeship Act authorized circuits with more than fifteen active judges to perform en banc review with fewer than all judges. This exception is currently utilized only by the Ninth Circuit (McKenna, Hooper and Clark 2000).

<sup>13</sup> Spill Solberg also argues that the political culture and demographic make-up of the circuit's comprising states set the stage for diverse appointments, though favorable conditions may be tempered by the relative prestige of the circuit since "women and minorities may have a more difficult time obtaining seats in more prestigious institutions" (251).

successfully nominated a total of eight women, two African-Americans (both male), and two Hispanics (both male)<sup>14</sup> to newly created seats (Spill Solberg 2006). In terms of maintaining or increasing overall levels of diversity in existing seats, Presidents Clinton and GW Bush (through 2002) were more successful than either of the Republican presidents of the 1980s.

Critical mass theory argues that when groups that are in the minority of an organization reach a certain proportion<sup>15</sup>, they become individuals who are differentiated from one another and can form coalitions to change the organization's culture (Kanter 1977, 209). Likewise, when the proportion of such individuals falls below the critical mass point, these individuals are seen as "tokens" and may be more likely to adopt the behavior of the dominant group in order to fit in with them (Kanter 1977, 933). Studies of legislative bodies have provided some support for this hypothesis (Saint-Germain 1989; Thomas 1991, 1994; but see Bratton 2005).

Applying critical mass theory to the Courts of Appeals, we might expect that, as the composition of a circuit becomes more heterogeneous in terms of gender and race, the decision-making environment may become more "complex" in the sense that white, male judges face a changing organizational culture in which norms and communication-interaction styles may be in flux. To capture this concept, I measure the racial and ethnic composition of the circuits, as well as the gender composition. For each circuit in each year, I use the proportion of judges who are African-American, Hispanic, or Asian, as

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<sup>14</sup> Broken down by president, the figures for appointments to new seats (not existing seats) are as follows: Reagan (4 white women, 1 Hispanic man), GHW Bush (1 white woman), Clinton (two white women, two African-American men, one Hispanic man), and through 2002, GW Bush (zero) (Spill Solberg 2006, 257). These numbers include the Federal Circuit in addition to the 11 numbered circuits and the DC circuit.

<sup>15</sup> Kanter suggests that the precise number for critical mass may range from fifteen to thirty-five percent; however, most scholars using the critical mass approach tend to choose fifteen percent (e.g. Saint-Germain 1989; Grey 2002; Bratton 2005).

well as a separate measure indicating the proportion of active judges who are female. This measure also includes judges on senior status, since they handle significant numbers of cases (e.g., the median value of case participations in this sample is 11 percent) and are likely continue to influence the organizational culture of the circuit as a result of their continued participation and presence.

### *Ideological composition of the circuit*

Another important organizational characteristic of a circuit that likely influences the clarity and consistency of its law is the ideological composition of the circuit. A long line of literature has shown that judicial ideology is a relatively consistent predictor of judicial votes in the Courts of Appeals, though it is not the only, or most important, determinant (e.g. Goldman 1975; Songer and Davis 1990). However, for the purposes of this analysis, it is not the ideological direction of a circuit's decisions that matters; rather, it is the degree of heterogeneity of the judges in a circuit, with respect to ideology, that may affect the circuit's outputs. A circuit that has relatively little dispersion in judge ideology (i.e. a predominantly conservative circuit) will likely find it relatively easy to come to consensus and produce clear, consistent law. On the other hand, a circuit with greater variance in ideology may struggle to achieve either clarity or consistency.

Rather than simply using the party of the appointing president as a proxy for ideology, I operationalize a circuit's ideology using the Giles, Hettinger, and Peppers (2001) scores, which take into account a president's ideology as well as the ideology of home state senators when senatorial courtesy is present<sup>16</sup>. After assigning an ideological

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<sup>16</sup> Unlike using the party of the appointing president as a proxy for judge ideology, Giles, Hettinger, and Peppers derived this measure from the Poole (1998) common space scores, which allow for variation in

score to each judge in a circuit, I calculated the standard deviation for each circuit as a measure of dispersion.

### *Task variability*

The degree to which a circuit's docket is homogeneous in terms of the cases it hears may affect the clarity and consistency of the law it produces. Because high levels of task routineness can increase experience and efficiency, and consequently reduce complexity in decision making, I incorporate a measure for the proportion of different case types represented in published opinions<sup>17</sup>. I expect circuits with higher levels of task variability to exhibit less clarity and consistency in their outputs.

### *Size of circuit*

It is commonly asserted in calls for splitting the Ninth Circuit that the large number of judges is unwieldy. For example, in his September 20, 2006, testimony before the Senate Judiciary Committee, John C. Eastman asserted: "Now with 28 active judgeships, there are simply too many cases and too many judges in the Ninth Circuit to effectively administer justice in an effective and cohesive manner" (cited in Lindquist 2007). In fact, Lindquist (2007) does find that, as far as the Ninth Circuit is concerned, its size does appear to affect case processing. Similarly, several of Cohen's interviews

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ideological preferences. The ideology scores range from -1 (most liberal) to 1 (most conservative) and takes the value of the president's score when senatorial courtesy is absent or the value of the home state senator if senatorial courtesy is present. If there are two senators of the same party as the president, their common space scores are averaged.

<sup>17</sup> The Songer and Kuersten and Haire databases include two fields for case types, and this measure utilizes both of these (i.e. I appended CASETYPE2 to CASETYPE1 and then calculated the number of unique case types represented).

with circuit judges reveal a concern that increasing the numbers of judges reducing the consistency of the law coming out of a circuit (2002, 161-2):

“I think [the large number of judges on the court] makes it harder for us to speak with a coherent voice and to maintain a body of law that is predictable and ascertainable...So the more judges you have, the harder it is to keep everybody on the same sheet of music.”

“I think for the practitioner, having a smaller court is somewhat desirable for predictability.”

“Because we have so many cases coming out so often, it is possible for people to decide [similar] cases the same week...So it is possible in one week to have two cases come down that are absolutely opposite to each other. Or it may have come down last week, and you just haven’t gotten to it. It is such a big circuit that handling your own cases, keeping up on your own cases, is just a huge job.”

Because of the suggestive anecdotal evidence and earlier empirical findings from Lindquist, I include a measure for the number of active resident judges in a circuit, excluding senior and visiting judges.

### *Workload*

As a circuit judge himself, Richard Posner has observed that there is an important distinction between the concept of caseload and that of workload:

“[F]igures on case filings cannot tell the whole [story about judicial workload ...Statistics on appellate caseloads are particularly misleading indications of workload because they are based merely on the number of notices of appeals filed. The notice of appeal—which is filed in the district court and simply identifies the parties and the order being appealed—is, as a practical matter, nothing more than a statement of an intention to appeal. Because it requires much less preparation than a complaint, it is a weaker commitment to proceed than the filing of a complaint is...It would be no commitment at all, were it not for the filing fee, which is not refundable if the appeal is abandoned” (Posner 1996, 64-67, footnote 9).

Posner goes on to distinguish between procedural terminations and terminations on the merits, noting that the latter are more time-consuming and perhaps a better proxy for workload than the former (2007, 67-70). For this reason, I rely on the number of terminations on the merits as my measure of circuit workload. The Ninth, Fifth, and

Eleventh circuits have the highest number of terminations over the entire period studied, while the First, Seventh, and Tenth have the fewest (see Figure 5).

In her study of circuits as organizations, Lindquist (2007) does not find a significant relationship between workload and reversal, nor does she find one between workload and dissent rates.

### *Difficulty of cases*

Another aspect of workload that plausibly relates to legal outcomes has to do with the nature of the cases heard by the circuit. Posner notes that a comparison of selected years [1960, 1983, 1992, 1993] over all circuits suggests that “the fraction of consistently difficult cases [admiralty, taxation, antitrust, intellectual property] ... in the docket of the courts of appeals is falling at least when difficulty is measured by likelihood of a case’s being disposed of by means of a signed opinion, while the percentage of easy cases (prisoner cases) is rising” (1996, 77).

To account for the general level of difficulty in a circuit’s docket, I use the proportion of total filings that are criminal appeals and prisoner petitions as a rough measure<sup>18</sup>. Looking at each circuit over the entire period studied, the three circuits with the highest proportions of such cases are the Eleventh Circuit (55 percent), the Fourth Circuit (53 percent), and the Eighth Circuit (50 percent). The First Circuit ranks at the bottom, with only 37 percent of its terminations attributable to criminal appeals and prisoner petitions<sup>19</sup>.

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<sup>18</sup> Other, more precise measures will be used in the subsequent chapters for the panel and individual level analyses.

<sup>19</sup> Looking at each category by itself produces slightly differing results. In criminal appeals alone, the Eleventh Circuit has the highest percentage of terminations in criminal cases (37 percent), while the Third, Fourth, Seventh, and Eighth all have the lowest, around 21 percent. The Fourth Circuit has the highest

### *Visiting judges*

Circuits use active resident judges, senior judges, and visiting judges from outside the circuit (either district court judges sitting in designation or other appellate judges, active or senior status, from other circuits) to dispose of cases. So-called “extra” judges play a central role in the regular disposition of cases because of the circuits’ burgeoning workload; for example, Posner (1996) observes that in 1993, visiting judges sat on 49.6 percent of argued courts of appeals panels. Writing in 2001, Brudney and Ditslear note that district court judges alone “helped decide more than 75,000 cases since 1980” (565-6).

The increased use of visiting judges, particularly district court judges sitting in designation (either from within a circuit or from another circuit) and circuit judges from other circuits, has provoked strong criticism by legal scholars and practitioners concerned with the implications of this particular solution to high workload (e.g. Saphire and Solimine 1995). Reliance upon visiting judges may undermine uniformity in circuit law (see Saphire and Solimine 1995; Posner 1996, 135-6), exacerbate coordination and communication problems in more geographically dispersed circuits (Wasby 1980-1, discussing the Ninth Circuit), and actually contribute to workload increases in the district court (Benesh 2006, 302). It should be noted that many of these objections do not apply to senior judges sitting in their own circuit, since they are ostensibly familiar with circuit norms and precedents and do not hear appellate cases in addition to a full regular docket of cases in their home courts, as with other visiting, non-senior judges.)

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proportion of prisoner appeals at 31 percent, while the First Circuit only has 10 percent of its merits terminations that are prisoner petitions.

However, empirical findings are somewhat mixed on whether visiting judges are a “drag” on circuit court processes. Solimine (1988) finds that, over a two-year span, panels with visiting district court judges were more likely to have their decisions reviewed en banc—a finding consistent with the complaint that visiting judges’ contributions are often of a lower quality than those of judges sitting in their home circuit. In terms of output, two studies of visiting judges in all appeals found that these judges neither shirk nor take on more work than their circuit colleagues (Green and Atkins 1978; Saphire and Solimine 1995). However, more recent work looking at subsets of appeals (Brudney and Ditslear 2001) and the Ninth Circuit (Benesh 2006) suggests that visiting judges are less likely to author opinions or write separately. Senior judges in the Ninth Circuit, on the other hand, wrote more than their expected share of majority opinions (Benesh 2006, 311). In sum, this evidence suggests that we should expect circuits that rely heavily upon visiting judges to exhibit higher levels of legal inconsistency and lower levels of legal clarity.

### **Garbage can hypotheses**

The garbage can model suggests that higher levels of organizational complexity may produce randomness in legal outcomes. This tendency would likely be worse in larger circuits with more judges because of coordination problems, and in circuits that rely heavily on the services of visiting judges. Similarly, the garbage can model leads us to predict that greater heterogeneity with respect to the demographic diversity and ideological dispersion of judges on a circuit will lead to less legal clarity and consistency. More variability in the kinds of cases heard as well as higher workloads may also reduce legal clarity and consistency.

*Judge-related factors*

**H<sub>1</sub>**: As the demographic diversity of judges in a circuit increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

**H<sub>2</sub>**: As the ideological diversity of judges in a circuit increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

**H<sub>3</sub>**: As the size increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

**H<sub>4</sub>**: As the proportion of visiting judges in a circuit increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

*Docket-related factors*

**H<sub>5</sub>**: As the task variability increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

**H<sub>6</sub>**: As the workload of a circuit increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes.

**H<sub>7</sub>**: As the relative difficulty of cases in a circuit's docket increases, we should see an increase in en banc decisions, district court reversals, and mixed outcomes

**Satisficing hypotheses**

The bounded rationality perspective predicts that conditions of high complexity will produce “satisficing” behavior in decision making, as evidenced by greater levels of consensus and compromise.

*Judge-related factors*

**H<sub>8</sub>**: As the demographic diversity of judges in a circuit increases, we should also see a decrease in dissenting opinions.

**H<sub>9</sub>**: As the ideological diversity of a circuit increases, we should see a decrease in dissenting opinions.

**H<sub>10</sub>**: As the size of a circuit increases, we should see a decrease in dissenting opinions.

**H<sub>11</sub>**: As the proportion of visiting judges in a circuit increases, we should see a decrease in dissenting opinions.

*Docket-related factors*

**H<sub>12</sub>:** As the task variability of a circuit increases, we should see a decrease in dissenting opinions.

**H<sub>13</sub>:** As the workload of a circuit increases, we should see a decrease in dissenting opinions.

**H<sub>14</sub>:** As the relative difficulty of cases in a circuit's docket increases, we should see a decrease in dissenting opinions.

## **Methods**

To test these hypotheses, I utilize a cross-sectional time-series design for the numbered circuits between 1983 and 2002. Perhaps the biggest advantage of the cross-sectional time-series approach is that it allows investigators to account for the effects of both space and time in social science phenomena (Stimson 1985). Cross-sectional time series designs may take a number of different forms, varying in terms of the number of units studied (i.e. how many circuits) as well as in the number of time points (i.e. how many years). Generally speaking, these designs utilize “stacked” data sets (Brown and Halaby 1982), in which some fixed unit  $i$  is observed across points of time ranging from 1 through  $t$ , and is followed by units  $i+1 \dots n$  with its accompanying time points (Stimson 1985, 918).

By pooling many points of data over multiple points of time, the design allows researchers to depart from “snapshot” analyses that are limited by the single point in time chosen. The design also has the comparative advantage of including multiple groups (e.g. nation-states, courts, or organizations), which allows for more generalizable conclusions about the phenomenon studied. However, apart from the advantages related to generalizability, such designs also present special methodological challenges. Foremost of these is the correlation of data across time and space.

In ordinary least squares regression, the residuals for each observation are assumed to represent errors that have independent and identical distributions (known as the i.i.d. errors assumption), but this assumption is violated with panel data models because the observations consist of the same units measured repeatedly (Stimson 1985).

One solution for the correlated errors problem is to utilize Generalized Estimating Equation, or GEE, models. GEE models can be understood as an extension of Generalized Least-squares Models and allow for both unit-specific and individual-observation errors to be estimated.

$$\Pr (Y_{it}) = g(X_{it}\beta_M)$$

Following Zorn (2001, 475), I utilize a marginal GEE model because I am interested in making comparisons across circuits, rather than exploring the effect of changes in covariates within a particular observation.

Because GEE requires the researcher to specify the intracluster correlation structure, the specification of the “working” correlation matrix that I use is the exchangeable correlation structure, in which values of  $Y_i$  are assumed to covary equally across all observations within a cluster. One significant advantage of the GEE model is that “the asymptotic consistency of  $\beta$  holds even in the presence of misspecification of the ‘working’ correlation structure; thus, GEEs offer the potential of providing asymptotically unbiased estimates of the parameters of primary interest even in cases where the exact nature of the intracluster dependence is unknown” (Zorn 2001, 472). However, misspecifying the correlation structure can produce inconsistency in the variance estimate for  $\hat{\beta}$ , so I use the Liang and Zeger (1986) robust estimate of the variance-covariance matrix. In addition to the robust estimator, I also include dummies

variables for the year to control for time-specific effects, using the first year in the analysis (1983) as the baseline.

In Stata 9, I use the “xtgee” command for cross-sectional time-series analysis using GEE. The dependent variables, which appear originally as percentages, were transformed using a logit transformation so that they are rescaled to lie between 0 and 1. This transformation accounts for the bounded nature of the dependent variables (i.e. it is impossible for any of the dependent variables to exceed 100 percent). Finally, I specify the link function of the expected value of Y as an identity link and choose the Gaussian distribution of Y.

## **Results**

Table 4 presents the results from the first set of analyses. Though all the models are significant at  $p < .05$ , only the mixed outcomes model yields more than two significant variables. There is little support for most of the hypotheses in the garbage can account. In the en banc model, we see that more racial heterogeneous circuits are associated with lower en banc rates, contrary to expectations, though they are positively associated with mixed outcomes (as hypothesized). Ideological dispersion does perform as expected in the reversal model, but is negative and significant in the mixed outcomes model. The hypotheses associated with the bounded rationality, or satisficing, account do somewhat better. In the dissent model, higher levels of gender diversity are negatively related to dissent, and size is also negatively related to dissent rates.

< Table 4 about here >

However, upon closer examination, it seems likely that the effects of size and judicial diversity are conditional upon each other, rather having isolated effects as

modeled in Table 4. That is, the effect of judicial diversity within a circuit may differ depending on the size of the circuit—for example, in smaller circuits, because there are fewer combinations of three-judge panels possible, judges will have more opportunities to interact with the other judges in the circuit. If the proportion of women or minorities is high, then white male judges will have more frequent experiences interacting with their non-traditional colleagues. Compare this scenario to one in which a circuit is large, but the proportion of women and minorities is very low, and it seems less likely that these groups will be able to influence the organizational culture very much (or at least in observable ways).

< Table 5 about here >

Table 5 presents the results from a second set of analyses in which the variables for percent women and percent minority are interacted with the court's size. In the consistency models, we find support for the demographic diversity hypothesis in en banc rehearings, though not in reversals. Also as expected, ideological dispersion is positively related to a circuit's reversal rate, lending support for the hypothesis that as a circuit becomes more ideologically spread out, lower courts are more frequently reversed because they cannot follow circuit law. However, increasing racial and ethnic diversity is negatively related to the reversal rate, contrary to expectations.

In the clarity analyses, expectations derived from the bounded rationality approach are not borne out by the circuit-level data, which is not altogether surprising given the infrequency of dissent in the Courts of Appeals. The only significant variable relates to judicial diversity and does not support the hypothesis that increased

heterogeneity leads to higher dissent rates. Instead, the interaction between court size and percent women is significant and positively related to dissent rates.

The mixed outcome model yields more interesting findings. First, there is some support for the demographic diversity hypothesis in the size-percent women interaction, which is positive and significant. Secondly, the visiting judges variable performs as expected, suggesting that as a circuit relies more on visiting judges, the clarity of its law (as measured by higher proportions of mixed outcomes) is compromised. Similarly, as the docket composition in a circuit becomes more heterogeneous, circuits issue more mixed outcomes.

However, a number of variables in the mixed outcomes model are significant in the direction opposite from the one predicted. Ideological dispersion, workload, and difficulty are all negatively related to the proportion of mixed outcomes issued by a circuit, suggesting that increases in these variables are associated with legal clarity. I will address some possible explanations for these findings in the next section.

## **Discussion**

It is important to re-emphasize here that these findings represent only aggregate level circuit processes and not the behavior of any one panel or individual judge. Thus, these analyses do not control for factors that affect case-level outcomes, such as the participation of the U.S. government as a party or the decision of the lower court,<sup>20</sup> since this is not the process being modeled. Nevertheless, some important conclusions can be drawn from the preceding analyses.

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<sup>20</sup> Case level and judge-level analyses typically account for the high success rate of the U.S. government by including a dummy variable; they also control for the ideological direction of the lower court's decision since appellate panels exhibit a tendency to affirm lower court's rulings.

First, a circuit's judicial composition has consequences for its legal outcomes. The diversity of a circuit with respect to gender and race/ethnicity appears to affect circuit processes in terms of en bancs, consistent with an account of changing organizational culture producing inconsistency in law. However, reversal rates are not affected in the same way by racial and ethnic heterogeneity. This finding suggests that one dimension of legal consistency is actually improved by a more heterogeneous judicial workforce. Further analyses at the case and individual level are needed to tease out the mechanism by which this occurs. In terms of gender diversity, more integrated circuits are associated with outcomes characterized by fragmentation (i.e. higher rates of dissent and decisions to affirm in part and reverse in part). While this could be interpreted as an argument against diversifying the federal bench, it may also reflect the presence of more robust debate and deliberation in more diversified circuits. One avenue for further exploration would be to examine the rate of diversification to see if circuits "reset" after an influx of women and minority judges or if they simply adjust and adopt different norms of operation.

Second, while mixed outcomes in this analysis are used to measure the degree of clarity in the law, they may also represent one aspect of the dynamics among the judges in a circuit. Other work by Lindquist, Martinek, and Hettinger (2007) has argued that panels issue mixed outcomes as a means of accommodation, especially when a panel is not ideologically similar in its composition. This explanation is consistent with the finding that ideological dispersion in a circuit is negatively related to mixed outcomes; in other words, when judges are very ideologically far apart, there may be less cooperation

and accommodation (as evidenced by split decisions). This then has the consequence of reducing the clarity of decisions issued by the circuit.

The analysis presented here also found that workload and docket difficulty are negatively related to mixed outcomes, contrary to the garbage can hypotheses. An alternative explanation for this finding is that circuits with high workloads and difficult cases experience something akin to “information overload.” In this scenario, mixed outcomes simply take too much time because of the accommodation and bargaining involved. However, this interpretation should be qualified, given that heterogeneity in docket composition is associated with more, not fewer, split outcomes.

While the findings of this chapter are suggestive, they cannot give us a complete picture of how variation in organizational characteristics shapes the decision-making environment. To account for both macro- and micro-level processes, the next two chapters employ a multilevel modeling approach to explain how circuit characteristics condition case-level and judge-level outcomes.

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**Table 1: The U.S. Courts of Appeals**

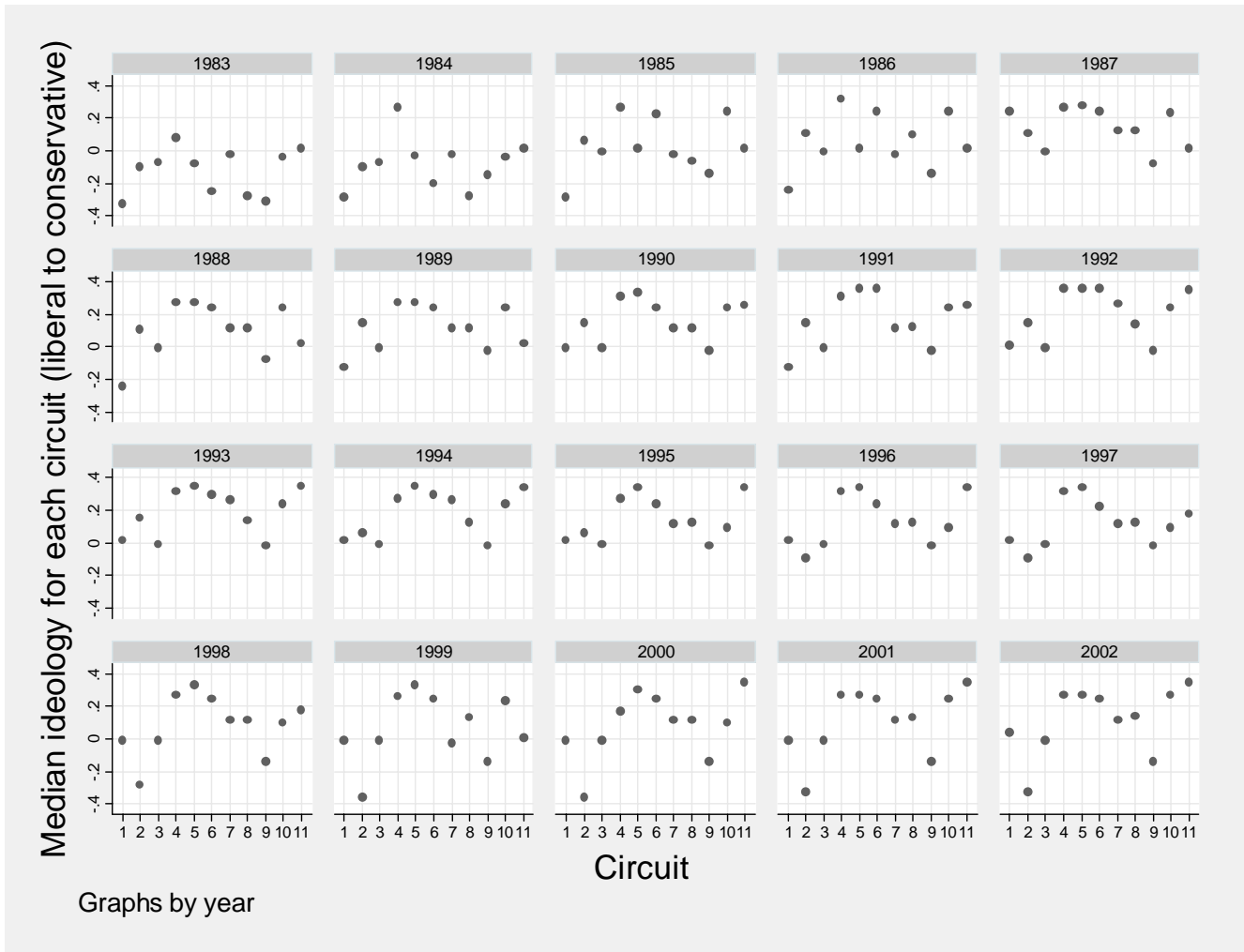
<b>Circuit</b>	<b>Year estab.</b>	<b>States in jurisdiction (as of 2002)</b>	<b>Location of circuit seat (as of 2002)</b>	<b>Average total yearly filings (1983-2002)</b>	<b>Average yearly no. of active judges (1983-2002)</b>
<b>First</b>	1891	Massachusetts, Maine, New Hampshire, Rhode Island, Puerto Rico, U.S. Virgin Islands	Boston, MA	1333	5.7
<b>Second</b>	1891	New York, Vermont, Connecticut	New York, NY	3888	12.75
<b>Third</b>	1891	Delaware, Pennsylvania, New Jersey	Philadelphia, PA	3190	12.75
<b>Fourth</b>	1891	Maryland, N. Carolina, S. Carolina, Virginia, West Virginia	Richmond, VA	3880	11
<b>Fifth</b>	1891*	Louisiana, Mississippi, Texas	New Orleans, LA	6087	16.15
<b>Sixth</b>	1891	Kentucky, Michigan, Ohio, Tennessee	Cincinnati, OH	4229	14.9
<b>Seventh</b>	1891	Illinois, Indiana, Wisconsin	Chicago, IL	2939	10.8
<b>Eighth</b>	1891**	Arkansas, Iowa, Minnesota, Missouri, Nebraska, N. Dakota, S. Dakota	St. Louis, MO	2794	10.5
<b>Ninth</b>	1891	Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, Washington, Guam, N. Mariana Islands	San Francisco, CA	7610	27.35
<b>Tenth</b>	1929	Colorado, Kansas, New Mexico, Oklahoma, Utah, Wyoming	Denver, CO	2377	10.65
<b>Eleventh</b>	1981	Alabama, Florida, Georgia	Atlanta, GA	5292	12

\*The Fifth Circuit was divided to create the U.S. Court of Appeals for the Eleventh Circuit in October 1980, pursuant to the Fifth Circuit Court of Appeals Reorganization Act.

\*\*The Eighth Circuit was divided to create the U.S. Court of Appeals for the Tenth Circuit in February 1929, pursuant to 45 USC 1346.

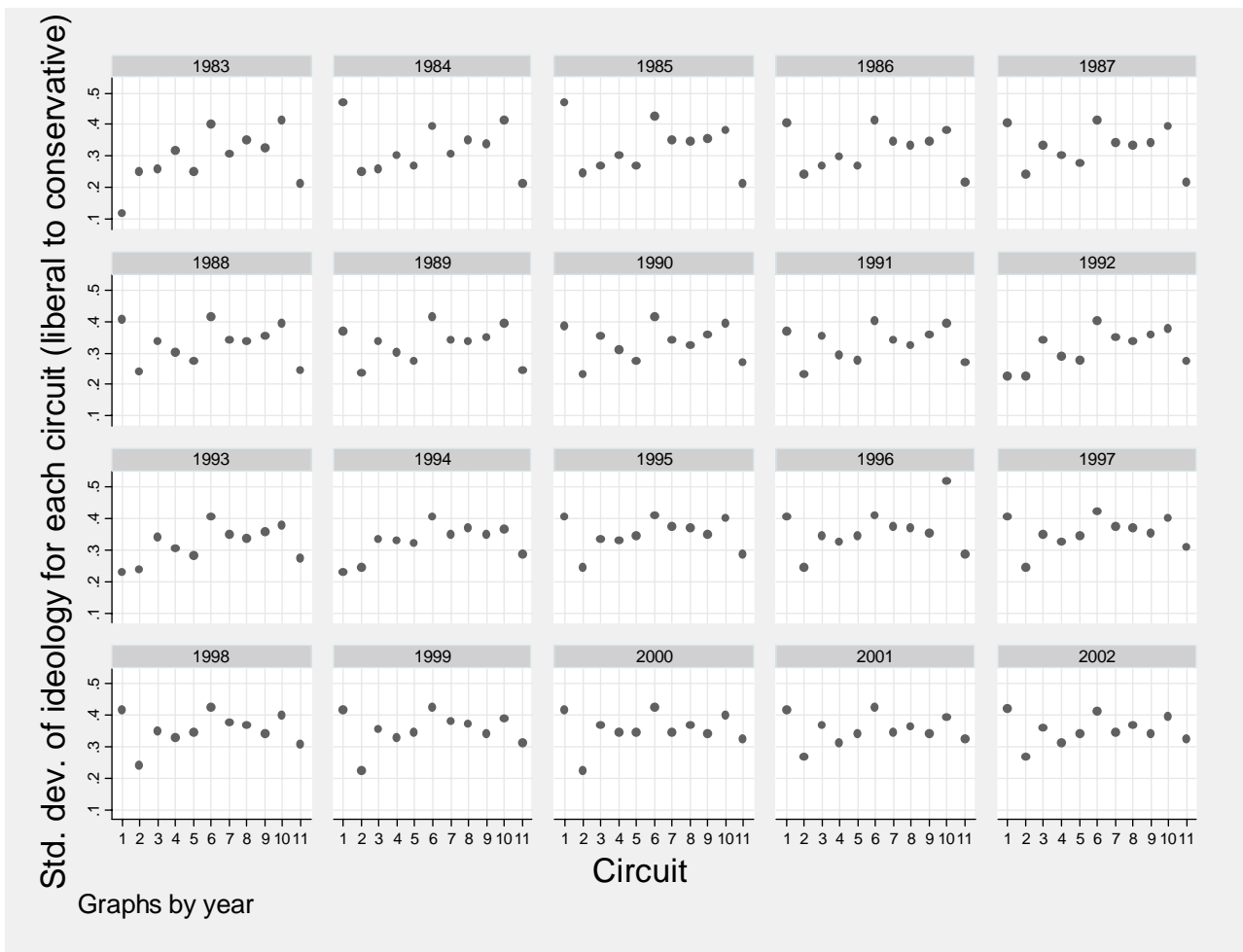
Note: The D.C. Circuit was established in 1893 in Washington, D.C. Data for this circuit are currently being compiled by the author and will be added to a future version of the analysis.

Figure 1: Median Ideology by Circuit and Year



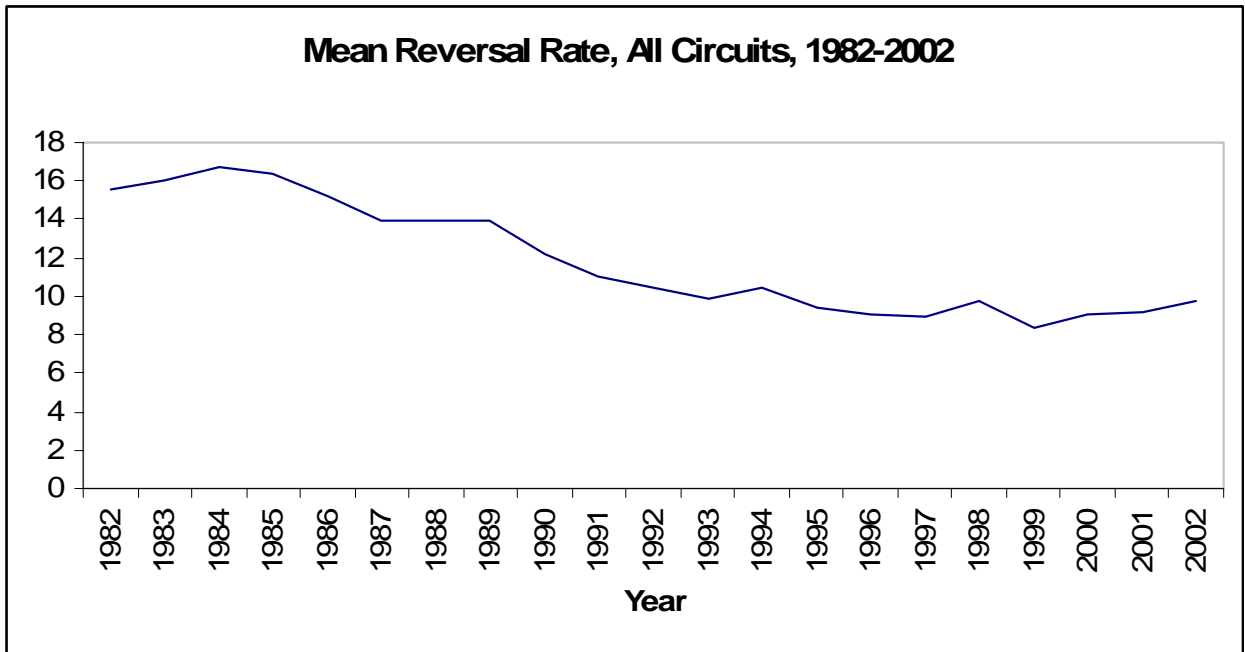
Note: Ideology scores range from -1 (most liberal) to 1 (most conservative).

**Figure 2: Standard Deviation of Ideology, By Circuit and Year**

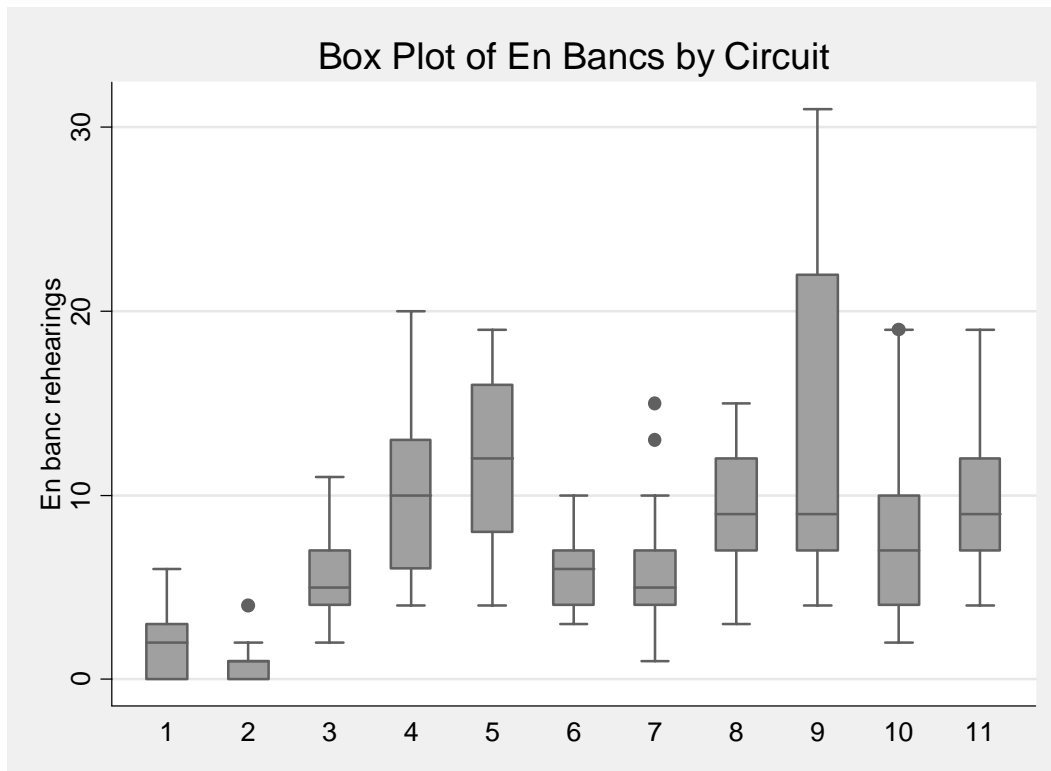


Note: Ideology scores range from -1 (most liberal) to 1 (most conservative).

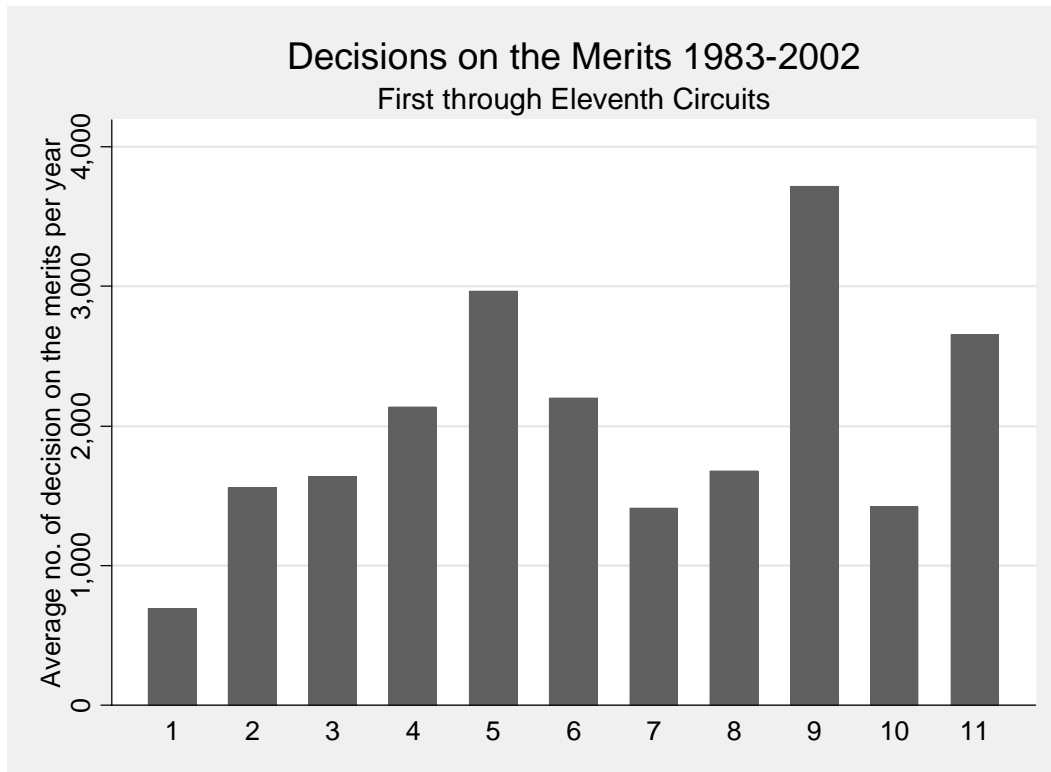
**Figure 3: Mean Reversal Rate, 1983-2002**



**Figure 4: Frequency of En Banc Rehearings**



**Figure 5: Merits Terminations**



**Table 2: Judicial Diversity in the Circuits**

CIRCUIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
First																				
<b>Total</b>	3	4	4	5	5	5	6	7	6	8	8	8	8	8	8	9	9	9	9	10
<b>Women</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
<b>Minorities</b>	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Second																				
<b>Total</b>	9	9	11	12	12	12	13	14	14	15	16	19	19	17	16	20	19	19	20	20
<b>Women</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
<b>Minorities</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2
Third																				
<b>Total</b>	6	6	8	8	12	12	12	13	13	14	14	15	15	14	14	14	15	16	16	17
<b>Women</b>	1	1	2	2	2	2	2	2	3	3	3	3	3	3	4	4	4	5	5	5
<b>Minorities</b>	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	1	1	1
Fourth																				
<b>Total</b>	9	11	11	12	11	11	11	12	14	15	16	17	17	16	16	18	17	14	14	14
<b>Women</b>	0	0	0	0	0	0	0	0	0	1	1	2	2	2	2	2	2	2	2	2
<b>Minorities</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Fifth																				
<b>Total</b>	15	16	17	17	17	17	17	19	21	19	18	20	21	21	21	21	21	20	21	21
<b>Women</b>	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	3	3
<b>Minorities</b>	0	0	0	0	0	0	0	0	1	1	1	3	3	3	3	3	3	3	3	3
Sixth																				
<b>Total</b>	10	11	14	16	16	16	16	17	19	19	20	20	22	22	24	23	23	23	23	24
<b>Women</b>	1	1	1	1	1	1	1	1	2	2	3	3	4	4	4	4	4	4	4	5
<b>Minorities</b>	2	2	2	2	2	2	2	2	2	2	2	2	3	3	4	4	4	4	4	4
Seventh																				
<b>Total</b>	8	8	10	11	12	12	12	12	12	13	13	13	14	14	14	14	15	14	14	14
<b>Women</b>	0	0	0	0	0	0	0	0	0	1	1	1	2	2	2	2	3	3	3	3
<b>Minorities</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Eighth																				
<b>Total</b>	9	9	10	11	12	12	12	13	14	15	15	16	16	16	16	17	16	17	18	19
<b>Women</b>	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1
<b>Minorities</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ninth																				
<b>Total</b>	21	24	28	29	30	30	31	32	33	33	33	34	34	35	35	38	39	44	43	43
<b>Women</b>	3	4	4	4	4	4	5	5	5	5	5	5	5	5	5	8	7	9	9	9
<b>Minorities</b>	5	5	5	5	5	5	6	6	6	6	6	6	6	6	6	6	6	7	7	7

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Circuit (con't)																				
Tenth																				
<b>Total</b>	7	7	11	11	10	12	12	12	12	13	13	14	17	17	17	17	16	15	16	17
<b>Women</b>	1	1	2	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1	1	1
<b>Minorities</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
Eleventh																				
<b>Total</b>	13	13	13	13	14	15	15	16	16	18	18	19	19	19	20	20	21	18	18	18
<b>Women</b>	1	1	1	1	1	1	1	1	1	2	2	3	3	3	4	4	4	4	4	4
<b>Minorities</b>	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1

Source: Auburn judges dataset; Federal Judicial Center website.

\*Figure does not include vacant judgeships

**Table 3: Dissent Rate, Reversal Rate, and Number of En Banc Hearings**

CIRCUIT	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
First																				
<b>Dissent</b>	3.37	1.62	3.37	2.65	2.76	3.75	2.41	2.34	1.8	2.02	2.34	1.2	2.04	1.03	.86	2.7	.98	2.15	.86	1.71
<b>Reversal</b>	18.6	20.6	29.4	20	23.1	16.1	18.2	15	14	8.3	15	7.4	10.2	4.2	5.2	5.1	6.2	4.9	7.3	12.8
<b>En banc</b>	0	2	0	1	1	1	5	4	5	3	4	0	0	3	3	3	2	0	4	0
Second																				
<b>Dissent</b>	3.94	3.76	3.11	2.8	3.2	3.43	4	3.69	3.13	3	1.88	1.54	2.17	1.96	1.36	2.09	1.61	2.34	1.03	1.49
<b>Reversal</b>	13.7	16.4	13.9	11.9	11.9	14.6	13.7	10.5	4.5	11.1	10.5	8.9	7	5.9	5.2	2.3	1.8	2.2	1.7	1.7
<b>En banc</b>	1	0	1	1	1	0	0	0	0	2	2	0	1	1	1	2	2	0	1	4
Third																				
<b>Dissent</b>	4	4.12	4.18	4.91	4.39	3.37	3.11	2.64	3.15	2.6	2.64	2.83	2.64	2.42	2.83	2.13	2.58	2.53	2.17	1.88
<b>Reversal</b>	13.8	13	18.1	15	15	13.4	12	12.1	9.7	11.3	10.1	11.3	10.6	11.5	9.1	9.7	9.8	11.4	10.5	12.5
<b>En banc</b>	5	3	5	5	8	4	4	2	2	7	5	9	9	11	6	4	6	6	2	7
Fourth																				
<b>Dissent</b>	7.8	6.67	2.7	2.98	2.91	3.09	2.56	2.18	2.43	1.84	2.08	1.66	2.29	2.25	1.76	1.48	1.78	1.9	1.34	1.64
<b>Reversal</b>	20.8	22.2	13.9	12.2	10.7	10	10.6	9.5	11.1	10.9	8.1	8.1	5.7	5.7	7.7	7.3	7.2	8.3	7	6
<b>En banc</b>	6	6	18	6	13	19	11	13	9	10	5	10	20	19	9	19	6	11	7	4
Fifth																				
<b>Dissent</b>	5.26	3.35	2.62	2.44	2.56	2.01	2.25	1.65	1.27	1.33	1.43	1.37	1.16	1.29	1.28	1.89	1.72	1.18	.87	1.22
<b>Reversal</b>	17.5	18.9	17.2	17.8	14.3	12.7	15.2	13.6	12.8	12.4	12.5	10.3	9.4	11.8	11.4	19.5	11	12.2	8.8	11
<b>En banc</b>	11	19	13	18	10	17	5	10	8	16	6	5	18	15	15	9	17	4	8	13
Sixth																				
<b>Dissent</b>	5.03	5.54	3.52	3.74	3.72	4.41	3.12	3.01	3.31	3.23	3.51	2.7	2.32	2.82	3.45	3.45	3.09	3.21	3.39	3.26
<b>Reversal</b>	15.7	17.4	17.7	15	13.3	14.9	13.5	12.7	10.7	11.8	11.4	12	11	11.2	11.2	11.2	9.9	10	10.9	9.9
<b>En banc</b>	3	9	7	5	7	6	7	4	6	7	10	5	6	6	6	6	6	4	4	4
Seventh																				
<b>Dissent</b>	5.95	4.65	7.14	5.26	4.05	4.64	3.74	4.16	4.44	3.8	4.17	3.64	2.46	2.27	2.3	2.47	2.7	3.07	2.04	2.78
<b>Reversal</b>	15.8	12.4	12.4	12.7	12.1	14	16.8	12.1	13.3	11.3	11.9	13	11.6	12.2	11.9	13.1	9.1	13.4	14.5	14
<b>En banc</b>	8	5	3	7	8	7	10	7	15	2	6	5	4	5	3	1	13	4	5	3
Eighth																				
<b>Dissent</b>	8.7	7.77	5.13	7.08	3.86	6.76	6.28	6.18	4.94	5.14	4.66	4.39	4.04	4.52	4.26	3.93	3.64	3.47	3.45	3.31
<b>Reversal</b>	14.7	16.5	12.5	14	12.5	11	12	9.9	10.3	8.5	8.7	11.2	8.9	8.9	9.9	9.7	9.1	8.2	8.8	8.2
<b>En banc</b>	5	15	15	9	11	12	14	7	15	9	10	6	9	9	5	3	13	9	5	9
Ninth																				
<b>Dissent</b>	3.41	4.49	4.37	4.63	4.34	3.85	2.83	3.5	3.3	2.92	2.4	2.51	2.56	2.38	2.56	2.61	2.92	2.96	2.88	3.2
<b>Reversal</b>	16.9	16.5	18.2	15.6	13.7	17.5	16	12.3	10.3	8.9	6.7	7.8	9.3	9.6	7.7	7.3	8.4	9.2	9.4	11.1
<b>En banc</b>	4	14	6	5	7	9	7	6	8	13	10	7	8	25	16	22	22	23	31	22

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
Tenth																				
<b>Dissent</b>	2.49	2.31	4.28	2.12	1.85	2.12	3.01	1.88	1.47	1.91	2.19	1.69	1.35	1.52	1.89	2.03	1.93	1.52	2.04	1.98
<b>Reversal</b>	11.5	16.3	14	15	13.1	12.5	13.5	13.3	11.5	8.9	12.7	11.9	11	10.2	11.1	11.4	10.2	10.3	12.2	10.2
<b>En banc</b>	3	16	4	12	8	13	17	19	10	7	7	4	4	4	5	3	7	2	4	7
Eleventh																				
<b>Dissent</b>	4.71	4.45	3.38	2.13	2.93	2.78	2.1	2.51	2.01	2.12	1.12	1.19	.86	1.08	.94	1.13	.89	.59	.67	.59
<b>Reversal</b>	17.5	13	13.4	18.1	13.4	15	11.4	12.9	12.9	11.3	10.3	12	9.2	8.9	7.9	10.8	9.9	9.8	10.1	9.7
<b>En banc</b>	10	14	8	19	10	16	7	12	4	14	9	11	11	7	7	6	8	9	8	4

\* Calculated as percent of all merits terminations.

**Table 4: GEE population-averaged models  
First through Eleventh circuits (1983-2002)**

Circuit Characteristics	Consistency models				Clarity models			
	<i>Model 1: En banc rate</i>		<i>Model 2: Reversal rate</i>		<i>Model 3: Dissent rate</i>		<i>Model 4: Mixed outcomes</i>	
	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>
<b><i>Judge variables</i></b>								
Pct women	-.22 (1.04)	.83	.260 (1.02)	.798	-1.16 (.541)	.032	-.530 (.350)	.130
Pct minority	-2.46 (1.14)	.03	.626 (.576)	.277	.038 (.713)	.957	1.35 (.553)	.015
Circuit size	-.022 (.027)	.42	.004 (.019)	.858	.058 (.024)	.014	-.018 (.013)	.178
Std. dev. of circuit ideology	-1.45 (1.88)	.44	1.80 (.818)	.027	-.496 (.805)	.538	-1.93 (.410)	.000
Pct visiting	-.17 (.874)	.85	-.958 (1.40)	.492	.188 (.543)	.729	1.87 (.918)	.042
<b><i>Case variables</i></b>								
Total filings	.000 (.000)	.513	.000 (.000)	.836	-.000 (.000)	.271	-.000 (.000)	.004
Pct criminal & prisoner petitions	-.745 (.811)	.358	-.361 (.683)	.597	-.356 (.477)	.455	-2.19 (.656)	.001
Task variability	-2.46 (3.63)	.498	-2.14 (1.59)	.179	-.796 (2.29)	.728	7.08 (3.32)	.033
Constant	-4.16 (.966)	.000	-1.87 (.433)	.000	-3.03 (.299)	.000	-5.13 (.587)	.000
<i>N</i>	207		220		220		214	
Chi <sup>2</sup>	31.87		60.68		179.02		121.23	
	Model sig. at p < .05		Model sig. at p < .05		Model sig. at p < .05		Model sig. at p < .05	

Notes: \*p < .05

Output for dummy variables for years omitted (1983 used as baseline).

**Table 5: GEE population-averaged models with interaction terms  
First through Eleventh circuits (1983-2002)**

<b>Circuit Characteristics</b>	<b>Consistency models</b>				<b>Clarity models</b>			
	<i>Model 1: En banc rate (logit trans.)</i>		<i>Model 2: Reversal rate (logit trans.)</i>		<i>Model 3: Dissent rate (logit trans.)</i>		<i>Model 4: Mixed outcomes (logit trans.)</i>	
	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>	<i>Coef. (SE)</i>	<i>p- value</i>
<b><i>Judge variables</i></b>								
Pct women	-8.81 (2.58)	.001	-3.22 (2.36)	.172	-3.83 (1.34)	.004	-4.61 (.800)	.000
Pct minority	-10.2 (3.25)	.002	2.88 (1.25)	.021	-.912 (1.33)	.492	.330 (1.21)	.786
Circuit size	-.199 (.028)	.000	-.006 (.027)	.823	.018 (.022)	.431	-.074 (.033)	.025
Std. dev. of circuit ideology	-1.30 (1.66)	.435	1.81 (.780)	.021	-.163 (.919)	.859	-2.17 (.538)	.000
Pct visiting	-1.16 (1.10)	.291	-1.29 (1.33)	.332	-.097 (.451)	.830	1.90 (.642)	.003
Size*pct women	.746 (.178)	.000	.323 (.226)	.153	.234 (.099)	.019	.385 (.080)	.000
Size*pct minority	.607 (.241)	.012	-.207 (.083)	.013	.078 (.136)	.566	.038 (.132)	.771
<b><i>Case variables</i></b>								
Total filings	.000 (.000)	.938	.000 (.000)	.880	-.000 (.000)	.104	-.000 (.000)	.010
Pct criminal & prisoner petitions	-.610 (.690)	.376	.140 (.730)	.848	-.271 (.482)	.574	-1.74 (.473)	.000
Task variability	-1.67 (2.97)	.573	-2.16 (1.47)	.143	-.772 (2.11)	.714	7.55 (3.23)	.019
Constant	-2.15 (.685)	.002	-1.86 (.372)	.000	-2.66 (.387)	.000	-4.66 (.350)	.000
<i>N</i>	207		220		220		214	
Chi <sup>2</sup>	706.06		132.96		878.96		196.23	
	Model sig. at p < .05		Model sig. at p < .05		Model sig. at p < .05		Model sig. at p < .05	

Notes: \*p < .05

Output for dummy variables for years omitted (1983 used as baseline).