Do Judicial Assignments Matter? Evidence from Random Case Allocation*

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ABSTRACT

Because judges exercise discretion in how they handle and decide cases, heterogeneity across judges can affect case outcomes and, thus, preferences among litigants for particular judges. However, selection obscures the causal mechanisms that drive these preferences. We overcome this challenge by studying the introduction of random case assignment in a venue (the U.S. District Court for the Western District of Texas) that previously experienced a high degree of case concentration before one judge (Alan Albright), whom litigants could select with virtual certainty. To assess Albright's importance to patent enforcers, we examine how case filing patterns changed following the adoption of random case allocation and show that case filings in the Western District of Texas decreased significantly at both the intensive and extensive margins. Moreover, to shed light on why litigants prefer Judge Albright, we compare case management metrics and motions practice across randomly assigned cases and show that cases assigned to Albright received relatively early trial dates and generated fewer motions to stay pending PTAB proceedings and fewer motions to invalidate on subject matter eligibilty grounds.

KEYWORDS: Judicial assignments, judge shopping, forum shopping, litigation, patents, U.S.

JEL Classification: K4, O3

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1 Introduction

When Matthew Kacsmaryk was sworn in as the newest member of the U.S. District Court for the Northern District of Texas in 2019, he became the lone member of the court's Amarillo Division and, therefore, the presumptive selection to preside over all lawsuits filed there. This fact, combined with Kacsmaryk's conservative *bona fides*, attracted the attention of activist litigators, who have since convinced the judge to issue orders with nationwide effect preserving Trump Administration immigration policies, delaying employment protections for transgender workers, and suspending approval of the "abortion pill" mifepristone. Following a similar game plan, politically motivated litigants have also directed suits of national significance to sympathetic judges in other small, rural divisions with predictable case assignment rules, including Judge Terry Doughty of Monroe, Louisiana and James Wesley Hendrix of Lubbock, Texas, both of whom are assigned the great majority of their respective divisions' civil caseloads. Doughty has since blocked a federal COVID-19 vaccine mandate for healthcare workers and in July 2023 barred federal officials from contacting social media platforms to report misinformation. Even more recently, in February 2024, Hendrix enjoined a federal law expanding the rights of pregnant employees in an opinion that also cast doubt on all federal legislation passed during an eighteen-month period at the height of the pandemic when the House of Representatives allowed votes to be cast remotely.

These decisions—and especially the perception that they were made by partisan judges "cherry picked" by like-minded litigants—have proven increasingly controversial and in recent months have sparked a full-blown "political firestorm" fueled by an ongoing public dialog among high ranking members of Congress, executive branch officials, and members of the (normally tight-lipped) federal judiciary.[1] In Congress, multiple legislative proposals that would reform federal case assignment rules are now pending in the Senate and House,[2] and in March 2024 the U.S. Judicial Conference, the federal judiciary's internal policymaking body, issued a set of policy recommendations urging district courts to reconsider any non-random or otherwise predictable case allocation procedures they currently employ (a recommendation that Kacsmaryk and Hendrix's court promptly declined).[3]

[1] For a selection of relevant press coverage, see, e.g., Senate Democratic Leader Schumer Urges 'Judge Shopping' Reform in Texas (Reuters, March 22, 2024); Judges, GOP Lawmakers Slam New Policy that Limits 'Judge Shopping' (Washington Post, March 14, 2024); Biden Administration Accuses Texas of 'Judge Shopping' Spending Law Case (Reuters, February 28, 2023).

[2] Among these are competing bills sponsored by Senate Majority Leader Chuck Schumer, End Judge Shopping Act, S. 4096, 118th Cong. (2024), and Senate Minority Leader Mitch McConnell, SHOP Act, S. 4095, 118th Cong. (2024). Additional bills include the Fair Courts Act of 2023, S. 1758, H.R. 3652, 118th Cong. (2023), the End Judge Shopping Act of 2023, H.R. 3163, 118th Cong. (2023), and the Stop Judge Shopping Act of 2023, S. 1265, 118th Cong. (2023).

[3] We refer here to the U.S. Judicial Conference's March 2024 Guidance on Civil Case Assignment in the District Courts, which states in part that U.S. district courts should "avoid case assignment practices that

While the salience of rulings by Kacsmaryk, Doughty, and Hendrix on issues of intense national interest has brought newfound attention and controversy to the confluence of case assignment practices and judicial bias, savvy litigators working in many areas of the law have long recognized the benefits of "judge shopping"—i.e., filing suit in a location that offers heightened odds that one's case will be assigned to a particular, preferred jurist.[4]

Litigants prefer some judges to others because judge characteristics and measures of bias have long been shown to correlate with case outcomes (e.g., Harris and Sen, 2019; Ash et al., 2024). Perhaps most well-known in the literature is a link between judges' ideological leanings and the results of litigation assigned to them. For example, because judges in the U.S. are typically appointed and confirmed by elected officials (and in some instances directly elected by voters), judicial selections have an inherent political valence that is readily observable to litigants and may influence where and how they litigate (Taha, 2010; Botoman, 2018). In addition, because judges have substantial discretion in how they handle and decide legal issues, litigation leaves ample room for judges' idiosyncrasies, tendencies, and biases with respect to race, gender, and much more to impact outcomes in their respective courtrooms (Yang, 2015; Lim et al., 2016).

Accordingly, prospective litigants have a strong incentive to exploit heterogeneity across judges by strategically selecting where to file suit—frequently resulting in a concentration of cases in a single court or a small number of forums perceived to be advantageous. Among other types of litigation, the literature has presented compelling evidence of case concentration driven by judge shopping in Chapter 11 bankruptcy filings (Eisenberg and LoPucki, 1999; Levitin, 2023), challenges to FCC regulations (de Figueiredo, 2005), immigration removal proceedings (Grantham, 2019), and patent assertion (Klerman and Reilly, 2010; Anderson and Gugliuzza, 2021; Helmers and Love, 2023).

However, beyond documenting (often extreme) judge-level case concentration, the literature has struggled to convincingly identify the causal mechanisms that explain why certain judges attract more cases than others. This is true for the simple reason that judge shopping introduces selection bias. That is, when some litigants choose to litigate in a particular court specifically because they expect strategic advantages and, ultimately, more favorable outcomes, the set of cases filed in that court is systematically skewed by those choices. As a

result in the likelihood that a case will be assigned to a particular judge" and, further, assign at least "civil actions seeking to bar or mandate nationwide [or statewide] enforcement of a federal [or state] law" on a "district-wide" (rather than division-level) basis. Despite the mandatory nature of some language included in the document, the Guidance is non-binding. As explained in greater detail below, U.S. law gives each district court the discretion to set its own case assignment rules. In a letter sent later the same month, the Chief Judge of the Northern District of Texas informed Congress that the judges of the district met to discuss the matter and the "consensus was not to make any change to our case assignment process at this time."

[4]"Judge shopping" can, thus, be viewed as a form of "forum shopping" that focuses on the benefits of a particular judge rather than broader venue-level advantages, like jury pool composition or local procedural rules.

result, it is challenging to isolate the causal effect of a specific judge from the distinct effect of litigants' decisions to file suit in that court in hopes of litigating before that judge.

In this paper, we overcome this challenge by taking advantage of a unique development in the U.S. District Court for the Western District of Texas (WDTX): a recent transition from a deterministic civil case assignment procedure, which allowed patent enforcers to select a preferred judge, to a quasi-random procedure, according to which patent suits are allocated across all judges with chambers in the district. For a period of close to four years (from late 2018 to mid-2022), most litigants bringing suit for U.S. patent infringement could elect to have their cases heard by Judge Alan Albright, a former patent litigator widely regarded as favorable to patent enforcers (Anderson and Gugliuzza, 2021), simply by filing suit in the WDTX's Waco Division, which consisted solely of Albright's chambers. Existing evidence suggests that this opportunity attracted a large influx of patent cases to the WDTX's Waco Division consistent with judge shopping (Helmers and Love, 2023). However, on July 25, 2022, the WDTX modified its case assignment procedures, likely in response to the then-extreme concentration of patent cases on Albright's docket, so that patent case filings in Waco would thereafter be assigned on a quasi-random basis across the district's complete roster of twelve district judges.

Our analysis of cases filed before and after the court's July 2022 amendment of its case assignment rules shows that random assignment reduced the share of new patent cases assigned to Albright from 100% to, on average, 11% of case assignments per month.[5] We additionally show that patent enforcers filed significantly fewer new cases in Waco following the shift to random case allocation and the consequent reduction in the odds of assignment to Albright. Our estimates indicate that new patent case filings dropped by an average of 71% or nearly 54 cases per month, from a pre-treatment mean of 76 cases to just 22 per month thereafter. These results suggest that patent enforcers' ability to select Albright as their judge with virtual certainty was highly valued and, indeed, their primary motivation for filing suit in Waco.

Following the guidance of a theoretical model of judge-shopping, we additionally consider factors that drive the observed substantial drop in new patent case filings in the WDTX. Here, we find that the post-treatment reduction in new patent suits is comprised of significant decreases at both the intensive and extensive margins, particularly the latter and particularly among so-called "non-practicing entities" (NPEs), firms specializing in patent assertion. Indeed, our results indicate that the majority of pre-treatment WDTX patent enforcers ceased

[5] As explained in greater detail below, patent case filings that are "related" to previously assigned cases are not subject to random allocation. We identify and exclude these related cases from our analysis; accordingly, our results are limited to wholly "new" cases that did not share a patent with a previously assigned, pending case.

filing new cases in the district following the introduction of random case assignments. Consistent with our model's predictions, we also find evidence that patentees enforcing patents of relatively high value and relatively low quality were disproportionately likely to abandon the WDTX after July 2022.

Finally, we leverage the random allocation of patent cases filed in Waco after July 25, 2022, to explore why patent enforcers prefer to litigate before Albright. Consistent with conventional wisdom among patent litigators, we find causal evidence that cases assigned to Albright are scheduled to proceed at a relatively fast pace and also that defendants in Albright's cases are both less likely to attempt to stay litigation pending the outcome of parallel administrative patent validity challenge and less likely to attempt to invalidate asserted patents on subject matter eligibility grounds.

These results contribute to the broader literature examining individual judges' role in the administration of justice, as well as to an emerging literature that specifically studies forum and judge shopping. A large extant literature assesses how judge characteristics, including personal and professional backgrounds and political leanings, affect judicial decision-making, particularly in the context of criminal sentencing (Cohen and Yang, 2019; Bonica and Sen, 2021). Additional contributions exploit these idiosyncratic differences across judges to measure the impact of case outcomes on other variables of interest, such as the impact of incarceration length on employment outcomes (Kling, 2006; Frandsen et al., 2023) and the effects of compensation in wrongful dismissal cases on firm performance (Cahuc et al., 2023). Viewed in the context of this literature, our results provide additional evidence of the potentially substantial effect of judicial discretion, particularly the freedom to adopt idiosyncratic standing orders and case scheduling practices. While discretion has the intended benefit of affording judges flexibility to meet the needs of their respective caseloads, our results provide further evidence that judge-specific practices can impose unintended costs, including incentives to engage in strategic litigation behavior. Our analysis also advances this literature by extending its application to civil litigation. While random case assignment has been used widely to study case outcomes in the criminal justice system, it has been used far less often in the study of civil claims and our study exploits random case allocation in the context of patent infringement litigation, a context where strategic forum and judge selection (especially by NPEs) has long been a topic of intense policy debate (e.g., Moore, 2001; Leychkis, 2007; Klerman and Reilly, 2010; Anderson, 2015; Love and Yoon, 2017; Anderson and Gugliuzza, 2021).

We contribute as well to a small but growing literature that focuses on strategic forum selection, including in the context of judge shopping (e.g., Atkinson et al., 2009; Ellias, 2018) and with respect to resulting trade-offs between cultivating decisionmaker expertise and inviting biased decisionmaking (e.g., McDonnell, 2004; Baum, 2008; Coviello et al., 2019). Our anal-

ysis differs from the bulk of the existing literature in that we study a concentration of cases before a single judge rather than in a single forum and also benefit from a rare change in case assignment policy. In the context of the literature on forum/judge shopping, our results have importance because they allow us to document the existence of *judge* shopping, as distinct from *forum* shopping, in our setting and, moreover, allow us to present causal evidence regarding why patent enforcers are drawn specifically to Judge Albright's courtroom, as distinct from his district. From a broader policy perspective, our results additionally demonstrate that incentives to judge-shop can be mitigated with a moderate degree of random variation in case assignments. In our setting, reducing the odds of receiving a preferred judge from a near certainty to roughly one in nine (11%) reduced new strategic filings by approximately 71%. Accordingly, our findings suggest (consistent with several pending bills and the Judicial Conference's recommendations) that policymakers and judicial officers wary of judge shopping would be wise to consider case assignment rules that maintain some threshold level of randomness that otherwise might not be achieved consistently in particularly small or rural venues with few judicial seats.[6] Our data further shows that division-level assignment policies are particularly ripe for abuse given the prospect that natural variation in judicial retirements and appointments can, at times, lead to very small and indeed even single-judge divisions. Finally, in the context of the literature studying trade-offs between expertise and bias in regulatory and judicial system design, our analysis of the U.S. court system's experience with Judge Albright documents a transition from fast-but-potentially-biased decisionmaking by a domain expert to slower-but-potentially-less-biased decisionmaking by actors with less specialized knowledge and shows that such a transition can have differential effects across litigant types and along different margins.

The paper is structured as follows: In Section 2, we describe the institutional setting in the WDTX and Judge Albright's Waco Division. In Section 3, we present a simple model of litigation and judge shopping. In Section 4, we describe our empirical approach. In Section 5, we present details of data collection and construction. In Section 6, we present and discuss our results. We conclude in Section 7.

[6] Among current bills, our results are particularly relevant to the Fair Courts Act of 2023, S. 1758, H.R. 3652, 118th Cong. (2023), which would require that district court case assignment procedures "ensure that the probability that an action, suit, or proceeding is assigned to any particular judge does not exceed 25 percent," and the End Judge Shopping Act, S. 4096, H.R. 3163, 118th Cong. (2024), which in its most recent form would codify the U.S. Judicial Conference's March 2024 policy guidance and, thus, require that cases with potential nationwide or statewide effect be randomly assigned across all judges in the district court in which the case was filed.

2 Setting

2.1 Case Allocation in U.S. District Courts

A suit alleging U.S. patent infringement must be heard in the first instance by one of the more than 600 judges that comprise the U.S. District Court system. According to the rules for establishing proper venue in patent suits, a complaint alleging infringement by a U.S. business entity must be filed in a U.S. District Court located in the entity's state of formation or in a district in which the entity otherwise maintains a "regular and established place of business," such as a headquarters or regional office.[7] Once filed, new cases are allocated to judges at the discretion of each district court's Chief Judge (28 U.S.C. §137(a)); nonetheless, case assignment rules adopted in the nation's 94 districts almost universally assign cases using some form of random draw. When a district is split into multiple "divisions," new cases are most often allocated at random across all eligible judges assigned to the division in which each new case was filed (Botoman, 2018). While assignments made in this fashion may be reasonably unpredictable in relatively large divisions, selections naturally become more predictable as the number of judges with chambers in a given division decreases and, rarely, a single judge may be assigned all or most cases filed in sparsely populated regions that are home to just one judge's chambers. In addition, all districts follow some number of secondary local rules that make case assignments more predictable in some circumstances. Most notably, cases identified as closely related are commonly assigned to a single judge for the sake of efficiency (Kahan and McKenzie, 2021). Moreover, case assignment rules and the pool of eligible judges can—and commonly do—vary somewhat depending on the type of case being assigned.[8]

Even within a particular district, the specific judge to which a case is assigned can be of great significance to litigants. In addition to mundane practical considerations (such as the proximity of the judge's courtroom to parties, witnesses, and evidence), judges have wide discretion to control and decide numerous aspects of the cases over which they preside. While it is true that all district courts are bound by the Federal Rules of Civil Procedure, and all judges assigned to a particular district are likewise bound by that district's "local rules" of procedure, individual judges commonly establish additional, detailed procedural norms of their own through the adoption of standardized scheduling orders, discovery orders, and other standing orders that litigants will be expected to follow in all cases assigned to their chambers.

[7] *See* 28 U.S.C. §1400(b); *TC Heartland v. Kraft Foods*, 137 S. Ct. 1514 (2017); In re *Cray*, 871 F.3d 1355, 1362-64 (2017). While foreign entities may be sued in any district, suits against foreign entities most often target those entities' U.S. subsidiaries due to limits on the extraterritorial reach of U.S. courts' jurisdiction.

[8] At a minimum, district judges who assume "senior status," a form of semi-retirement (28 U.S.C. §371), may opt not to hear certain kinds of cases. In addition, districts commonly adopt ad hoc case assignment rules for certain types of cases, most notably pro se suits, habeas corpus petitions, bankruptcy and social security appeals, and patent cases.

These idiosyncratic practices can impact the speed, order, and cost of litigation stages and, therefore, may also influence case outcomes. Judicial assignments plainly can have more direct substantive implications as well. Whether due to judges' professional backgrounds, life experiences, political leanings, or myriad other factors, it is well established in the literature that judges exhibit a great deal of heterogeneity in how they approach and decide the legal issues before them (e.g., Bonica and Sen, 2021; Ash et al., 2024), including in the specific context of patent litigation (e.g., Klerman and Reilly, 2010; Anderson, 2015; Love and Yoon, 2017; Anderson and Gugliuzza, 2021).

2.2 Alan Albright and the U.S. District Court for the Western District of Texas

Following nearly two decades in private practice as an intellectual property (IP) litigator, Alan Albright was nominated to a seat on the U.S. District Court for the Western District of Texas in January 2018 and was confirmed by the Senate eight months later in September. The Western District of Texas spans more than 50 counties in the western and central regions of Texas and is divided by statute into seven divisions: the Austin, Del Rio, El Paso, Midland-Odessa, Pecos, San Antonio, and Waco Divisions (28 U.S.C. §124(d)). Though Albright lived and worked in Austin, Texas, at the time of his nomination, he chose to locate his judicial chambers 100 miles to the north in the district's then-unoccupied Waco courthouse. As the Waco Division's sole district judge, case assignment rules in effect at the time specified that Albright would preside over all civil cases filed in his courthouse.

With Albright on the bench, patent case filings in Waco increased dramatically.[9] While the WDTX saw just 17 patent case filings per quarter (and the Waco Division just 3 cases per quarter) in the year prior to Albright's arrival, the district received approximately 140 new patent cases per quarter (almost all of which were assigned to Albright) in the three years that followed. In 2020, more than 20% of all patent cases filed in the U.S. were brought in Waco, and in 2021, that share grew to 25%. In addition to attracting cases to Waco that otherwise would have been filed in other courts, empirical evidence suggests that Albright's availability induced the filing of hundreds of cases that would not otherwise have been filed at all (Helmers and Love, 2023).

As documented by Anderson and Gugliuzza (2021), this influx of cases coincided with—and,

[9]While the Waco, Texas economy lacks a significant tech sector, whether or not venue is proper in a patent suit is determined at the district level. Accordingly, patent infringement cases can properly be filed in Waco provided the firm accused of infringement is incorporated in Texas or maintains a place of business *anywhere within the WDTX*, a large geographic area that includes both Austin (one of the nation's most significant tech hubs) and San Antonio, Texas. *TC Heartland v. Kraft Foods*, 137 S. Ct. 1514 (2017). A wide variety of major technology firms and retailers are, therefore, eligible to be sued for patent infringement in any division of the WDTX (Helmers and Love, 2023).

indeed, appears to be the intended result of—efforts by Albright to publicize his arrival in Waco and interest in patent law through press interviews, speeches, and conference attendance. As the local newspaper explained in early 2019, Albright "let it be known in no uncertain terms that he would like his Waco courtroom to become a hub for IP cases."

In addition to inviting patent enforcers to consider filing in Waco, Albright adopted several practices widely regarded as favorable to patent owners. For one, Albright adopted a standing order for patent cases that includes a default case schedule according to which a claim construction hearing (a crucial milestone in patent litigation[10]) is set for five months following an initial case management conference and trial is set for one year thereafter, meaning that cases are initially scheduled to reach trial within approximately 18 months' time. Conventional wisdom holds that early trial dates are generally advantageous to plaintiffs, and this is particularly true in patent cases due to trial dates' potential effect on defendants' ability to initiate parallel administrative challenges to the patents asserted against them in court. While parties accused of infringement may petition the U.S. Patent and Trademark Office's Patent Trial and Appeal Board (PTAB) to reconsider patent validity, PTAB may decline to review a patent on efficiency grounds and, in recent years, has commonly denied petitions challenging patents involved in court cases that are scheduled to reach trial before the Board can complete its review. Because PTAB reviews require about 18 months to complete, Albright's default case schedule commonly allows patents enforced in Waco to avoid PTAB's scrutiny.

Legal commentary on the benefits of litigating in Waco typically raises three additional considerations. First, to the extent that Albright's trial scheduling practices do not foreclose PTAB challenges, it is said that Albright is unlikely to grant motions to stay litigation pending the outcome of PTAB review. Second, it is said that Albright is reluctant to invalidate patents on subject matter eligibility grounds even though the cases before him frequently assert patents that appear vulnerable to such challenges.[11] And third, conventional wisdom holds that Albright is loathe to grant motions to transfer cases to other courts with a greater geographic connection to the evidence and witnesses involved.[12] In combination, these tendencies (if accurate) increase the odds that firms accused of infringement will incur substantial costs

[10] Claim construction is a phase of patent litigation during which the parties identify contested claim terms/phrases and present arguments in briefing and orally at a hearing supporting their preferred definitions of those terms. Thereafter, the court issues a set of definitions of these terms. On the basis of these definitions, the parties then typically move the court for summary judgment of invalidity/validity and/or infringement/noninfringement. If the case is not resolved by these motions and doesn't settle in the meantime, the jury will be instructed to follow the court's claim term/phrase definitions at trial.

[11] Patent cases filed in Waco since Albright's arrival disproportionately assert patents related to software, e-commerce, finance, and other subject matter of questionable patentability following the U.S. Supreme Court's ruling in *Alice v. CLS Bank*, 573 U.S. 208 (2014). For a summary of *Alice*'s impact on patent litigation in recent years, see, e.g., Alice: Benevolent Despot or Tyrant? Analyzing Five Years of Case Law Since Alice v. CLS Bank (IP Watchdog, August 29, 2019).

[12] Notably, several of Albright's transfer denials have been forcefully reversed on appeal. *See, e.g.*, Fed. Circ. Keeps Up Criticism of Albright's Transfer Denials (Law360, September 27, 2021).

litigating in Waco even if they have strong defenses that, absent settlement, ultimately would succeed at PTAB, in trial, or on appeal.[13]

Patent case concentration in Waco—and particularly a perceived concentration of cases filed at Albright's invitation to achieve quick settlements—soon caught the attention of national policymakers. In November 2021, ranking members of the Senate Judiciary Committee's IP Subcommittee wrote to Supreme Court Chief Justice John Roberts, expressing concern about the "extreme concentration of patent litigation in [the Western District of Texas] and the unseemly and inappropriate conduct that has accompanied this phenomenon," and in January 2022, Chief Justice Roberts directed the U.S. Judicial Conference's Committee on Court Administration and Case Management to review the issue and "work in partnership with Congress in the event change in the law is necessary."

In July 2022, before any legislation was proposed, Orlando Garcia, then serving as Chief Judge of the WDTX, stepped in and revised the district's case assignment rules so that patent cases filed in Waco would no longer be assigned exclusively to Albright. Under the terms of Garcia's July 25, 2022 order, patent cases filed in Waco would thereafter be assigned randomly among the district's twelve active district judges. On December 16, 2022, the district's next Chief Judge, Alia Moses, issued an order of her own continuing the practice of random patent case assignment, and this order remains in effect.[14]

3 Model

To guide our empirical analysis, we first present a simple model of whether and where patentees file lawsuits against alleged infringers. We begin with a theoretical framework of patent assertion litigation, which we adapt to incorporate the multi-venue nature of U.S. patent enforcement and the key characteristics that set Albright apart from other judges. We then derive optimal case allocation for a patentee before and after introducing random case allocation and identify predictions for empirical analysis.

[13] For a summary of legal commentary on Albright, see Anderson and Gugliuzza (2021).

[14] Prior to Moses' elevation to Chief Judge, it was unclear for a time whether Garcia's special assignment rule for Waco patent cases would be renewed when it expired on December 15, 2022. However, Moses readopted the rule the very next day. On December 1, 2022, Judge Frank Montalvo assumed "senior status" and thereafter elected to no longer hear patent cases. In addition, Judge Lee Yeakel retired on May 1, 2023. Because neither judge was replaced prior to the end of our study, the WDTX had 12 active district judges through November 2022, 11 active members between December 2022 and April 2023, and 10 active members from May 2023 to the present.

3.1 A Simple Framework of Litigation

We model litigation and settlement with symmetric information. Both parties expect the plaintiff to win at trial with probability ω. In case of a win, the plaintiff receives a prize of W. If the plaintiff loses (with probability $1-\omega$), the patent is invalidated with probability $\bar{\mu}$. This invalidation probability is a function of the specific litigation setting (see below). We denote the plaintiff's losses from invalidation (e.g., the loss of future licensing revenues) by N. The patentee incurs litigation costs c_P; the defendant incurs costs c_D. The patentee's expected payoffs from litigation are $\pi_P = \omega W - (1-\omega)\,\bar{\mu} N - c_P$; and the defendant's expected payoffs are $\pi_D = -\omega W - c_D$.

Before the case goes to trial, the parties can settle. We model settlement negotiations as random take-it-or-leave-it offers where each party makes a one-time offer with a probability of one-half. The settlement offers must make the receiving party at least as well off as the expected trial outcome. In equilibrium, each party will extract the full surplus with its respective offer. If the plaintiff brings a negative-expected value suit (with $\pi_P < 0$), the threat to take the case to trial is not credible, and the defendant will reject any $S_P \geq 0$. For positive-expected value suits with $\pi_P \geq 0$, the respective offers are $S_P = \omega W + c_D$ by the plaintiff and $S_D = \omega W - (1-\omega)\,\bar{\mu} N - c_P$ by the defendant.

The expected settlement outcome S (i.e., the expected settlement offer) is a settlement payment from the defendant to the plaintiff and equal to

$$S = \omega W - \frac{(1-\omega)\,\bar{\mu} N}{2} + \frac{c_D - c_P}{2} \tag{1}$$

if $\pi_P \geq 0$. If $\pi_P < 0$ and $S = 0$, the plaintiff is indifferent to filing a lawsuit. We assume that, in this case, the plaintiff will not file.

3.2 Heterogeneity of Venues

Different litigation venues follow different procedures that can facilitate or hinder a defendant's attempt to have the plaintiff's patent invalidated. This observation introduces heterogeneity in the probability of patent invalidation $\bar{\mu}$ (with a loss of N for the plaintiff). In some venues, the probability of invalidation will, therefore, be higher than in others. We assume two different types of venues with probabilities $\mu^L < \mu^H$.

A given venue induces a low invalidation probability with probability ρ and a high invalidation probability with probability $1-\rho$. The plaintiff expects its patent invalidated with probability $\bar{\mu} = \rho\mu^L + (1-\rho)\,\mu^H$. The expected settlement amount (and the expected value of a lawsuit)

is equal to

$$S = \omega W - \frac{(1-\omega)\left[\rho\mu^L + (1-\rho)\,\mu^H\right]N}{2} + \frac{c_D - c_P}{2} \tag{2}$$

for $\pi_P \geq 0$ (and zero otherwise).

We now introduce two effects on a plaintiff's payoffs of its choice to file a lawsuit with Albright in the WDTX. First, in combination, Albright's scheduling practices, reluctance to grant motions to stay litigation pending the outcome of PTAB review, and resistance to the invalidation of patents on subject eligibility grounds suggest a lower invalidation probability when filing a suit in Waco. In terms of our notation, if a case is in a venue other than Waco, then we assume $\rho = 0$, and the probability of invalidation is

$$\bar{\mu}^O = \mu^H. \tag{3}$$

If, instead, a case is in front of Albright with certainty, then $\rho = 1$, and the probability of invalidation is μ^L. This is the setting prior to the case assignment order in the WDTX. We denote the probability of invalidation *before* the random case allocation order by

$$\bar{\mu}^{before} = \mu^L. \tag{4}$$

With ρ representing the probability that Albright is assigned a case (with a lower invalidation probability), the expected probability of invalidation *after* the random case allocation order is

$$\bar{\mu}^{after} = \rho\mu^L + (1-\rho)\,\mu^H. \tag{5}$$

The second effect stems from potential limits to the choice of cases that a plaintiff can bring in a specific venue. As introduced above, U.S. law states that a firm generally may be sued for patent infringement in a given district only if the firm maintains an established place of business in the district or the district is located in the firm's state of incorporation. Thus, constraining venue choice to the WDTX may affect the litigation prize a patentee can expect. Suppose the plaintiff has identified several potential infringers but can file only one lawsuit. When filing in the WDTX, the prize is W^L. When filing in another district, the patentee can choose from a set of V venue-infringer combinations, each with a prize W_i. Denote this set by $\mathbb{W} = \{W_i\}_1^V$. A patentee choosing to file outside the WDTX will choose the best venue with prize $W^H \equiv \max \mathbb{W}$.[15]

[15] A larger prize may be available in another venue because, among other possible reasons, another venue is home to a more plaintiff-friendly jury pool and/or an alternative infringer against which a larger damages award may otherwise be achieved, due, for example, to a larger volume of infringing sales.

Finally, because our empirical analysis focuses on the litigation behavior of plaintiffs already active in the WDTX, we introduce switching costs $k \geq 0$ in our model. In practice, such costs may include, for example, relocation costs (e.g., the cost of renting office or storage space in the new forum), additional travel expenses (if the new forum is harder for witnesses, experts, and counsel to reach), and costs associated with securing local counsel in the new forum. At the time of settlement negotiations, these costs are sunk and do not enter the expression of the settlement amount.

Collecting terms, we summarize the expected values of lawsuits filed in the WDTX and other venues as follows:

$$S^{before} = \omega W^L - \frac{(1-\omega)\,\mu^L N}{2} + \frac{c_D - c_P}{2} \tag{6}$$

$$S^{after} = \omega W^L - \frac{(1-\omega)\left[\rho\mu^L + (1-\rho)\,\mu^H\right] N}{2} + \frac{c_D - c_P}{2} \tag{7}$$

$$S^{O} = \omega W^H - \frac{(1-\omega)\,\mu^H N}{2} + \frac{c_D - c_P}{2} - k. \tag{8}$$

These payoffs apply to positive-expected value lawsuits with $\pi_P^O \geq 0$, $\pi_P^{before} \geq 0$, and $\pi_P^{after} \geq 0$. If any of these inequalities are violated, the plaintiff will not file a lawsuit in the respective venues.

3.3 Case Allocation

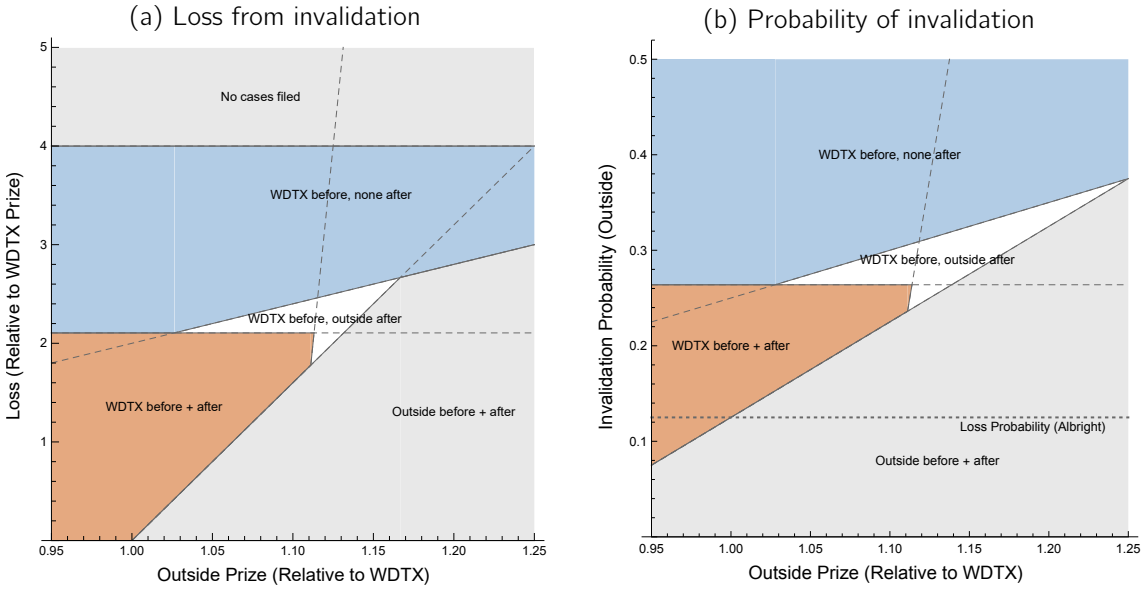
The patentee will file a case in a given venue (WDTX or elsewhere) if it expects non-negative payoffs from the venue and the respective payoffs are higher than in the alternative venue. It does expect positive payoffs if $\pi_P^O \geq 0$, $\pi_P^{before} \geq 0$, or $\pi_P^{after} \geq 0$.[16] Suppose these participation constraints are satisfied for all venues (i.e., not filing a case is strictly dominated). *Before* random assignment of judges, the plaintiff files a suit in the WDTX if $S^{before} \geq S^O$ or

$$\frac{(1-\omega)\,N}{2}\left[\mu^H - \mu^L\right] \geq \omega\left[W^H - W^L\right] - k. \tag{9}$$

The plaintiff files in the WDTX when the benefits from lower probabilities of invalidation more than outweigh the costs associated with the potential restrictions on which cases qualify for the venue (i.e., if $W^H > W^L$). If no such restrictions exist (i.e., if $W^H < W^L$), then there is no downside to filing in the WDTX; the patentee will always choose this venue (as long as the participation constraint, $\pi_P^{before} \geq 0$, is satisfied).

[16] The patentee's expected payoffs are positive if $S \geq 0$; a necessary and sufficient condition for this inequality to hold for the WDTX is $\pi_P \geq 0$. For a lawsuit filed outside after case randomization, $\pi_P^O \geq 0$ is the binding constraint for sufficiently low k such that $\frac{(1-\omega)\mu^H N + c_P + c_D}{2} \geq k$.

Figure 1: Patentee's Case Allocation



Notes: For the calibration of the model, we use $W^L = 1$ for the litigation prize in the WDTX, $\omega = 1/2$ for the plaintiff's probability of winning at trial, $c_P = c_D = 1/4$ for the parties' respective litigation costs, $k = 1/20$ for the plaintiff's venue switching costs, $\rho = 1/10$ for the probability of assigning Albright after the random case allocation order, $N = 2$ (varying in panel (a)) for the loss from invalidation, $\mu^L = 1/8$ for the probability of invalidation under Albright, and $\mu^H = 2/8$ (in panel (b)) for the probability of invalidation in all other venues. In panel (b), the dotted horizontal line depicts the probability of invalidation in the Waco Division of the WDTX (under Albright).

The condition for filing a lawsuit in the WDTX *after* the introduction of random judge assignment is $S^{after} \geq S^O$ or

$$\rho \cdot \frac{(1-\omega)\,N}{2}\left[\mu^H - \mu^L\right] \geq \omega\left[W^H - W^L\right] - k. \tag{10}$$

With randomization, the benefits from lower invalidation probabilities materialize only when Albright presides over the case, now with probability ρ. The result is a lower incentive to file in the WDTX *after* randomization.

We illustrate the patentee's venue choice in Figure 1.[17] In both panels, we vary the litigation prize W^H that the patentee can achieve outside the WDTX (relative to the prize W^L in the WDTX) on the horizontal axis. In panel (a), we vary on the vertical axis the loss N from patent invalidation relative to the litigation prize in the WDTX (keeping the probabilities of invalidation, μ^L and μ^H, constant). In panel (b), we vary on the vertical axis the probability of invalidation μ^H outside the WDTX (keeping the loss from invalidation and the probability of invalidation in the WDTX constant).

The red, white, and blue-shaded areas are parameter combinations with cases in the WDTX before the random case allocation order. In the red-shaded area, the patentee files cases in

[17] For the calibration values, see the figure notes.

the WDTX both before *and* after the order; in the white area, the patentee moved to an outside venue after the order; and in the blue-shaded area, the patentee does not file a case after the order. The gray areas are parameter combinations for which the patentee does not file a case in the WDTX before the order (either because no case is filed, or pre-order cases are filed outside the WDTX).

3.4 Predictions

Figure 1 and the underlying participation constraints and allocation conditions in equations (9) and (10) highlight specific factors that drive judge shopping. We summarize our main predictions in this section with a focus on venue-specific factors; i.e., factors that change with a plaintiff's choice of venue.

First, the effect of random case assignment on a plaintiff's decision to file suit in the WDTX is straightforward:

Lemma 1. *Random case allocation (with $\rho < 1$) lowers the plaintiff's incentive to file a case in the Western District of Texas.*

We see this from a comparison of the plaintiff's decision to file in the WDTX *before* random allocation (in equation (9)) and *after* (in equation (10)). With randomization, the benefits from lower invalidation probabilities (under Albright) materialize only with probability $\rho < 1$, lowering the plaintiff's incentive to file in the WDTX (relative to before). Moreover, as ρ decreases (and the probability of an invalidation increases), the plaintiff is less likely to file a case in the WDTX, particularly for higher values of W^H (i.e., the relative advantage of an outside venue).

One of our venue-specific factors is related to the loss from invalidation. Figure 1 depicts, on the vertical axes of panels (a) and (b), the case allocation decision for varying values of invalidation loss N and outside invalidation probability μ^H. After randomization, and as long as $\rho > 0$, higher values of N (and μ^H) make the WDTX increasingly more attractive than an outside venue. But this holds only if the plaintiff's participation constraints are satisfied.

To see this, consider two different ranges of the outside-venue prize W^H (see Figure 1(a)). For low W^H (e.g., below 1 on the horizontal axis), an outside venue has no prize advantage. As N increases (moving north in the picture), the plaintiff no longer brings the case after randomization (from red to blue) because $\pi_P^{after} < 0$. For intermediate values of W^H (e.g., a value of 1.1 on the horizontal axis, implying an outside prize that is 10% above the WDTX prize), an increasing value N eventually violates the participation constraint for the WDTX.

Because of W^H, the plaintiff files the case outside the WDTX before dropping the case for even higher values of N (from red to white to blue).[18]

Lemma 2. *Higher losses from invalidation (i.e., higher values of N or μ^H) reduce case filings in the WDTX. For a sufficiently large prize advantage of the outside venue, some of these cases move to an outside venue.*

Our second venue-specific factor captures a potential prize advantage of a venue outside the WDTX when $W^H > W^L$. A higher value of W^H makes a move away from the WDTX more attractive to the plaintiff. In both panels of Figure 1, we see that an increase of W^H (moving to the right on the horizontal axes) reduces cases filed in the WDTX. For low values of invalidation loss N or invalidation probability μ^H, cases both before and after randomization move away from the WDTX (from red to grey). For higher values of N or μ^H, initially post-randomization, and for higher values of W^H also pre-randomization, cases move away from the WDTX (from red to white to grey).

Lemma 3. *A higher prize advantage from litigation outside the WDTX (i.e., higher values of W^H relative to W^L) reduces case filings in the WDTX.*

4 Empirical Approach

Our empirical approach proceeds in three parts. First, we estimate the overall impact of the random assignment order on case filings in the WDTX. Second, we rely on the model presented above to examine drivers of the observed change in case filings in the WDTX. And third, we rely on random case assignment in Waco to analyze Albright's causal impact on litigation metrics identified as central to his popularity with patent plaintiffs.

4.1 Effect of Random Case Assignment Order

First, we quantify the overall impact of the random case assignment order on case filings. This analysis not only informs us about the impact of imposing random case assignment on litigation, but it also provides direct evidence on judge-shopping in the WDTX. We use a difference-in-differences approach at the court-month level, where we ask whether the number of cases filed in the WDTX changed following the random case assignment order relative to the number of cases filed in all other district courts during the same time period. We estimate

[18] For even higher values of W^H (e.g., above values of 1.2. on the horizontal axis), the plaintiff will not file in the WDTX before randomization (grey area).

the following specification:

$$\begin{aligned} \text{case}_{vt} = \alpha + \beta_1 \text{WDTX} + \beta_2 \text{WDTX} \times I(t \geq Jul2022) + \\ + \gamma I(t \geq Jul2022) + \delta X_{vt} + \sum_t \theta_t D_t + \theta_v + \epsilon_{vt} \end{aligned} \tag{11}$$

where case_{vt} represents the number of cases filed in district v at time t; WDTX is a dummy variable that is equal to one if a case was filed in the WDTX; $I(t \geq Jul2022)$ is a dummy variable that is equal to one starting in July 2022 when Chief Judge Garcia issued the random case assignment order; X_{vt} denotes a set of time-varying district court-level controls (described in appendix A);[19] D_t are monthly dummies that account for time-varying shocks to litigation; θ_v are fixed effects for all other district courts that account for unobserved, time-invariant, court-level characteristics; and standard errors are clustered at the court-month-level. Coefficient β_2 captures the relative difference in case filings before and after cases filed at the Waco Division were randomly allocated across judges in the WDTX to case filings at all other district courts. Since the available empirical evidence shows that Albright disproportionately attracted NPE cases to Waco (Helmers and Love, 2023), we also consider whether the transition to random case allocation had a differential impact on NPEs. We do this by restricting the sample to cases brought by NPEs.

As summarized in Lemma 1, our model suggests that changes to litigation in the WDTX following the random case assignment order are driven by a change in ρ, the likelihood that a case is assigned to Albright. The model predicts that lower values of ρ (i.e., a lower probability that plaintiffs can benefit from Albright's handling of cases) reduce case filings in the Western District. Since we observe ρ, which is exogenously determined by randomization, we can study this mechanism directly with a specification that uses the observed share of cases assigned to Albright as the treatment variable. We estimate the impact of Albright's share of Waco Division patent cases on case filings as follows:

$$\text{case}_{vt} = \alpha + \beta_1 \text{Case share assigned to Albright}_{vt} + \delta X_{vt} + \sum_t \theta_t D_t + \theta_v + \epsilon_{vt} \tag{12}$$

where *Case share assigned to Albright*$_{vt}$ represents one minus the observed share of cases filed at the Waco Division assigned to Albright in month t. This variable is zero for all district courts other than the WDTX. All other variables are the same as in specification (11), and again, we estimate (12) also on a subsample consisting only of cases filed by NPEs.

[19] While these controls are unlikely to be directly affected by the introduction of random case assignment for reasons provided in the appendix, we note that our results are robust to their omission from specifications (11) and (12).

4.2 Judge-Shopping and Selection

Next, we analyze selection into judge-shopping by looking at the drivers of the post-July 2022 drop in case filings in the WDTX. First, we ask whether the change in case filings results from changes at the extensive or intensive margin—i.e., whether the drop in case filings is primarily attributable to a reduction in the number of patent enforcers willing to file suit there after July 2022 or, instead, to a reduction in the number of cases filed by patent enforcers.

To do so, we use the specification below to estimate how pre-July 2022 WDTX patent enforcers' likelihood of filing a case in the district changed in the months following Judge Garcia's order:

$$\text{case}_{it} = \alpha + \beta \cdot I(t \geq Jul2022) + \sum_{t} \theta_t D_t + \theta_i + \epsilon_{it} \tag{13}$$

where case_i is either (i) a binary variable equal to 1 if plaintiff i filed at least one case in month t, and equal to 0 if plaintiff i filed no case in month t, or (ii) the number of cases filed by plaintiff i in month t. Specification (13) includes plaintiff fixed effects θ_i since we are interested in changes in plaintiff case filing behavior over time. Again, we also look for a differential effect on NPEs by estimating a version of specification (13) where we interact $I(t \geq Jul2022)$ with a dummy variable that is equal to one if the plaintiff is an NPE. Note that for this analysis, we restrict the sample to cases filed in the Waco Division of the WDTX since our focus is on changes in case filing behavior in Albright's courtroom over time.

Next, we construct empirical measures of the key variables highlighted in Lemmas 2 and 3 to estimate the following specification, which estimates the likelihood that case i is filed at the Waco division post-random case assignment order:

$$\text{postorder}_i = \alpha + \beta X_i + \epsilon_i \tag{14}$$

where postorder_i is equal to one if case i was filed after the random case assignment order was put in place, X denotes a number of empirical measures of the variables highlighted by Lemmas 2 and 3, and ϵ_i is a random error term.

Lemma 2 predicts that the observed reduction in case filings in the WDTX is driven by increases in patentees' expected losses from invalidation (N) and the likelihood of invalidation (μ^H) following the introduction of random case allocation. We capture N and μ^H, respectively, using patent characteristics recognized in the literature as proxies for patent value (i.e., the value of the patented technology) and quality (i.e., the patent's ability to withstand a significant validity challenge). As a measure of value (and, thus, loss associated with invalidation), we look principally to patent family size and counts of forward citations and relevant

technology classifications. The pursuit of a large family of related patents across multiple national markets suggests that the patentee expected the underlying technology to be used widely (geographically speaking) and with sufficient strategic value to justify a relatively large expenditure on patent prosecution. In a similar vein, a relatively large number of forward citations and relevant technology classifications additionally evinces the patented technology's potential relevance to a relatively wide array of follow-on innovations and a relatively diverse set of applications.

With respect to quality (and, thus, a patent's likelihood of validity), we include a number of patent characteristics that serve as proxies for the thoroughness of the patent's initial examination by the USPTO. Among these are the overall allowance rate of the examiner assigned to the application from which the patent issued (which serves as a rough proxy for the examiner's leniency); overall backward citation count (which serves as a proxy for the number of prior art references that were considered during examination); counts of backward citations to non-patent literature and information disclosure statements (which serve as rough proxies of the thoroughness of both the patentee's and examiner's searches for relevant prior art); and the change in the number of independent claims between publication and issuance (as a proxy for the degree to which the patentees' claims were narrowed during examination). In addition, we consider the number of requests for continued examination (RCEs) filed during a patent's prosecution (as a proxy for circumvention of proper rejections and attempts to claim new matter), as well as each patent's status as a "software" patent vulnerable to invalidation on subject matter eligibility grounds following the Supreme Court's ruling in *Alice v. CLS Bank*.[20]

Lemma 3 additionally suggests that the rate of patent case filings in Waco following the introduction of random case assignment is a factor in patentees' ability to pursue litigation elsewhere in the country. As proxies for W^H, we consider a number of characteristics of firms accused of infringement, including firm size, firm age, whether firms are publicly or privately owned, and whether they operate in the software industry. Firm size and age serve as rough proxies for the likelihood that a firm has one or more physical locations outside the WDTX, which would open them to suit in other districts. Similarly, the overwhelming majority of publicly traded U.S. firms are (by virtue of being incorporated in Delaware) eligible to be sued in the District of Delaware, a very common outside option to WDTX. By contrast, software firms may be relatively unlikely to have physical locations outside a small number of major tech hubs since they lack manufacturing, distribution, and retail facilities. In addition, we use the size of NPE plaintiffs as a proxy for W^H because larger, more litigious NPEs may have greater facility and experience litigating in multiple venues.

[20] Alice Corp. v. CLS Bank Int'l, 573 U.S. 208 (2014).

4.3 Albright's Effect on Litigation and Outcomes

Finally, we leverage the random allocation of cases filed in Waco after July 2022 to determine the factors that set Albright apart from his peers and thus may explain why he is preferred by patent enforcers. For this purpose, we estimate Albright's causal effect on motions practice, scheduling, and case outcomes. Restricting our sample to the set of randomly assigned cases filed in the Western District of Texas since the random assignment order came into effect on July 25, 2022, we estimate the following specification at the case-level:

$$\text{mechanism}_i = \alpha + \beta \text{Albright}_i + \epsilon_i \tag{15}$$

where mechanism_i is one of the following: (i) a dummy variable that is equal to one if a motion to transfer was filed in case i; (ii) a dummy variable that is equal to one if a motion to stay pending PTAB review of an asserted patent was filed in case i; (iii) a dummy variable that is equal to one if a motion to invalidate an asserted patent on subject matter eligibility grounds was filed in case i; (iv) the number of days between case i's filing date and the earliest date on which case i was set for a claim construction (i.e., *Markman*) hearing; or (v) the number of days between case i's filing date and the earliest date on which case i was scheduled to proceed to trial.

In addition, we analyze Albright's potential effect on case settlement by estimating the following similar specification at the case level using the set of randomly assigned post-July 2022 cases:

$$\text{settle}_i = \alpha + \beta_1 \text{Albright}_i + \epsilon_i \tag{16}$$

where settle_i is either (i) equal to one if case i settled or (ii) the number of days between a case's filing date and its settlement date. Settlement is far and away the most common outcome of patent litigation generally, and moreover, conventional wisdom and empirical evidence suggest that NPEs are particularly fond of quick settlements, perhaps because substantive rulings risk the invalidation of weak patents or the foreclosure of broad claim interpretations (Bessen and Meurer, 2014; Cohen et al., 2016).

5 Data

We collect data on patent case filings, characteristics of the litigants and patents involved in those cases, and information concerning how those cases were litigated once filed. Our source for basic case-level data is Maxval's Litigation Databank, which provides a comprehensive list

of patent case filings, the date on which each case was filed, the district and division in which it was filed, the patent(s) asserted, the name of the entity enforcing those patents, and the names of all parties accused of infringement. Our sample begins in July 2017 and extends through October 2023.[21]

To capture variation among the parties involved in these cases, we add firm characteristics drawn from four sources. First, we determine each patent enforcer's status as a "non-practicing entity" or operating technology company by cross-referencing three sets of case-level patent enforcer classifications: Stanford Law School's NPE Litigation Database, RPX Insight, and Unified Patents' Litigation Case List. We also use RPX Insight to identify NPEs that are part of a larger group of related entities controlled by a parent and measure the size of each group by counting its known subsidiaries or affiliates.

In addition, we extract firm-level characteristics for all defendants, including size and ownership type, from Bureau van Dijk's Orbis database. To capture variation among the patents asserted in our sample of litigation, we also extract standard patent-level characteristics, including citation metrics and technology classifications, from EPO's Patstat database, as well as a variety of patent-level information sourced from the USPTO's PatentsView and PatEx databases.

Our source for data on litigation events is DocketNavigator. Using DocketNavigator's case search functionality, we determine for each case in our sample which judge was initially assigned to the case, as well as whether the case was subsequently reassigned to another judge and, if so, when and to whom. We also determine whether each case is active or terminated, and for each terminated case, we identify whether the case was terminated due to settlement and, if so, on what date the case was settled. Using DocketNavigator's database of court filings, we identify all cases in which an accused infringer filed a motion to transfer the case to another district, a motion to stay the case pending the outcome of a PTAB challenge, or a motion to invalidate an asserted patent on the grounds that the patent claims ineligible subject matter. In addition, we use Docket Navigator's database of docket entries to identify the earliest scheduled *Markman* (i.e., claim construction) hearing date and trial date (if any) reported in each case's docket text. Our data on litigation events (for all cases in our sample filed through October 2023) is current as of July 2024.

Finally, we determine based on a review of case dockets whether cases filed in the Waco Division of the WDTX on or after July 25, 2022, were assigned at random pursuant to the Chief Judges' respective orders or, instead, were assigned to a particular judge who had

[21] Throughout the paper, we use the term "patent" to refer to utility patents. Our sample does not include cases filed to enforce design or plant patents. We also drop cases generated due to the transfer or severance of an earlier-filed case, as well as the small minority of cases that concern patent rights but do not bring a claim for patent infringement.

previously been assigned a "related case"—i.e., a case filed by the same patent enforcer to assert at least one of the same patents. During the period of our study, docket entries reporting Western District case assignments commonly indicate on what basis the case was assigned; for example, some entries note that cases were assigned "randomly," while others indicate that the case was assigned "directly . . . due to previously filed cases . . . having same Plaintiff and patent case number(s)."[22] In an abundance of caution, we additionally treat as "related" (i.e., as non-randomly assigned) all cases without such a note that were assigned to a judge already presiding over an active case involving the same patent enforcer and at least one of the same asserted patents.

6 Results

6.1 Effect of Random Case Assignment Order

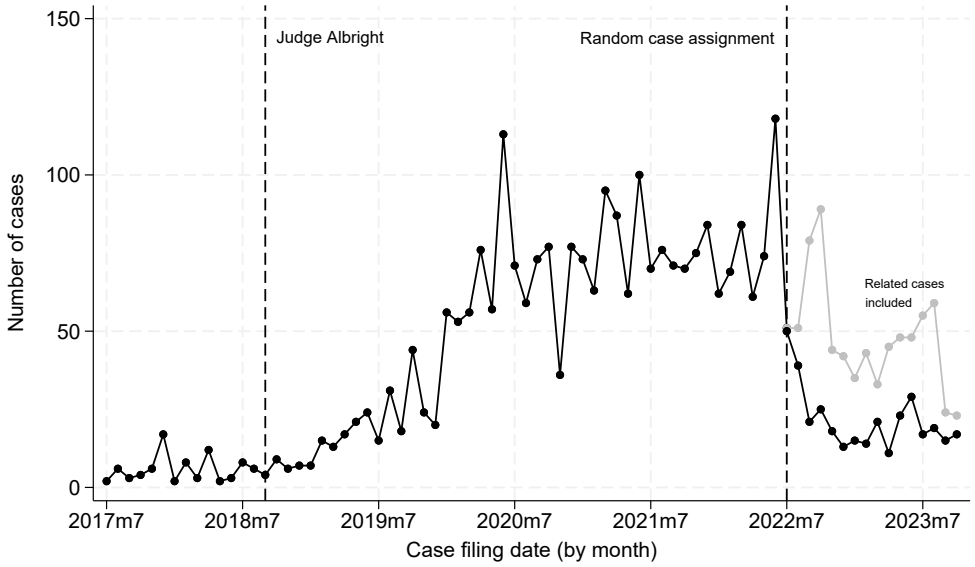
Figure 2 plots monthly case filing counts for the WDTX, beginning in mid-2017 and continuing through October 2023. On average, fewer than six patent cases per month were filed in the Western District prior to Albright's arrival in September 2018. Thereafter, patent case filings began to rise quickly, reaching in the year prior to Judge Garcia's order an average of more than 76 new suits per month (more than a quarter of all patent cases filed each month in the U.S.). In the period following Garcia's order, the solid black line plots total monthly patent case filings, excluding case filings identified as related to previously filed cases (and thus assigned on a non-random basis). The dashed gray line plots the total case counts, including related cases. To ensure that the analyses that follow are restricted to cases assigned at random, we ignore these related cases.[23]

To see the impact that random case assignment has had on Albright's docket, Figure 3 plots the monthly share of cases filed in the Waco Division of the WDTX that were assigned to Albright (excluding related cases) from July 2021 onward. As expected, prior to Judge Garcia's order, patent cases filed in Waco were assigned to Albright with certainty, while

[22] *Compare* Docket Entry dated October 25, 2002, Aperture Net, LLC v. Gen. Dynamics Mission Sys., Inc., No. 6:22-cv-01109 (W.D. Tex.) ("Case randomly assigned to Judge Jason K. Pulliam pursuant to the Order Assigning Business of the Court as it Relates to Patent Cases, filed 7/25/2022."); Docket Entry dated October 7, 2022, WirelessWerx IP, LLC v. Raytheon Tech Corp., No. 6:22-cv-01059 (W.D. Tex.) ("Case randomly assigned due to no known related cases.") *with* Docket Entry dated Dec. 28, 2022, Cedar Lane Tech., Inc. v. Zenitel Group, No. 6:22-cv-01307 (W.D. Tex.) ("Case directly assigned to Judge Alan D Albright due to previously filed cases as having same Plaintiff and patent case number(s)."); Docket Entry dated October 27, 2022, Stormborn Tech., LLC v. Itron, Inc., No. 6:22-cv-01128 (W.D. Tex.) ("Case assigned to Judge Robert Pitman due to related case.").

[23] Another reason for ignoring related cases is that they are largely a short-run phenomenon. As cases filed prior to the random case assignment order are disposed of, related case filing counts will naturally decline.

Figure 2: Patent Case Filings in WDTX (by Month)



Notes: The figure shows the number of patent infringement cases filed at the Western District of Texas (WDTX) by month. Judge Albright was sworn in as judge of the WDTX on September 18, 2018. The random case assignment order was issued on July 25, 2022. Related cases are cases that were assigned (on a non-random basis) to a judge who was already presiding over an active case involving the same patent enforcer and at least one of the same asserted patents.

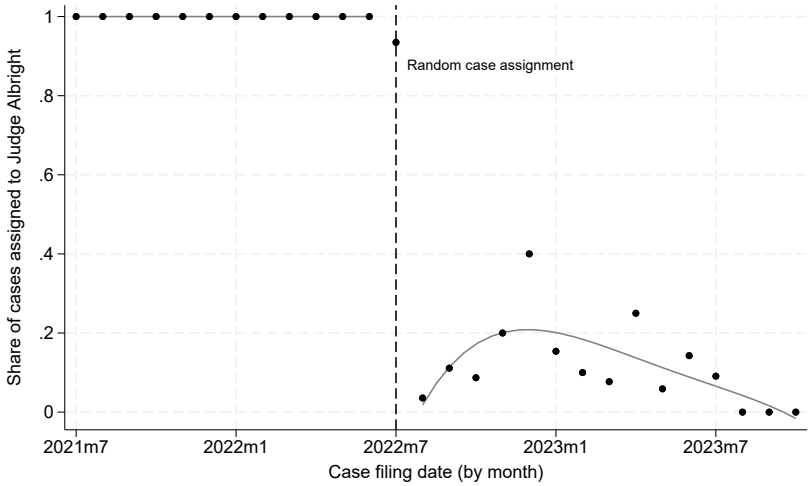
following the random case assignment order, Albright received on average just 11% of wholly new (i.e., unrelated) case assignments.[24]

Figure 4 examines further the effect of Judge Garcia's order on all judges in the WDTX. Figure 4(a) plots the absolute number of (unrelated) cases filed in Waco that were assigned to Albright or another West Texas judge. Figure A-1 additionally plots monthly patent case counts across WDTX divisions and judges. In addition to documenting the dramatic impact of random case assignment on the number of new, unrelated patent cases filed in Waco and assigned to Albright, these graphs confirm as well (i) that patent enforcers did not react to Judge Garcia's order by shifting cases from Waco to Austin or other WDTX divisions, and (ii) that WDTX patent case filings were almost entirely allocated to Albright prior to July 2022. By contrast, as shown in Figure 4(b), unrelated patent case filings in Waco have since been assigned across judges in reasonably comparable shares.[25]

[24] The spike of 40% in December 2022 is explained by a very low absolute number of cases filed. In total, just five unrelated cases were filed that month, two of which were assigned to Albright.

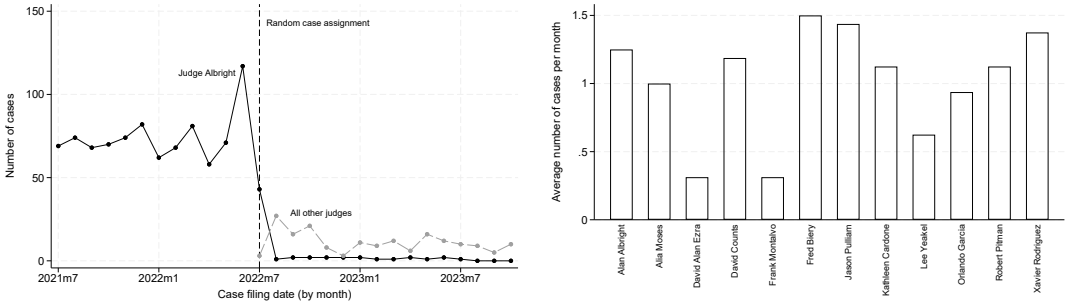
[25] The relatively lower average number of cases assigned to David Ezra, Frank Montalvo, and Lee Yeakel is explained by the fact that Ezra was a senior judge throughout the duration of our sample period, Montalvo assumed senior status on December 1, 2022, and Yeakel retired on May 1, 2023. In Table A-3 in the online appendix, we also show that the number of cases allocated to a given judge is uncorrelated with a large number of observable judge characteristics.

Figure 3: Share of Cases Filed at Waco Division Assigned to Albright



Notes: The figure shows the share of patent cases filed at the Waco Division of the Western District of Texas (WDTX) assigned to Albright before and after the random case assignment order issued on July 25, 2022.

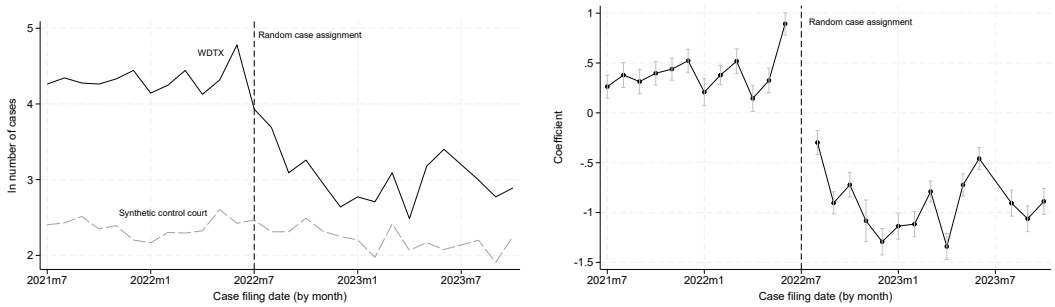
Figure 4: Patent Case Filings in Waco Division (by Judge)



(a) Over time (b) By judge after random case allocation

Notes: Figure (a) shows the number of cases filed at the Waco Division of the Western District of Texas (WDTX) allocated to Albright and all other eligible judges. Figure (b) shows the average number of cases assigned to a given judge following the random case assignment order issued in July 2022. In (a) "All other judges" includes the judges shown in Figure (b).

Figure 5: Effect of Random Case Allocation on Patent Case Filings



(a) Over time (b) By judge after random case allocation

Notes: Figure (a) compares the number of cases filed at the Western District of Texas (WDTX) to a synthetic control. Control courts include the top 10 courts in terms of average patent case filings during the sample period. The estimated ATT by synthetic control approach is -1.151 (significant at 1%). Figure (b) shows the coefficients on the leads and lags of the following regression specification $case_{vt} = \alpha + \sum_t \beta_t(\text{WDTX} \times D_t) + \sum_t \theta_t D_t + \theta_v + \epsilon_{vt}$ where $t = 2021m7, 2021m8, ..., 2023m10$ with $2022m7$ as the omitted category. All variables are explained in Section 4. The figure also shows confidence intervals at the 5% level.

To more formally illustrate the effect of random case assignment on Waco patent case filings, we first compare monthly WDTX case filings to a synthetic control "court" constructed using monthly patent case filing patterns in the next ten most popular districts with patent enforcers. In Figure 5(a), we see that the synthetic control tracks case filing levels at the Western District reasonably well during the period preceding the random case assignment order. However, while case filings remain largely flat for the synthetic control court after the order was issued, we observe a large drop in the Western District.

To assess the dynamics of this large drop in case filings, we estimate the leads and lags associated with the following specification: $case_{vt} = \alpha + \sum_t \beta_t(\text{WDTX} \times D_t) + \sum_t \theta_t D_t + \theta_v + \epsilon_{vt}$ where $t = 2021m7, 2021m8, ..., 2023m10$ with $2022m7$ as the omitted category. Figure 5(b) shows that the drop in case filings occurred immediately after the order was implemented. While the graphs suggest some anticipation effect, the increase in case filings in the month prior to the random case assignment order is, in fact, unlikely to be driven by the expectation of a change in the way cases are assigned to judges in the Western District. There is no evidence suggesting that plaintiffs were aware of the imminent change before its official announcement on July 25, 2022.[26] Instead the spike in case filings observed for June 2022 appears to driven by idiosyncratic NPE filing behavior.[27]

Table 1 shows the results obtained when we estimate specifications (11) and (12) using

[26] For example, the Financial Times published an article titled "How Waco Became a Patent Litigation Hotspot" in mid-June 2022 that makes no mention of any plans to change the way patent cases are assigned to judges in the Western District. Similarly, the popular intellectual property blog Patently-O published an article on Albright and the WDTX on June 17, 2022, without mentioning any potential change to the way cases are assigned in the Western District.

[27] See for example a blog post discussing case filing patterns in June 2022. Table A-4 in the online appendix shows that our results are robust to dropping all cases filed by the NPE responsible for the spike in filings.

Table 1: Effect of Random Case Allocation on Patent Case Filings

	All		NPE	
	(1)	(2)	(3)	(4)
WDTX $\times$ $I(t \geq Jul2022)$	-53.962***		-39.627***	
	(0.836)		(1.020)	
Case share Albright $\times$ $I(t \geq Jul2022)$		-58.935***		-41.774***
		(0.973)		(1.097)
Controls	Yes	Yes	Yes	Yes
Court FE	Yes	Yes	Yes	Yes
Case filing month FE	Yes	Yes	Yes	Yes
R^2	0.903	0.900	0.855	0.848
Observations	2,187	2,187	1,512	1,512

Notes: Dependent variable: number of patent cases filed in a given month. NPE: non-practicing entity. FE: fixed effects. Controls listed in Appendix A. The sample consists of 79 district courts. Unit of observation at the case-month-level; OLS coefficients shown; robust standard errors clustered at the case-month-level; * significant at 10%, ** at 5%, *** at 1%.

OLS. The coefficient on the WDTX $\times$ $I(t \geq Jul2022)$ interaction term shown in column (1) is highly statistically significant and implies that random case assignment reduced monthly average case filings in the Western District by nearly 54 cases. This is a sizeable effect given that prior to the random case assignment order, on average 76 new cases were filed in the Western District per month. In column (2), we use the observed probability of a given case being assigned to Albright post-random assignment order as shown in Figure 3. The estimate shown in column (2) implies that a drop in the probability of a case being assigned to Albright from one to, on average, 0.11 in the post-random assignment period leads to a drop in the number of case filings comparable to the estimate shown in column (1). In columns (3) and (4), we repeat the regressions for the subsample of NPE cases. The results suggest that the random assignment order reduced NPE filings by between 37 and 39 cases per month on average (corresponding to a drop of about 72%). Hence, the impact of the random case assignment order on NPEs is comparable in magnitude to the overall effect for all plaintiff types shown in columns (1) and (2). These results provide strong evidence that prior to the random case assignment order, case filings at the Western District were driven by the ability to choose Albright as the presiding judge with certainty simply by filing a case in the district's Waco Division. Indeed, this is particularly true given that our results might *underestimate* the impact of random case assignment in the WDTX to the extent that Judge Garcia's order caused patent enforcers to shift future filings from the WDTX to other courts included in our control groups. However, as shown in Section 6.2, there is very limited empirical evidence to suggest that this was indeed the case. Moreover, the synthetic control approach shown in Figure 5(a) suggests that any such effect is unlikely to meaningfully affect our estimates.

6.2 Judge-Shopping and Selection

Next, guided by the predictions of our theoretical model, we consider drivers of random case allocation's large negative effect on patent case filings in Waco.

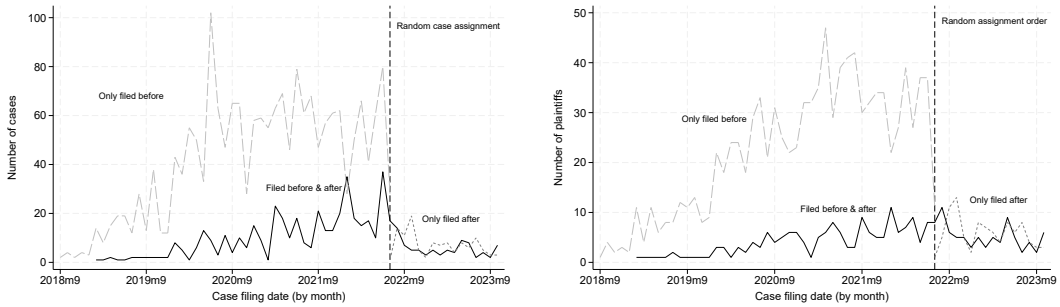
We begin by disaggregating the overall observed effect across three types of patent enforcers:[28] (i) patent enforcers that filed suit in Waco both before and after the introduction of random case allocation, (ii) patent enforcers that filed suit in Waco prior to random case allocation, but not after, and (iii) patent enforcers that filed suit in Waco after the introduction of random case allocation, but not before. As depicted in Figure 1 above, our model shows that a patent enforcer may fall into any one of these three categories depending on the strength and value of its patent rights and its ability to litigate in multiple districts.

In Figures 6(a) and (b), we plot pre- and post-July 2022 litigation activity by patent enforcers in each group. These plots suggest that the post-July 2022 reduction in Waco case filings is largely explained by the large number of patent enforcers in group (ii)—i.e., by a reduction in the number of patent enforcers that are active in West Texas. While some prior patent enforcers continue to file suit in Waco in late 2022 and beyond (group (i)), they are relatively small in number. To assess whether the patent enforcement activity "missing" from Waco after July 2022 represents a reduction in patent assertion or instead a shift of litigation to other courts, we plot in Figure A-2 in the online appendix case filings by each group of patent enforcers in all other U.S. district courts. We additionally plot in Figure A-3 monthly counts of cases filed outside the WDTX that assert one or more patents that were also enforced in Waco and, further, distinguish qualifying cases brought in the Eastern District of Texas (EDTX), an obvious potential substitute forum that has been very popular with patent enforcers (and especially NPEs) for well over a decade (Love and Yoon, 2017). These plots reveal no clear evidence of an uptick in patent assertion outside the WDTX caused by an exodus of cases from Waco and, thus, suggest that the predominant effect of random case allocation was a cessation, rather than reallocation, of patent enforcement efforts. Viewed in the context of our model, these results therefore suggest that patent enforcers who flocked to Waco prior to July 2022 predominantly asserted relatively high value, yet relatively weak patents—i.e., pursued claims falling within the blue-shaded areas of Figures 1(a) and (b).

In Table 2, we assess more formally the extent to which the observed drop in case filings is driven by changes at the extensive or intensive margin. Here, we present the results obtained when we estimate specification (13) at the plaintiff level, including month and plaintiff fixed effects. Columns (1) and (2) address the extensive margin—the likelihood that a given patent enforcer files at least one suit in Waco after the introduction of random case assignment—

[28] We take into account business groups, which is particularly important for large NPEs as they often distribute their patent enforcement activities over many different limited liability companies.

Figure 6: Case Filings by Plaintiff Type



(a) Number of cases (b) Number of plaintiffs

Notes: Figure (a) shows the number of cases filed by plaintiff type. Figure (b) shows the number of distinct plaintiffs by plaintiff type. Plaintiff types are defined as follows: (i) plaintiffs that file cases before as well as after the random case assignment order, (ii) plaintiffs that file cases before the random case assignment order but stop doing so afterward, and (iii) plaintiffs that only file cases after the order came into effect. The sample consists only of cases filed at the Waco Division of the Western District of Texas (WDTX).

while columns (3) and (4) address the intensive margin—the frequency with which a given patent enforcer files suit in Waco once random case assignment begins. Consistent with the results presented in Table 1, we see that the likelihood with which a given patent enforcer continues to file (unrelated) suits in Waco after July 25, 2022, drops significantly (by 59%) with no differential effect on NPEs. Likewise, we find that the number of cases per patent enforcer drops by an average of 67% and a bit more among NPEs. Accordingly, our results suggest that the overall reduction in case filings shown in Figure 2 is comprised of significant reductions at both the extensive and intensive margins.[29]

Next, we consider how our empirical results square with our predictions concerning the drivers of judge-shopping as stated in Lemmas 2 and 3. Table 3 presents the results obtained when we estimate specification (14) using OLS. Table A-1 in the online appendix additionally compares each metric's average across cases filed before and after July 25, 2022. On the whole, our results are broadly consistent with Lemma 2 and mixed (at best) with respect to Lemma 3.

Recall from Section 3.4 above that Lemma 2 predicts that patents covering technology of relatively high value (i.e., patents with relatively higher losses associated with invalidation) and patents that received relatively less scrutiny from the USPTO (i.e., patent with a relatively high risk of invalidation) will be asserted less often following the introduction of random allocation. Consistent with this prediction, our results indicate that patents asserted after July 2022 are members of significantly smaller families (a proxy for lower value) and, further,

[29]While our results do not reveal what became of these missing suits, results obtained by Helmers and Love (2023) suggest that approximately one-third of patent cases filed in the WDTX following Albright's appointment would not have been filed at all but-for the ability to select Albright as a judge, while the remaining two-thirds would have been filed instead in another district. If incentives are similar when the ability to select Albright is removed, it seems reasonable to assume that similar shares of cases "missing" post-random assignment were either not filed at all or were filed instead in other courts.

Table 2: Effect of Random Case Allocation on Patent Case Filings at Plaintiff-Level

	Case 0/1		ln # of cases	
	(1)	(2)	(3)	(4)
$I(t \geq Jul2022)$	-0.594***	-0.585***	-0.670***	-0.649***
	(0.010)	(0.012)	(0.010)	(0.011)
NPE $\times$ $I(t \geq Jul2022)$		-0.011		-0.029**
		(0.010)		(0.012)
Plaintiff FE	Yes	Yes	Yes	Yes
Case filing month FE	Yes	Yes	Yes	Yes
R^2	0.059	0.059	0.040	0.039
Observations	17,409	17,409	15,383	15,383

Notes: Dependent variable: in columns (1) and (2) a dummy variable that is equal to one if a plaintiff filed a case in a given month; in columns (3) and (4), the log number of patent cases filed by a given plaintiff in a given month. NPE: non-practicing entity. FE: fixed effects. Unit of observation at the plaintiff-month-level; OLS coefficients shown; robust standard errors clustered at the plaintiff-level; * significant at 10%, ** at 5%, *** at 1%.

have significantly higher counts of backward citations to non-patent prior art, significantly higher independent claim counts at publication relative to issuance, and significantly fewer RCEs (all three of which are proxies for a lower risk of invalidity). In addition, though not statistically significant, we note that the coefficients obtained on our remaining two proxies for technological value, counts of forward citations and technology classes, are negative, as predicted by Lemma 2. Coefficients on our remaining metrics of validity are both insignificant and, as a group, mixed.

Lemma 3 predicts that patentees with greater ability to pursue litigation outside the WDTX will do so more often following a shift to random case allocation. Consistent with this prediction, we find that software firms (which lack manufacturing, distribution, and retail locations) make up a significantly greater share of WDTX defendants in the period following July 2002. In addition, though none of the corresponding results cross the threshold of statistical significance, we note that our remaining three proxies for an accused infringers' relative ability to be sued outside the WDTX (defendant size, age, and an indicator of whether it is publicly traded) have negative coefficients as one would expect.[30] That said, contrary to our expectations given Lemma 3, we find that the size of NPEs litigating in Waco significantly increased in the post-July 2022 period, despite the fact that larger NPEs likely have greater expertise and experience litigating in outside venues. That being said, it is possible that the increased risk of invalidation of some of their patents is less important for larger NPEs which can draw on their vast portfolios of enforceable patents. Consistent with Lemma 2, larger NPEs should therefore be in fact more likely to file cases in the WDTX post-randomization

[30] The range of these three proxies may not map into values of W^H that are sufficiently varied to support the theoretical predictions in Lemma 3.

order.

6.3 Albright's Effect on Litigation and Outcomes

Finally, we estimate specifications (15) and (16) to analyze Albright's impact on patent suits relative to that of his WDTX judicial peers. Following conventional wisdom regarding Albright's appeal to patent enforcers, we focus on the following: the rates at which accused infringers attempt to transfer cases away from the WDTX, to stay cases pending administrative review of asserted patents, and to invalidate asserted patents on subject matter eligibility grounds; the *Markman* hearing and trial dates set in initial case scheduling orders; and the rate and speed with which patent cases settle.

Before turning to our results, we note once more (and more formally) that our setting shields our analysis from bias caused by case selection.[31] As shown in Figure 4, new (i.e., unrelated) cases filed in the WDTX's Waco Division since July 25, 2022 have been allocated on a roughly even basis across all judges in the district. To confirm the quasi-random nature of these assignments, we additionally run a balance test that regresses our Albright dummy (i.e., the variable that is equal to one for cases assigned to Albright and otherwise zero) on a large set of plaintiff, defendant, and patent characteristics. The results of this test are presented in Table A-5 in the online appendix. Across the 21 total observables included in the test, we find just one marginally significant correlation (with defendant size).[32]

While limiting our analysis to wholly new cases filed following Judge Garcia's July 2022 order therefore avoids selection bias, it simultaneously limits the data available for this final set of analyses. Because patent litigation is a notoriously slow process that rarely extends beyond the initial discovery phase in less than approximately 1–2 years' time, we have relatively few observations across our metrics of interest. For a tally of observations of metrics of interest, see Table A-2 in the online appendix.

Table 4's first three columns present the results obtained when we estimate specification (15) using OLS to determine Albright's causal effect on motions practice in patent cases. As shown in columns (2) and (3), we find that litigants accused of infringement in cases randomly assigned to Albright are significantly less likely to request that the court stay litigation pending

[31] To provide one concrete example, consider a plaintiff asserting a software patent that is likely invalid. Such a plaintiff may strategically choose to file suit in Waco in hopes of reducing the odds that the asserted claims are found ineligible for patent protection. If so, the firm accused of infringement in that suit may be *more* likely to file a motion to transfer—not because Albright is more likely to grant such motions all else equal—but rather because selection has increased the value of transfer.

[32] In addition, Table A-6 in the online appendix shows that there is no evidence to suggest Albright changed his behavior with respect to motions practice or case scheduling following the implementation of the random assignment order.

Table 3: Selection Into Assertion Post Random Assignment Order

	(1)	(2)
Plaintiff characteristics		
NPE	-0.189	-0.232
	(0.260)	(0.259)
NPE size	0.004***	0.004***
	(0.001)	(0.001)
Defendant characteristics		
Size	-0.164	-0.165
	(0.157)	(0.156)
Publicly traded	-0.111	-0.096
	(0.280)	(0.281)
Age	-0.002	-0.002
	(0.003)	(0.003)
Software	0.515**	0.503*
	(0.256)	(0.257)
Patent characteristics		
Software patent	-0.218	-0.172
	(0.181)	(0.192)
Patent family size	-0.054***	-0.053***
	(0.019)	(0.020)
Forward citations	-0.002	-0.002
	(0.001)	(0.001)
Backward citations	-0.002	-0.00005
	(0.001)	(0.0008)
Non-patent lit. citations	0.002**	0.002*
	(0.001)	(0.001)
IPC class count	-0.103	-0.099
	(0.063)	(0.064)
Diff. indep. claim count	0.027*	0.027*
	(0.015)	(0.015)
Examiner allowance rate	0.402	0.256
	(0.470)	(0.511)
No. information disclosure statements	-0.009	-0.010
	(0.016)	(0.015)
No. requests for continued examination	-0.252**	-0.242**
	(0.099)	(0.098)
Technology FE	No	Yes
Observations	7,337	7,337

Notes: Logit estimates shown; dependent variable is equal to one if a case was filed post random assignment order; Technology FE: fixed effects represent broad IPC-based technology areas including Electrical engineering, Instruments, Chemistry, pharmaceuticals, Mechanical engineering, machinery, and Other; observations are at the case-defendant-patent-level; robust standard errors clustered at the case-level; * significant at 10%, ** at 5%, *** at 1%.

Table 4: Effect of Judge Albright on Motions Practice and Settlement Rate

	(1)	(2)	(3)	(4)
0/1	Motion to Transfer	Motion to Stay	PSM Motion‡	Settle
Albright	0.021	-0.018*	-0.024**	-0.027
	(0.052)	(0.010)	(0.012)	(0.076)
R^2	0.001	0.003	0.004	0.001
Observations	198	198	198	176

Notes: Dependent variables: in column (1) the dependent variable is equal to one if the defendant filed a motion to transfer; in column (2) the dependent variable is equal to one if the defendant filed a motion to stay the proceedings; in column (3) the dependent variable is equal to one if the defendant filed a motion for summary judgment on invalidity due to patentable subject matter; in column (4) the dependent variable is equal to one if a given case terminated through settlement. ‡ Motion for judgment on invalidity due to patentable subject matter (PSM). Unit of observation at the case-level; OLS estimates; robust standard errors; * significant at 10%, ** at 5%, *** at 1%.

the outcome of administrative patent challenges and also significantly less likely to attempt to invalidate asserted patents on subject matter eligibility grounds. Both findings are what one would expect if Albright was relatively less likely to grant such relief. That said, we find in column (1) no significant difference in the frequency with which motions to transfer were filed in cases assigned to Albright and his peers.

The results obtained when we estimate specification (15) using case scheduling metrics as the dependent variable are presented in Table 5's first two columns. Our findings here indicate that Albright does indeed schedule his cases for claim construction and trial on an aggressive timeline. Relative to the scheduling practices of other WDTX judges, we find that Albright's initial scheduling orders anticipate that claim construction hearings will take place 100 days sooner and that trial will begin 212 days sooner on average. Given an average time-to-scheduled-*Markman*-hearing of 379 days in the sample and an average time-to-scheduled-trial-date of 800 days in the sample, Albright's patent case scheduling orders assume that litigation will proceed approximately 26% faster than the average schedule adopted by all other WDTX judges.

Last, we consider Albright's effect on the settlement of patent infringement claims. Results obtained when we estimate specification (16) using a settlement dummy and a count of days from case filing to settlement are presented, respectively, in the fourth column of Table 4 and the third column of Table 5. Neither analysis yields a significant result, meaning that cases assigned to Albright have thus far settled roughly as often and as quickly as cases assigned to other WDTX judges.

While not uniformly significant, these findings are nonetheless broadly consistent with conventional wisdom regarding Albright's appeal to patent enforcers. Consistent with the perception that Albright is loathe to defer to administrative validity review or invalidate patents on subject

Table 5: Effect of Judge Albright on Case Schedules and Settlement Speed

Delay in days	Time to Markman Date	Time to Trial Date	Time to Settle
Albright	-100.180**	-212.532***	70.393
	(33.324)	(54.038)	(56.423)
Case filing month FE	Yes	Yes	Yes
R^2	0.407	0.502	0.186
Observations	35	27	153

Notes: Dependent variables: in column (1) the dependent variable is the delay measured in number of days lapsed between the filing of the complaint and the scheduled *Markman* hearing; in column (2) the dependent variable is the delay measured in number of days lapsed between the filing of the complaint and the scheduled trial; in column (3) the dependent variable is the delay measured in number of days lapsed between the filing of the complaint and when a given case terminated through settlement. Unit of observation at the case-level; OLS estimates; robust standard errors clustered at the month-level; * significant at 10%, ** at 5%, *** at 1%.

matter eligibility grounds, our results indicate that accused infringers are less likely to invest in pursuing those outcomes in cases assigned to Albright. Moreover, our findings support the contention that cases assigned to Albright are scheduled to proceed at a relatively fast pace, a characteristic traditionally viewed as favorable to plaintiffs and, in our context, doubly so due to its tendency to frustrate administrative patent challenges. While our data suggests that neither advantage has a clear impact on the timing of settlements, we caution that our data does not, and as a practical matter cannot (due to widespread confidentiality), capture potential variation across cases in the *terms* of settlements reached.

7 Conclusion

While the literature has long documented that litigants commonly prefer particular judges, empirical evidence of the causal mechanisms behind these preferences is generally obscured by selection inherent in litigants' efforts to obtain the judge of their choosing. We overcome this challenge by studying the recent introduction of a random case assignment order in the U.S. District Court for the Western District of Texas, a district previously noted for an extreme concentration of patent infringement cases before a single judge, Alan Albright, whom patent enforcers could until recently select with virtual certainty by filing suit in the district's Waco Division.

Our analysis of cases filed before and after the court's July 25, 2022, case assignment rule modification shows that the transition from certain to random assignment led to a significant decrease in patent case filings in Waco. In addition, we show that the overall drop in case filings reflects decreases at both the intensive and extensive margin: the majority of parties enforcing patents in Waco prior to random allocation stopped litigating in the Western District thereafter, and those that continued to file suits in Waco (especially NPEs) were significantly

less active post-July 2022. Moreover, among patent cases assigned by random draw since July 2022, we find that cases assigned to Albright were scheduled to reach claim construction and trial at relatively earlier dates and also that accused infringers were less likely to file both motions to stay pending administrative patent review and motions to invalidate asserted patents on subject matter eligibility grounds. Accordingly, our results suggest that patent enforcers highly value the ability to select Albright as their judge and also that Albright's value to patent enforcers derives from his reluctance to stay cases and invalidate patents on subject matter eligibility grounds, as well as his aggressive case scheduling practices.

From a broader policy perspective, our results tend to support calls to increase the randomness of judicial assignments as a means to frustrate judge shopping. Setting aside non-random related case assignments, we show that random allocation of patent suits has been a seemingly effective deterrent to judge shopping in the Western District of Texas. To the extent that this effect translates to other types of litigation, our analysis lends support to ongoing efforts to induce Congress and individual Chief Judges to limit the practice of division-level case assignment in U.S. district courts.

References

Anderson, J. J. (2015). Court Competition for Patent Cases. *University of Pennsylvania Law Review 163*(3), 631–698.

Anderson, J. J. and P. R. Gugliuzza (2021). Federal Judge Seeks Patent Cases. *Duke Law Journal 71*, 419–497.

Ash, E., D. L. Chen, and A. Ornaghi (2024). Gender Attitudes in the Judiciary: Evidence from U.S. Circuit Courts. *American Economic Journal: Applied Economics 16*(1), 314–350.

Atkinson, S. E., A. C. Marco, and J. L. Turner (2009). The Economics of a Centralized Judiciary: Uniformity, Forum Shopping, and the Federal Circuit. *Journal of Law and Economics 52*(3), 411–443.

Baum, L. (2008). Probing the Effects of Judicial Specialization. *Duke Law Journal 58*, 1667–1684.

Bessen, J. and M. J. Meurer (2014). The Direct Costs of NPE Disputes. *Cornell Law Review 99*, 387–422.

Bonica, A. and M. Sen (2021). Estimating Judicial Ideology. *Journal of Economic Perspectives 35*(1), 97–118.

Botoman, A. (2018). Divisional Judge Shopping. *Columbia Human Rights Law Review 49*, 297–344.

Cahuc, P., S. Carcillo, B. Patault, and F. Moreau (2023, 09). Judge Bias in Labor Courts and Firm Performance. *Journal of the European Economic Association 22*(3), 1319–1366.

Cohen, A. and C. S. Yang (2019). Judicial Politics and Sentencing Decisions. *American Economic Journal: Economic Policy 11*(1), 160–191.

Cohen, L., U. Gurun, and S. D. Kominers (2016). The Growing Problem of Patent Trolling. *Science 352*(6285), 521–522.

Coviello, D., A. Ichino, and N. Persico (2019). Measuring the Gains from Labor Specialization. *Journal of Law and Economics 62*(3), 403–426.

de Figueiredo, J. (2005). Strategic Plaintiffs and Ideological Judges in Telecommunications Litigation. *Journal of Law, Economics, and Organization 21*, 501–523.

Eisenberg, T. and L. M. LoPucki (1999). Shopping for Judges: An Empirical Analysis of Venue Choice in Large Chapter 11 Reorganizations. *Cornell Law Review 84*, 967–1003.

Ellias, J. A. (2018). What Drives Bankruptcy Forum Shopping? Evidence from Market Data. *Journal of Legal Studies 47*(1), 119–149.

Frandsen, B., L. Lefgren, and E. Leslie (2023). Judging Judge Fixed Effects. *American Economic Review 113*(1), 253–277.

Grantham, R. C. (2019). Detainee Transfers and Immigration Judges: ICE Forum-Shopping Tactics in Removal Proceedings. *Georgia Law Review 53*, 281–307.

Harris, A. and M. Sen (2019). Bias and Judging. *Annual Review of Political Science 22*, 241–259.

Helmers, C. and B. Love (2023). Welcome to Waco! The Impact of Judge-Shopping on Litigation. *Journal of Law, Economics and Organization forthcoming*.

Kahan, M. and T. A. McKenzie (2021). Judge Shopping. *Journal of Legal Analysis 13*, 341–379.

Klerman, D. and G. Reilly (2010). Forum Selling. *Southern California Law Review 89*(2), 241–316.

Kling, J. (2006). Incarceration Length, Employment, and Earnings. *American Economic Review 96*(3), 863–876.

Levitin, A. J. (2023). Judge Shopping in Chapter 11 Bankruptcy. *University of Illinois Law Review 2023*, 351–417.

Leychkis, Y. (2007). Of Fire Ants and Claim Construction: An Empirical Study of the Meteoric Rise of the Eastern District of Texas as a Preeminent Forum for Patent Litigation. *Yale Journal of Law & Technology 9*, 193–232.

Lim, C. S., B. S. Silveira, and J. M. Snyder (2016). Do Judges' Characteristics Matter? Ethnicity, Gender, and Partisanship in Texas State Trial Courts. *American Law and Economics Review 18*(2), 302–357.

Love, B. J. and J. Yoon (2017). Predictably Expensive: A Critical Look at Patent Litigation in the Eastern District of Texas. *Stanford Technology Law Review 20*, 1–37.

McDonnell, B. H. (2004). Delaware, Federalism, and the Expertise-Bias Tradeoff. Unpublished manuscript, University of Minnesota Law School.

Moore, K. A. (2001). Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation? *North Carolina Law Review 79*, 889–938.

Taha, A. E. (2010). Judge Shopping: Testing Whether Judges' Political Orientations Affect Case Filings. *University of Cincinnati Law Review 78*, 1007–1042.

Yang, C. S. (2015). Free at Last? Judicial Discretion and Racial Disparities in Federal Sentencing. *Journal of Legal Studies 44*(1), 75–111.

Online Appendix

Do Judicial Assignments Matter? Evidence from Random Case Allocation

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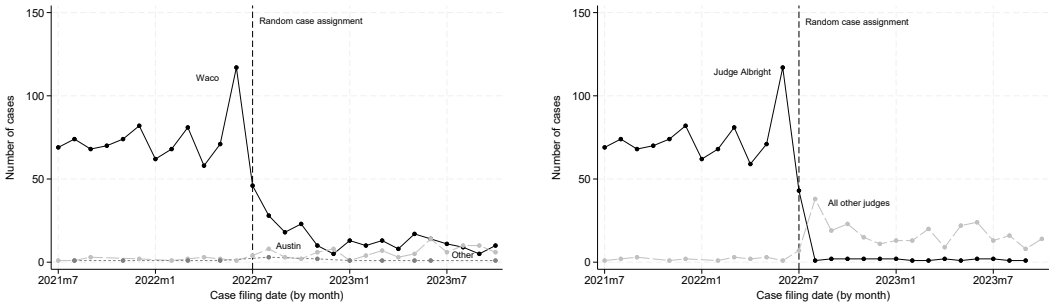
A Appendix: Controls

All regressions reported above include the following set of time-varying district court-level control variables:

- **New Judge**: A count of the new district judges (if any) confirmed to seats on district court v during month t. Judicial confirmations are uncertain and vary widely in timing. For district court nominees, confirmations occur on average about six months post-nomination. Time from vacancy to nomination also varies greatly and is generally substantial.
- **New Chief Judge**: A dummy variable that is equal to one if there was a transition in the role of "Chief U.S. District Judge" in district court v during month t. In each multi-judge district, one judge serves as the district's Chief Judge pursuant to a set of statutory criteria for a period of up to seven years (28 U.S.C. §136). Chief Judges are tasked with supervising the district's employees and managing the district's day-to-day operations, including the modification and enforcement of case assignment rules.
- **Change in local rules**: A dummy variable that is equal to one if an updated/amended version of district court v's Local Civil Rules were adopted during month t.
- **ln Total pending cases**: The log count of total non-patent cases (civil and criminal) pending in district court v in month t.

B Appendix: Figures

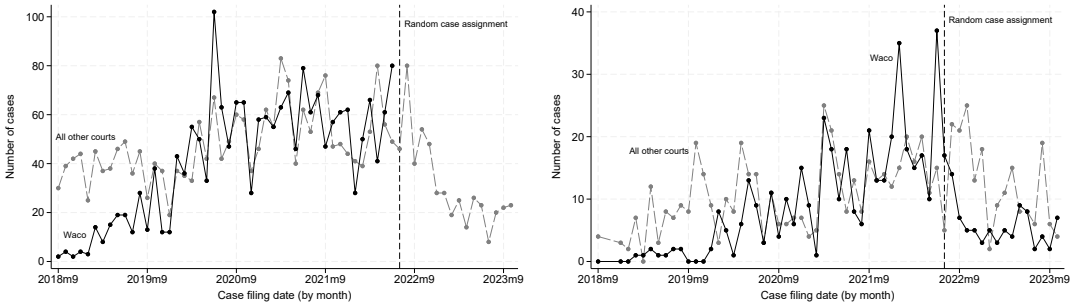
Figure A-1: Patent Case Filings in Waco Division (by Judge)



(a) By division (b) By judge

Notes: Figure (a) shows the number of cases filed at the Western District of Texas (WDTX) by division. Figure (b) shows the number of cases assigned to a given judge in the WDTX. In (a) "Other" includes the Midland-Odessa and San Antonio divisions. In (b) "All other judges" includes Alia Moses, David Alan Ezra, David Counts, Frank Montalvo, Fred Biery, Jason Pulliam, Kathleen Cardone, Lee Yeakel, Orlando Garcia, Robert Pitman, and Xavier Rodriguez.

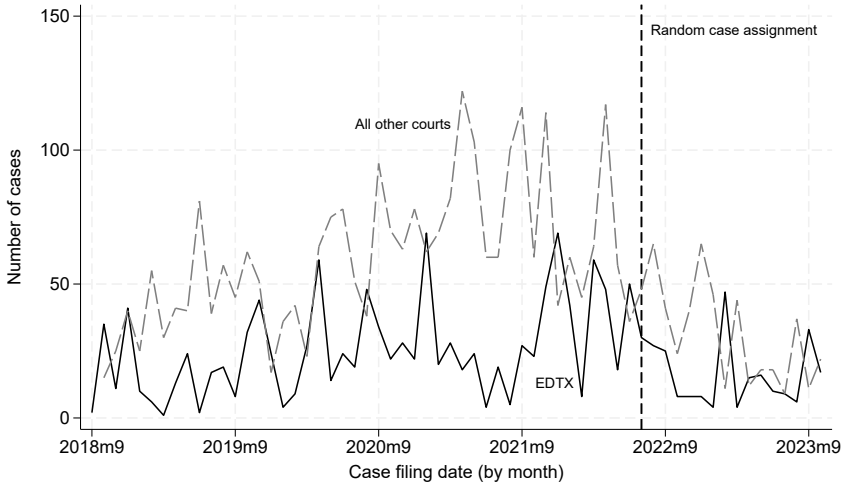
Figure A-2: Patent Case Filings in Waco and All Other District Courts by Plaintiff Type (by Month)



(a) No cases after (b) Case before and after

Notes: Figure (a) shows the number of cases filed in the Waco Division of the Western District of Texas (WDTX) and all other district courts for plaintiff type (ii) plaintiffs that file cases before the random case assignment order but stop doing so afterwards. Figure (b) shows the number of cases filed in the Waco Division of the WDTX and all other district courts for plaintiff type (i) plaintiffs that file cases before as well as after the random case assignment order.

Figure A-3: Patent Case Filings in the Eastern District of Texas (EDTX) and All Other District Courts Asserting Patents Asserted in the Waco Division of the WDTX (by Month)



Notes: The figure shows the number of cases filed in the Eastern District of Texas (EDTX) and all other district courts asserting any of the patents asserted in the Waco Division of the Western District of Texas (WDTX) since Albright's appointment in September 2018.

C Appendix: Tables

Table A-1: Plaintiff, Defendant, and Patent Characteristics of Cases Before and After the Random Case Assignment Order

	Before			After			Diff
	Obs	Mean	Std. Dev.	Obs	Mean	Std. Dev.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Plaintiff characteristics							
NPE	2,339	0.796	0.402	198	0.767	0.423	-0.028
NPE size	1,854	36.980	69.997	152	56.592	82.613	19.611***
Defendant characteristics							
Size	2,467	2.483	0.786	196	2.311	0.859	-0.171***
Publicly traded	2,573	0.654	0.475	204	0.607	0.489	-0.046
Age	2,465	38.639	36.934	196	32.403	31.200	-6.236**
Software	2,498	0.182	0.386	198	0.222	0.416	0.040
Patent characteristics							
Software patent	6,171	0.696	0.459	378	0.642	0.479	-0.053**
Patent family size	6,171	7.506	10.271	378	5.293	5.063	-2.213***
Forward citations	6,171	20.763	48.767	378	16.227	27.721	-4.536*
Backward citations	6,171	51.242	110.975	378	48.338	69.940	-2.904
Non-patent lit. citations	6,171	18.581	68.050	378	23.619	94.358	-5.037
IPC class count	6,166	1.811	1.648	377	1.559	1.114	-0.251***
Diff. indep. claim count	4,903	0.026	2.746	320	0.190	1.665	0.164
Examiner allowance rate	6,165	0.783	0.145	376	0.788	0.121	0.005
No. information disclosure statements	6,171	1.802	5.276	378	1.486	3.836	-0.316
No. requests for continued examination	6,171	0.270	0.933	378	0.150	0.495	-0.119**

Notes: * significant at 10%, ** at 5%, *** at 1%.

Table A-2: Motions Practice and Case Management

	Albright		Other		Diff
	Obs	Mean	Obs	Mean	
	(1)	(2)	(3)	(4)	(5)
Motion to Transfer (0/1)	34	0.088	164	0.067	0.021
Motion to Stay (0/1)	34	0	164	0.018	-0.018
Motion PSM‡ (0/1)	34	0	164	0.024	-0.024
Settle (0/1)	26	0.846	150	0.873	-0.027
Time to Markman Date (days)	11	342.636	24	395.125	-52.488
Time to Trial Date (days)	11	717.909	16	855.875	-137.965***
Time to Settle (days)	22	213.818	131	135.259	78.558***

Notes: ‡ Motion for judgment on invalidity due to patentable subject matter; * significant at 10%, ** at 5%, *** at 1%.

Table A-3: Case Assignment and Judge Characteristics

	All	NPE
	(1)	(2)
Age	17.785	15.258
	(18.382)	(9.161)
Female	9.363	7.007
	(12.888)	(6.423)
Years of service	0.407	0.313
	(0.780)	(0.388)
Republican	12.127	8.075
	(23.857)	(11.890)
STEM experience	-73.935	-60.833
	(54.194)	(27.010)
Graduate degree	20.109	23.651
	(42.594)	(21.229)
Law school quality	3.550	2.664
	(8.601)	(4.287)
Years since law school graduation	-15.192	-12.885
	(15.451)	(7.701)
Large law firm experience	4.912	-1.475
	(13.721)	(6.838)
Federal judicial experience	46.359	42.559
	(50.053)	(24.947)
R^2	0.863	0.056
Observations	12	12

Notes: Dependent variable is the number of cases assigned to a given judge post random case assignment order. All: all cases filed; NPE: cases filed by non-practicing entities only. Information on individual judges comes from the WDTX website. Judges included: Alan Albright, Alia Moses, David Alan Ezra, David Counts, Frank Montalvo, Fred Biery, Jason Pulliam, Kathleen Cardone, Lee Yeakel, Orlando Garcia, Robert Pitman, Xavier Rodriguez. Robust standard errors; * significant at 10%, ** at 5%, *** at 1%.

Table A-4: Effect of Random Case Allocation on Patent Case Filings – excl. cases filed by IP Edge

	All		NPE	
	(1)	(2)	(3)	(4)
WDTX $\times$ $I(t \geq Jul2022)$	-47.949***		-33.711***	
	(0.708)		(0.807)	
Case share Albright $\times$ $I(t \geq Jul2022)$		-52.676***		-35.632***
		(0.791)		(0.882)
Controls	Yes	Yes	Yes	Yes
Court FE	Yes	Yes	Yes	Yes
Case filing month FE	Yes	Yes	Yes	Yes
R^2	0.910	0.912	0.870	0.866
Observations	2,187	2,187	1,512	1,512

Notes: Dependent variable: number of patent cases filed in a given month. NPE: non-practicing entity. FE: fixed effects. Controls listed in Appendix A. The sample consists of 79 district courts. Unit of observation at the case-month-level; OLS coefficients shown; robust standard errors clustered at the case-month-level; * significant at 10%, ** at 5%, *** at 1%.

Table A-5: Balance Test

	(1)
NPE	-0.045
	(0.067)
NPE size	-0.000
	(0.0003)
D size	0.063*
	(0.036)
D public	-0.042
	(0.060)
D age	-0.0003
	(0.0006)
D software	0.002
	(0.059)
Software patent	-0.029
	(0.084)
Patent family size	0.006
	(0.006)
Forward citations	0.0003
	(0.0008)
Backward citations	-0.0001
	(0.0003)
Non-patent lit. citations	0.0002
	(0.0004)
IPC class count	0.005
	(0.024)
Diff. Indep. claim count	0.012
	(0.012)
Examiner allowance rate	-0.352
	(0.225)
No. information disclosure statements	-0.002
	(0.003)
No. requests for continued examination	0.036
	(0.050)
Instruments	0.007
	(0.059)
Electrical eng.	0.027
	(0.131)
Chemistry/Pharma	0.253
	(0.246)
Mechanical eng.	0.093
	(0.130)
Other	0.189
	(0.166)
R^2	0.142
Observations	189

Notes: Dependent variable equal to one if a case was randomly assigned to Albright, zero if it was assigned to any other judge. Robust standard errors clustered at the case-level; * significant at 10%, ** at 5%, *** at 1%.

Table A-6: Comparison of Motions Practice and Settlement Rate Before/After Random Case Assignment for Judge Albright

	Before		After		Diff
	Obs	Mean	Obs	Mean	
	(1)	(2)	(3)	(4)	(5)
Motion to Transfer (0/1)	936	0.118	34	0.088	-0.030
Motion to Stay (0/1)	936	0.027	34	0	-0.027
Motion PSM‡ (0/1)	936	0.005	34	0	-0.005
Settle (0/1)	856	0.873	26	0.846	-0.027
Time to Markman Date (days)	283	339.459	11	342.636	-3.177
Time to Trial Date (days)	279	713.354	11	717.909	4.554
Time to settle (days)	748	242.471	22	213.818	-28.653

Notes: ‡ Motion for judgment on invalidity due to patentable subject matter; * significant at 10%, ** at 5%, *** at 1%.