Justice System Journal

ISSN: 0098-261X (Print) 2327-7556 (Online) Journal homepage: http://www.tandfonline.com/loi/ujsj20

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To cite this article: Brett Curry & Banks Miller (2016): Case Citation Patterns in the U.S. Courts of Appeals and the Legal Academy, Justice System Journal

To link to this article: http://dx.doi.org/10.1080/0098261X.2016.1251364

Published online: 29 Nov 2016.

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JUSTICE SYSTEM JOURNAL
http://dx.doi.org/10.1080/0098261X.2016.1251364

Routledge
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Case Citation Patterns in the U.S. Courts of Appeals and the Legal Academy

Brett Curry[a] and Banks Miller[b]

[a]Department of Political Science and International Studies, Georgia Southern University, Statesboro, Georgia; [b]School of Economic, Political, and Policy Sciences, University of Texas at Dallas, Richardson, Texas

ABSTRACT

Is there a disconnect between the priorities that make cases important to the legal academy and American courts and judges? We use previously unexplored data on the decisions of federal appellate judges to cite cases compared to the decisions of legal academics to cite the same cases. One component of our approach is an investigation of case-level characteristics, and we focus on these and other factors that structure decisions to cite cases across three different contexts: within a federal circuit, by courts out of circuit, and in law review articles. Our results highlight a divergence between what prompts judges and those in the legal academy to cite cases, and, to our knowledge, this is the first study to compare the drivers of court citation with those of law review citation.

KEYWORDS

Appellate courts; judicial behavior; legal citations; opinions

> Pick up a copy of any law review that you see, and the first article is likely to be, you know, the influence of Immanuel Kant on evidentiary approaches in 18th Century Bulgaria, or something.
>
> —Chief Justice John Roberts (quoted in Gershman 2015)

Recent developments—and the quote from Chief Justice Roberts displayed above—seem to indicate a growing divergence between the aims of law reviews and the needs of judges (Posner 2016). As law review articles have become increasingly obscure, both judges (Liptak 2007; Posner 2002, 2016; Edwards 1992) and academic commentators (Newton 2012; Merritt and Putnam 1996) have suggested that the academy's influence on judging has waned. For instance, then–Chief Judge Dennis Jacobs of the Second Circuit undoubtedly spoke for many other judges in 2007 when he said, "I haven't opened up a law review in years" (Liptak 2007, A8).

While comments of this sort are frequently chronicled as evidence of an advancing disconnect between the bench and the academy, the other dynamic of this relationship—the circumstances under which law review articles rely on judicial opinions—has garnered far less attention. Specifically, are there characteristics that make scholarly use of some judicial opinions more (or less) likely than others? If so, what are those characteristics, and how are they similar to or different from the attributes that other judges take into account when choosing which cases to cite in their own judicial opinions? Ultimately, we believe answers to such questions bear on two related issues. The first centers on what it is that makes a given case important to the legal community, and the second relates to the concept of the "judicial audience" (Baum 2006), as different audiences may find value in different aspects of an opinion. Taking these issues together, we believe there are theoretical and practical reasons why different elements of the legal community are likely to take note of different things in judicial opinions. Indeed, it has been suggested that "judges and academic writers may use citations for different purposes"

CONTACT Brett Curry bcurry@georgiasouthern.edu Department of Political Science and International Studies, Georgia Southern University, Statesboro, GA 30460.

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(Merritt and Putnam 1996, 877–78), though that assertion has not been tested empirically. Here, we set out to explain the criteria these actors use in their unconstrained choices to cite case law. In fact, it is this reality that links the aforementioned issues of case importance and the judicial audience: unless the citation practices across different components of the judicial audience are examined, scholars are likely to have an incomplete appreciation for why a given case is important—because different professional audiences may well have unique ways of defining that concept. Furthermore, citations are traditionally used as a proxy for judicial influence, and so our results can help facilitate appraisals of influence more generally by examining a component of that influence—citations—in a fresh setting.

In this article, we examine citation practices, and, in so doing, we depart from most prior studies of legal citations (but see Choi and Gulati 2008a) by shifting the unit of analysis from the judge to the case. We do this to control for case-level characteristics that might influence the likelihood of a case being cited independent of the authoring judge.[1] Indeed, as we show below, case characteristics are uniquely important across all the audiences we examine in this study, and omitting them would lead to serious misspecification of the models. More to the point, ours is the first study of which we are aware to analyze the differing decisional criteria of judges and legal academics to cite cases, as opposed to law reviews (e.g., Schwartz and Petherbridge 2011). As noted above, we rely on a theory based on the notion of judicial audiences and the characteristics in opinions they value to motivate our study, focus our hypotheses, and help us understand the citation practices we see in the Courts of Appeal and the legal academy. The divergence in citation practices that we observe is important for a number of reasons, including the fact that it empirically illustrates one basic component of the gap between judges and legal academics—what judges and legal academics think makes a judicial opinion worth engaging in their own work. In addition, a difference of opinion as to the importance of a given case might mean that bridging the apparently widening gap between what legal scholars write about and what judges, in turn, cite from those scholars is more difficult than first thought (see Newton 2012).

Judicial Audiences and Prior Studies of Judicial Citation

Before turning to the role of audiences and what they may find important about a judicial opinion, we think some discussion about the broader relationships between judges and their audiences—and precisely who those different audiences are likely to be—is warranted. Judges have a wide range of potential audiences, and those audiences are themselves subject to different pressures and constraints (Baum 2006). While this concept of audiences is not uniquely American, it is also important to bear in mind that legal audiences in the United States are especially likely to be attentive to judge-specific characteristics. This is because the United States has a "recognition judiciary" (Ginsburg and Garoupa 2009), arguably making individual characteristics more prominent with relevant audiences than would be true in civil law or even most other common law countries. This attention to the individual and the work product associated with them can characterize both internal and external audiences, with "internal audiences [being] within the judiciary itself, while external audiences include lawyers, the media, or the general public" (Ginsburg and Garoupa 2009, 451; see also Baum 2006, 21).

Previous work appropriately equates judicial citations with influence and reputation (e.g., Kosma 1998; Smith and Bhattacharya 2003; Bhattacharya and Smith 2001), and, while prior scholarship has examined citation practices by audiences, those audiences have been limited to courts and judges (e.g., Landes et al. 1998; Hume 2009; Choi and Gulati 2008a). However, we believe it is important to go beyond the factors that may lead other courts and judges—that is, audiences internal to the judiciary itself—to cite particular opinions (Baum 2006; Ginsburg and Garoupa 2009). We do that here by considering for the first time the citation behavior of an external audience—legal scholars. This strikes us

[1] At a minimum, case facts ought to be a central component of any judicial inquiry as to whether a case has precedential value in a particular instance. Furthermore, given that the audiences for judicial opinions are diverse, it may be that other judges—who must worry about the fit between two cases factually—treat case facts differently than do legal academics who may view cases less constrained by these concerns. Beyond that, absent extant research on the factors that might predispose law review authors to cite cases, we are uncomfortable assuming that case facts are unimportant and, therefore, have opted to control for them.

as being particularly important in light of manifold indications of divergence between the aims of the judiciary and the academy (e.g., Posner 2016).

Leading citation studies recognize the importance of contextual factors in framing the choice to cite a particular case inasmuch as they distinguish between in-circuit and out-of-circuit citation practices (Choi and Gulati 2008a, 98; Choi and Gulati 2008b):—namely, that judicial citations to in-circuit opinions are necessarily constrained by principles of *stare decisis* (Posner 2000), whereas out-of-circuit precedents are limited to having a persuasive effect (Landes et al. 1998, 273; Hinkle 2015). We take this distinction as a point of departure, for it underscores that different actors are subject to unique constraints even within the limited audience of federal judges—to say nothing of an audience external to the courts. Indeed, the overarching reason we discriminate between our expectations for in-circuit, out-of-circuit, and law review citation patterns is because each of these audiences is subject to a unique matrix of constraints and incentives. In our view, considering the unique behavioral incentives of each audience yields testable hypotheses about the factors that help structure the patterns with which actors in those audiences cite judicial opinions.

Because previous citation studies have not examined the factors associated with judicial opinions being cited by law reviews, discerning theoretical guidance about citation practices in that venue represents a particular challenge. Nonetheless, scholarship by Schwartz and Petherbridge (2011) has considered precisely the opposite question, examining the frequency with which opinions in the U.S. Courts of Appeals cite law review scholarship. These authors find that rates of judicial citation to law review material have actually increased over time, and they exhort others to devote further attention to the underpinnings of the relationship they observe. When considered in tandem with the idea that different audiences are subject to different sorts of constraints, aspects of their perspective shed additional light on the relationship between legal citations and law review content that we examine.

In sum, similar to studies in the Landes et al. (1998) tradition, we are interested in the number of citations that judicial opinions receive, and we rely on aspects of their framing in considering factors that may help structure rates of citation across the audiences we consider. In addition, and echoing Schwartz and Petherbridge (2011), we incorporate legal scholarship into our analytical framework. As noted, our theoretical approach is based on the concept of the judicial audience. More specifically, our approach seeks to leverage the reality that in-circuit, out-of-circuit, and law review audiences vary in terms of the general constraints that exist on their behavior. The clearest distinction between in-circuit citation, out-of-circuit citation, and law review citation is that in-circuit citation is the most bounded or constrained of the three categories owing to the hierarchical nature of citation within a federal circuit court.[2] Distinguishing between out-of-circuit citation and law review citation is more difficult, given that both venues can be considered unbounded in some sense. Instead of being forced to rely on certain precedential holdings, authors in these circumstances are freer to select the most persuasive or useful precedents that exist (Landes et al. 1998). At the same time, these two audiences arguably differ in an important respect. Out-of-circuit citations reflect the behavior of judges, and, as we will see, those judges—even though freed from the requirement of citing binding precedent that attends in-circuit citations—are nevertheless constrained by other forces specific to their judicial roles. They may have designs on promotion to the U.S. Supreme Court (e.g., Baum 1997, 2006); they will presumably wish to minimize the prospects of reversal, either out of concern for their reputation or simply because a reversal require them to expend significant further effort (e.g., Epstein, Landes, and Posner 2013). Many judges may simply be subject to greater time constraints than a typical law professor. Finally, in comparison to their academic counterparts, these judges must function as members of a small group (Martinek 2010). As such, they are called on to forge a level of consensus while maintaining an atmosphere of collegiality (Edwards 2003; Cohen 2002) and respect (Lipez 2013), and this could have implications for their citation behavior.

A number of important findings have emerged from analyses of judicial citation patterns, particularly with regard to the influence of ideological considerations. For instance, Choi and Gulati (2008a, 2008b) have

[2]In-circuit citations include instances where another panel or district court within the relevant circuit treated the case. Out-of-circuit citations include instances where any court not within the relevant circuit treated the case.

identified circumstances that may yield bias in judicial citations. Focusing on out-of-circuit citations, these authors identify an ideological cast to the nature of judicial citations and find that judges are less likely to cite opinions written by opposite-party judges than would be expected on the basis of chance alone (Choi and Gulati 2008a, 91; Choi and Gulati 2008b, 754). Landes et al. (1998) underscore the relevance of judicial ideology to citation practices, albeit in a different way. They claim that the *direction* of a judge's ideological bias is less important than its *magnitude*. In effect, they posit that most judges are unlikely to credit work by colleagues whose views are thought to represent the extremes of legal and political thought (Landes et al. 1998, 275; see also Posner 2016). They generally want to produce opinions that are perceived as mainstream—whether to facilitate future citation, to avoid *en banc* or Supreme Court review, or to accrue other reputational benefits. Therefore, although judges may still adopt the reasoning of a more extreme judge, that reasoning is likely to be couched in terms of citations to the opinions of those whose views are thought to be more conventional. Another way of expressing this point is to say that judges may be constrained in their ability to cite ideologically by the norms and obligations of their profession. In turning our focus to law reviews, however, it seems unlikely that those who author law review content would be subject to the same ideological constraints that Landes et al. (1998) suggest are operative in the judicial realm. As described in the next section, this leads us to hypothesize that ideological considerations will exert differential effects across these out-of-circuit and law review audiences.

Another justification scholars have used to explain differential rates of citation to particular judges stems from the idea that information costs are intrinsic to authoring a judicial opinion (or, we would add, a law review article). Judges may establish something of a "brand name" or "trademark" that distinguishes them and makes them especially visible to those who are seeking to complete their writing under time constraints that are typically significant (Landes et al. 1998). In such situations, rational citers would gravitate toward opinions authored by these more distinguished judges. If one "think[s] of the citer as a shopper among competing brands…the more familiar the brand the cheaper it is to cite rather than to cite a substitute." This cost "is lower not only to the citer, but also to his audience," because citation to the work of a "brand name" judge will likely have more meaning to that audience (Posner 2000, 389). One reason the work of some judges might be perceived as being more respected than others could result from that judge's overall professional reputation, which, presumably, would have the potential to grow as that judge's experience on the bench lengthens (e.g., Klein 2002, 30–1). Another could derive, in part, from the informational advantages that subject matter specialization has been shown to bestow in a range of circumstances (e.g., Miller and Curry 2013; Gilligan and Krehbiel 1995), a concept to which we return below. Finally, it is important to reiterate that the congruence of two cases on the relevant legal facts is likely to increase the chances that judges both within a circuit and out of a circuit discern cases as relevant to their decisional task. However, such a motivation is unlikely to exist most of the time for law review authors.

Data and Hypotheses

In considering the hypotheses spelled out below, we chose to examine citation patterns in antitrust, securities, environmental, and search and seizure cases. We randomly sampled search and seizure cases between 1995 and 2006; to ensure a sufficient sample of antitrust, environmental, and securities cases—all of which appear less frequently in the Courts of Appeals than search and seizure matters—we sampled those areas from 1995 to 2012. As discussed below, these issue areas and this timeframe were chosen to coincide with the measure of specialization in opinion writing that we use in the analyses that follow.

Our unit of analysis is the case as opposed to the judge (which is the more typical focus of studies of opinion citation), and we made this choice for several reasons.[3] First, we believe that the characteristics of a case will influence the likelihood that it is subsequently cited or treated significantly, and one cannot control for case characteristics if the unit of analysis is the judge. Furthermore, if we focused on judges and failed to control for case characteristics, we might underestimate the extent to which

[3]We exclude cases that are per curiam opinions from our analysis. As will be clear in our analysis, authorship provides critical information, and no author can be identified in per curiam opinions.

ideologically extreme judges, more experienced judges, or subject matter specialists focus on authoring opinions with particular characteristics, confounding our inferences about how judicial characteristics shape citation patterns.

A second preliminary point is that the counts capturing our three dependent variables are of treatments of cases and citations in law reviews. For citations by other judges we count actual treatments of the case, as opposed to mere citation, as this is a higher bar.[4] It amounts to excluding mere string citations (i.e., citations that are simply present but not discussed in the text). For reasons discussed below, we do not distinguish between negative and positive treatments. For law review citations we count actual citations and not treatments, because LexisNexis only summarizes such citations as a simple count of the number of times a case is mentioned in a law review.[5]

Further, because our primary interest is in judicial audiences broadly construed as opposed to specific courts, we chose not to disaggregate the treatment counts by citing court in the models we analyze. However, to provide a degree of insight into the relationships between citations to various courts, we randomly sampled 5 percent of the cases in our data. Several conclusions were apparent from this review. First, Supreme Court treatments were exceptionally rare, with just three existing out of a total of 1,659 treatments. Second, there is a high degree of correlation between treatments by the courts of appeals, the district court treatments, and the number of out-of-circuit treatments: $r = 0.82$ for Court of Appeals treatments and 0.96 for district court treatments. Further, the correlation between court of appeals treatments and district court treatments is also very high, with $r = 0.73$. Though by no means conclusive, these results strongly suggest that each of these measures moves together—when district court treatments are high, so, too, are treatments by the courts of appeals.

Finally, as we have noted, most studies have treated legal citations as a rough approximation for judicial influence (e.g., Landes et al. 1998, 271). Few studies differentiate between citations that are favorable or critical ones, and, since we find that posture most consistent with our understanding of judicial influence, we adopt it here. For one thing, if influence represents “the extent to which the actions of one person have an effect on the views or behavior of others,” (Klein and Morrisroe 1999), then “[a]n influential judge is one whose opinions…affect the thinking or work product of the judges or other actors in the legal community” (Solimine 2000, 1334; Garoupa and Ginsburg 2010, 244). Practically speaking, Judge Richard Posner has remarked that it is far easier to ignore poor judicial opinions than it is to cite them. Thus so-called negative citations often reflect that an opinion has presented “a powerful challenge to established positions or ways of thinking” (Posner 2000, 387)—a concept that seems akin to influence. Further, as Schwartz and Petherbridge (2011, 1354) observed with respect to decisions by judges to cite law reviews, “judges do not have to cite legal scholarship…so the choice to cite it…or criticize it can be understood as having a bearing on the decisional process…[and] that choice is part of the law.”

Our analysis centers on two dependent count variables. First, we count the number of choices to cite *out-of-circuit treatments* of a decision, including treatments by other federal district courts, the circuit courts, the U.S. Supreme Court, and any treatments by state courts. Second, we include a count of the number of *citations in law review articles*. Lastly, for the sake of comparison, we count the number of *in-circuit treatments* of a decision, including treatments by the district courts and the circuit courts. We are interested in these in-circuit citations primarily because they allow us to explore the importance of independently considering case facts in attempting to understand case citation practices. Descriptive statistics for these variables, as well as other included variables described below, appear in Table 1.

Our independent variables essentially divide into three categories: author characteristics, panel characteristics, and case characteristics. Below we describe each of the variables and how they fit within

[4]The correlation between the count of citations and the count of treatments is quite high at $r = .86$, meaning that though they count different things, there is still a high degree of similarity between the number of citations and the number of treatments. When one is high, so is the other. Unlike in cases, we believe that mere string citation is less likely in law review articles. Therefore, treatments and citation ought to be more closely analogous in law review articles than they are in cases.

[5]We collected our data utilizing searches in LexisNexis within the legal areas and time periods referenced in the text. We then took this set of cases and Shepardized them, relying on LexisNexis's coding to construct our dependent variables.

Table 1. Descriptive statistics.

Variable	Mean	Std. Dev.	Min.	Max.
In-Circuit Treatments	13.30	27.60	0	481
Out-of-Circuit Treatments	3.30	5.90	0	11.4
Law Review Citations	15.40	22.60	0	236
Author Ideological Extremism	0.33	0.16	0.01	0.65
Opinion Specialist Author	0.10	0.30	0	1
Author Experience	13.83	8.49	0	41
Author Experience^2	263.18	287.17	0	1681
Panel Ideological Extremism	0.29	0.14	0.01	0.57
Panel Has Specialist	0.08	0.27	0	1
Affirm Lower Court	0.72	0.45	0	1
Lower Ct. Liberal	0.25	0.43	0	1
Issues	12.18	9.79	0	91
Case Age	8.71	4.76	0	17
Case Age^2	98.39	87.12	0	289
Dissent	0.08	0.27	0	1
Amicus	0.16	0.37	0	1
Circuit Share of Case Terminations	0.09	0.05	0.02	0.22
Number of Published Ops. in COAs	29.39	3.21	25.14	37.29
Published	0.83	0.37	0	1

each category. Because in-circuit citation represents the most constrained of our three forums, we do not expect author or panel characteristics to be predictive of citation behavior there. Alternatively, case characteristics ought to be important predictors of citation in-circuit since the decision to cite should be driven largely by the extent to which the issues in the cited case match those in the citing case. This is because we expect in-circuit citations to be heavily constrained by *stare decisis* and binding circuit precedent (Choi and Gulati 2008a).

As discussed in the previous section, out-of-circuit and law review audiences can both be considered unbounded in some sense because no precedential value is attached to those citations (Landes et al. 1998). As such, we are particularly interested in how the characteristics of a panel deciding a case and the characteristics of the authoring judge influence how a decision is perceived by these relatively unbounded audiences (out-of-circuit and law review citations). To this end we conceptualize two of our key concepts, ideological extremism and opinion specialization, in two distinct ways. For these concepts we code for the characteristics of the author and the characteristics of the panel because we are unsure of whether, when citers look at these characteristics, they evaluate the author or the panel that produced the opinion. Previous studies that have focused on the judge assume citers respond primarily to author characteristics, but this ignores that majority opinions are a collegial work product from (usually) three different judges, not just the opinion author (Martinek 2010). On the other hand, we know that authors can have a disproportionate influence on opinion language and even, perhaps, its ideological valence (Hinkle 2014; Choi and Gulati 2008b). And while we have no explicit expectations in this regard (and thus do not distinguish between them in our expectations), the group-based context of appellate judging on the one hand and the more individualistic work product that typifies law review material only furthers the case for tapping these constructs at both the panel and individual levels.

To measure ideology we focus on ideological extremism, as implied by Landes et al.'s discussion (1998, 275; see also Posner 2016). We code the author's ideological extremism by relying on the commonly used Giles, Hettinger, and Peppers (2001) ideology scores for appellate judges. That variable, *ideological extremism*, is a folded measure to account for distance from the theoretical middle of the ideology score (which is 0), so that extreme liberals and extreme conservatives are placed on the same distance metric. We follow the same approach in creating our measure of *panel ideological extremism*, by folding the ideology of the median member of the panel. This measure reflects a form of ideologically informed citation in that it captures ideological extremity. That allows us to assess the following hypotheses:

Hypothesis 1a: We expect ideological extremism to have a negative effect on out-of-circuit citations.
Hypothesis 1b: We expect ideological extremism to have a positive effect on citations in law reviews.

First consider the application of our ideological extremity measure to the out-of-circuit context, as captured in Hypothesis 1a. Prior research indicates that judges tend to cite in a risk-averse or cautious manner—indeed, Posner references the "intellectual conservatism of judges… [and] their dislike of legal innovation" (2016, 28). This is because judicial opinions that are perceived as ideologically mainstream are more likely to be affirmed than those that are not (Landes et al. 1998, 275). By definition, then, those judges who are more ideologically distant from the average are further from most other judges. If judges tend to cite cautiously in the manner predicted by Landes and his colleagues (1998) and Posner (2016), they should be less likely to cite work associated with greater levels of ideological extremity.

If anything, law review authors are subject to still fewer citation constraints than out-of-circuit judges. We noted the potential benefits associated with citing "moderate" out-of-circuit opinions above. But that same calculus is inapposite to the law review context; indeed, the contents of law reviews have been shown to reflect the ideological views of particular authors (Chilton and Posner 2014; Schuck 2005). This absence of constraint is also reflected in part by the fact that law reviews provide clearer opportunities—oftentimes positive incentives—for authors to take bold and provocative positions (Posner 2002, 1321; 2016, 24). This, we suspect, may *increase* the likelihood that ideologically extreme citations will be included in law reviews by incentivizing law review authors to gravitate toward extremist arguments—hence the divergent predictions in Hypotheses 1a and 1b.

A second construct we account for in our models is designed to control for the presence of opinion specialization, and, as before, we capture this at both the judge and panel levels. First, we code whether an authoring judge is an *opinion specialist* using Cheng's (2008) measure of this concept, which is detailed in the Appendix. Second, we code whether the panel had a specialist on it but someone else wrote the majority opinion—a variable we term *panel has specialist.* We do not believe that in-circuit citation is likely to be responsive to the presence of an opinion specialist. Similarly, and perhaps counterintuitively, we assert that it is unlikely to matter much with respect to out-of-circuit citation. Most scholarly discussions about perceptions of judicial reputations on the Courts of Appeals are stylized not in terms of a judge's facility within a particular issue area or areas but, rather, that judge's *overall* professional reputation (e.g., Klein 2002, 30–1). If it is true that judges and academics use citations differently (Merritt and Putnam 1996, 877–78), perhaps any author-related biases in judicial citation rates are based on these more holistic assessments of a judge's competency rather than her status as a specialist in a particular area of law. In other words, citing judges may not approach judicial opinions with these more issue-specific assessments of competence in mind. Furthermore, the idea that judges are—and should be—generalists, not specialists, is deeply ingrained within the culture of the Courts of Appeals (Wood 1997; Posner 1983; Walker 1999; Tacha 1999; Cheng 2008, 521 n.2; Curry and Miller 2015, 35). Perhaps, then, an Eighth Circuit judge authoring an opinion in an environmental case cites an opinion by Judges Easterbrook or Cabranes because they have general reputations as being incisive, thoughtful jurists—not because either specializes in authoring opinions in environmental cases (which, according to Cheng (2008), they do not). But there is an even more concrete reason to posit no effects for specialization in the out-of-circuit context—we submit that most circuit judges will simply be unaware of those out-of-circuit judges who are opinion specialists in a particular area and those who are not. We suspect that judges serving within the same circuit as an opinion specialist may well be aware of their specialization due to their proximity and frequency of interaction, but that the constraining effects of circuit precedent and case facts will prevent them from relying disproportionately on the opinions of those specialists. Paradoxically, while out-of-circuit judges are freer to cite these specialists, they will be less capable than their in-circuit counterparts of identifying who they are.

By the same token, legal scholarship has grown increasingly specialized in the last several decades (e.g., Posner 2002, 2016; Priest 1983). As the substance of law reviews has grown more interdisciplinary, for example, Posner argues the law review audience has become less judicial and more professorial. To that end, he contends the "size" of the modern law review market has contributed to increasing levels of specialization in legal scholarship—specialized journals have grown in importance, and a rise in the number of law school

faculty has helped facilitate that march toward specialization. In other words, "the larger the overall market, the likelier it is that specialists can find customers for their specialized product" (Posner 2002, 1324; Posner 2016, 8). This type of market, then, is one in which it seems that specialist judges ought to find a ready and welcome reception. Since legal academics tend to specialize narrowly, they should more regularly engage with the work of opinion specialists regardless of the circuit in which that specialist sits. For example, a law professor specializing in environmental law would be better positioned to appreciate Judge Juan Torruella's status as an opinion specialist in that area than would, say, a judge sitting on the Fifth Circuit. Therefore we have the following expectation:

> **Hypothesis 2:** We expect opinion specialization to positively affect citation rates in law reviews, but not otherwise.

Our expectations about judicial experience are straightforward; we include two variables to determine whether lengthier periods of judicial service tend to result in greater levels of citation.[6] *Author experience* is a count of the number of years the judge authoring an opinion has been on the bench when the decision is issued. *Author experience^2* is the square of this term, which we include because past research has indicated that experience may help increase the likelihood of citation up to a point, before it actually diminishes the likelihood of citation (Landes et al. 1998). Because experience is a characteristic of the judge authoring an opinion, we expect that, in general, audiences that are responsive to other author-specific characteristics will be responsive to author experience. Indeed, judicial experience is a key indicator of out-of-circuit citation rates for judges in Landes et al. (1998).[7] We extend their logic to law review citation and have no expectation that the two audiences will treat experience differently. This leads to hypothesis 3:

> **Hypothesis 3:** We expect that increasing judicial experience will lead to more citation in out-of-circuit cases and law reviews, but not in in-circuit cases.

Our focus on cases, as opposed to judges, allows us to isolate how various case characteristics affect the likelihood of citation across the various forums we focus on. Given the norm of *stare decisis*, our general expectation is that these case-level factors ought to be particularly important for in-circuit citation practices, but less so for out-of-circuit and law review citations. We focus on four separate conceptions for cases: uniqueness, scope, age, and salience. Two variables form our conception of case uniqueness: the ideological direction of the lower court's decision and whether the circuit court affirmed that decision. We define case uniqueness along two distinct axes. First, we determine whether the lower court decision in a case was liberal or not where *liberal vote* is coded one if the panel decided the case in a liberal direction, and zero otherwise (please see the Appendix for details on our ideological coding). Three-quarters of the cases in our data are decided in a conservative direction.[8] Second, the vast majority of cases in our data are affirmed—again, about three-quarters of all cases are affirmed, and we capture this attribute with an *affirm lower court* variable, which is equal to one if the panel affirmed the lower court's decision and zero otherwise. Combining these concepts allows us to create a profile for cases that taps how unique they are along these two axes. The most unusual cases are those in which the lower court overturns a liberal lower court's decision (comprising 9 percent of cases). Two middle categories of cases are similarly likely to occur in our data: cases in which the panel affirms a liberal lower court decision (16 percent of cases) and those in which the panel overturns a conservative lower court decision (18 percent). The remaining cases (57 percent) are those in which the appellate court upholds a lower court's conservative decision. Given norms of stare decisis, we expect that

[6] We limit our measures of judicial experience to the individual authoring the opinion and, thus, do not include an estimate of panel-level judicial experience. While we tested those measures in alternative model specifications, those panel-level measures of experience were not significant predictors of the likelihood of citation/treatment and did not result in any differences in the results that we present.

[7] We acknowledge the notion that beyond a certain point, experience will potentially negatively effect citations, which we discuss more below.

[8] This general pattern holds when each issue area is considered separately, as the majority of cases in each issue area are decided in a conservative direction.

uniqueness will work against in-circuit citation, but that unique cases should stand out to less bounded audiences out-of-circuit and in the academy, leading to the following hypotheses:

Hypothesis 4a: We expect that the more unique a case the less likely it is to be cited in-circuit.
Hypothesis 4b: We expect that the more unique a case the more likely it is to be cited out-of-circuit and in law reviews.

Another case-level factor that may affect the likelihood a case is cited is how many legal issues it covers—in other words, case scope. The logic here is simple: the more issues a case touches on, the more likely it is to be relevant to subsequent cases or articles. We therefore include a variable that captures the number of *issues* present in the case, which is operationalized by counting Key-Cites in Westlaw. We have no reason to expect that the effects of scope will differ across citation forums; therefore,

Hypothesis 5: We expect that as the number of issues covered in a case increases so too will the number of citations a case receives.

Cases are more likely to be cited as they age. Essentially, the longer a case is in the potential set of cases that can be cited, the more likely it is that it will be cited. But this logic holds up only to a point, because after a period of time a case's value begins to depreciate. Within our data we expect the effect of case age to be more or less linear (as opposed to curvilinear), because our data spans only 17 years—generally not enough time for cases to age out of relevance. To account for the above, we include both a variable measuring *case age* in years and *case age*^{2}.[9] We do not expect that case age will matter differentially across our various audiences. This leads to a straightforward hypothesis:

Hypothesis 6: We expect that older cases are more likely to be cited than are newer cases.

A final set of case characteristics need to be considered—those related to case salience. Here we use two common measures of case salience: whether an amicus brief is present (Hettinger, Lindquist, and Martinek 2006, 58) and whether there was a dissent in the case (e.g., Collins 2008), as indicators of case salience. These two variables, *amicus* and *dissent*, are dichotomous and equal one when an amicus brief or a dissent, respectively, is present in a case. Our expectation is that salience will not matter much for the bounded in-circuit audience—decisions to cite here ought to be dominated by more legalistic considerations, such as case uniqueness, scope, and age, and we believe this will leave far less room for these constructs to operate in-circuit. However, for audiences that may choose which cases they cite with more freedom, case salience ought to be a positive predictor of citation. Choi and Gulati (2008a, 96), who find a significant relationship between out-of-circuit citations and the presence of dissent, put it this way: "the presence of a dissent serves to garner more than the usual amount of attention from outsiders." The presence of an amicus brief might do much the same thing. To wit:

Hypothesis 7: We expect that more salient cases are more likely to be cited out-of-circuit and in law reviews.

Table 2 summarizes our theoretical expectations for the above variables across our three audiences of interest.

Before turning to the results of our models, we note our inclusion of three additional control variables. We include a measure of the *circuit's share of case terminations* in a given year, because as the share of terminations in one circuit increase, there should be more opportunities for within-circuit treatment but fewer for out-of-circuit treatment (Landes et al. 1998). We also include a count of the *number of published opinions in the COAs* (courts of appeal) in hundreds (Landes et al. 1998). An increase in the number of opinions might increase demand for any given case, yet it also represents an increase in the competition to be cited. Lastly, we control for whether or not an opinion was *published*,

[9] It is worth noting that the case age variable also serves as a counter of elapsed time in our models. In addition, the inclusion of dummy variables for the year in which a case was decided does not alter the results we present below.

Table 2. Theoretical expectations.

Concept	In Circuit	Out of Circuit	Law Reviews	Hypothesis
Author Ideological Extremism	~	−	+	1
Author Opinion Specialist	~	~	+	2
Author Experience	~	+	+	3
Panel Ideological Extremism	~	−	+	1
Panel has Op. Specialist	~	~	+	2
Case Uniqueness	−	+	+	4
Case Scope	+	+	+	5
Case Age	+	+	+	6
Case Salience	~	+	+	7

Note. Signs indicate expected effect on citations, with the ~ sign representing an expectation of no effect.

with a dummy variable equal to one if the case was selected for inclusion in the official reporter and zero otherwise.[10]

Results

We model our data using a two-stage process. First, there are a fair number of cases that are never treated in cases or cited in law reviews. These cases enter our data as zeros, and this inflation of the number of zeros in our data can cause methodological problems if not properly modeled (Long 1997). To account for this, we model the data using a zero-inflated negative binomial model. This approach accounts for the count nature of the data, the predictable overabundance of zeros, and the fact that the counts are overdispersed (i.e., that some cases have very large counts, while most cases have more modest counts). To predict the overabundance of zeroes we use the indicator variable for whether or not a case was published. Cases that are not published have smaller chances of being cited than do cases that are published. For in-circuit treatments, there is a 58 percent likelihood of no treatments when a case is not published, in the out-of-circuit treatments model there is an 88 percent likelihood of no treatments, and in the law review citation model there is a 74 percent likelihood of no treatments. Obviously, this means that panels themselves will exercise a good deal of discretion about whether a case is likely to be taken up by subsequent judges or commentators. Before discussing the models it is worth noting the baseline levels of citation across each forum. In-circuit cases are treated on average 13 times, out-of-circuit cases are treated three times, and law review cases are cited 15 times.

The results are displayed in Table 3. In general, each of the models fits the data well, with statistically significant Wald χ^2 tests. Furthermore, the Vuong tests indicate that the zero-inflation equations significantly improve model fit (Long 1997). To control for any un-modeled circuit level characteristics, we include fixed effects for each circuit. In addition, to control for variation between the areas of law in our sample, we include issue area fixed effects. We treat both the circuit and issue area fixed effects as nuisance parameters and do not display them. In addition, to control for any unobserved heteroscedasticity we utilize robust standard errors.

[10]Our decision to include unpublished opinions in our models is an important one. The fact that judges themselves control whether or not an opinion is officially published in a reporter cannot be ignored. Given the wide availability of unpublished opinions in electronic databases, limiting the data to only published opinions could blinker some of our inferences unnecessarily. Instead, we model the effect of publishing by allowing publication to influence whether a case is cited at all. From a methodological perspective, our approach uses the published variable to predict the over-inflation of zeroes. However, including an additional control for whether the case is published in the count equation, instead of just in the zero inflation equation, does not alter our results in any meaningful way. Lastly, we estimated an additional model, not shown here, in which we included fixed effects for years in the model to account for potentially shifting norms regarding the citation of unpublished cases over time. Other than causing the squared case age term to drop from the model due to collinearity, there are no appreciable differences between the fixed effect model and those presented in the text. Readers may wonder whether the substantive effect of the decision to publish a case overwhelms the other effects that we discuss below. Because 89 percent of the cases in our data are published, the effects that we discuss are driven largely by results from published cases. In cases that are unpublished the effects of our variables are similar, but are smaller substantively. The number of published cases in our data might seem high, but this is driven by the fact that we exclude memorandum opinions in the data because we have no information about authorship in those cases.

Table 3. Zero-inflated negative binomial regression results.

	In Circuit Treatments	Out of Circuit Treatments	Law Review Citations
Author Characteristics			
Author Ideological Extremism	0.04 (.24)	0.31 (.22)	0.55 (.19)*
Opinion Specialist Author	−0.08 (.11)	−0.10 (.10)	0.29 (.08)*
Author Experience	0.01 (.01)	0.03 (.01)*	0.01 (.01)
Author Experience^2	−0.00 (.00)	−0.00 (.00)*	−0.00 (.00)
Panel Characteristics			
Panel Ideological Extremism	0.17 (.27)	−0.40 (.28)	−0.35 (.21)
Panel Has Specialist	0.07 (.10)	0.13 (.12)	0.17 (.08)*
Case Uniqueness			
Affirm Lower Court	−0.18 (.06)*	−0.19 (.07)*	−0.18 (.06)*
Lower Ct. Liberal	−0.34 (.07)*	−0.26 (.07)*	0.16 (.05)*
Case Scope			
Issues	0.05 (.00)*	0.03 (.00)*	0.02 (.00)*
Case Age			
Case Age	0.17 (.03)*	0.19 (.03)*	0.27 (.02)*
Case Age^2	−0.01 (.00)*	−0.01 (.00)*	−0.01 (.00)*
Case Salience			
Dissent	0.03 (.10)	0.16 (.15)	0.10 (.08)
Amicus	−0.07 (.09)	0.29 (.09)*	0.70 (.07)*
Controls			
Circuit Share of Case Terminations	2.55 (3.35)	−3.01 (3.61)	2.56 (3.06)
Number of Published Ops. in COAs	−0.00 (.02)	0.01 (.02)	0.04 (.01)*
Constant	0.59 (.76)	−0.23 (.81)	−0.87 (.60)
Zero Inflation Equation			
Published	−25.99 (.22)*	−24.39 (.35)*	−25.65 (.53)*
Constant	0.35 (.16)	2.00 (.25)	1.06 (.16)
Nonzero Observations	1801	1398	1827
Zero Observations	328	731	302
α (over-dispersion)	1.05 (.04)	1.15 (.06)	0.88 (.03)
Vuong Test	7.48 ($p = 0.000$)	9.52 ($p = 0.000$)	10.17 ($p = 0.000$)
Wald χ^2	639.54 ($p = 0.000$)	445.44 ($p = 0.000$)	797.68 ($p = 0.000$)
N	2129	2129	2129

*Coefficients are significant at $p < 0.05$ (two-tailed). Models include fixed effects for circuits and areas of law that are not displayed. Cell entries are coefficients, with robust standard errors in parentheses.

We begin by interpreting the coefficients from the model of in-circuit treatments. Recall that, in general, treatments in-circuit ought to be highly circumscribed by the possibility of review at a higher level (since much of the opportunity to treat a case occurs at the district court level) and other constraints on discretion. This is reflected by our assertion that neither ideological concerns nor judge or panel characteristics ought to affect the likelihood of treatment, and we see that this holds true. The ideological distance and specialist variables are insignificant at both the individual and panel levels. Additionally, author experience has no effect on rates of citation.

In general, the case-level concepts are highly predictive of in-circuit citation. Indeed, the only statistically significant predictors in the in-circuit model come from the case uniqueness, case scope, and case age sets of variables. Recall that we are using two variables to capture the concept of case uniqueness: whether the panel affirmed the lower court decision and whether the lower court decision is liberal. Moving from the most prevalent case in our data (affirming a conservative decision) to the least prevalent case in our data (overturning a liberal decision) results in a decrease of 2.2 [−2.6, −1.7] treatments (throughout 95 percent confidence intervals are in brackets). This is an 18 percent decrease in the likelihood of treatment over the baseline and suggests that cases reflecting results that are typical are more likely to be treated than are those that are atypical within circuits (in line with hypothesis 4). Case scope, captured by the number of legal issues present in a case, has a powerful effect on the number of in-circuit treatments. Moving from the 5th percentile for issues (2 issues) to the 95th percentile (30 issues) increases the number of treatments by 20.5 [17.7, 23.4], in accordance with hypothesis 5. This is the single largest effect in the in-circuit model, and this represents a 305 percent increase over the baseline. Lastly, case age affects the number of treatments a case receives in-circuit, as both the linear operationalization and the squared term are significant. Increasing the length of time a case has

been available for treatment from 1 year (the 5th percentile) to 17 years (the 95th percentile) increases the number of treatments by 8.8 [7.0, 10.6], a 129 percent increase over the baseline (as in hypothesis 6). Note that though the squared term is significant, it has no substantive impact here—the substantive effect of case age in this data is essentially linear. Lastly, it is worth noting that neither of the salience indicators is a significant predictor of in-circuit treatment, a difference from the models for out-of-circuit and law review citation. This lack of significance for ideological distance is contrary to expectation.

In contrast to the model for in-circuit citations, author characteristics matter for treatments out-of-circuit.[11] Unlike the regression for in-circuit treatments, the experience of the author of an opinion is an important determinant of the number of expected treatments, with both the linear operationalization and the squared term significant. Increasing the experience of an author from 0 years to 13 years increases the expected number of treatments by 0.5 [0.5, 0.6], representing an 18 percent increase over the baseline level of treatments. But as with case age, there are diminishing returns to author experience, as moving from 13 years to 29 years of experience results in a 0.3 [−.5, −0.1] decrease in the number of citations. We have conceptualized ideological citation as a measure of extremity, such that more ideologically extreme authors and panels ought to be less likely to be cited when judges have discretion. Interestingly, we find that neither the ideology nor the status of the majority opinion author as a subject matter specialist is a significant predictor of the likelihood that a case is treated. Nor does the ideological extremism of the panel or the presence of a specialist seem to matter for subsequent treatment of the decision.

Case characteristics are also important predictors of the likelihood that a case will be treated out-of-circuit. The uniqueness of a case continues to matter here. Again, moving from the most typical case to the most atypical case in terms of circuit reversal and the direction of the lower court's decision, we see a decrease in subsequent treatments of 0.2 [−.4, −.1]. This is a very modest change and represents only a 7 percent increase over the baseline and contradicts our expectations in hypothesis 4. To put this in perspective, uniqueness (as we have defined it) matters only about a third as much in out-of-circuit cases as it does in in-circuit cases. The scope of a case continues to be an important predictor of the likelihood of subsequent treatment, as a shift from the 5th percentile (two issues) to the 95th percentile (30 issues) increases the number of treatments by 2.6 [2.3, 2.9]. This represents a 111 percent increase in the probability of subsequent treatment, which, while substantial, is still only about a third of the effect for this same change in scope for in-circuit treatments.

Case age is a significant predictor of the likelihood of subsequent out-of-circuit treatment, as increasing the age of a case from 1 year (5th percentile) to 17 years (95th percentile) increases the number of treatments by 3.4 [2.7, 4.1]. This is a substantial increase over the baseline likelihood of treatment, representing a 258 percent increase that is about twice the magnitude of the effect for case age in the in-circuit model. Lastly, unlike in the model for in-circuit citations, the presence of an amicus brief increases the likelihood of subsequent treatments in the out-of-circuit model. Cases in which an amicus brief has been filed see an increase in out-of-circuit treatment of 1.0 [.4, 1.5], about a 30 percent increase over the baseline. To briefly summarize, compared to in-circuit treatments, for out-of-circuit treatments case uniqueness and case scope matter less, and case age and salience matter more.

Compared to the out-of-circuit model, the law review citation model suggests that characteristics of the author of an opinion matter significantly, as do some characteristics of the panel. In general, we have suggested that law reviews and the law professoriate are increasingly specialized (e.g., Posner 2002; Posner 2016, 24) and that this might lead these authors to focus disproportionately on the opinions of judges who also specialize in a particular area.[12] The data bear this out: opinions authored by

[11] One additional characteristic, not included in the models, that might matter for the subsequent treatment of the case is the institutional position of the author of the opinion. Basically, it may be the case that those authors who are chief judges of their circuits are more likely to be subsequently cited. We included a variable indicating situations in which the author of an opinion was a chief judge, and it is not a statistically significant predictor of citation in any of the models. Furthermore, the inclusion of this variable does not alter the results we present here.

[12] For example, judges who are not in the same circuit as an opinion specialist may be unaware of the fact that a particular judge tends to author an inordinate number of opinions in a particular area of law, whereas legal scholars working solely in particular disciplines (e.g., antitrust) may be keenly aware of such specialization since they will tend to focus their attention more narrowly on subject matter but more broadly across circuits.

opinion specialists are cited 5.1 [2.9, 7.4] more times than are opinions by non-specialists, representing a 34 percent increase over the baseline number of citations. Indeed, opinion specialists appear to have a positive effect on subsequent citation even if they are not the authors of the majority opinion in the case being cited. When the panel has a specialist on it, this increases the likelihood of subsequent citation by 2.9 [.9, 5.1], an effect about half of that for having an opinion specialist actually author the opinion in question. Further distinguishing the law review authors as an audience from judges is the fact that the more extreme an opinion author is ideologically, the more likely a case is to be cited. Moving from the 5th percentile of author ideological distance to the 95th percentile increases the number of case citations by 3.9 [3.6, 4.8]—a 28 percent increase in baseline citations. This comports with Hypothesis 1b and supports our argument that law review authors may seek out controversial and ideologically provocative opinions in their writing, again highlighting the differences between these audiences about which so many others have opined.

Now we turn our attention to the case characteristic variables in the law review model. The case uniqueness variables support the argument that law review citation is different from the citation practices of judges. Moving from the least common case in the data to the most common, there is a *decrease* in the likelihood of citation of 5.8 [−7.4, −4.3] —this means that more typical cases are less likely to be cited than are more atypical cases. This is a complete reversal of the situation for both in-circuit and out-of-circuit treatments, wherein more typical cases are more likely to be cited. The scope of a case matters for law review citation. An increase from 2 (5th percentile) to 30 (95th percentile) in the number of issues addressed in a case increases subsequent citations by 9.0 [7.9, 9.9], a 42 percent increase. The direction of this effect is the same as in the in-circuit and out-of-circuit models, but the magnitude of the effect is substantially smaller than in either of those models.

The effect of case age is rather profound in the law review model. Moving from 1 year old (5th percentile) to 17 years old (95th percentile) results in an increase in citations of 26.7 [21.5, 32.0], a 721 percent increase over the baseline citation rate. Again, as in the in-circuit and out-of-circuit models, though the squared term for age is significant, it does not matter substantively because of the relatively limited nature of the timespan in our data. The effect of case age in the law review model is three times that in the out-of-circuit model and about six times greater than in the in-circuit model. Case salience is also most important in the law review cases, as the presence of an amicus brief increases the number of citations by 13.3 [10.7, 15.7], a 101 percent increase over the baseline—an effect about three times as large as that seen in the out-of-circuit model.

Lastly, as the number of published opinions in the circuit courts increase, the number of citations to any one case actually increase: an increase from the 5th to the 95th percentile in the number of case terminations increases the number of citations by 5.0 [3.1, 7.1]. This is obviously a curious result, as one would expect that as the number of terminations increase and the pool of cases available for citation increase that the likelihood of any one being cited should decrease. Further, that this effect occurs only in the law review model is also puzzling and suggests to us that perhaps an increase in the number of law reviews over our time period is a partial cause of this finding.[13]

Simulating across Characteristics and Audiences

To better illustrate the varying effects of author and case characteristics, we present simulated predicted citations or treatments across a host of theoretically interesting scenarios in Figure 1. The figure presents changes across three scenarios in terms of the percentage change in number of citations above (or below) the baseline expectation for in-circuit, out-of-circuit, and law reviews. We use percentage change instead of raw numbers because of the widely differing average number of citations across each category, which is normalized here to allow for easier comparison. In the first scenario, represented in the first grouping in the figure, we alter the ideology of the opinion author (from moderate to extreme),

[13]The number of merits terminations increases as a function of time—the correlation between year and merits terminations is $r = .86$.

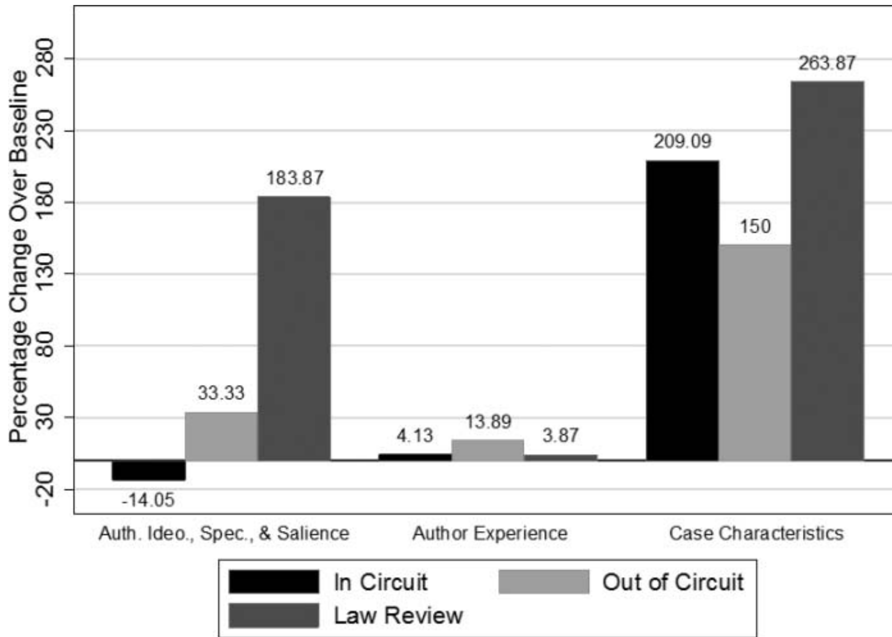

Figure 1. Scenario analysis.

whether the author is specialist (no specialist to specialist), and the salience of the case (no amicus present to amicus present). In the second scenario, represented in the second grouping in the figure, we alter author experience from the minimum (1 year) to the median (13 years). In the third scenario, represented by the third grouping in the figure, we alter the case scope (from 1 issue present to 29 issues present), the case age (from minimum 1 year to the median 13 years), and the case uniqueness (from a liberal lower court decision that is reversed to a conservative lower court decision that is upheld). As noted, the percentage changes noted above the bars in the figure represent the change in the number of citations engendered by changing these variables together compared to the mean number of citations within each category (in-circuit, out-of-circuit, and law reviews).

Here it is most useful to compare the changes within groupings, where the black bar represents changes for a scenario in in-circuit citations, the light gray bar for changes in out-of-circuit citations, and the dark gray bar for law review citations. In the first scenario, it is immediately apparent that cases decided by more extreme judges who are specialists deciding highly salient cases are less likely to be cited in-circuit, moderately more likely to be cited out-of-circuit (an effect driven entirely by case salience), and substantially more likely to be cited in law reviews. Indeed, the characteristics of the author of an opinion on citations in law reviews are much more dramatic than they are for either types of citation undertaken by judges. Given the setup of our scenarios, a near doubling of the number of law review citations occurs when one moves from an ideologically moderate and non-specialized judge authoring an opinion in a non-salient case to an ideologically extreme and specialized judge authoring an opinion in a salient case. Furthermore, the differences across potential citation forums in the first grouping are the starkest of any of the three scenarios. It is therefore clear that law review authors premise their decisions to cite cases on the basis of the identity of the authoring judge more than do other judges, something that is true even when judges are largely unconstrained in their citation decisions (as is true for out-of-circuit citations). Looking at the second grouping, at the effects of author experience, it is clear that the effects are modest and matter most for out-of-circuit treatments. Finally, the third grouping tracks the effects of case changes on the likelihood of citation. Across all the types of audiences, changes in case characteristics are highly impactful, mattering most in the decisions of law review authors to cite cases. More importantly, we wish to highlight the degree of change that is

missed by not focusing carefully on how the case characteristics matter for citation decisions across three unique audiences—this, of course, underscores the value of using the case as our unit of analysis.

Discussion

We have shown that factors structuring rates of citation to judicial opinions vary across different audiences. Consistent with expectation, case-related variables were key in shaping in-circuit citations; factors related to author characteristics, panel attributes, and ideological extremism proved unimportant in this context. This underscores the relevance of legal constraint to in-circuit citation practice (e.g., Hinkle 2015). The same case-based variables that registered as significant in the in-circuit model remained important out-of-circuit and in law reviews, although, in the latter two contexts, the presence of an amicus brief—a proxy for case salience—also mattered. Further, case uniqueness was a key negative predictor for both in-circuit and out-of-circuit treatment, but it was a positive predictor of citation in law reviews. Though we had anticipated author experience to enhance citation both out-of-circuit and in law reviews, its significance was limited to the out-of-circuit model. Ideological extremism mattered in only one instance—with respect to extremism of opinion authors in law review citation (Hypothesis 1b). Neither other judges nor legal academics seem to react to the ideological extremism of the deciding panel (as predicted in Hypothesis 1a). On the other hand, other judges seem to consider the experience of the authoring judge when citing out-of-circuit (Hypothesis 3), although legal academics do not seem to value experience in the same way. That these two audiences pay heed to differing aspects of the opinion author is telling of the divergence between what judges and the legal academy seem to find important about an opinion.

In our view, these results are valuable to scholars of law and courts for at least four overlapping reasons. First, and most generally, legal citations are important. Hinkle (2015, 722) calls citation decisions the "fundamental building blocks of judicial opinion writing" and stresses that citation analysis can give scholars leverage by which to better understand judicial lawmaking. A second point is that, as attention to the existence and significance of judicial audiences grows (e.g., Baum 2006), a natural extension of questions about how judges can appeal to their relevant audiences and why they are inclined to do so is likely to be reciprocal: What is it those various audiences want or deem important? And with respect to legal audiences in particular, though the divergence between the judiciary and the academy has been referenced for some time, the fact that we have identified a divide between unbounded (out-of-circuit and law review) audiences on the issue of citations—that is to say, about the factors that make decisions useful, persuasive, and important—is significant. Further, our findings augment those of Merritt and Putnam (1996, 873; see also Schwartz and Petherbridge 2011), who note that only by undertaking different examinations pertaining to "citation preferences of judges and academics… [can scholars] assay the nature of any divide between the courts and the academy."

Third, though our study's direct implications for judicial behavior are more limited, our results do have secondary lessons for decision making. As an example, having established the importance of ideological extremity to law review content, a possible avenue for behavioral study could involve examining whether judges elevated to the Courts of Appeals from the professoriate engage in more ideologically consistent decision making than do those who have never served on a law school faculty. Informed by our results here, there are at least two potential mechanisms that might lead this to occur. Former law professors may be more conditioned than their peers to read, write, and think about legal issues from an academic vantage point that is, on balance, more receptive to ideologically extreme arguments. Alternatively, or in addition, they may be particularly motivated to reach the legal academy as a primary audience—an audience that, again according to our results, looks approvingly at more extreme or unorthodox material (e.g., Posner 2016, 278).

Finally, our results suggest how different types of judges may be more influential in some contexts than others. To the extent that citation patterns can be equated with influence or prestige (see Landes et al. l998; Kosma 1998; Posner 2000; Smith and Bhattacharya 2003; Bhattacharya and Smyth 2001), these findings imply that more ideologically extreme judges may be especially able to cultivate their influence outside the judiciary, whereas more ideologically moderate jurists will encounter greater

difficulty in doing so in the context of that particular audience. Similarly, whatever the other benefits of opinion specialization on the courts of appeals (Curry and Miller 2015), it appears that the primary reward for specialization in terms of citation-related behavior exists external to the courts. Coming full circle, then, the pathways for judicial influence as conceived here are audience specific—and determining how judges can be most influential in their citation behavior is dependent on a follow-up question: Who, exactly, do they wish to influence?

Beyond all this, attention should be devoted to the articles that judges on the Courts of Appeals contribute to law reviews and the frequency with which they do so. For instance, to what degree might certain types of judges be more likely to publish in law reviews than others? Though it necessitates further study, perhaps the results we have uncovered represent preliminary evidence that the increasingly specialized nature of legal scholarship has afforded more ideologically extreme judges or those with strong interests in particular legal areas an important outlet by which to reach their relevant audiences. At the same time, however, our results buttress the legitimacy of concerns about the waning relevance of mainstream judicial opinions to the academy—and the academy's own diminishing sway over many of the issues with which courts and judges today must regularly grapple.

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Appendix

Measuring Opinion Specialization

As noted in the body of our article, we rely on Cheng's (2008) measure to capture opinion specialization on the Courts of Appeals. Cheng's measure is based on identifying judges whose patterns of opinion authorship in a given legal area are statistically anomalous—that is, while opinion assignment on

Table A1: Opinion specialists by court and issue area.

Name	Court	Area(s) of Opinion Specialization
Garland, Merrick	DC	Criminal
Randolph, A. Raymond	DC	Criminal
Rogers, Judith Ann Wilson	DC	Criminal
Boudin, Michael	1st	Antitrust
Torruella, Juan	1st	Environmental
Cabranes, Jose	2nd	Securities
Calabresi, Guido	2nd	Criminal
Newman, Jon	2nd	Criminal
Sack, Robert	2nd	Antitrust
Wesley, Richard	2nd	Criminal
Barry, Maryanne	3rd	Criminal
Fisher, D. Michael	3rd	Criminal
Mansmann, Carol Los	3rd	Securities
Rendell, Marjorie	3rd	Criminal
Scirica, Anthony	3rd	Criminal
Smith, D. Brooks	3rd	Securities
Van Antwerpen, Franklin	3rd	Criminal
Michael, M. Blaine	4th	Criminal
Wilkins, William	4th	Criminal
Wilkinson III, J. Harvie	4th	Criminal
Jolly, E. Grady	5th	Criminal
Reavley, Thomas	5th	Criminal
Brown, Bailey	6th	Criminal
Contie Jr., Leroy	6th	Criminal
Jones, Nathaniel	6th	Criminal
Kennedy, Cornelia	6th	Criminal
Moore, Karen	6th	Criminal
Norris, Alan	6th	Environmental; Criminal
Ryan, James	6th	Criminal
Bauer, William	7th	Criminal
Coffey, John	7th	Criminal
Easterbrook, Frank	7th	Antitrust; Criminal; Securities
Flaum, Joel	7th	Criminal
Kanne, Michael	7th	Criminal
Posner, Richard	7th	Antitrust; Criminal
Rovner, Ilana	7th	Criminal
Lay, Donald	8th	Antitrust
Loken, James	8th	Criminal
Magill, Frank	8th	Criminal
Murphy, Diana	8th	Criminal
Smith, Lavenski	8th	Criminal
Alarcon, Arthur	9th	Criminal
Beezer, Robert	9th	Antitrust
Clifton, Richard	9th	Environmental
Gould, Ronald	9th	Environmental
Kozinski, Alex	9th	Criminal
Hug Jr., Procter	9th	Environmental
Noonan, John	9th	Criminal
Norris, William	9th	Antitrust
Reinhardt, Stephen	9th	Criminal
Sneed, Joseph	9th	Securities
Trott, Stephen	9th	Criminal
Wardlaw, Kim	9th	Criminal
Anderson, Stephen	10th	Criminal
Barrett, James	10th	Criminal
Ebel, David	10th	Criminal
Lucero, Carlos	10th	Criminal
McKay, Monroe	10th	Criminal
Birch, Stanley	11th	Criminal

the courts of appeals is unlikely to be entirely random, Cheng restricts his definition of opinion specialists to those who fall at least three standard deviations beyond perfectly random authorship patterns. While his measure can include both positive and negative specialists, only one legal area we analyze (search and seizure) has negative specialists. Further, while we count negative opinion specialists as non-specialists, our results remain robust when treating them as negative specialists.

Ideological Coding in Each Issue Area

For each issue area we created a variable characterizing a decision as either liberal or conservative. Here we detail, for each of the four issue areas in our study, how we operationalized the ideology of a case outcome. In general, our characterizations track traditional (i.e., Spaeth et al. 2013) thinking about liberal and conservative outcomes. For instance, we characterize liberal antitrust decisions as those that favor breaking a monopoly; Curry and Miller (2015) and Landes and Posner (2003) provide further justifications for this characterization. In environmental cases, liberal decisions are those favoring greater environmental regulation (e.g., Revesz 1990); in cases where criminal environmental liability was alleged we counted as liberal those cases that upheld a conviction on environmental crimes.

The overarching purpose of federal securities law is to provide investors with full and fair disclosure (Taylor 2003; Steinberg 2001). For example, passage of the Sarbanes-Oxley Act of 2002 was largely a reaction against a number of corporate accounting scandals in which investors lost billions of dollars. In most securities cases in our dataset, individual investors (as stand-alone plaintiffs or in class-action suits) or the Securities and Exchange Commission itself have accused corporate defendants of failing to discharge their responsibilities related to that openness. Securities cases were considered liberal when they favored greater regulation or oversight. Finally, we follow well-established practice (e.g., Segal 1984, 1986; Scherer 2005) and code liberal search and seizure decisions as those that favor defendants who have alleged a Fourth Amendment violation.