The Efficiency of Federal Appellate Decisions: An Examination of Published and Unpublished Opinions*

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Almost 60 years ago, James Gough, wrote of the "pathologies" of the federal appellate process—particularly institutional characteristics that obstructed swift, meaningful justice. While some researchers have explored these institutional pathologies for published cases, the present piece extends our understanding in two ways. First, we introduce an empirical measure of judicial efficiency, "swift justice," in terms of adjudicatory disposition time. Second, we examine the impact of particular institutional characteristics—whether a case is orally argued, or whether the decision is published—on judicial efficiency. We analyze the population of published and unpublished U.S. federal appellate decisions from 1976-97, using institutional variables to identify prescriptions that might attenuate pathologies of adjudicatory speed. Our historical analysis provides some baseline evidence that publication status influences the timeliness of appellate decision making.

Until the late 1990s scholars had little knowledge about the institutional dynamics of the U.S. Courts of Appeals. Part of the limitation in scholarly exploration of these courts was the scope and magnitude of collecting data on the thirteen circuits reaching across the country, with different judges, political cultures, and legal influences. The most comprehensive collection of data on these courts was initiated by Donald Songer and funded by the National Science Foundation in 1989. Songer (1996) produced a multiuser data set of approximately 20,000 published decisions from the U.S. Courts of Appeals (hereafter, "Songer Database") that included 229 variables and a sample of published cases decided from 1925 to 1996. In 2003 the National Science Foundation funded an update (hereafter, "Update") to the Songer Database that mirrored Songer's coding scheme and added over 2,000 cases from 1997 to 2002 (Kuersten and Haire, 2007).[1]

These two rich sources of data have allowed scholars to test a wide variety of substantively meaningful questions surrounding the U.S. Courts of Appeals and other courts, including mixed-outcome decisions (Lindquist, Haire, and Songer, 2007); issue agenda (Songer, Sheehan, and Haire, 2000); party advantage (Clermont

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[1] To be more specific, the Songer Database is composed of two phases of data. Phase 1 includes 15,325 decisions from 1925 to 1988. Phase 2 includes 2,880 decisions from 1988 to 1996. These two databases are merged and referred to as the "Songer Database." The "Update" includes 2,160 cases from 1997 to 2002 that have been merged with the Songer Database. (Phase 2 compiles appellate cases that were reviewed by the Supreme Court.)

and Eisenberg, 2002); the impact of ideology (Hettinger, Lindquist, and Martinek, 2004) and presidential appointment (Giles, Hettinger, and Peppers, 2001); precedent (Cross, 2007); statutes (Randazzo, Waterman, and Fine, 2006); litigant resources (Songer, Sheehan, and Haire, 1999); and judge gender, race (Collins and Moyer, 2008), and tenure (Kaheny, Haire, and Benesh, 2008). The data were also used to produce at least three book-length manuscripts (Cross, 2007; Kuersten and Songer, 2001; Songer, Sheehan, and Haire, 2000). Notwithstanding these contributions, we contend that two areas of necessary appellate research have been relatively neglected.

First, we know little about the institutional consequences of unpublished opinions. The preceding references illustrate that answers to many of the important questions in the subfield of judicial behavior are based on the Songer Database and the Update. Notwithstanding the database's strengths, these data only include opinions published in the *Federal Reporter*, often called *published* opinions.[2] Unfortunately, as Songer (Songer, 1990; Songer and Sheehan, 1992) himself noted, focusing on reported decisions is highly problematic for several reasons. In the last forty years, a significant portion of the cases decided by the courts of appeals have not been published in the *Federal Reporter*. Indeed, over time, the number of unreported decisions has started to dwarf the number of those reported; by the 1980s, less than half of the courts' decisions were reported (Songer, 1990), and by 1997 that proportion dropped to one quarter (Mecham, 1997).

But the importance of unpublished decisions has also increased. Federal Rule of Appellate Procedure 32.1 was amended in 2007 to allow attorneys and judges to cite unpublished cases as precedent in all circuits (Boyeskie, 2008; Gant, 2006). And while some studies have examined the court's decision to publish (Merritt and Brudney, 2001; Wasby, 2001), other scholars have either compared the general traits of unpublished and published cases (Songer, 1990), or distinguished these types of cases with respect to a particular inquiry (Keele et al., 2009, examining the applicability of the attitudinal model to forestry cases). However, these studies have done little to analyze the impact that publishing a case would have on a substantive outcome like judicial efficiency. This leads to our second contribution to the scholarship literature.

Most of the judicial decision-making research focuses on the nature of the decision, and not the time spent making the decision. From a practical standpoint there is certainly a long list of scholars (e.g., Carrington, 1969; Posner, 1985; Shuldberg, 1997) who have concerned themselves with judicial timeliness as a means to reduce caseload or to illustrate court performance. Beyond this means-based approach, we see appellate disposition time as an important outcome of judicial decision making for several reasons that are perhaps best borrowed from Cauthen and Latzer's (2008) study of capital appeals. First, lengthy appellate-case-disposition time compromises public

[2] We also note that *published* decisions became a misnomer in 2001, when West started publishing most of the *unpublished* cases in the *Federal Appendix*; indeed, the more precise terms are *reported* and *unreported* decisions. However, having made the distinction, we adhere to standard practice and use *unreported* and *unpublished*, and *reported* and *published*, interchangeably throughout this article.

confidence in the justice system. Second, for criminal cases, inefficiency may dilute the deterrent effect of a sentence, thus creating further diminishment of public confidence in the judiciary. Finally, delays in appellate-disposition time can be grounds for further litigation. In broadest terms, however, our interest in adjudicatory speed flows from the logic of constitutional due process and the adage that "swift justice" is fair justice.

Another important institutional characteristic of appellate decision making is the court's use of oral arguments. The role of oral arguments at the appellate level has been well covered (Cohen, 2002; Posner, 1996), and some have noted that this characteristic may even be related to the decision to publish. For example, Posner (1996) observed that a decrease in oral arguments has led to fewer published opinions.

The use of oral argument may impact individual case disposition time. Cohen (2002:57) observed "judges spend at least one week of each month hearing arguments, potentially at the expense of time spent on other aspects of the judicial process." Perhaps this is why some (e.g., Posner, 1996) have identified dispensing with orals as a prescription toward increasing efficiency. Research by Lindquist (2007:692) offers some support; at the circuit level, she found a positive relationship between use of oral argument and disposition time.

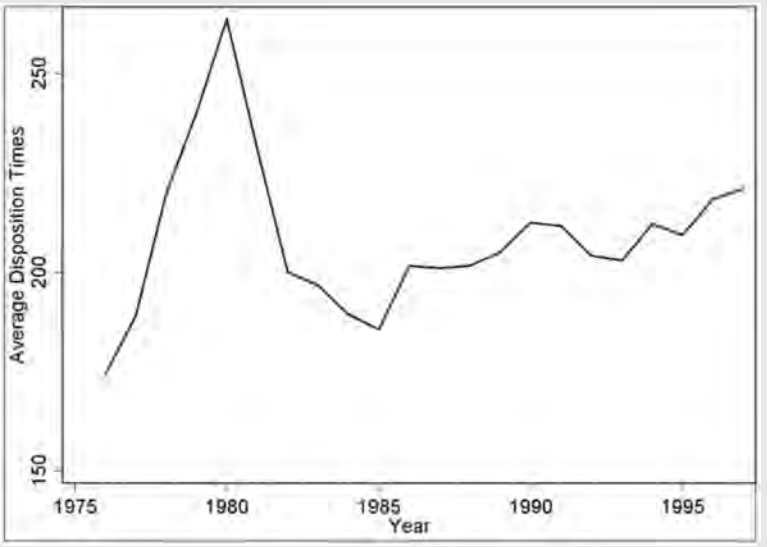
In short, we see the need for further empirical studies that examine not only unpublished appellate decisions, but also disposition time as a variable of substantive interest. With our eye on federal appellate decisions, the following study attempts to do both.

We proceed as follows. First, we give a brief description of the data we use; introducing the data early in the manuscript allows us to share descriptive representations of appellate outcomes as we discuss relevant themes in the literature. In our literature review, we discuss judicial efficiency, our dependent variable, and extant work that focuses on this important measure of judicial performance. We then review pathologies—institutional and case-level characteristics—that may influence case-processing times, which is our measure of swift justice. Our primary independent variables of interest will be the influence of published and unpublished decisions and presence of oral arguments. We then describe our analytical approach, including more specific descriptions of our variables, measures, and methods. We conclude by presenting our analyses and discussing implications of our study.

CASE DATA

Because the Songer data exclusively focus on published decisions, our primary data source is the Federal Judicial Center's Federal Court Cases: Integrated Data Base, Appellate Terminations, 1970-2000 (2005), which contains the population of cases decided by the twelve geographic circuits. The time period, while extensive, was limited by data availability, as the FJC did not collect all of the relevant variables, particularly those necessary to generate the dependent variable (disposition time), as well as

Figure 1
Mean U.S. Courts of Appeals Disposition Times per Year, 1976-97



one of the main independent variables (whether the opinion was published).[3] As such our analysis focuses on nearly 400,000 cases between 1976 and 1997.[4]

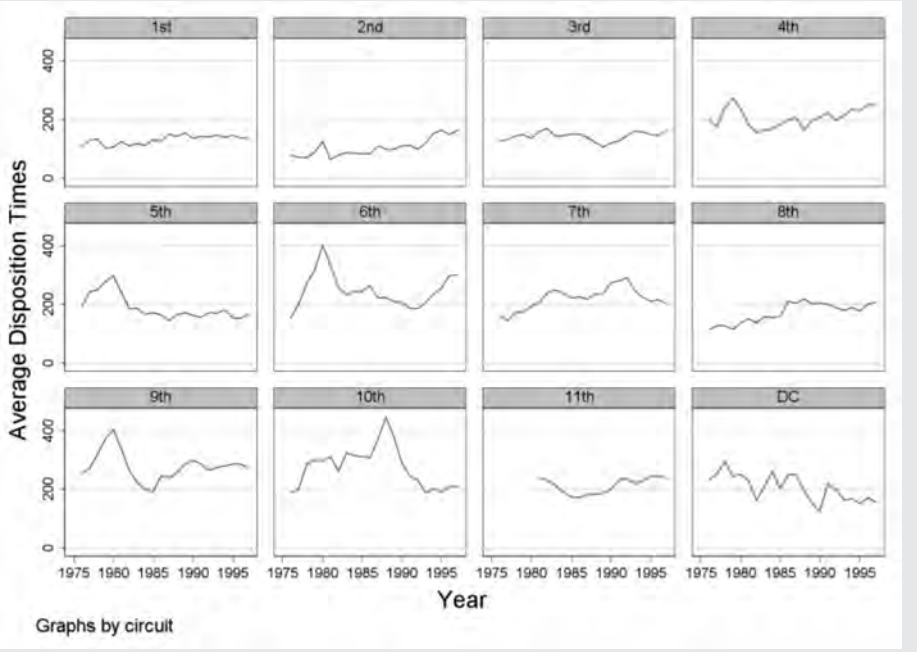
SWIFT JUSTICE AND PATHOLOGIES OF JUDICIAL EFFICIENCY

Judicial Efficiency: Case Disposition Time. Judicial observers have long perceived the importance of timeliness/efficiency in case disposition time, noting dramatic increases in federal appellate workload over time (Cohen, 2002; Dragich, 1996; Keele et al., 2009). In some cases, practitioners and scholars (e.g., Gough, 1955-56) have taken a medical-like approach suggesting "pathologies" that obstruct swift justice. Before we explore particular case-level pathologies with available controls, for example, caseload

[3] Overall, missing data is still a significant limitation. Even during our time period, almost 25 percent of the cases were excluded due to missing data, primarily a result of the dependent variable, disposition time. We compared cases with complete data to cases with incomplete data (included vs. excluded cases). First, the excluded cases seem to be cursory summary dispositions or decrees (almost all the excluded cases were neither reported nor orally argued). As such, our descriptive statistics likely overstate the time it takes the circuits to dispose of cases. Second, because these cases are likely disposed of quickly, and because cases with incomplete data are highly correlated with our two main independent variables, oral arguments and publication status, our estimates of the impact of both variables are likely biased downward.

[4] As context for the time frame of our study, we were unable to effectively extend the analysis beyond 1997 for several reasons. First, after 1997 the FJC neither accurately nor consistently reported the date on which the last litigant's brief was filed. As we explain in the Variables section, date of brief submission is a key piece of information needed to calculate judicial efficiency. In fact, after 1997 the available data sets reported the *year* a brief was filed in only about 40 percent of the cases, *month* in about 80 percent of the cases, and *day* in less than 20 percent of the cases. Second, paucities in the FJC data prevent us from using even less satisfying measures to calculate judicial efficiency, for example, docket date. For example, docket *days* are missing in the FJC data after 1997.

Figure 2
Mean U.S. Courts of Appeals Disposition Times per Circuit per Year, 1976-97

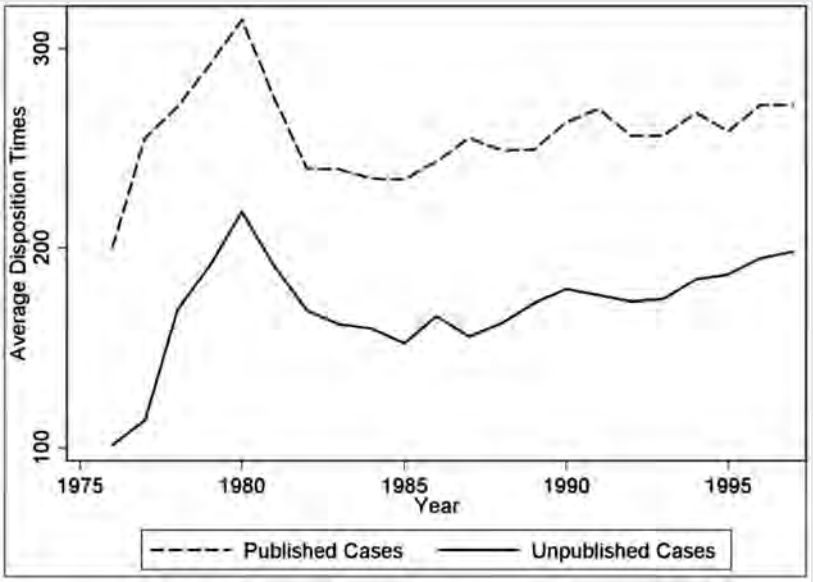


and issue type, we offer a descriptive depiction of case disposition times to confirm the relevance of concerns about workload and efficiency. Figure 1 depicts the upward sloping trend that is mean disposition time across all federal appellate cases from 1976 to 1997. Figure 2 offers a more nuanced view of case-processing times by circuit, underscoring the rising trend in the majority of circuits.

It is apparent by the dramatic spike in Figure 1 that the courts of appeals were becoming increasingly inefficient in the late 1970s. As a result, Congress implemented a variety of prescriptive measures, including the approval of new judgeships, a third law clerk, and the split of the 5th Circuit (Richman and Reynolds, 1988). During the early 1980s, after the implementation of these measures, the mean disposition times decreased by approximately two months. However, starting in the mid-80s, the slope increased, albeit slowly.

To determine whether these patterns are consistent across circuits, we also graphed the changes in mean disposition time by circuit (Figure 2). It is apparent that the overall pattern observed in Figure 1 is driven by a handful of circuits: primarily the Sixth and Ninth, and to a lesser extent the Fourth and Fifth. The Fifth Circuit pattern is likely a result of the circuit split. At the same time, the Sixth and Ninth circuits added the most new judges in 1979 (four and nine, respectively, after the passing of the judges' bill). Finally, the Fourth Circuit, which experienced a less dramatic drop around

Figure 3
Mean U.S. Courts of Appeals Disposition Times per Year, Published v. Unpublished Cases, 1976-97



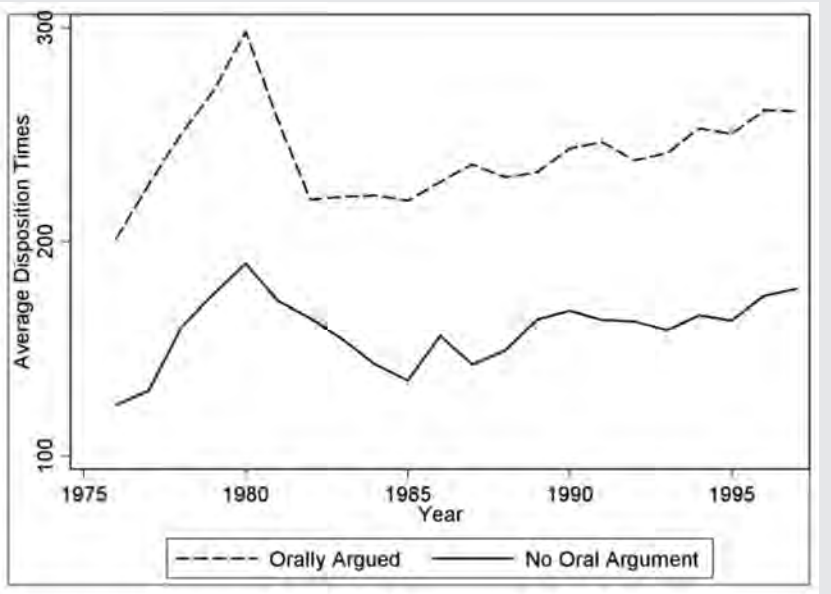
1980 than the other three circuits (Fifth, Sixth, and Ninth), added more judges than all but those three circuits.

Next, we graphed the different mean disposition times for published and unpublished (Figure 3) and orally argued and non-orally argued (Figure 4) cases. In both graphs, the two trend lines reflect the overall pattern of disposition times observed in Figure 1. However, published and orally argued cases take approximately 100 more days to decide when compared to the unpublished and non-orally argued cases, respectively.

Despite a persistent focus on reforming federal appellate courts, most work that suggests the need for court reform, or analyzes the logical implications of various types of reform, does so without empirically testing these implications (e.g., Posner, 1983, 1996; Richman and Reynolds, 1988) relative to judicial efficiency. Even beyond federal appellate courts, only a few scholars have empirically focused on efficiency in other settings (Marvell and Moody, 1998, examining a sample of forty-four state appellate courts).

Many researchers have examined the impact of appellate reforms, but only a handful of studies test whether the reforms actually enhance efficiency (e.g., Beenstock and Haitovsky, 2004; Binford et al., 2007). Recently, Binder and Maltzman (2009), Cauthen and Latzer (2008), and Lindquist (2007) provided the most compre-

Figure 4
Mean U.S. Courts of Appeals Disposition Times per Year, Orally Argued v. Non-Argued Cases, 1976-97

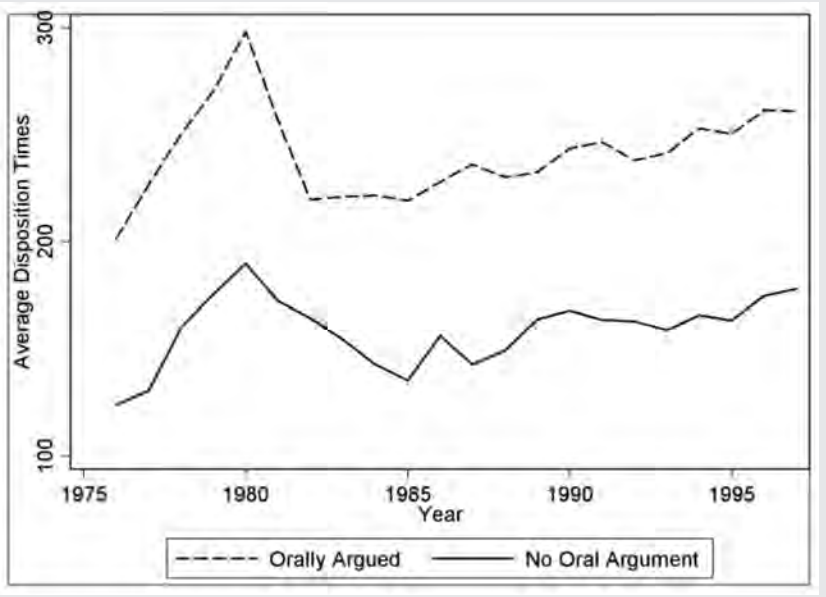


hensive studies of judicial efficiency. In their work on the U.S. Courts of Appeals, Binder and Maltzman (2009) and Lindquist (2007) do not examine individual case efficiency, but they do examine the impact of aggregate, circuit-level characteristics on average disposition times. Binder and Maltzman (2009) focus primarily on the impact of vacancies resulting from conflict in the confirmation process. Lindquist (2007) analyzes the impact of numerous characteristics on circuit-level outcomes, including use of oral arguments, number of judges, judges sitting by designation, and decision publication. These studies are pathbreaking but are limited in that they only examine aggregate-level efficiency.

Cauthen and Latzer's (2008) study is a case-level analysis, but focuses on the narrow case type of capital appeals. Like Marvell and Moody's (1998) work, Cauthen and Latzer's (2008) focus is state, not federal, appellate courts. Nevertheless, they find relationships between processing times and opinion length, treatment of the lower court, dissensus, and ideological diversity of the judges.

In our effort to supply the field with a comprehensive analysis of decision-level efficiency on the federal appellate courts, we build on existing research to identify practices and pathologies that might impact the speed with which U.S. Courts of Appeals deliver decisions. In the following sections we focus specifically on two such institutional pathologies: the decision to publish and the decision to hear oral arguments.

Figure 5
Proportion of U.S. Courts of Appeals Published Decisions per Year, 1976-97

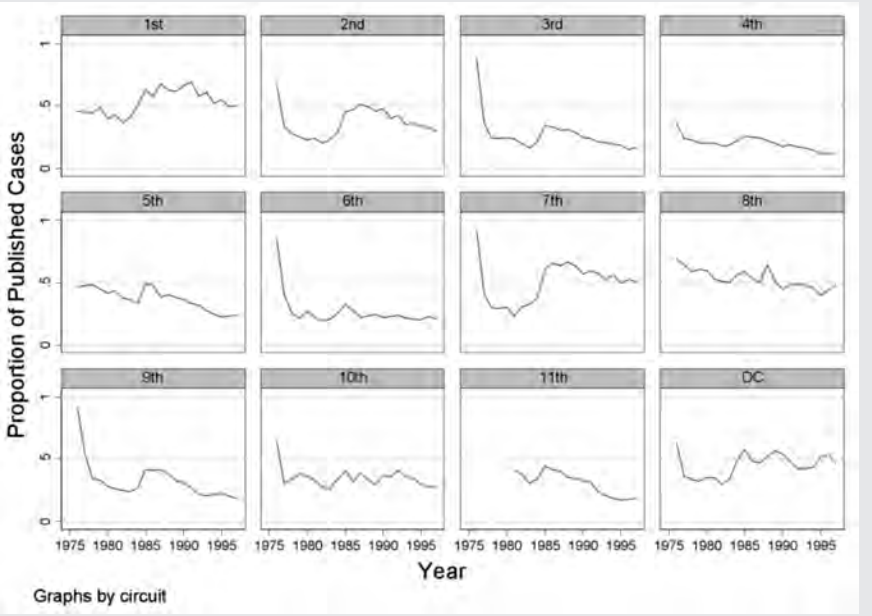


Opinion Publication. Some scholars (Shuldberg, 1997) have highlighted the increased use of unpublished decisions by the U.S. Courts of Appeals as one way to remedy the inefficiency of published decisions. Indeed, our data demonstrate a precipitous drop in the proportion of publication rates up to the early 1980s, followed by a small rise and ending with a steady decline post-1985 (see Figure 5). This pattern holds up fairly uniformly across individual circuits (see Figure 6).

We believe the initial decline reflected circuit responses to the workload crisis resulting from burgeoning caseloads and static resources (Cohen, 2002). The increase in the number of judges and clerks in the early 1980s mitigated the workload crisis (Cohen, 2002; Richman and Reynolds, 1988), which allowed circuits to moderately increase case publication. The subsequent fall in publication rates may reflect the continuing increase in caseloads as the number of judges and clerks remained static.

Extant studies on the question of publication typically either compare the characteristics of unpublished and published cases (Keele et al., 2009; Ringquist and Emmert, 1999; Songer, 1990; Weresh, 2001) or focus on explaining the court's decision to publish (Merritt and Brudney, 2001; Wasby, 2001). A relatively recent line of research (Beenstock and Haitovsky, 2004; Binford et al., 2007; Lindquist, 2007; Marvell and Moody, 1998) has begun to empirically test whether these reforms improve efficiency, finding that published decisions are indeed more time consuming. Nevertheless, these studies have either looked at state appellate samples, international courts, or aggregate circuit-level rather than individual-case efficiency.

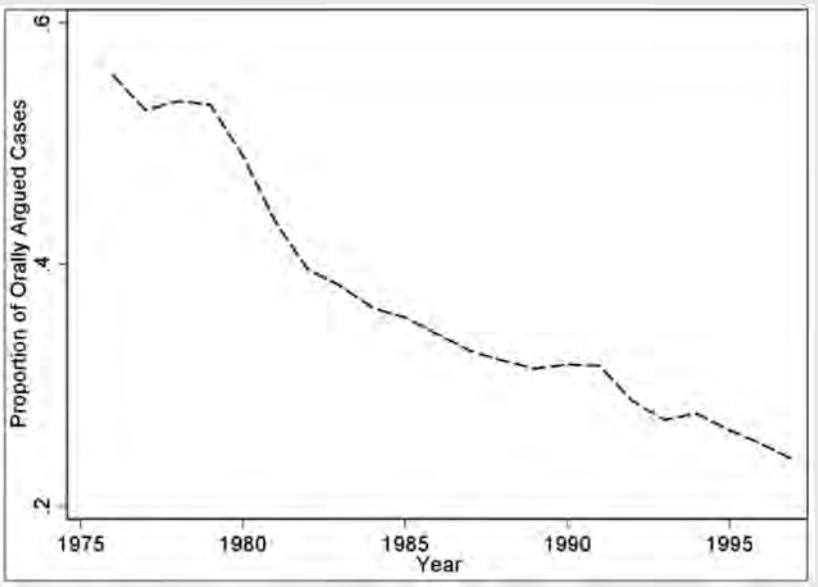
Figure 6
Proportion of U.S. Courts of Appeals Published Decisions per Circuit per Year, 1976-97



Use of Oral Argument. Figures 7 and 8 give some sense of the patterns in the use of oral argument across the appellate population. Figure 7 displays a sharp decline in the use of oral arguments at the appellate level. The proportion of oral arguments has generally dropped steadily over time, going from a small majority to a significant minority (around 25 percent). Interestingly, even for those cases that do receive oral arguments, Posner (1996:160) suggests that the time dedicated for hearing orals has declined by half. Figure 8 displays that most circuits currently hear oral arguments for no more than 20 to 25 percent of their cases—less than half of the average proportion in 1980. Looking across individual circuits, the shape of the trend lines for oral argument use are fairly similar, though some circuits were significantly more likely to use oral arguments in the 1970s than other circuits.

Inasmuch as oral argument and publication rates are thought to be related (Posner, 1996), it appears that the circuits' yearly publication rates (Figure 5) vary more substantially across circuits than do rates of rates of oral arguments, with some circuits' publication rates exhibiting generally monotonic, gradual decreases (e.g., Fourth, Fifth, and Eighth), while others trend lines appear resemble sin waves (e.g., Second), and still others appear similar to the overall trend presented in Figure 6 (e.g., Third, Seventh, and Ninth).

Figure 7
Proportion of U.S. Courts of Appeals Orally Argued Cases per Year, 1976-97



VARIABLES AND METHODS

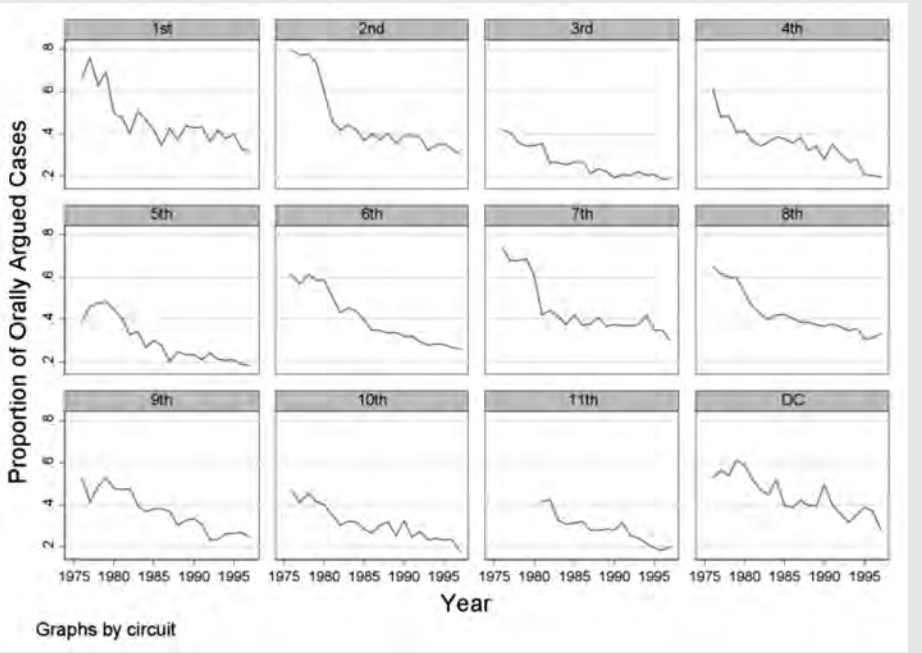
Dependent Variable and Modeling. As suggested by Levi and Gulati (2008), we measure disposition time as the number of days between the date the last litigant's brief was filed and the court's final judgment.[5] The variable's mean is just under 209 days, ranging from 0 to 7,084 days (or 19.4 years); 1.37 percent of the observations had disposition times greater than two years, while 0.03 percent had values above five years. These outliers are unbalanced and could be a function of idiosyncrasies or, worse, data-entry error (which would not be surprising in a data matrix with tens of millions of cells). As such, we excluded the 99 observations (out of more than 390,000) with disposition times in excess of five years.[6] Since the dependent variable is a count, we utilized negative binomial regression to estimate the models.[7] To account for possible serial autocorrelation we included fixed-effects dummies for all but the last calendar

[5] Alternatively, we could have used the number of days from the oral argument to the decision date. However, we would then be unable to test the impact of oral arguments, as this would exclude all of the non-orally argued cases.

[6] Including the outliers does not change the tests of statistical significance, or estimates of substantive effects.

[7] Poisson regression was inappropriate due to the strong evidence of overdispersion (Long and Freese, 2006). Additionally, even though disposition time is also a measure of duration, we did not use a duration-model estimation method because the data are not right censored (see Box-Steffensmeier and Jones, 2004:16-17; Maltzman, Spriggs, and Wahlbeck, 2000:138, fn. 6).

Figure 8
Proportion of U.S. Courts of Appeals Orally Argued Cases per Circuit per Year, 1976-97



year in the analysis.[8] We also calculate Huber-White robust standard errors to correct for potential bias resulting from additional possible correlations of the error terms across years, circuits, or both.[9] Finally, we estimated three models: with all of the cases, only reported cases, and only unreported cases.

Independent Variables. All of the case-level variables were constructed from the FJC database. They are all dichotomous variables and were coded as follows. **Publication Status** is coded 1 if the opinion of the court was published, 0 if it was unpublished. **Oral Arguments** is coded 1 if the case was resolved after an oral argument, 0 if it was resolved without oral argument. We hypothesized that criminal cases were procedurally easier than noncriminal cases and, therefore, may require fewer

[8] To be parsimonious, we do not report the coefficients for the 21 fixed-effects variables in our results. However, the complete results are available from the authors upon request.

[9] We did not include fixed-effects or clustered standard errors by circuits for two reasons. The rationale in this case for fixed effects or clustered standard errors would be the fear of nonindependent errors within the clusters resulting from unobserved factors at the cluster, or circuit, level. Primarily, we address this more directly by including direct measures of circuit-level characteristics. In particular, the Circuit Median Disposition time variable is an even more refined measure of the otherwise unobserved circuit-level characteristics than circuit dummies, if only because the former is dynamic.

disposition days based on Lindquist (2007:686). Indeed, Lindquist (2007) and Szmer, Christensen, and Wemlinger (2009) find that affirming a case on appeal takes less time than reversing. Thus, we have a variable for **Criminal** cases, coded 1 if the case was criminal, 0 if it was civil. **Affirm** is coded 1 if the court affirmed the lower-court decision, 0 if it did not. On the other hand, when a separate opinion is written, we expect that processing will take longer as a function of additional deliberation. Dissent is coded 1 if a dissenting opinion was filed, 0 if it was not. **Concurrence** is coded 1 if a concurring opinion was filed, 0 if it was not.

While some of the importance of our analysis lies in our focus on individual-case analysis, there are several circuit/institutional-level variables that we feel should be incorporated into our models. The circuit-level variables are each continuous and, unless otherwise noted, were generated from U.S. Administrative Office of the Courts reports. We expect that smaller circuits may be more collegial (Cohen, 2002; Lindquist, 2007), yielding shorter disposition times. We use **Active Judges** and **Area per Judge** to capture different dimensions of potential collegiality. The former is the number of active judges on the circuit for at least one half of the calendar year. The latter is the total number of square miles covered by the circuit (determined using Census data), divided by the total number of active judges serving on the circuit during that year. **Judge Vacancies**, on the other hand, suggests certain levels of flux (vacancies may be temporarily filled by judges sitting by designation or the seat could remain empty), which may lead to longer case disposition times. We have calculated vacancies as the number of months of judicial vacancies on the circuit during the year. For example, if a circuit had two positions open for the entire year, and one position open for four months, the variable value for that circuit year would be 28. **Senior Judges** is the number of senior appellate judges from the circuit that served as designated judges during the year. We expect, following Lindquist (2007), that elevated circuit levels of senior judges will contribute to reduced cohesion and longer processing times. Similarly, courts with longer backlogs of cases will likely have longer processing times. **Docket Size** is the number of terminations by the circuit per three-judge panel during the corresponding fiscal year.[10] **Median Disposition Time** is the average number of months it took the circuit to dispose of a case during the corresponding fiscal year. We use this final variable to capture some of the immeasurable uniqueness of each circuit relative to their norms, customs, and processes in handling cases.

[10] The measure is the total number of terminations by the circuit divided by the total number of three-judge panels (which is the number of active judges divided by three). While it might be more intuitive to use the total number of cases per active judge, the AOC suggests that the per panel caseload measure is more appropriate for the courts of appeals (see http://www.uscourts.gov/fcmstat/intro97/pgv.pdf, last accessed November 5, 2009). For example, the per-judge method would assume that a single judge in a circuit of 12 with a docket of 120 would hear 12 cases; however, since the circuit meets in three-judge panels, the judge would actually participate in 30 cases, or 120/(12/3). Of course, beyond measurement validity concerns, the panel-level data were available for the entire time period, while the judge-level data were not available for four of the years we examined. Finally, we note that both measures are correlated above 0.80.

ANALYSIS

Multivariate Models. Of course, graphic depictions can only provide a rough indication of the impact of intra-circuit changes like decreases in oral arguments and publication. Moreover, they do not help us determine whether the effects of other factors on efficiency vary in published and unpublished opinions. For that information, we analyzed three negative binomial regression models. The first model, presented in Table 1, contains both published and unpublished cases. The second and third models focus on published and unpublished cases, respectively.[11] In each model, the dependent variable, the number of days from the submission of the last litigant brief to the decision date, is a measure of inefficiency. As such, positive coefficients indicate increases in inefficiency (i.e., decreases in efficiency).

Combined Model. Overall, the model analyzing published and unpublished opinions does an adequate job of explaining disposition times, with a Nagelkerke pseudo R2 of 0.301. Additionally, all of the coefficients are statistically significant at the 0.001level. This is not surprising, particularly given the sample size (almost 390,000 cases). As such, we also present a measure of substantive significance. The last two columns of Table 1 contain two sets of first differences (King, Tomz, and Wittenberg, 2000) or changes in the expected values of the number of days it takes the court to decide the case for two values of the particular independent variable, holding all other variables constant at the appropriate measure of central tendency.[12] The second-to-last column contains the first differences when the independent variable, set to its mean, is a standard deviation above or below the mean. This is appropriate for continuous variables and was not calculated for dummy variables. For dummy variables, the last column contains the difference in the expected number of days to decide the case when the independent variable is set to one and zero.

Overall, the case factors appear to have a greater impact on the length of time it takes a panel to decide a case. Clearly, as anticipated, the decisions to hold oral arguments and publish the decision have substantial effects on the disposition time. Published cases, on average, take seven weeks longer to dispose of than unpublished cases; orally argued cases are six weeks slower than those decided without oral arguments. Since the average case is decided in a little less than 30 weeks, unpublished cases without oral arguments are almost twice as fast as published, orally argued cases. Of course, while these methods significantly reduce case-processing times, they could have negative costs in terms of the quality of decisions (e.g., Dragich, 1995).

Among other case factors, all but the presence of a concurring opinion affect disposition times by at least three weeks. Cases with dissenting opinions, for example, are almost five weeks longer than cases without dissents. This probably reflects both added

[11] Generally, it is inappropriate to compare results of statistical analyses from two different subpopulations unless the data-generating processes differ across the two subpopulations. As discussed previously, there are substantial and important differences in published and unpublished cases (Keele et al., 2009; Songer, 1990).

[12] The first differences were generated using Gary King's CLARIFY package for Stata (see King, Tomz, and Wittenberg, 2000).

Table 1
Negative Binomial Regression: U.S. Court of Appeals Processing Days per Case, 1976-97 (Year-Fixed Effects Omitted)

X	β	Robust Std. Error	Change in Expected Values of the Number of Processing Days	
			E(Y|X = 1) – E(Y|X = 0) Continuous Ind. Variables	*E(Y|X = 1) – E(Y|X = 0) Dummy Ind. Variables*
Case-Level Variables				
Publication Status	0.293***	0.003	—	49.023
Oral Arguments	0.257***	0.003	—	42.140
Criminal	-0.314***	0.004	—	-38.706
Affirm	-0.146***	0.003	—	-22.629
Dissent	0.210***	0.005	—	33.564
Concurrence	0.048***	0.007	—	7.157
Circuit-Level Variables				
Active Judges	0.003***	0.000	2.573	—
Senior Judges	-0.019***	0.001	-7.890	—
Judge Vacancies	0.003***	0.000	7.803	—
Docket Size	0.000***	0.000	1.382	—
Area per Judge	0.000***	0.000	10.199	—
Median Disposition Time	0.089***	0.000	45.692	—
Constant	4.076	—	—	—
N	389,927	—	—	—
Nagelkerke R^2	0.301	—	—	—

$p<0.001$=*** ; LRT = 0: $\overline{\chi}^2$ (01) = 26,000,000; Pr(($\overline{\chi}^2$ (01)) 0)≥ 0) = 0.000

complexity and the additional length of time it can take to write the dissent. Conversely, affirmances are three weeks faster than reversals, suggesting that the latter are cases that are more likely to involve complex issues. Similarly, criminal issues likely involve simpler issues and are three-and-a-half weeks faster than noncriminal issues. This also likely reflects a perception that swift justice is more important when the potential sanctions include a loss of liberty.

The circuit-level variables generally have less of an effect on disposition time. Perhaps most surprisingly, our docket-size measure (the expected number of panels an active judge is likely to sit on during the term) has very little effect on efficiency. A standard deviation increase in docket size only increases disposition times by a little more than a day.

Circuit size has more sizable, but still moderate effects on efficiency. A standard-deviation increase in the overall geographic size of the circuit increases disposition times by approximately 1.5 weeks. Similarly, circuits with more active judges are indeed slower, but a standard-deviation (approximately 6 judges) increase from the mean (approximately 14 judges) only increases the average disposition time by 2.5 days. A circuit the size of the Ninth at its largest (29 judges) would be 6 days slower, on average, than a circuit with approximately the mean number of judges. This final piece of evidence may lend an empirical perspective to the relationship between size and cohesion/collegiality. In a House subcommittee hearing, Justice Kennedy stated about the Ninth Circuit, "I saw first hand that it was simply too big for the collegiality that it ought to have" (Rehberg, 2007).

While too many active judges serving on the circuit can slow things down, failure to fill the vacancies after those judges leave the court can also create minor problems. A standard-deviation increase in total number of months that statutorily authorized seats in the circuit remain vacant during the year (from 14 to 31 months) slows down cases by approximately eight days. However, it would appear that circuits can counter this problem if they use more senior judges sitting by designation to compensate for the vacancies. An increase in approximately three senior judges slows down disposition times by just under eight days.

Finally, it is clear that we are not observing other factors at the circuit level that significantly affect disposition times. A standard-deviation increase from the average number of days the circuit takes to decide a case increases the disposition time of that circuit by six-and-a-half weeks. This likely taps into unmeasured factors like intra-court norms and circuit-specific rules.

Individual Models. In addition to our examination of the effects of publication status on judicial efficiency, we also tried to determine whether the impact of the other factors on efficiency varied across published and unpublished cases. To do so, we ran individual models (without the publication-status variable) for published (Table 2) and unpublished (Table 3) cases.

There are two major differences across models. First, while increased use of senior judges decreases disposition times in the complete sample, as well as the unpublished subsample, it actually increases disposition times in the subsample of published cases. This suggests that the advantage to utilizing senior judges occurs in the pre-opinion-writing stage. Moreover, the substantive impact on efficiency in unpublished cases is substantial—more than two weeks for a standard-deviation increase in the number of senior judges sitting on panels. Conversely, the substantive disadvantage in published cases is small—approximately a one-day increase in disposition times for the same standard-deviation increase in the use of senior judges. Perhaps the senior-judge advantage stems from more flexibility in scheduling, which is then countervailed by a loss in efficiency during the opinion-writing stage. This certainly warrants future research.

Table 2
Negative Binomial Regression: U.S. Court of Appeals Processing Days per Reported Case, 1976-97 (Year-Fixed Effects Omitted)

X	β	Robust Std. Error	Change in Expected Values of the Number of Processing Days	
			E(Y|X = 1) – E(Y|X = 0) Continuous Ind. Variables	*E(Y|X = 1) – E(Y|X = 0) Dummy Ind. Variables*
Case-Level Variables				
Oral Arguments	0.328***	0.006	—	74.364
Criminal	-0.269***	0.005	—	-62.809
Affirm	-0.102***	0.003	—	-28.669
Dissent	0.205***	0.005	—	60.623
Concurrence	0.047***	0.007	—	12.854
Circuit-Level Variables				
Active Judges	0.002***	0.000	4.097	—
Senior Judges	0.005***	0.001	3.607	—
Judge Vacancies	0.003***	0.000	13.534	—
Docket Size	0.000***	0.000	15.490	—
Area per Judge	0.000***	0.000	19.653	—
Median Disposition	0.074***	0.001	67.446	—
Constant	4.325	—	—	—
N	164,256	—	—	—
Nagelkerke R^2	0.246	—	—	—

p<0.001=*** ; LRT = 0: $\overline{\chi}^2$ (01) = 11,000,000; Pr(($\overline{\chi}^2$ (01)) 0)≥ 0) = 0.000

The other major difference is less explicable. As expected, larger dockets decrease efficiency in the population of cases, as well as in the subsample of published cases. However, an increase in docket size actually increases efficiency in unpublished cases. Perhaps this is some function of busier circuits giving some kind of processing priority to unpublished cases. Certainly more research is necessary to explore this point.

Perhaps of greatest interest are the dramatic differences in the relative substantive significance of certain variables in published and unpublished cases. Overall, the variables in the published-case model tend to exert more influence on efficiency. With respect to case characteristics, oral arguments increase disposition times by approximately one month in unpublished cases, two-and-a-half months in published cases.

Table 3
Negative Binomial Regression: U.S. Court of Appeals Processing Days per Unreported Case, 1976-97 (Year-Fixed Effects Omitted)

X	β	Robust Std. Error	Change in Expected Values of the Number of Processing Days	
			E(Y|X = 1) – E(Y|X = 0) Continuous Ind. Variables	*E(Y|X = 1) – E(Y|X = 0) Dummy Ind. Variables*
Case-Level Variables				
Oral Arguments	0.236***	0.003	—	33.822
Criminal	-0.352***	0.006	—	-37.703
Affirm	-0.210***	0.005	—	-29.634
Dissent	0.290***	0.013	—	42.761
Concurrence	0.099***	0.020	—	13.391
Circuit-Level Variables				
Active Judges	0.002***	0.000	1.310	—
Senior Judges	-0.040***	0.001	-14.888	—
Judge Vacancies	0.004***	0.000	7.689	—
Docket Size	-0.000***	0.000	-4.709	—
Area per Judge	0.000***	0.000	7.756	—
Median Disposition Time	0.109***	0.001	50.618	—
Constant	4.118	—	—	—
N	225,912	—	—	—
Nagelkerke R^2	0.277	—	—	—

p<0.001=*** ; LRT = 0: $\overline{\chi}^2$ (01) = 14,000,000; Pr(($\overline{\chi}^2$ (01)) 0)≥ 0) = 0.000

Similarly, published criminal cases are two months faster than noncriminal cases, compared to a little more than five weeks faster in unpublished cases. Finally, dissenting votes add two months in published cases, compared to six weeks in unpublished cases. The rationale for the lower temporal costs of dissents in unpublished cases is perhaps the most obvious: the dissenting opinions in unpublished cases are often just one-sentence statements. As such, the delays observed in unpublished cases are likely due only to the added complexity/difficulty of the case. Conversely, in published cases, the increase in disposition times is likely a function of both difficulty and the temporal costs associated with writing the dissenting opinion.

Other than senior judges and docket size, a similar pattern is apparent for circuit-level variables. The circuit-level variables are primarily positive in both models, with higher substantive significance in published cases.

Discussion and Conclusion

In this piece we seek to fill a noticeable void in our knowledge of the judiciary: the efficiency of federal appellate decision making. Researchers have recently begun to explore this question for a limited number of published cases (e.g., Szmer, Christensen, and Wemlinger, 2009; Cauthen and Latzer, 2008), if not at the aggregated, circuit level (e.g., Binder and Maltzman, 2009; Lindquist, 2007). However, in this piece we have expanded the state of knowledge by performing a case-level analysis for the population of published and unpublished cases from 1976 to 1997.

The limited work on the differences between published and unpublished appellate opinions, for example, analyzing the relative veracity of attitudinal voting for published and unpublished federal-forestry cases (e.g., Keele et al., 2009), highlights the need for a more generalized analysis. Among our contributions here is a dependent variable of broad interest: efficiency (disposition time). The focus on efficiency is key to scholars and practitioners interested in remedying the "pathologies" of an often arduous appellate process. Our focus on efficiency provides a more objective perspective on important and perennial issues such as federal appellate restructuring. Speaking, for example, to the question of whether the Ninth Circuit should be split, Justice Kennedy (Rehberg, 2007) stated, "You don't design a Circuit around the perceived political leanings of the judges. That would be quite wrong. You design it for other objective, neutral, and efficient reasons." We submit that our longitudinal analysis of disposition times of unpublished and published cases could objectively inform the question upon which Justice Kennedy was commenting.

There are some limitations of this research that the authors readily acknowledge. It could be that circuits with larger dockets have a proportionally larger staff size. Hence, our finding that increases in docket size actually increase the efficiency of a court in managing their unpublished cases may actually be a function of larger staff size. Additionally, the research reported here is looking solely at a sample of unpublished decisions that were coded. It would be helpful to add data from court personnel to determine if other variables, like increases in staff size, could account for the diminishing amount of time a circuit takes to complete a case and, thus, increase court efficiency. Finally, we recognize the need for greater specificity in defining judicial efficiency (what others might call timeliness). Rather than assert an encompassing definition of judicial efficiency, our intent here is to offer but one measure—case disposition time—to build on and to encourage conversations about the various factors that influence the performance of justice systems.

Notwithstanding these limitations, we identified several mechanisms that potentially enhance judicial timeliness. Some of these factors, like decreasing the use of oral arguments and publication, are within the control of the circuits, which set the guidelines in local rules, and the specific panels, which are responsible for implementing the rules. Of course, these "prescriptions" arguably have negative costs that must be considered (Cohen, 2002; Dragich, 1995). For example, Cohen (2002) cites oral arguments as an important method that can encourage some judges to better prepare as they decide cases.

Other methods for enhancing judicial efficiency are largely controlled by Congress. For example, given that cases decided by larger circuits (both in terms of the number of active judges and geographic area) are slower, perhaps Congress should consider splitting up the larger circuits. Certainly this idea has frequently and recently been proposed (e.g, 109th Congress, 2006), and purportedly has the support of the many of the current U.S. Supreme Court justices (Rehberg, 2007). Additionally, we find evidence that intracircuit formal rules and norms, bluntly reflected in the median-disposition-time measure, play a major role in judicial efficiency. Finally, we find that the effects of most of the variables on efficiency are conditional on the decision to publish the case—even after controlling for factors like complexity.

In light of these findings, we return to our initial observation that much of what we currently know about the federal appellate process is based on published opinions. By including published and unpublished opinions in the present analysis, we offer both descriptive and inferential evidence that publication status matters to the efficiency with which courts decide cases. The increasing precedential value of unpublished opinions and the relevance of judicial efficiency motivate our hope that this study will not only enlighten our current understanding of the federal appellate process, but also encourage future work that contemplates the role and effects of publication status in the U.S. Courts of Appeals. **jsj**

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