# The Relational Foundations of Policy Impact[*]

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Because most decisions about policy adoption require preference aggregation, it is difficult to determine how and when an individual can influence policy change. Examining how frequently a judge is cited by peers who are under no legal obligation to do so offers insight into this question. We theorize that both absolute and relational characteristics affect the policy effect of a judge's opinions. First, by nature of their background, some judges are, on average, more influential. Second, judges tend to cite opinions written by colleagues who share similar background characteristics. We test these hypotheses using an original dataset of discretionary citations to all published search and seizure cases from federal circuit courts and state high courts from 2000 to 2010. Characteristics of the cited judge predict influence, but it is the relationship between judges that constitutes the primary foundation of a judge's impact on policy in other jurisdictions.

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A fundamental aspect of the study of politics concerns the ability of political actors to affect the course of legal and policy development. For example, scholars of state politics have long been interested in the patterns of policy diffusion across state lines (Walker 1969), and scholars of legislative politics have sought to determine whether some types of legislators have more success at passing laws than others (Bratton and Hedge 1996). Likewise, scholars of law and courts have long sought to uncover the factors that lead some courts to have a more pronounced influence on legal development across state lines (Caldeira 1985). These studies face a common difficulty: the aggregate nature of policy decisions often obscures how and when an individual can influence policy. For example, while the literature on legislative policy diffusion illustrates that geographic proximity between two states is positively associated with one state adopting the policy of another state, the complexities of the legislative process (to say nothing of interstate variation in those processes) obscure the effect that individual legislators can have on affecting policy adoption.

Appellate judges offer an excellent opportunity to examine the factors that drive individual influence over policy because they make important policy decisions, yet produce a considerable amount of work product on an individual basis. Even though appellate judges sit on collegial courts, most judicial opinions are crafted largely by a single, identified, author. While some legal precedents are binding on these judges, they have enormous discretion to draw upon nonbinding judicial precedents, sometimes adopting the views of those opinion authors or otherwise using those authors' views to bolster their own arguments. Examining such citations to discretionary precedents represents a unique opportunity to understand how individual-level characteristics of elites (and the relationships between pairs of elites) affect the decisions they make about policy adoption while largely sidestepping issues of preference aggregation.[1]

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[1]To be clear, judges do often bargain over opinion content (Maltzman, Spriggs and Wahlbeck 2000); however, studies suggest that citations reflect the characteristics of the opinion author (Choi and Gulati 2007).

In spite of this opportunity, we currently know comparatively little about the factors that lead certain types of judges to have more influence over policy than others (but see Landes, Lessig, and Solimine 1998; Klein and Morrisroe 1999). The existing literature on the topic has focused primarily on explaining variation in judicial influence based on the characteristics of a judge, leaving aside the possibility that a judge's influence may not be constant across her peers. The policy diffusion literature has shown that states tend to adopt the policies of states that are similar to them geographically, ideologically, or culturally (Hinkle 2015a; Volden, Wiseman and Wittmer 2013). We also know that at the aggregate level state high courts are more likely to cite other such courts with similar characteristics (Caldeira 1985; Hinkle and Nelson 2016). So too may judges be influential among one peer group but not another.

Understanding the determinants of individual-level policy influence is important because it may help shed light on the consequences of diversity. For example, if the work of certain types of policymakers is systematically disregarded, then they are limited in their ability to influence policy. Yet, by examining how influence varies across pairs of policymakers, we can begin to understand whether any (presumably unconscious) biases that exist against particular types of policymakers might be rectified by additional diversity. Thus, uncovering the determinants of policy influence at the policymaker-dyad level is vital to developing our understanding of the importance of diversity.

To this end, we develop a theory of judge-level influence on legal development based on the fundamental idea that citation patterns are a function of both relational and reputational concerns (Caldeira 1985). Drawing on the citation practices literature we expect that a judge's reputation will influence how frequently they are cited. Consequently, absolute factors such as a judge's education, demographics, and professional experiences make them more or less likely to be cited by any judge. Furthermore, drawing on the political science and psychological literatures on policy diffusion and cognitive biases, we theorize that the relationship between two judges also effects citation at the dyadic judge-to-judge level. We

expect that judges are more likely to cite other judges who are more proximate ideologically and geographically and who share similar educational, demographic, and professional backgrounds.

We test our theory by examining discretionary horizontal citations among appellate judges. Specifically, we count the number of times a judge on a U.S. Court of Appeals is cited by each judge on another U.S. Court of Appeals and the number of times a judge on a state supreme court is cited by each judge on another state supreme court. These citations are an ideal arena to study judicial policy influence because they are to opinions that are not legally binding on the opinion author, meaning that she has no legal obligation to cite or acknowledge those precedents. Thus, judges who amass large amounts of these citations play an outsized role in legal development (Choi and Gulati 2008). Moreover, a judge's influence outside his own jurisdiction is analogous to the influence of other political actors. Just like a legislator considering voting for a bill sponsored by a particular colleague, there are no outside legal constraints on a judge's decision whether to cite an opinion written by a peer in a sister court.

Our original datasets (one each for federal and state judges) include citations to a core dataset of published search and seizure opinions from 2000-2010. This core dataset includes 7,604 opinions from both federal circuit courts and state high courts. Through the end of 2013 there were 20,671 discretionary citations to those opinions by peer courts.[2] These unique data enable us to examine citation patterns in both federal and state courts that wield considerable policymaking power. The results provide evidence that both absolute and relational characteristics influence how much impact a judge has on legal development in parallel jurisdictions. This evidence is particularly consistent in the federal courts, and the effect of relational characteristics is more pronounced than the effect of the absolute

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[2]By "discretionary" we mean citations to a precedent that is not legally binding under the doctrine of stare decisis. For example, for the Idaho Supreme Court a citation to the Oregon Supreme Court is discretionary while a citation to the U.S. Supreme Court is not.

characteristics of a cited judge. These results suggest that understanding an individual's power to influence policy requires accounting for the object of that influence.

In addition to shedding light on the process of policy impact more broadly, our results provide an interesting complement to existing research that suggests the effects of judicial identity are limited to cases in which identity is a salient issue (Boyd, Epstein and Martin 2010; Kastellec 2011). While background may have only minor effects on the outcomes of judicial decisions, our results indicate that judicial background characteristics play a broader role in discretionary citation and, by extension, who has an enhanced (or reduced) ability to affect legal development. Moreover, since these patterns emerge in decisions that are not constrained by stare decisis, there is reason to believe that similar dynamics may be at play among other political actors. As a result, our findings have implications for how continued diversification may influence the development of policy in unexpected ways.

## Citations and Legal Development

Since at least the work of Mott, Albright and Semmerling (1933), scholars have recognized the importance of judicial citation practices as a window into patterns of policy adoption among elites as well as the development of the law. As Hansford and Spriggs (2006) note, "while precedent can operate as a constraint on the justices' decisions, it also represents an opportunity. It represents a constraint in that justices may respond to the need to legitimize their policy choices and thus gravitate toward some precedents rather than others. It represents an opportunity in the sense that justices can utilize precedent to constrain other factors, thereby promoting the outcomes they prefer" (13). In other words, precedent affects legal development by both enabling judges to create legal rules that will bind judges in future cases while limiting a judge's own ability to change existing rules, since that same judge is also bound by precedent. In this way, legal opinions are policy tools: judges have the opportunity to craft legal rules that bind future judges, and judges simultaneously draw upon the policy insights of other judges, as stated in past precedents, to do so. In this way,

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legal rules diffuse both within and across courts, just as policies diffuse in other areas of politics (Walker 1969).

The opportunities presented to a judge to impact legal and policy development are created by the norm of stare decisis and the institutional structure of the judiciary. At the most basic level, citations may be *vertical* or *horizontal*. Vertical citations are to higher or lower courts within the same judicial hierarchy as the citing court while horizontal citations are to peer courts at the same level of the judicial hierarchy. Thus, a citation from the U.S. District Court for the Eastern District of Texas to the Fifth Circuit (which includes the state of Texas) is a vertical citation, as is a citation from the Fifth Circuit to the U.S. Supreme Court. A citation from the Fifth Circuit to the Ninth Circuit is, by contrast, a horizontal citation. The same logic follows for state courts. A citation from the Iowa Supreme Court to the Florida Supreme Court is a horizontal citation while a citation by the Iowa Supreme Court to the Iowa Court of Appeals is a vertical citation.

A second distinction is between *binding* and *discretionary* citations. Judges are bound by the decisions of higher courts and prior decisions of their own court but not by the decisions of lower courts, courts that are horizontal to them in the judicial hierarchy, or courts in other judicial hierarchies (Aldisert 1989). For example, when writing opinions Diane Wood, the chief judge of the Seventh Circuit Court of Appeals, is bound by the opinions written by other Seventh Circuit judges as well as by U.S. Supreme Court decisions. She is not, however, bound by the decisions of judges on the Ninth Circuit. Likewise, Roy Moore, the Chief Justice of the Alabama Supreme Court, is bound by decisions of the U.S. Supreme Court (which can review state courts on federal constitutional issues) and prior Alabama Supreme Court decisions but not by the decisions of the lower Alabama courts or by decisions of courts in other states. Judges may choose to include discretionary citations in their opinions, but they are not compelled to follow those precedents as they are compelled to follow binding cases.

These distinctions among types of precedents are important because they provide a window into legal and policy development among judges. Indeed, empirical evidence suggests

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that theoretical legal constraints can affect judges' citation practices.[3] Most notably, Hinkle (2015b) finds that judges on the U.S. Courts of Appeals face significant constraint in their decisions to negatively treat binding precedents but have more freedom to negatively treat nonbinding precedents. However, because judges have wide discretion to decide which cases they will cite (Cross et al. 2010), there is scant evidence of a precedent's status as binding or not influencing judges' choices about which cases to cite (Hinkle 2015b). Thus, citations tend to represent the ideology of the opinion author (Choi and Gulati 2007), and opinion authors use discretionary citations to craft an opinion that advances their policy preferences (Epstein et al. 1998). As a result, ideological disagreement with a precedent has a powerful effect on judges' citation decisions (Hansford and Spriggs 2006; Johnson 1987; Spriggs and Hansford 2002).

Of course, opinions are written by judges, and some of those judges are more influential than others (Cross and Spriggs 2010).[4] It is surprising, then, that most studies focus on why some *opinions*, and not *judges*, are more influential than others, especially since judges have broad discretion to shape opinions in ways that affect legal and policy development. Cross and Spriggs (2010) argue that "Not every case may be transformed into a landmark decision, but there is surely the ability at the margin for a Justice to write a decision that may be more or less significant" (490). In other words, judges may use their ability to craft opinions to influence legal development to a greater (or lesser) extent.

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[3]There are some nuanced exceptions to the doctrine that courts are bound by their own precedents (Lee III 2003). Moreover, stare decisis may not be particularly constraining when appellate oversight is very unlikely.

[4]Another possible approach is to understand why some *courts* are more influential than others. Studies of state supreme courts have taken up this challenge (Caldeira 1985; Hinkle and Nelson 2016) as has at least one study of the U.S. Courts of Appeals (Landes, Lessig and Solimine 1998).

Indeed, judges' choices about which cases to cite are meaningful because they reflect how much influence the authors of those cases have over legal and policy development. As opinions are cited more frequently, they become more deeply embedded in the web of law, thereby increasing their importance to future judges and opinions (Fowler et al. 2007). Conversely, opinions that are rarely cited have little opportunity to influence future cases. Indeed, when the U.S. Supreme Court is overruling precedent, they typically do so using an opinion that is more deeply grounded in influential decisions (Fowler and Jeon 2008). Moreover, citation patterns are such strong determinants of an opinion's eventual influence that they can be used to predict an opinion's influence at the time it is issued (Fowler and Jeon 2008). Thus, citations provide a way to gauge the influence a decision has over legal and policy development (Posner 2007; Kosma 1998).

Put differently, we argue that judges whose opinions are cited more often have a larger influence on legal policy than judges whose opinions are cited less often. While acknowledging the well-known criticisms of citation counts (Klein and Morrisroe 1999), we support our use of citation counts as a measure of influence in several ways. First, citation to a judge's opinion indicates that another judge has found that judge's argument worthy of note, which is one indicator of influence. Second, citation decisions involve considerable discretion, meaning that judges have wide authority to determine which legal arguments to acknowledge with citation (Cross and Spriggs 2010). As Judge Posner (2007) writes, "precedent projects a judge's influence more effectively than a decision" (585). Finally, a conception of citation as a measure of impact fits well with the academic conception of the term, with more citations to an academic article or book being seen as an indicator that it is more influential. Indeed, the discussion of potential U.S. Supreme Court nominees includes discussion of their citation counts (e.g. Posner 2009).

Moreover, the institutional rules that make some precedents binding while others are nonbinding present a unique window into policy adoption at the level of the individual policymaker. Whereas other studies of policy diffusion must examine the adoption of policies

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at the level of the state or the chamber, the fact that judges both control the content of the opinions they author and are under no legal obligation to draw upon policies adopted by their sister courts means that an examination of judge-to-judge citation patterns presents a unique opportunity to sidestep the issues traditional policy diffusion studies present with regard to preference aggregation while enabling us to assess the effects of diversity (an individual-level trait) on policy influence.

To be clear, we are not the first to examine the determinants of judicial impact. Landes, Lessig and Solimine (1998) examine discretionary horizontal citations to U.S. Courts of Appeals judges to examine judicial influence; their findings indicate that judges who graduated from Harvard or Yale are particularly likely to have high citation counts while there is no difference in citation counts based upon judges' demographic characteristics. Likewise, Klein and Morrisroe (1999) examine the prestige of judges on the U.S. Courts of Appeals, using as their measure of prestige discretionary horizontal citations that reference the opinion author by name, finding that judicial prestige leads to the adoption of legal rules by future panels, suggesting that prestige can fuel legal development. Studies of U.S. state judges that attempt to measure influence (Choi and Gulati 2008) tend to focus on the differences between elected and appointed judges in an effort to determine whether elected judges are of lower quality than appointed judges; they conclude that appointed judges are cited more often.

## Relation and Reputation

Existing studies focus upon characteristics of the cited judge without taking into account the fact that citation patterns may be influenced by the connections or similarities between two judges, be those demographic, political, or professional. Thus, by examining the dyadic relationship between a judge and each of his peers across the nation, we can determine the extent to which judicial influence is a result of a judge's absolute, or reputational, characteristics and the extent to which judicial influence is based on more ephemeral, dyadic relationships that one judge has with another. Such dyadic relationships may be particularly important

inasmuch as some characteristics of judges—for example race or gender—may be historically underrepresented on the bench. To this end, we theorize broadly that variation in judicial influence is a function of reputational and relational characteristics.

Absolute characteristics are the demographic, professional, and educational attributes of a cited judge (Caldeira 1985). We argue that two sets of absolute characteristics—prestige and demographics—affect the likelihood that a judge is cited. First, career paths in the legal profession are strongly related to prestige in its many forms (Galanter 1999). Two indicators of prestige, graduation from a top law school and the completion of a judicial clerkship, are particularly important throughout the legal profession, including among judges (Redding 2003; Simon 1986). At the state level, legal scholars and interest groups have long questioned whether elected judges are lower quality judges than their appointed peers (Choi, Gulati and Posner 2008). Proponents of "merit selection" systems argue that judicial elections produce less qualified judges (Caufield and Nelson 2009). Likewise, political scientists have argued that judges may specialize in particular issue areas (Maltzman, Spriggs and Wahlbeck 2000), suggesting that a judge may build prestige in a particular issue area, either though experience as a judge or through prior professional experience in that issue area. For example, judges may view their peers with prior prosecutorial experience as particularly well-qualified to write on criminal law issues (Tate 1981).

Given the emphasis the legal profession places on professional prestige, the expected relationship between professional prestige and the number of citations a judge receives from her peers is straightforward: prestige leads to influence.[5] When a judge seeks a case to cite, she will be more likely to cite a prestigious colleague. There is some evidence of this effect in prior studies: Landes, Lessig and Solimine (1998) note that prior experience as a law

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[5]We follow the distinction made by Klein and Morrisroe (1999): "We use the term 'prestige' in its broad and familiar sense to mean something like the amount of respect, regard, or esteem one enjoys among one's fellows.... By 'influence' we mean the extent to which the actions of one person have an effect on the views or behavior of others" (371-372).

professor or a diploma from a prestigious law school correlates with receiving more citations. Thus, we hypothesize that judges with more prestigious backgrounds will be cited more than judges with less prestigious backgrounds.

Second, nonprofessional demographic characteristics of an opinion author may also influence the likelihood that she is cited. Existing evidence regarding this proposition is sparse, though Landes, Lessig and Solimine (1998) find no evidence that white or male judges are more influential than their female or minority counterparts. Still, a robust literature on the determinants of academic citation patterns suggests that demographic characteristics may play a substantial role in determining influence. For example, Maliniak, Powers and Walter (2013) demonstrate that, even holding constant venue, topic, rank, and institutional affiliation, women are cited less than men in academic studies of international relations. This finding is largely robust across academic disciplines.[6] Therefore, we expect that female judges and minority judges will be cited less than white male judges.

We anticipate that the identity of the citing judge will also play a role, though we expect that the citing judge's identity only matters dyadically. That is, we do not expect female or minority judges to cite precedents at a different rate overall than their white, male counterparts. A major research project in the study of judicial politics has sought to understand how the demographic and professional characteristics of judges affect the choices they make (Gibson 1981; Tate 1981). Recent work in this area indicates that, on the merits, judicial identity does matter, albeit only in issue areas that implicate those identities (Boyd, Epstein and Martin 2010; Kastellec 2011; Glynn and Sen 2015). Extended to the study of citation practices, this literature suggests that direct effects of judicial identity on a citing judge's citation patterns are likely to be difficult to detect in most issue areas.

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[6]See, for example, Sonnert (1995) on biology, Long (1992) on biochemistry, Symonds et al. (2006) on ecology, and Peñas and Willett (2006) on library and information science. However, Ayres and Vars (2000) provide evidence that law review articles written by women are cited more frequently than similar articles written by white men.

However, relative characteristics may affect citation patterns (Choi and Gulati 2008). Judges may be predisposed to cite other judges who are "like them." Support for this expectation comes from a number of disparate literatures. First, the literature on academic citation patterns supports this expectation.[7] Greenwald and Schuh (1994), studying citation practices in 15 disciplines, find that scholars are 40% more likely to cite an article written by a scholar who shares their ethnicity than one who does not. Likewise, Mitchell, Lange and Bruns (2013), studying citation patterns in international relations, find that female authors are more likely to cite female scholars than are male authors.

Second, the literature on cognitive biases in social psychology suggests that individuals tend to seek out and use information that fits with their prior expectations as stronger evidence, a phenomenon called prior attitude effects; likewise, confirmation bias suggests that individuals seek out information that confirms their preexisting schemas (Braman and Nelson 2007; Taber and Lodge 2006). To the extent that judges view individuals who share their background characteristics as "like them," social psychology suggests that they should be more likely to look to similar judges to cite.[8]

Third, some studies of judicial influence suggest that ideology and social interactions affect judicial influence. Choi and Gulati (2008) find that judges have a greater tendency to cite judges with whom they are ideologically predisposed to agree. Blanes and Leaver (2013) find that citations are more common among judges who work together, and Choi and Gulati (2008) find that judges cite those judges who cite them frequently, creating "mutual citation clubs." Finally, the literature on policy diffusion has long found that policies tend to diffuse across state lines more rapidly between states that are closer ideologically, geographically,

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[7]Fowler et al. (2007) note other similarities between legal citation networks and academic citation networks.

[8]Along similar lines, voters give higher ratings to incumbent legislators who share their demographic characteristics (Branton, Cassese and Jones 2012).

and/or culturally (Berry and Berry 1990; Hinkle 2015a; Choi, Gulati and Posner 2009). Again, the expectation is that sharing discrete characteristics should be positively associated with citation.

Of course, these relational effects could manifest themselves in a number of different ways. The most obvious of these relationships is ideology. If citations do affect legal development, then we should expect judges to take advantage of their opportunity to shape legal development by citing ideologically compatible judges more often. Thus, liberal judges should be predisposed to cite other liberal judges and conservative judges should be more likely to cite other conservative judges.

We expect other types of relational effects to influence citation as well. For example, familiarity might also lead judges to cite particular colleagues. New federal judges attend a two-week training session (known colloquially as "Baby Judges School") together with other new federal judges from around the country. Judges who attend together may get to know each other on a personal level and become more likely to cite each other. Likewise, as the policy diffusion literature suggests, we might expect that judges whose chambers are more closely located in geographic space may be more likely to have met and, as a result, to cite each other's opinions. Professionally, judges may be predisposed to cite peers who were law school classmates (or who simply graduated from the same law school) or who clerked for the same court. Demographically, female or minority judges may seek to increase the influence of peers who share their demographic characteristics by citing them more frequently. Thus, we hypothesize that judges are more likely to cite judges who are closer to themselves in terms of ideology, geography, and background characteristics.

## Data and Research Design

Each year appellate courts in the United States issue many thousands of opinions that, in turn, contain a vast quantity of citations. In order to construct an original dataset of citations that is tractable, we begin by focusing on one broad issue area: Fourth Amendment search

and seizure law. This topic incorporates a discrete set of legal issues that are routinely raised in both state and federal litigation, and relevant cases can be identified by the simple expedient of finding cases that cite the Fourth Amendment of the United States Constitution or its state constitution equivalent.[9] We further narrow our focus to examine two types of appellate courts that play a key role in policy formation: state high courts and federal circuit courts. Using Lexis, we collected every published search and seizure opinion from such a court between 2000 and 2010.[10] After excluding all opinions that do not address the merits or do not identify the author, the resulting dataset contains 7,604 cases.

After identifying this core group of cases, we used *Shepard's Reports* to obtain a list of all citations to each case as of December 31, 2013. We next coded each citation as binding or discretionary and as horizontal or vertical. Table 1 shows the breakdown of each different citation type. Any citation by the United States Supreme Court is discretionary and vertical. Any citation by a court directly subordinate to the cited court is binding and vertical. However, neither type of vertical citation is particularly useful for evaluating our hypotheses. Vertical discretionary cites are quite rare, and the Supreme Court has sufficient resources to make highly nuanced decisions. Vertical binding cites are the most common type of citation (by a large margin), but the role of stare decisis is likely to dominate this process. Horizontal citations are sufficiently large in number to support empirical analysis yet not so common as to make data collection impracticable.

[Table 1 about here.]

Among horizontal citations generally, there are theoretical reasons to focus on discretionary citations. Landes, Lessig and Solimine (1998) write "[a] citation to an opinion of Judge X reflects either the precedential value of that opinion or its ability to influence the decision in a subsequent case." (271). By removing all instances where precedent is binding, we

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[9]The legal publication *Shepard's Citations* provides this list.

[10]Federal appellate courts with subject-specific jurisdiction are not included in this study.

can eliminate the precedential influence that Landes, Lessig and Solimine (1998) reference, leaving us with the opportunity to examine judicial impact in the absence of binding legal doctrine (Choi, Gulati and Posner 2008; Landes, Lessig and Solimine 1998). Consequently, these are the citations we examine here. Substantively, this requires extracting all citations from one federal circuit court to another or from one state high court to another. Citations from a federal circuit court to a state high court (or vice versa) are also discretionary and (at least in a general sense) horizontal, but we conduct separate analyses for federal judges citing one another and state judges citing one another.

Through the end of 2013 our federal search and seizure cases generated 12,116 citations from a judge in a different federal circuit, and our state search and seizure cases generated 3,496 citations from a judge on a sister court of last resort. We obtained information on the author of each of these 15,612 cases.[11] Using this information, together with the identity of the author of each cited case, we calculated how frequently each judge cited another. Our unit of analysis is a citing judge-cited judge dyad. The citing judge (and all related variables) are indicated using an index of $i$, while the index $j$ denotes the cited judge. Since there is a distinct difference between citing and being cited, these are directed dyads. We construct two sets of judge-to-judge dyads, one for federal judges and one for state judges. Each federal judge sitting on a circuit court between 2000 and 2013 is a possible citing judge. Each author of a federal search and seizure case in our core dataset is a possible cited judge. There is a dyad for every pairwise combination of citing and cited judges with the exception of combinations where both judges sit on the same court or where citation would be temporally impossible. The state judge-to-judge dyads are compiled using the same procedure.

The outcome variable for each dyad is the number of times judge$_i$ cited one of the search

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[11]Just over five thousand horizontal discretionary citations are excluded from analysis because the opinion was per curiam or the citation involved both a federal judge and a state judge.

and seizure cases written by judge$_j$. Since we are using citation counts as a proxy for legal influence, we take the additional step of excluding negative treatments from the citation count.[12] Such citations, although rare, reflect the very opposite of the concept of legal impact we seek to quantify. Consequently, we deem it worthwhile to purge these negative treatments from our citation counts. The outcome variable is a count that ranges up to a maximum of 8. It shows evidence of overdispersion, so we employ negative binomial models.[13]

The dyadic structure of our data introduce complex interdependencies which may lead to deflated standard errors if not addressed. A particular citing judge, Judge A, appears in the data multiple times, but the number of times Judge A uses precedents written by Judge B is not independent of the number of times Judge A cites Judge C. Citation to horizontal discretionary precedents is not precisely a zero-sum game. Each citing judge does not have a specified number of citations to distribute among her peers. However, time constraints will place loose bounds on how many citations judges can incorporate into their opinions. This, in turn, will tend to result in correlation of the residuals for all dyads involving a particular citing judge. Consequently, we estimate robust standard errors clustered on the citing judge.

We examine a variety of measures of both the absolute characteristics of the cited judge and the similarity between the citing and cited judges. The first four variables are designed to reflect the perceived prestige of the cited judge. We account for whether the cited judge obtained their law degree from a top-14 law school,[14] whether they completed a judicial clerkship, the year they were appointed to the court, and whether they have experience as

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[12]The *Shepard's* treatment categories that clearly indicate negative treatment include 'Distinguished,' 'Criticized,' 'Limited,' 'Questioned,' 'Overruled,' and 'Disapproved' (Spriggs and Hansford 2000).

[13]Zero-inflated negative binomial models produce nearly identical results.

[14]The top-14 law schools are (in alphabetical order) Berkeley, Chicago, Columbia, Cornell, Duke, Georgetown, Harvard, Michigan, NYU, Northwestern, Penn, Stanford, UVA, and Yale.

a prosecutor. While prosecutorial experience may not be a signal of prestige or competence more broadly, we incorporate it here due to the fact that we are measuring citations to search and seizure cases, and former prosecutors may be seen by peers as having issue-specific expertise. The length of a judge's judicial tenure does not necessarily directly convert to prestige, but more years on the bench do provide a greater opportunity to develop a notable reputation. Consequently, we expect judicial tenure to be correlated with higher levels of prestige among cited judges.

Next, we proceed to examine the role of the gender and race of the cited judge as well as the similarity of the citing and cited judges in terms of gender and race. The courts are not yet diverse enough to allow us to examine the intersection of race and gender together. Instead, we examine each separately and classify race along the broadest possible terms by comparing judges of all racial minorities together to Caucasian judges. Our approach for both gender and race is to examine the four possible types of dyads, using the most frequently observed type as the baseline. For example, the baseline for gender is a male judge citing another male judge. Our model includes an indicator variable for each of the remaining three types of dyads, a male judge citing a female judge, a female judge citing a male judge, and a female judge citing another female judge. We employ the same approach for race.

Two more key features of the relationship between two judges are the distance between them in both ideological and geographical terms. We rely on Judicial Common Space scores to calculate the *Ideological Distance* between two federal judges (Epstein et al. 2007) and Bonica and Woodruff's (2012) measure of state high court ideology to do so for state judges. *Geographic Distance* is the number of miles between the cities where the two judges maintain their primary chambers (divided by one hundred). Next, a series of binary variables indicate the presence (or absence) of a particular type of similarity or shared background. These include whether both judge$_i$ and judge$_j$ graduated from the same law school, clerked for the same court, or joined the bench in the same or consecutive calendar years (*Similar Starting Year*). All of these variables equal one if judge$_i$ and judge$_j$ share the relevant characteristic

and zero otherwise. The last variable is included as a very rough proxy for whether two federal judges may have attended the same two-week training session run by the Federal Judicial Center. In the state court model we include additional variables to reflect whether judges in are selected through elections (or not).[15]

Finally, we include control variables for factors that might be correlated with both citation and our key explanatory variables. First, we must account for the fact that our research design results in including different numbers of opinions authored by each cited judge. Therefore, we control for the number of cases in our core dataset of search and seizure cases that are authored by the cited judge (*Authored Cases$_j$*). Second, we must account for the fact that not all citing judges were on the bench for the entire 13 year period we examine. Consequently, we control for how many years (during the relevant time frame) the citing judge was on the bench (*Years on Bench$_i$*). Table 2 shows the summary statistics for each variable in the federal and state data including the percentage of dyads within each type of race, gender, and judicial selection dyad.[16] Both federal and state courts have more gender diversity than racial diversity, and state high courts are more diverse than federal circuit courts in terms of gender, but not race.

[Table 2 about here.]

## Results

The empirical results displayed in Table 3 provide some support for our hypotheses, particularly as they pertain to federal judges. First, there is evidence that greater prestige or reputation increases the number of citations to a judge. Federal judges who graduated from

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[15]This variable is generated using the method of judicial selection from the relevant state in the year the judge in question joined the high court.

[16]Demographic, educational, and career data for federal judges was obtained from the Federal Judicial Center database. Analogous data for state judges was compiled using a variety of sources including *The American Bench*, official court websites, and obituaries.

a top law school and state judges who clerked are both significantly more likely to be cited.[17] Additionally, both state and federal judges who ascended to the bench earlier, thus having more time to establish a prestigious reputation, are more likely to be cited. The models control for the number of opinions written by each cited judge, so the effect of longer tenure on the bench reflects something more than just greater opportunity to author opinions. An unexpected finding is that federal judges who have prosecutorial experience are significantly less likely to have their search and seizure opinions cited by their peers in other circuits.

[Table 3 about here.]

Next, we examine the effects of gender and race, starting with the cited judge. There is no evidence of either factor having a statistically significant impact in the state judge model, but the federal judge model reveals some interesting patterns. Recall that the literature on academic citation patterns suggests a possible bias against female and minority authors. Here, the coefficient in the federal judge model for a dyad with a male judge citing a female judge is positive and statistically significant. The baseline is a dyad with two male judges. This means that male judges cite female judges more frequently than male judges cite other male judges. This finding is the opposite direction from what most of the academic citation literature would predict. However, it does correspond with the one contrary finding that female authors of top law review articles are cited more frequently than male authors (Ayres and Vars 2000). This suggests that the legal arena is somehow different than other academic disciplines.

Race, however, follows the conventional story. In federal circuit courts white judges cite minority judges significantly less frequently than white judges cite other white judges. This finding dovetails with other findings about minority judges, whom studies suggest face discrimination in other venues as well (Sen 2015). Taken together, these findings suggest that the roles that race and gender play in legal development are not straightforward: female judges are cited at higher rates while minority judges are cited at lower rates. Furthermore,

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[17]All discussion of statistical significance is at the 0.05 level.

these patterns only emerge among federal judges.

We also hypothesize that relational demographic characteristics of two judges may affect citation patterns. In particular, we are interested in the relational effects of race and gender on legal development. Comparing all possible pairwise combinations of dyad types is not intuitive based on the model results alone, so we provide the predicted citation count for each dyad type in Table 4. These predicted counts hold all other variables at their median and the associated 95% confidence intervals allow us to assess the statistical significance of differences between the expected number of citations for each dyad type.

As discussed above, there is no evidence that race or gender affect citation patterns among state court judges. Consequently, our focus here is on the results for federal judges. For both race and gender, the dyad with the highest predicted citation count is one where both the citing and cited judge share the demographic characteristic that would historically have led to their exclusion from the judiciary. A dyad with two female judges generates a significantly higher citation frequency than a dyad with two male judges. Similarly, a dyad with two minority judges results in more citations than any of the other three types of race dyads, although imprecision in the estimates prevents these differences from reaching statistical significance. There is no corresponding pattern to suggest that all-male or all-white dyads might consistently generate more citations than diverse dyads. These results highlight a potentially overlooked benefit of judicial diversity: female and minority judges can mutually reinforce each other's impact on legal development.

[Table 4 about here.]

We also expect other types of similarity between two judges to increase the number of times one judge cites another. This expectation is largely supported in the federal judge model. Federal judges who are more distant from one another, both ideologically and geographically, are less likely to cite one another. At the same time, having professional experiences in common can increase the frequency of citation. A judge is significantly more likely to cite another judge who has clerked for the same court or who has been appointed

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to the federal bench within the same or consecutive years. However, geographic distance is the only relational variable that is statistically significant for state judges. There is no reason to expect *Similar Start Year* to be significant since new judges from different states are not trained together. But there is no evidence that ideological distance, attending the same law school, clerking for the same court, or similar institutions for judicial selection have the expected impact on citation between state judges. The predicted counts by dyad type in Table 4 show that dyads with two judges who are not elected generate the highest number of citations, but dyads with two elected judges produce the lowest number of citations. These patterns are generated by the fact that elected judges are both significantly less likely to cite overall and significantly less likely to be cited.

Finally, the control variables perform as expected in both models. A judge who has authored more search and seizure cases in the core dataset gets cited significantly more frequently. Similarly, a citing judge who has been on the bench for more of the relevant years (2000-2013) is more likely to cite any given judge simply because the longer time frame provides more opportunities to cite overall.

There is evidence, particularly in the federal judges model, that the prestige of the cited judge, demographic characteristics, and the similarity between two judges influence how frequently one judge cites another. In order to further elaborate on the magnitude of this influence, we present a series of changes in predicted outcomes in Table 5. For each model, we present both the baseline predicted count and the amount of change in that count that occurs when each variable is moved from either from 0 to 1 (for dichotomous variables) or from its 25th percentile value to its 75th percentile value (for continuous variables). Overall, the incidence of judges citing their peers in other courts is quite low. The average federal judge has authored 12 opinions but garners an average of only one citation from every twelve judges who serve in sister circuits ($0.086 \times 12 = 1.03$). A judge who graduated from a top law school, clerked, and has been on the bench since 1982 has a predicted citation count of 0.100 which translates into an average of one citation from every ten judges. When focusing

even further to examine how frequently such a prestigious judge is cited by a colleague who attended the same law school, clerked for the same court, and is closer in terms of both ideological and geographic distance (i.e., the 25th percentile value) the predicted citation count doubles to 0.200, one citation from every five judges. While some individual variables are not measured precisely enough to register a statistically significant impact, this look at reputational and relational characteristics together illustrates that the latter appear to have a larger impact on citation frequency.

[Table 5 about here.]

## Discussion and Conclusions

Judges have a considerable amount of discretion when deciding which precedents to cite, particularly when such precedents are not binding under the doctrine of stare decisis. Moreover, there are a tremendous (and ever-increasing) number of precedents available. As a result, this study provides a unique window into broader questions concerning how elites learn from each other about policy and how elites determine which of their peers to rely upon as they are crafting policy. Indeed, policymakers both in and outside the judiciary routinely face novel policy issues which may benefit from the wisdom of their peers in other jurisdictions. Given the intersection of these realities it is no surprise that both the absolute characteristics of a policymaker and the similarity between two policymakers influence how frequently one cites the other across jurisdictional boundaries. We find particularly consistent evidence of such effects among federal circuit judges.

We reach several conclusions. First, this study establishes that a judge's perceived prestige or reputation among her peers influences how frequently her opinions are cited. Both state and federal judges with longer tenure on the bench, and therefore more experience, are cited more frequently. The 13% of state high court judges who obtained a judicial clerkship upon graduation from law school are also cited more frequently. Almost half of all federal circuit judges graduated from one of the top 14 law schools, a credential which earns them

a boost in the number of citations. Yet there is no evidence that state high court judges defer to out-of-state colleagues who attended a prestigious law school nor does it appear that federal judges perceive clerkship experience as a hallmark of particular intelligence or ability.

The second contribution we make is to provide the first extensive examination of the role gender and race play in citation to nonbinding caselaw. This leads to two important discoveries about how federal circuit judges cite one another. Female judges and judges who are not white experience opposite patterns in terms of citation by their male and white colleagues. On the one hand, women, although historically excluded from judicial service, are cited more frequently by their male colleagues than men are. On the other hand, minority judges are cited less frequently by white judges. This finding raises questions about why these patterns emerge and what implications they have for the impact of further diversification of the judiciary. The second discovery is that women, and possibly minority judges, go out of their way to cite the relatively small number of colleagues who share their gender or race. This pattern suggests that increasing the number of women and minorities on the federal bench may allow such judges to further increase their impact on policy development.

These findings underscore the importance of judicial diversity. Most previous studies (Tate 1981; Boyd, Epstein and Martin 2010; Kastellec 2011) have focused on the extent to which identity affects judges' votes or their ability to persuade other judges on their panel, emphasizing how the identity of the judge affects who wins in court. Yet, judicial decisions are important for their influence on the decisions of later judges, not just because they resolve disputes on the merits (Friedman 2006). Our findings indicate that identity presents a barrier for some judges to exert influence over legal development. That minority judges are cited less *and* represent a relatively small number of federal judges means that whatever increase in citation patterns minority judges can "make up" through mutual citation is dwarfed by the reduction of influence that results from lower levels of citation by their white peers. Thus, our findings indicate that beyond whatever legitimacy-enhancing benefits increased descriptive

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representation can have on the judiciary (Scherer and Curry 2010), additional descriptive representation is necessary in order to give minority judges equal footing on which to direct legal development.

The implications of our findings extend the existing literature on academic citation patterns. Maliniak, Powers and Walter (2013) and others have suggested that demographic characteristics affect who gets cited, yet our focus on legal development suggests that such systematic biases in citation practices may also affect what we know. To the extent that minority and female judges speak in a "different voice" (Gilligan 1982) by writing opinions that differ systematically from those written by their white and male colleagues, these results indicate that minority judges, in particular, are limited in their ability to contribute to legal development.

The third broad contribution of this piece is to establish the important role of the relationship between two judges. Once again, more evidence emerges from the federal judge model than the state court model to shed light on the importance of similarity. In the federal judge model, nearly every indicator of the similarity or closeness between two judges is statistically significant. Consistent with a long line of literature, we find that a judge is more likely to cite a peer who is more proximate ideologically. We go on to find that geographic distance has a similar effect. Circuit judges are more likely to cite judges who have their primary chambers in a city that is geographically more proximate. While this finding may seem somewhat foreign to students of judicial behavior, it is a common finding among policy diffusion studies. Apparently, federal judges are not so different from state legislators, at least when it comes to seeking out the wisdom and experience of those nearby before referring to those farther afield.

Similarities between two judges' professional backgrounds can also increase the probability of citation. Although this is likely to be partially due to common experiences, these variables also serve as rough proxies for the probability that two judges from different circuits know one another personally. In fact, we control for whether two judges joined the bench

in the same or consecutive years specifically to track the probability that they were trained together. Similarly, having common clerkship experiences in the same court may result in two judges knowing one another personally. Such personal relationships are impossible to measure directly for every possible combination of judges, but they surely have an impact on the probability of citation.

While our results provide a range of answers to questions about how and when judges cite one another, they also raise a number of follow-up questions. Perhaps the most prominent is why so many variables fail to achieve statistical significance in the state judge model. Part of the explanation may lie in the sparsity of the data. While there are nearly 200,000 dyadic combinations of judge pairs, there are less than 3,500 actual citations. Increasing the scope of the research design in terms of issues or years (or both) may provide results more similar to the federal judges model. However, the problem may not lie in a lack of data but in the institutional reality that consulting peers on 51 other courts is a fundamentally different process than consulting peers on 11 other courts. In addition to federal circuit judges having fewer peers to consider, they also have the informational advantage of operating within the same institutional structure as their colleagues on different circuit courts. As a result, a federal judge from Virginia is more likely to be aware of the characteristics of a federal judge from Minnesota than a state judge from Virginia who may know little about a peer in Minnesota.

Another area of necessary follow-up concerns generalizability in terms of both issues and citation types. Our data include only search and seizure cases, but previous studies of judicial identity have identified strong issue area-specific effects (Boyd, Epstein and Martin 2010; Glynn and Sen 2015). Search and seizure cases are a good venue to test our hypotheses because they represent a broad area of criminal law in which identity is not as directly implicated as in, for example, sex or racial discrimination cases. Thus, to find background-specific effects in this area of law is a strong suggestion that these effects are generalizable to other areas of law. But, it is possible that race- and gender-specific effects are stronger

in the areas of law in which judicial identities prime voting behavior, or that these effects dissipate in areas of law in which technical expertise trumps demographic concerns. These topics are ripe for future research.

Additionally, though our data concern judges at the state and federal levels, the broader questions that motivate this research lie behind some of the most contentious representational debates in politics: those over the effects of diversity. Our focus on judges provides insight into the individual-level characteristics of policymakers, traction that can be difficult to find in other policy arenas. Moreover, by looking only at discretionary citations, we are able to leave aside many of the confounding influences brought about by studies of judges (namely that of stare decisis), enabling us to focus on the sorts of discretionary policy adoption decisions that characterize the choices of many elites. As a result, the conclusions that we draw with respect to diversity have wide-ranging implications both within the judiciary and in legislative, bureaucratic, and executive settings. While all of our findings may not be directly applicable across institutional settings, the results suggest the importance of future exploration of the extent to which institutional features might condition the effect of diversity on policy outcomes.

## Tables

|  | Federal | State | Total |
| --- | ---: | ---: | ---: |
| **Vertical, Discretionary** | 219 | 79 | 298 |
| **Vertical, Binding** | 257,496 | 109,497 | 366,993 |
| **Horizontal, Discretionary** | 16,403 | 4,268 | 20,671 |
| **Horizontal, Binding** | 80,655 | 26,861 | 107,516 |
| **Other** | 38,703 | 7,668 | 46,371 |
| **Total** | 393,476 | 148,373 | 541,849 |

Table 1: Summary of all citations to published search and seizure cases from 2000-2010 from federal circuit courts and state high courts (through December 31, 2013).

| | Federal Judges | | | State Judges | | |
|---|---|---|---|---|---|---|
| | **25%** | **50%** | **75%** | **25%** | **50%** | **75%** |
| **Continuous Variables** | | | | | | |
| First Year on Bench$_j$ | 1982 | 1991 | 1999 | 1992 | 1997 | 2001 |
| Ideological Distance | 0.13 | 0.35 | 0.63 | 0.35 | 0.81 | 1.40 |
| Geographic Distance | 5.69 | 9.97 | 16.63 | 5.86 | 9.85 | 15.10 |
| Authored Cases$_j$ | 6 | 12 | 22 | 3 | 6 | 11 |
| Years on Bench$_i$ | 7 | 13 | 13 | 4 | 7 | 11 |
| | **0** | **1** | | **0** | **1** | |
| **Dichotomous Variables** | | | | | | |
| T14 Law School$_j$ | 50.9% | 49.1% | | 78.1% | 21.9% | |
| Clerkship$_j$ | 66.1% | 33.9% | | 86.9% | 13.1% | |
| Prosecutor$_j$ | 73.8% | 26.2% | | 54.8% | 45.2% | |
| Same Law School | 96.3% | 3.7% | | 99.3% | 0.7% | |
| Clerked for Same Court | 98.8% | 1.2% | | 99.97% | 0.03% | |
| Similar Starting Year | 92.9% | 7.1% | | 88.9% | 11.1% | |
| **Dyad Types** | | | | | | |
| | **Male$_j$** | **Female$_j$** | | | **Male$_j$** | **Female$_j$** |
| **Male$_i$** | 63.0% | 16.4% | | **Male$_i$** | 52.9% | 20.1% |
| **Female$_i$** | 16.4% | 4.2% | | **Female$_i$** | 20.2% | 7.8% |
| | **White$_j$** | **Minority$_j$** | | | **White$_j$** | **Minority$_j$** |
| **White$_i$** | 73.5% | 11.6% | | **White$_i$** | 80.0% | 9.1% |
| **Minority$_i$** | 12.9% | 2.0% | | **Minority$_i$** | 9.8% | 1.1% |
| | | | | | **Not Elected$_j$** | **Elected$_j$** |
| | | | | **Not Elected$_i$** | 23.8% | 26.4% |
| | | | | **Elected$_i$** | 24.6% | 25.2% |

Table 2: Summary Statistics

|                                  | Federal Judges | | State Judges | |
|                                  | Coef. | S.E. | Coef. | S.E. |
| --- | --- | --- | --- | --- |
| T14 Law School$_j$               | 0.088* | (0.023) | −0.023 | (0.061) |
| Clerkship$_j$                    | 0.031 | (0.029) | 0.258* | (0.066) |
| First Year on Bench$_j$          | −0.004* | (0.001) | −0.013* | (0.003) |
| Prosecutor$_j$                   | −0.142* | (0.030) | 0.052 | (0.048) |
| **Dyad Type: Gender**            | | | | |
| Male$_i$, Female$_j$             | 0.107* | (0.036) | −0.021 | (0.063) |
| Female$_i$, Male$_j$             | 0.117 | (0.131) | −0.094 | (0.149) |
| Female$_i$, Female$_j$           | 0.288* | (0.130) | −0.203 | (0.162) |
| **Dyad Type: Race**              | | | | |
| White$_i$, Minority$_j$          | −0.125* | (0.047) | 0.028 | (0.090) |
| Minority$_i$, White$_j$          | 0.111 | (0.132) | −0.072 | (0.205) |
| Minority$_i$, Minority$_j$       | 0.241 | (0.165) | 0.261 | (0.262) |
| Ideological Distance             | −0.142* | (0.069) | 0.059 | (0.057) |
| Geographic Distance              | −0.011* | (0.004) | −0.017* | (0.005) |
| Same Law School                  | 0.148 | (0.098) | 0.100 | (0.274) |
| Clerked for Same Court           | 0.470* | (0.195) | 0.857 | (0.892) |
| Similar Starting Year            | 0.103* | (0.049) | −0.084 | (0.078) |
| **Dyad Type: Judicial Selection** | | | | |
| Elected$_i$, Not Elected$_j$     | | | −0.805* | (0.132) |
| Not Elected$_i$, Elected$_j$     | | | −0.271* | (0.071) |
| Elected$_i$, Elected$_j$         | | | −1.114* | (0.139) |
| Authored Cases$_j$               | 0.038* | (0.001) | 0.061* | (0.003) |
| Years on Bench$_i$               | 0.140* | (0.015) | 0.173* | (0.016) |
| Intercept                        | 3.728 | (2.214) | 19.682* | (6.930) |
| N                                | 86,976 | | 192,917 | |

Table 3: Negative binomial regression estimates of the effect of absolute and relative characteristics on the number of times judge$_i$ cited judge$_j$ for federal circuit court judges and state high court judges. Robust standard errors clustered on the citing judge are reported in parentheses next to each coefficient, and * denotes a p-value less than 0.05.

| Federal Judges | | | | State Judges | | |
|---|---|---|---|---|---|---|
| | **Male**$_j$ | **Female**$_j$ | | | **Male**$_j$ | **Female**$_j$ |
| **Male**$_i$ | 0.086 | 0.095 | **Male**$_i$ | | 0.0062 | 0.0060 |
| | [0.071,0.100] | [0.078,0.112] | | | [0.0047,0.0076] | [0.0046,0.0075] |
| **Female**$_i$ | 0.096 | 0.114 | **Female**$_i$ | | 0.0056 | 0.0050 |
| | [0.073,0.119] | [0.087,0.141] | | | [0.0038,0.0074] | [0.0034,0.0066] |
| | | | | | | |
| | **White**$_j$ | **Minority**$_j$ | | | **White**$_j$ | **Minority**$_j$ |
| **White**$_i$ | 0.086 | 0.075 | **White**$_i$ | | 0.0062 | 0.0063 |
| | [0.071,0.100] | [0.060,0.091] | | | [0.0047,0.0076] | [0.0045,0.0082] |
| **Minority**$_i$ | 0.096 | 0.109 | **Minority**$_i$ | | 0.0057 | 0.0080 |
| | [0.071,0.120] | [0.074,0.143] | | | [0.0033,0.0081] | [0.0038,0.0122] |
| | | | | | | |
| | | | | | **Not Elected**$_j$ | **Elected**$_j$ |
| | | | **Not Elected**$_i$ | | 0.0081 | 0.0062 |
| | | | | | [0.0060,0.0101] | [0.0047,0.0076] |
| | | | **Elected**$_i$ | | 0.0036 | 0.0027 |
| | | | | | [0.0028,0.0044] | [0.0020,0.0033] |

Table 4: Predicted citation counts by dyad type holding all other variables at their median. The relevant 95% confidence interval appears in brackets below each predicted count.

| | Federal Judges | | State Judges | |
| --- | --- | --- | --- | --- |
| | **Change** | **95 % CI** | **Change** | **95 % CI** |
| Baseline Predicted Count | 0.086* | [0.071,0.100] | 0.0062* | [0.0047,0.0076] |
| T14 Law School$_j$ | 0.008* | [0.004,0.012] | −0.0001 | [-0.0009,0.0006] |
| Clerkship$_j$ | 0.003 | [-0.002,0.008] | 0.0083 | [-0.0169,0.0336] |
| First Year on Bench$_j$ | −0.006* | [-0.009,-0.003] | −0.0007* | [-0.0011,-0.0003] |
| Prosecutor$_j$ | −0.011* | [-0.016,-0.007] | 0.0003 | [-0.0003,0.0009] |
| **Dyad Type: Gender** | | | | |
| Male$_i$, Female$_j$ | 0.010* | [0.003,0.016] | −0.0001 | [-0.0009,0.0006] |
| Female$_i$, Male$_j$ | 0.011 | [-0.013,0.034] | −0.0006 | [-0.0022,0.0011] |
| Female$_i$, Female$_j$ | 0.029* | [0.001,0.056] | −0.0011 | [-0.0028,0.0006] |
| **Dyad Type: Race** | | | | |
| White$_i$, Minority$_j$ | −0.010* | [-0.017,-0.003] | 0.0002 | [-0.0009,0.0013] |
| Minority$_i$, White$_j$ | 0.010 | [0.003,0.017] | −0.0004 | [-0.0028,0.0019] |
| Minority$_i$, Minority$_j$ | 0.023 | [-0.011,0.058] | 0.0018 | [-0.0022,0.0059] |
| Ideological Distance | −0.006 | [-0.012,0.001] | 0.0004 | [-0.0004,0.0011] |
| Geographic Distance | −0.010* | [-0.018,-0.002] | −0.0010* | [-0.0016,-0.0004] |
| Same Law School | 0.014 | [-0.006,0.033] | 0.0006 | [-0.0030,0.0043] |
| Clerked for Same Court | 0.051 | [-0.004,0.107] | 0.0083 | [-0.0169,0.0336] |
| Similar Starting Year | 0.009* | [0.001,0.018] | −0.0034* | [-0.0047,-0.0021] |
| **Dyad Type: Judicial Selection** | | | | |
| Elected$_i$, Not Elected$_j$ | | | −0.0019* | [-0.0031,-0.0008] |
| Not Elected$_i$, Elected$_j$ | | | −0.0041* | [-0.0055,-0.0028] |
| Elected$_i$, Elected$_j$ | | | −0.0005 | [-0.0014,0.0004] |
| Authored Cases$_j$ | 0.058* | [0.048,0.067] | 0.0032* | [0.0024,0.0040] |
| Years on Bench$_i$ | 0.049* | [0.037,0.061] | 0.0087* | [0.0064,0.0109] |

Table 5: The change in the predicted number of citations when moving each dichotomous variable from 0 to 1 and moving each continuous variable from its 25th percentile to its 75th percentile (while all other variables are held at their median). The relevant 95% confidence interval appears in brackets next to each predicted change.

# References

Aldisert, Ruggero J. 1989. "Precedent: What It Is and What It Isn't: When Do We Kiss It and When Do We Kill It." *Pepperdine Law Review* 17(3):605–636.

Ayres, Ian and Fredrick E. Vars. 2000. "Determinants of Citations to Articles in Elite Law Reviews." *Journal of Legal Studies* 29(S1):427–450.

Berry, Frances Stokes and William D. Berry. 1990. "State Lottery Adoptions as Policy Innovations: An Event History Analysis." *American Political Science Review* 84(2):395–415.

Blanes, Jordi and Vidal Clare Leaver. 2013. "Social Interactions and the Content of Legal Opinions." *Journal of Law, Economics, & Organization* 29(1):78–114.

Bonica, Adam and Michael J. Woodruff. 2014. "A Common-Space Measure of State Supreme Court Ideology." *Journal of Law, Economics & Organization* Forthcoming.

Boyd, Christina L., Lee Epstein and Andrew D. Martin. 2010. "Untangling the Causal Effects of Sex on Judging." *American Journal of Political Science* 54(2):389–411.

Braman, Eileen and Thomas E Nelson. 2007. "Mechanism of Motivated Reasoning? Analogical Perception in Discrimination Disputes." *American Journal of Political Science* 51(4):940–956.

Branton, Regina P, Erin C Cassese and Bradford S Jones. 2012. "Race, Ethnicity, and US House Incumbent Evaluations." *Legislative Studies Quarterly* 37(4):465–489.

Bratton, James and David Hedge. 1996. "Legislative Life in the 1990s: A Comparison of Black and White State Legislators." *Legislative Studies Quarterly* 21:199–218.

Caldeira, Gregory A. 1985. "The Transmission of Legal Precedent: A Study of State Supreme Courts." *American Political Science Review* 79(1):178–94.

Caufield, Rachel P. and Michael J. Nelson. 2009. "Institutional Maintenance and Unanimity at the U.S. Supreme Court: The Consensus-Building Justice." Presented at 2009 Midwest Political Science Association Annual Conference.

Choi, Stephen J. and G. Mitu Gulati. 2007. "Trading Votes for Reasoning: Covering in Judicial Opinions." *Southern California Law Review* 81(4):735–779.

Choi, Stephen J. and G. Mitu Gulati. 2008. "Bias in Judicial Citations: A Window into the Behavior of Judges?" *Journal of Legal Studies* 37(1):87–130.

Choi, Stephen J., G. Mitu Gulati and Eric A. Posner. 2008. "Professionals or Politicians: The Uncertain Empirical Case for an Elected Rather than Appointed Judiciary." *Journal of Law, Economics, & Organization* 26(2):290–336.

Choi, Stephen J., Mitu Gulati and Eric A. Posner. 2009. "Judicial Evaluations and Information Forcing: Ranking State High Courts and their Judges." *Duke Law Review* 58:1313–1381.

Cross, Frank B and James F Spriggs. 2010. "The Most Important (and Best) Supreme Court Options and Justices.".

Cross, Frank B., James F. Spriggs, II, Timothy R. Johsnson and Paul J. Wahlbeck. 2010. "Citations in the U.S. Supreme Court: An Empirical Study of Their Use and Significance." *University of Illinois Law Review* 2010(2):489–576.

Epstein, Lee, Andrew D. Martin, Jeffrey A. Segal and Chad Westerland. 2007. "The Judicial Common Space." *Journal of Law, Economics, & Organization* 23(2):303–325. Data available at http://epstein.usc.edu/research/JCS.html.

Epstein, Lee, Valerie Hoekstra, Jeffrey A. Segal and Harold J. Spaeth. 1998. "Do Political Preferences Change? A Longitudinal Study of U.S. Supreme Court Justices." *Journal of Politics* 60(3):801–818.

Fowler, James H. and Sangick Jeon. 2008. "The Authority of Supreme Court Precedent." *Social Networks* 30:16–30.

Fowler, J.H., T.R. Johnson, J.F.S. II, S. Jeon, P.J. Wahlbeck and O.B. Drive. 2007. "Network Analysis and the Law: Measuring the Legal Importance of Supreme Court Precedents." *Political Analysis* 15(3):324–346.

Friedman, Barry. 2006. "Taking Law Seriously." *Perspectives on Politics* 4(2):261–276.

Galanter, Marc. 1999. "'Old and in the Way': The Coming Demographic Transformation of the Legal Profession and Its Implications for the Provision of Legal Services." *Wisconsin Law Review* 1999:1081–1117.

Gibson, James L. 1981. "Personality and Elite Political Behavior: The Influence of Self Esteem on Judicial Decision Making." *The Journal of Politics* 43(1):104–125.

Gilligan, Carol. 1982. *In a Different Voice: Psychological Theory and Women's Development.* Cambridge, MA: Harvard University Press.

Glynn, Adam and Maya Sen. 2015. "Identifying Judicial Empathy: Does Having Daughters Cause Judges to Rule for Women's Issues." *American Journal of Political Science* 59(1):37–54.

Greenwald, Anthony G. and Eric S. Schuh. 1994. "An Ethnic Bias in Scientific Citations." *European Journal of Social Psychology* 24:623–639.

Hansford, Thomas G. and James F. Spriggs, II. 2006. *The Politics of Precedent on the U.S. Supreme Court.* Princeton University Press.

Hinkle, Rachael K. 2015*a*. "Into the Words: Using Statutory Text to Explore the Impact of Federal Courts on State Policy Diffusion." *American Journal of Political Science* Forthcoming.

Hinkle, Rachael K. 2015b. "Legal Constraint in the U.S. Courts of Appeals." *Journal of Politics* 77:721–735.

Hinkle, Rachael K. and Michael J. Nelson. 2016. "The Transmission of Legal Precedent Among State Supreme Courts in the 21st Century." *State Politics & Policy Quarterly* Forthcoming.

Johnson, Charles A. 1987. "Law, Politics, and Judicial Decision Making: Lower Federal Court Uses of Supreme Court Decisions." *Law & Society Review* 21(2):325–340.

Kastellec, Jonathan P. 2011. "Hierarchical and Collegial Politics on the U.S. Courts of Appeals." *Journal of Politics* 73(02):345–361.

Klein, David and Darby Morrisroe. 1999. "The Prestige and Influence of Individual Judges on the U.S. Courts of Appeals." *Journal of Legal Studies* 28(2):371–391.

Kosma, Montgomery N. 1998. "Measuring the Influence of Supreme Court Justices." *Journal of Legal Studies* 27(2):333–372.

Landes, William M., Lawrence Lessig and Michael E. Solimine. 1998. "Judicial Influence: A Citation Analysis of Federal Courts of Appeals Judges." *Journal of Legal Studies* 27(2):271–332.

Lee III, Emery G. 2003. "Horizontal Stare Decisis on the U.S. Court of Appeals for the Sixth Circuit." *Kentucky Law Journal* 92:767.

Long, J. Scott. 1992. "Measures of Sex Differences in Scientific Productivity." *Social Forces* 71(1):159–178.

Maliniak, Daniel, Ryan Powers and Barbara F. Walter. 2013. "The Gender Citation Gap in International Relations." *International Organization* 67(4):889–922.

Maltzman, Forrest, James F. Spriggs, II and Paul J. Wahlbeck. 2000. *Crafting Law on the Supreme Court: The Collegial Game.* Cambridge University Press.

Mitchell, Sara McLaughlin, Samanthe Lange and Holly Bruns. 2013. "Gendered Citation Patterns in International Relations Journals." *International Studies Perspectives* 14(4):485–492.

Mott, Rodney L., Spencer D. Albright and Helen R. Semmerling. 1933. "Judicial Personnel." *Annals of the American Academy of Political and Social Science* 167:143–155.

Peñas, Celia Sánchez and Peter Willett. 2006. "Brief Communication: Gender Differences in Publication and Citation Counts in Librarianship and Information Science Research." *Journal of Information Science* 32(5):480–85.

Posner, Eric. 2009. "Judge Sonia Sotomayor: What the Data Show." *Volokh Conspiracy* 13 May. Accessed 25 Apr. 2016. `http://volokh.com/posts/1242229209.shtml`.

Posner, Richard A. 2007. *Economic Analysis of Law*. 7th ed. Aspen Publishers.

Redding, Richard E. 2003. ""Where Did You Go to Law School?" Gatekeeping for the Professoriate and Its Implications for Legal Education." *Journal of Legal Education* 53(4):594–614.

Scherer, Nancy and Brett Curry. 2010. "Does Descriptive Race Representation Enhance Institutional Legitimacy? The Case of the U.S. Courts." *Journal of Politics* 72(1):90–104.

Sen, Maya. 2015. "Is Justice Really Blind? Race and Appellate Review in U.S. Courts." *Journal of Legal Studies* 44(S1):187–229.

Simon, William H. 1986. "Judicial Clerkships and Elite Professional Culture." *Journal of Legal Education* 36(2):129–137.

Sonnert, Gerhard. 1995. "What Makes a Good Scientist? Determinants of Peer Evaluation Among Biologists." *Social Studies of Science* 25(1):35–55.

Spriggs, II, James F. and Thomas G. Hansford. 2000. "Measuring Legal Change: The Reliability and Validity of *Shepard's* Citations." *Political Research Quarterly* 53(2):327–341.

Spriggs, II, James F. and Thomas G. Hansford. 2002. "The U.S. Supreme Court's Incorporation and Interpretation of Precedent." *Law & Society Review* 36(1):139–159.

Symonds, Matthew R.E., Neil J. Gemmell, Tamsin L. Braisher, Kylie L. Gorringe and Mark A. Elgar. 2006. "Gender Differences in Publication Output: Towards an Unbiased Metric of Research Performance." *PLoS ONE* 1(e127).

Taber, Charles S. and Milton Lodge. 2006. "Motivated Skepticism in the Evaluation of Political Beliefs." *American Journal of Political Science* 50(3):755–769.

Tate, C. Neal. 1981. "Personal Attribute Models of the Voting Behavior of U.S. Supreme Court Justices: Liberalism in Civil Liberties and Economics Decisions, 1946-1978." *American Political Science Review* 75(2):pp. 355–367.

Volden, Craig, Alan E. Wiseman and Dana E. Wittmer. 2013. "When are Women More Effective Lawmakers Than Men?" *American Journal of Political Science* 57:326–341.

Walker, Jack L. 1969. "The Diffusion of Innovations Among the American States." *American Political Science Review* 63(3):880–899.