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University at Buffalo School of Law

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SPECIALIZED TRIAL COURTS IN PATENT LITIGATION: A REVIEW OF THE PATENT PILOT PROGRAM'S IMPACT ON APPELLATE REVERSAL RATES AT THE FIVE-YEAR MARK

AMY SEMET

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SPECIALIZED TRIAL COURTS IN PATENT LITIGATION: A REVIEW OF THE PATENT PILOT PROGRAM'S IMPACT ON APPELLATE REVERSAL RATES AT THE FIVE-YEAR MARK

AMY SEMET*

Abstract: Do specialized trial court judges make more accurate decisions in patent law cases? In 2011, Congress passed a law setting up a ten-year pilot program to enhance expertise in patent litigation by funneling more trial court decisions to fourteen select district courts. Now that the five-year mark has passed, has the program had its intended effect of increasing accuracy, as measured by less reversal of pilot judges by the Federal Circuit? This Article analyzes trial court patent cases filed from September 2011 through September 2016, focusing specifically on whether the appellate treatment of cases heard by district court judges participating in the pilot program differs from the treatment of cases heard by non-pilot judges. Of the several hundred cases where the Federal Circuit rules on the substantive patent law issues on appeal, the results indicate that, even controlling for other factors, the Federal Circuit does not overrule non-pilot judges more than pilot judges. After discussing the empirical results, the Article proposes suggestions for reform.

INTRODUCTION

Patent law stands out as an obscure area of law, raising questions about the capabilities of generalist judges and lay juries to accurately resolve patent disputes.¹ Although such cases comprise less than 1% of the overall

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* Postdoctoral Research Associate, Center for the Study of Democratic Politics, Princeton University. I would like to thank participants at the 2017 PATCON conference at Northwestern Pritzker School of Law for their helpful comments on this Article, particularly Christopher Seaman, who served as a discussant, and David Schwartz, who offered helpful comments. I would also like to thank Vasundhara Prasad, Lauren Koster, and Lauren Allen at *Boston College Law Review* for their work on this Article. This Article was cited by Colleen Chien in the Subcommittee on Courts, Intellectual Property, and the Internet hearing on the Supreme Court's *T.C. Heartland, LLC v. Kraft Foods Group Brand LLC*, 137 S. Ct. 1514, 1517 (2017). *Hearing on the Supreme Court's TC Heartland Decision Before the Subcomm. on Courts, Intellectual Prop., & the Internet of the H. Judiciary Comm.*, 115th Cong. (2017) (statement of Colleen Chien, Professor, Santa Clara University School of Law).

¹ Lawrence M. Sung, *Strangers in a Strange Land: Specialized Courts Resolving Patent Disputes*, 17 BUS. L. TODAY, Mar./Apr. 2008, at 27, 27; see Jay P. Kesan & Gwendolyn G. Ball,

federal docket, the technical complexity of patent cases results in trial judges spending a disproportionate amount of time learning the law as well as mastering the technology of the patent.² Scholars have increasingly tried to analyze statistically whether judges with more experience differ in the way they decide patent cases.³ After years of debate, the U.S. Congress passed a law in 2011 establishing a pilot program to leverage federal judge expertise in patent law cases.⁴ The new system assumes that judges with more experience will make better decisions and will adjudicate cases faster while facing shorter learning curves.⁵ Volunteers for the program, which is scheduled to run ten years, were selected from the fifteen judicial district courts that heard the greatest number of patent cases in 2010.⁶

This Article examines the workings of the program at the halfway mark to test the pilot program's success and to gauge whether specialized patent judges render more correct decisions that are less likely to be disturbed on appeal. Part I details the terminology of patent law and explains how patent litigation unfolds in the court system.⁷ Patent litigation is unique, because appeals are heard by a specialized appellate court in the U.S. Court of Appeals for the Federal Circuit ("CAFC") stationed in Washington, D.C.⁸ Over the years, certain trial courts have emerged as *de facto* specialized courts, hearing more patent cases than their sister district courts.⁹ Part II dissects the empirical findings of earlier research on the in-

Judicial Experience and the Efficiency and Accuracy of Patent Adjudication; An Empirical Analysis of the Case for a Specialized Patent Trial Court, 24 HARV. J.L. & TECH. 393, 394–95 & 395 n.1 (2011) (citing Sung, *supra*).

² 153 CONG. REC. 3713 (2007); see Kesan & Ball, *supra* note 1, at 408 (discussing the impact of specialization on court efficiency).

³ See generally Kesan & Ball, *supra* note 1 (setting forth an empirical study on judicial experience and specialization).

⁴ Act of Jan. 4, 2011, Pub. L. No. 111-349, 124 Stat. 3674 (2011); see, e.g., Kesan & Ball, *supra* note 1, at 395–96 (outlining the debate surrounding a specialized patent trial court).

⁵ See 153 CONG. REC. 3714 (2007) (documenting remarks by Representative Howard Coble on the need for judicial experience in patent law cases).

⁶ Act of Jan. 4, 2011 § 1(b)(2)(A)(i), (c), 124 Stat. at 3675.

⁷ See *infra* notes 19–98 and accompanying text.

⁸ See John M. Golden, *The Federal Circuit and the D.C. Circuit: Comparative Trials of Two Semi-Specialized Courts*, 78 GEO. WASH. L. REV. 553, 555 (2010) (describing creation of the U.S. Court of Appeals for the Federal Circuit ("CAFC")).

⁹ See U.S. GOV'T ACCOUNTABILITY OFF., GAO-16-490, INTELLECTUAL PROPERTY: PATENT OFFICE SHOULD DEFINE QUALITY, REASSESS INCENTIVES, AND IMPROVE CLARITY 16 (2016) [hereinafter U.S. GOV'T ACCOUNTABILITY OFF.] (noting that the Eastern District of Texas experienced an increase in patent infringement suits). For instance, in 2015, the Eastern District of Texas heard about 50% of cases involving defendants in patent infringement cases. See *id.* at 16, 17 fig.3. The District of Delaware is the second most popular district in which to bring a patent infringement suit. See *id.* at 17 fig.3 (representing graphically the counts of defendants in patent infringement cases from 2007–2015).

ner-workings of specialized patent courts.¹⁰ Then, Part III discusses the present empirical project, describing the data, the data collection, and the summary findings.¹¹ Next, Part IV undertakes a statistical analysis to test the hypothesis of whether judges designated as pilot judges perform “better” compared to non-designated judges as measured by their respective CAFC reversal rates.¹² In particular, this Part discusses the significant methodological difficulties in undertaking the present analysis, including a discussion of the selection effects that urge caution in stating definitive findings on the workings of the pilot program.¹³ Finally, Part V deciphers the results and offers proposals for reform of the current system.¹⁴

Overall, the empirical analysis presented here indicates that, thus far, the pilot program has not resulted in pilot judges being reversed less often on appeal after accounting for other factors. The results indicate that judicial experience influences reversal rates but in an unexpected way. While participation in the pilot does not affect reversal rates, judges who previously sat by designation at the CAFC were less likely to get reversed on appeal in certain instances, suggesting that past experience has some impact on outcomes. Pilot judges fare no better than non-pilot judges, even when controlling for legal issues addressed, procedural posture, and experience, among other variables.¹⁵ But, cases are not necessarily decided the same way in pilot and non-pilot districts. Rather, pilot judges—who often have more patent-law experience than non-pilot judges—are somewhat better at encouraging settlement, though these differences vary based on technology, issue, and procedural posture.¹⁶

The results of this study call into question whether alternatives, in addition to the pilot program, are necessary to increase certainty and efficiency in patent litigation. The shift in recent years to allow for *inter partes* review of patents—a procedure through which parties can challenge the validity of a patent before administrative judges at the Patent and Trademark Appeals Board (“PTAB”) at the U.S. Patent and Trademark Office (“USPTO”)—may be a good first step in giving more power to the USPTO.¹⁷ Unlike many other areas of law, courts—even specialized courts—may not have the resources or technical know-all to engage effec-

¹⁰ See *infra* notes 99–161 and accompanying text.

¹¹ See *infra* notes 162–221 and accompanying text.

¹² See *infra* notes 222–300 and accompanying text.

¹³ See *infra* notes 275–300 and accompanying text.

¹⁴ See *infra* notes 301–391 and accompanying text.

¹⁵ See *infra* notes 231–300 and accompanying text.

¹⁶ See Mark A. Lemley et al., *Does Familiarity Breed Contempt Among Judges Deciding Patent Cases?*, 66 STAN. L. REV. 1121, 1151 (2014) (finding “that judges with more patent experience are less likely to rule for patentees on infringement, though not on validity”).

¹⁷ See 35 U.S.C. § 311 (2018) (establishing who may request review and how).

tively in making patent policy and devising rules that balance property rights and innovation. Although specialized patent trial courts may be a needed first step in reform, the time is ripe to start thinking about whether the patent system needs to be re-altered fundamentally to give greater rule-making authority and responsibility back to the USPTO or some other expert administrative agency.¹⁸

I. PATENT LAW SPECIALIZATION

A. Basics of Patent Law

Patents confer a right on patentees to prevent others from “making, using, . . . or selling” the patented invention in question.¹⁹ To determine patent rights, adjudicators engage in a process called claim construction in which a judge determines the meaning of the patent’s terms as defined by the patent’s claims.²⁰ For example, one claim among the hundreds of patents and patent applications covering the Apple iPhone (in its past, current, or future forms) states that “[a]n electronic device may have a flexible portion that allows the device to be folded.”²¹

When constructing claims, courts first interpret the intrinsic evidence of the patent, which includes the language of the claims; the specification of the patent, encompassing the written description of the claimed invention and the disclosure of the preferred embodiment; and, the patent’s prosecution history, including written correspondence between the patentees or the patentees’ lawyers with the USPTO during the patent prosecution process.²² If the intrinsic evidence is unclear, courts may then consider extrinsic evidence, such as dictionary definitions, treatises, expert testimony, or other evidence that the court believes relevant to the job of interpreting the claims.²³ Trial courts review patent claims as a matter of law.²⁴ Appeals courts review claim constructions *de novo* but subsidiary factual questions

¹⁸ See, e.g., Lauren Cohen et al., “Troll” Check? A Proposal for Administrative Review of Patent Law, 97 B.U. L. REV. 1775, 1775, 1782 (2017) (arguing for automatic administrative review at the onset of a patent litigation amid calls for reform of the system).

¹⁹ See 35 U.S.C. § 154(a)(1) (2018) (describing patentee’s right to exclude); *id.* § 271(a) (listing actions that constitute patent infringement). Cohen et al. explore the basics of patent law and its accompanying proceeds in their 2017 article. See Cohen et al., *supra* note 18, at 1783–90.

²⁰ *Helmsderfer v. Bobrick Washroom Equip., Inc.*, 527 F.3d 1379, 1380–81 (Fed. Cir. 2008).

²¹ See U.S. Patent No. 20,170,336,831, at [54], [57], [71] (filed Sept. 22, 2016) (listing Apple, Inc. as the applicant and covering “electronic devices with flexible displays”).

²² Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J. L. & TECH. 1, 5 & nn.19–20 (2001).

²³ See *Vitronics Corp. v. Conceptoronic, Inc.*, 90 F.3d 1576, 1584 & n.6 (Fed. Cir. 1996) (discussing when the judge may rely upon extrinsic evidence).

²⁴ *Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 372 (1996).

for clear error.²⁵ Courts should construe terms by their “plain and ordinary meaning to one of skill in the art” unless the intrinsic evidence dictates otherwise.²⁶

The Patent Act of 1952 is written broadly, allowing inventors to have patents on any “new and useful process, machine, manufacture, or composition of matter”²⁷ Many disputes in patent litigation concern whether one party infringed another’s patents, and in turn whether those patents are invalid due to being anticipated or made obvious by the prior inventions of others, or whether the patents should be rendered unenforceable due to the patentee’s fraud before the USPTO during prosecution, an allegation known as inequitable conduct.²⁸ Additionally, patentees can file for a preliminary injunction to stop further infringement of the patent.²⁹ Such an analysis requires the judge to consider not only the likelihood of success on the merits but also irreparable harm.³⁰ Motions for preliminary injunctions can quickly escalate into “mini-trial[s]” involving claim construction as that the judge must opine on validity and infringement in order to determine the likelihood of success on the injunction motion.³¹ In addition to injunctive relief, a patentee who prevails in an infringement action can recover “damages adequate to compensate for the infringement, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court.”³² If patentees prevail on infringement claims, they may also be entitled to treble damages.³³

The adjudicatory structure for patent law disputes is unique in American law.³⁴ Regional generalist district courts undertake trials of patent litiga-

²⁵ Teva Pharms. USA, Inc. v. Sandoz, Inc., 135 S. Ct. 831, 841 (2015).

²⁶ 35 U.S.C. § 112(a) (2018) (requiring “a written description of the invention” detailed enough “to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same”); *see also* Moore, *supra* note 22, at 6 (discussing conventions of claim interpretation).

²⁷ Patent Act of 1952, 35 U.S.C. § 101 (2018).

²⁸ *Id.* §§ 271(a), 282; *see id.* §§ 102–103 (describing the “conditions for patentability” and potential invalidity); John M. Golden, *Patent Law’s Falstaff: Inequitable Conduct, the Federal Circuit, and Therasense*, 7 WASH. J.L. TECH. & ARTS 353, 354 (2012) (defining the defense of inequitable conduct). Defenses, such as inequitable conduct, must be proved by clear and convincing evidence. *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91, 95 (2011).

²⁹ Adam Shartzter, *Patent Litigation 101: Empirical Support for the Patent Pilot Program’s Solution to Increase Judicial Experience in Patent Law*, 18 FED. CIR. B.J. 191, 221 (2009); *see* 35 U.S.C. § 283 (2018) (establishing the boundaries of injunctions).

³⁰ Shartzter, *supra* note 29, at 221 & nn.271–72.

³¹ *Id.* at 221–22.

³² 35 U.S.C. § 284 (2018).

³³ *See id.* (providing judges with discretion).

³⁴ Banks Miller & Brett Curry, *Expertise, Experience, and Ideology on Specialized Courts: The Case of the Court of Appeals for the Federal Circuit*, 43 LAW & SOC’Y REV. 839, 841–42 (2009).

tion, but appellate jurisdiction rests in the specialized CAFC in Washington, D.C.³⁵ In 1982, the appellate dockets of the U.S. Court of Customs and Patent Appeals and the U.S. Court of Claims combined to form the CAFC, which has exclusive jurisdiction over appeals of patent disputes.³⁶ The impetus behind the CAFC's formation was to ensure uniform application of the nation's patent laws since regional appellate courts greatly differed in how they ruled in patent cases, causing alarm in the business community for the unpredictability of patent rulings.³⁷ Of particular concern was the negative impact on economic and industrial growth stemming from "inconsistencies in judge-made patent law."³⁸ Today, one-third of the CAFC's docket concerns patent law cases, taking up a disproportionate share of the court's time relative to other cases due to the complexity posed by patent disputes.³⁹ This complexity stems not only from the technical sophistication of the cases, but also from the increased interrelation with other areas of law that touch on patent issues, such as antitrust law.⁴⁰ Indeed, the Federal Judicial Center ("FJC") notes the burden that patent litigation imposes on courts due to its complexity and cost, placing it fourth in terms of time burden, behind only death penalty habeas cases, environmental cases, and civil cases under the Racketeer Influenced and Corrupt Organizations Act.⁴¹

Scholars offer differing opinions on whether the CAFC has achieved its goals of fostering uniformity and discouraging forum shopping.⁴² Judge

³⁵ See Golden, *supra* note 8, at 555 & n.15 (describing the uniqueness of the CAFC).

³⁶ See Pauline Newman, *The Federal Circuit—A Reminiscence*, 14 GEO. MASON U. L. REV. 513, 521 (1992) (detailing the history of the cases now heard by the CAFC).

³⁷ See James B. Gambrell, *The Evolving Interplay of Patent Rights and Antitrust Restraints in the Federal Circuit*, 9 TEX. INTELL. PROP. L.J. 137, 139 (2001) (describing the purpose of the legislation creating the CAFC); Craig Allen Nard & John F. Duffy, *Rethinking Patent Law's Uniformity Principle*, 101 NW. U. L. REV. 1619, 1624 (2007) (outlining Congress's concerns with regionalism); Newman, *supra* note 36, at 516 (recalling the impetus for creating a court with specialized patent review). As Judge Pauline Newman wrote, "the fate of duly examined and issued patents had become so uncertain in the courts as to place a cloud on patent-based investment." Newman, *supra* note 36, at 516.

³⁸ Newman, *supra* note 36, at 517.

³⁹ See 153 CONG. REC. 3713 (2007) (citing complexity of cases as a reason for the pilot program's creation); Paul R. Michel, *The Court of Appeals for the Federal Circuit Must Evolve to Meet the Challenges Ahead*, 48 AM. U. L. REV. 1177, 1180–81, 1194 (1999) (noting that about one-third of the CAFC's docket consists of patent cases but they can take require upwards of ten times more work than certain other civil cases); see also Kesan & Ball, *supra* note 1, at 410 (citing Michel, *supra*).

⁴⁰ See Gambrell, *supra* note 37, at 139 (noting the "fear" that the CAFC will encroach impermissibly upon antitrust law); Kesan & Ball, *supra* note 1, at 410 (citing Gambrell, *supra* note 37).

⁴¹ See PAT LOMBARD & CAROL KRAFKA, FED. JUDICIAL CTR., 2003–2004 DISTRICT COURT CASE-WEIGHTING STUDY: FINAL REPORT TO THE SUBCOMMITTEE ON JUDICIAL STATISTICS OF THE COMMITTEE ON JUDICIAL RESOURCES OF THE JUDICIAL CONFERENCE OF THE UNITED STATES 5 tbl.1 (2005) (providing data on "case weights for civil case types").

⁴² See, e.g., William M. Landes & Richard A. Posner, *An Empirical Analysis of the Patent Court*, 71 U. CHI. L. REV. 111, 112 (2004) (noting that the CAFC had a "positive and significant

Kimberly A. Moore, who was later appointed to the CAFC, concluded that forum shopping is a continuing problem within the top ten district court jurisdictions that heard almost half of all patent cases between 1995 and 1999.⁴³ In particular, she found that litigants chose districts based on favorable procedural or substantive law.⁴⁴ Other scholars complain that the CAFC does not accurately transmit precedent for lower courts to follow because it does not always make the full reasoning of its opinions known.⁴⁵ Rochelle Cooper Dreyfuss offers a more positive assessment of the CAFC, concluding that it contributes greatly to the “precision and accuracy of patent law.”⁴⁶

Some scholars also argue that decision making at the trial court level changed after the CAFC’s formation.⁴⁷ Using data from 1989 to 1996, John R. Allison and Mark A. Lemley concluded that decisions on validity favorable to patentees is slightly higher after the CAFC came into being.⁴⁸ Glynn S. Lunney’s study echoes these results; he found that the percent of patents held invalid decreased from 50% before the CAFC’s formation to about 25% in the period 1994–1995.⁴⁹ Scott E. Atkinson et al. also examined the

impact on the number of patent applications, the number of patents issued, the success rate of patent applications, the amount of patent litigation, and, possibly, the level of research and development expenditures”); Richard Linn, *The Future Role of the United States Court of Appeals for the Federal Circuit Now That It Has Turned 21*, 53 AM. U. L. REV. 731, 732 (2004) (arguing that the CAFC helped achieve uniformity, certainty, and clarity within patent law); Nard & Duffy, *supra* note 37, at 1620–21 (arguing that the CAFC is constrained by its own “isolated and sterile jurisprudence”); Richard H. Seamon, *The Provenance of the Federal Courts Improvement Act of 1982*, 71 GEO. WASH. L. REV. 543, 545 (2003) (“By most accounts, the [legislation that created the CAFC] seems to have achieved its purposes. The [CAFC] has clarified many aspects of patent law and made it more coherent as a whole.”).

⁴³ See Kimberly A. Moore, *Forum Shopping in Patent Cases: Does Geographic Choice Affect Innovation?*, 83 J. PAT. & TRADEMARK OFF. SOC’Y, 558, 571 (2001) (analyzing “whether patent cases are equally dispersed”).

⁴⁴ *Id.* at 574–85.

⁴⁵ See, e.g., Erica U. Bodwell, Note, *Published and Unpublished Federal Circuit Patent Decisions: A Comparison*, 30 IDEA 233, 233, 235 (1990) (noting that the CAFC often does not publish its decision when it affirms the district court); Michel, *supra* note 39, at 1186–87 (criticizing the lack of precedential value of a substantial portion of the CAFC’s cases).

⁴⁶ Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 8 (1989).

⁴⁷ See, e.g., John R. Allison & Mark A. Lemley, *How Federal Circuit Judges Vote in Patent Validity Cases*, 27 FLA. ST. L. REV. 745, 754 (2000) (finding a slight increase in validity findings post-CAFC creation); Scott E. Atkinson et al., *The Economics of a Centralized Judiciary: Uniformity, Forum Shopping and the Federal Circuit*, 52 J.L. & ECON. 411, 412 (2009) (finding a decrease in non-uniformity in the post-CAFC universe of cases); Glynn S. Lunney, Jr., *E-Obviousness*, 7 MICH. TELECOMM. & TECH. L. REV. 363, 371–72, 371 fig.1 (2001) (finding an overall decrease in the rate of patent invalidity after the implementation of the CAFC).

⁴⁸ Allison & Lemley, *supra* note 47, at 754.

⁴⁹ Lunney, Jr., *supra* note 47, at 371–72, 371 fig.1.

rate at which trial courts mark patents not invalid and found less variability across districts after the creation of the CAFC.⁵⁰

B. Call for More Expertise

Beginning in the 1990s, scholars shifted attention to explore whether the CAFC's experiment of specialized decision making should be translated to the lower trial courts with the twin aims of bringing uniformity to patent law and encouraging greater innovation and growth by protecting patent rights.⁵¹ Despite the CAFC's emergence, problems remained with the system. In particular, compared to other areas of law where only 10% of cases are appealed, litigants appeal half (50%) of patent cases to the CAFC.⁵² One predominant concern is the high rate at which the CAFC reverses lower court decisions, particularly on claim construction—one of the most important areas in patent law.⁵³ Scholars also express skepticism that lay juries can reliably decide patent cases.⁵⁴ As Judge Moore uncovered, patent juries are more likely than district court judges to find for the alleged infringer in deciding infringement, validity, and damages cases, though the different outcomes between jury and bench trials are less apparent than expected.⁵⁵ Further, juries tend to decide cases on an “all-or-nothing basis” compared to

⁵⁰ Atkinson et al., *supra* note 47, at 412.

⁵¹ See, e.g., Rochelle Cooper Dreyfuss, *Specialized Adjudication*, 1990 BYU L. REV. 377, 411–12 (considering whether specialization is more effective at the trial court level than in the appellate courts); Kesan & Ball, *supra* note 1, at 395 (discussing proposals for specialization throughout the patent law system); Michel, *supra* note 39, at 1191–92 (describing the structural pitfalls that exist between the district courts and the CAFC); John B. Pegram, *Should There Be a U.S. Trial Court with a Specialization in Patent Litigation?*, 82 J. PAT. & TRADEMARK OFF. SOC'Y 765, 775 (2000) [hereinafter Pegram, *Should There Be a U.S. Trial Court?*] (arguing for specialization akin to the British system to support innovation); Jeffrey W. Stempel, *Two Cheers for Specialization*, 61 BROOK. L. REV. 67, 112–13 (1995) (advocating for trial court specialization). See generally 153 CONG. REC. 3713 (discussing the aims of the pilot program in the district courts).

⁵² Michel, *supra* note 39, at 1193.

⁵³ See, e.g., *id.* at 1191–92, 1195–96 (offering multi-faceted criticisms of the current system); David L. Schwartz, *Courting Specialization: An Empirical Study of Claim Construction Comparing Patent Litigation Before Federal District Courts and the International Trade Commission*, 50 WM. & MARY L. REV. 1699, 1701 (2009) [hereinafter Schwartz, *Courting Specialization*] (describing responses to the high reversal rate).

⁵⁴ See, e.g., Moore, *supra* note 22, at 3 & nn.5–6 (comparing the shortcomings of judges and juries in patent law cases); Kimberly A. Moore, *Judges, Juries and Patent Cases—An Empirical Peek Inside the Black Box*, 99 MICH. L. REV. 365, 408–09 (2000) (comparing outcomes of cases decided by judges and juries); Arti K. Rai, *Specialized Trial Courts: Concentrating Expertise on Fact*, 17 BERKELEY TECH. L.J. 877, 879–80 (2002) (addressing benefits of specialized juries).

⁵⁵ Moore, *supra* note 54, at 408. Judge Moore found no difference with respect to enforceability findings and discovered that there were no statistically significant differences between judges and lay juries on appeal. *Id.* at 408–09. The latter finding, she notes, however, could be due to the deferential standard of appellate review. *Id.* at 409.

judges, who may decide each issue separately, ruling for both the patentee and the competitor.⁵⁶

Concerns about accuracy became especially acute after the United States Supreme Court decision in 1996 in *Markman v. Westview Instruments, Inc.*, the seminal case in which the Court ruled that trial courts must review the patent claims as a matter of law and appellate courts must apply a *de novo* standard of review on appeal.⁵⁷ In a “*Markman* hearing,” judges decide the scope of the claims at issue, hearing from experts and the parties on how narrow or wide a given claim should be interpreted.⁵⁸ How the claims are construed forms the basis for any subsequent infringement or validity analysis.⁵⁹ Indeed, in some cases, the parties even stipulate to infringement or non-infringement on the basis of the claim construction, thus underscoring how important this pre-trial proceeding is to the case outcome in patent cases.⁶⁰

Scholars find varying evidence that district courts reliably construe patent claims.⁶¹ Because district courts receive no deference on their claim constructions, there is some level of unpredictability.⁶² Analyzing cases from 1996 to 2000, during the first years of *Markman* hearings in district courts, Judge Moore found that district courts interpret the claims wrongly 33% of the time, resulting in cases being either vacated or reversed 81% of the time.⁶³ This high rate of reversal contrasts with the 10% rate of reversal in non-patent law appeals.⁶⁴ Similarly, in his study of the slightly later period between 1998 and 2000, Christian A. Chu discovered that almost a majority (44%) of claim constructions were modified on appeal.⁶⁵ David L. Schwartz’s 2008 study also found that about 40% of cases included a claim

⁵⁶ See *id.* at 409 (summarizing the differences in decisions rendered by juries and judges).

⁵⁷ See 517 U.S. at 372, 390, 391 (assigning claim construction to the court and framing the role of the CAFC in reviewing those decisions); see also *Cybor Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1451, 1456 (Fed. Cir. 1998) (inferring that *de novo* review is the proper standard based on the Supreme Court’s preservation of the CAFC’s appellate decision in *Markman*).

⁵⁸ See Andrew T. Zindel, Comment, *Patent Claim Construction in the Trial Courts: A Study Showing the Need for Clear Guidance from the Federal Circuit*, 33 SETON HALL L. REV. 711, 712 & nn.6–7 (2003) (describing the *Markman* hearing).

⁵⁹ *Id.* at 712.

⁶⁰ See *id.* at 728–29, 729 n.150 (considering the impact of *Markman* hearings on litigation decisions).

⁶¹ See, e.g., Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075, 1104 (2001) (analyzing reversal rates over time); Moore, *supra* note 22, at 3 (noting high error rate); Zindel, *supra* note 58, at 713 (noting persistently high reversal rate).

⁶² Moore, *supra* note 22, at 27–28.

⁶³ *Id.* at 2.

⁶⁴ F. JAMES SENSENBRENNER, JR., PILOT PROGRAMS FOR PATENT JUDGES, H.R. REP. NO. 109-673, at 5 (2006).

⁶⁵ Chu, *supra* note 61, at 1104.

construction that was wrong, at least in part.⁶⁶ As Jay P. Kesan and Gwendolyn G. Ball argue, combined with the fact that claim construction decisions are reviewed *de novo* on appeal, this “high rate of both claim construction modifications and claim construction-based reversals in CAFC decisions may be unraveling many of the gains in predictability and uniformity resulting from the creation of the CAFC.”⁶⁷ Although some scholars contend that claim construction is no different than other issues in inspiring difference, the high rate of reversal on claim construction calls into question whether specialized expertise can create greater predictability and accuracy.⁶⁸

C. *De Facto* Specialization in Trial Courts

Even prior to the onset of the pilot program, district courts have *de facto* specialized in the years since the emergence of the CAFC.⁶⁹ In her study of close to ten thousand cases terminated between 1995 and 1999, Judge Moore found that patent litigation is geographically concentrated, with the top five districts accounting for almost a third of patent cases, with the next five districts accounting for an additional 15% of the total.⁷⁰ A later study confirmed these results.⁷¹ In an analysis of trial courts’ decisions from 1995 through 2003, Kesan and Ball uncovered that the top ten district courts heard over half of all the nations’ patent law cases, and that the following ten district courts heard almost another third.⁷² The rest of the districts, al-

⁶⁶ David L. Schwartz, *Practice Makes Perfect? An Empirical Study of Claim Construction Reversal Rates in Patent Cases*, 107 MICH. L. REV. 223, 248 (2008) [hereinafter Schwartz, *Practice Makes Perfect?*].

⁶⁷ Kesan & Ball, *supra* note 1, at 416; see also *Cybor Corp.*, 138 F.3d. at 1451 (providing the scope of *de novo* review); Chu, *supra* note 61, at 1143 (recognizing “an increase in claim construction modifications and claim interpretation-based reversals since *Cybor Corp.*”). These differences in claim construction may be compounded by the fact that the CAFC does not speak in a single voice on claim construction. See R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1111–12 (2004) (arguing that the CAFC is divided into “two distinct methodological approaches” for interpreting claims).

⁶⁸ See, e.g., Jeffrey A. Lefstin, *The Measure of the Doubt: Dissent, Indeterminacy, and Interpretation at the Federal Circuit*, 58 HASTINGS L.J., 1025, 1092, 1094 (2007) (arguing that “claim construction has been no less determinate than another interpretive regime, that of contract interpretation” but also considering the positive impact of specialization at the district court level).

⁶⁹ See Moore, *supra* note 43, at 561 (noting that specialization occurs due to the forum selection choices made by litigants).

⁷⁰ *Id.* at 571.

⁷¹ See Kesan & Ball, *supra* note 1, at 421–23, 421 n.175 (discussing results of their study).

⁷² See *id.* at 421.

most 80%, heard only 20% of patent cases filed.⁷³ Likewise, a select group of judges ruled on most patent cases, with the top 20% of judges hearing almost two-thirds of all patent cases in the United States and 40% of judges hearing only one patent case over the entire eight-year period.⁷⁴ Yet, despite the high concentration of cases before only a few judges, Kesan and Ball found that among the judges who heard 80% of the patent cases in the entire period under study, they each heard, on average, only eleven cases.⁷⁵ In turn, judges with fewer than twenty cases on their docket oversaw slightly less than a majority (40%) of cases, with 16% of the cases being heard by judges with fewer than ten total patent cases.⁷⁶

Litigants favor certain districts for their reputation and efficiency.⁷⁷ Notably, in recent years patentees alleging infringement are filing cases with increasing frequency in the Eastern District of Texas.⁷⁸ The forum is perceived as having plaintiff-friendly rules and pro-patentee juries, which resulted in patentee win rates of 90% in jury trials between 1998 and 2006 compared to the national average of 68%.⁷⁹ Some believe that Texas juries view property rights differently while also having “a great respect for the government and a general distrust of large corporations.”⁸⁰ Local rules in Texas also shorten the discovery period to nine months, making it quicker to resolve cases.⁸¹ Moreover, judges strictly enforce deadlines and rarely grant extensions in an attempt to “clear the docket.”⁸²

Indeed, some scholars argue that judicial practice in the Eastern District of Texas has “institutionalized” a pro-patentee bias.⁸³ Dan Klerman and

⁷³ *Id.* The districts comprising the top third of cases adjusted each year as some districts moved in and out of the top groups. *Id.* For example, the Eastern District of Virginia made the top ten in two years between 1995 and 2003 but not in the others. *Id.* at 421 n.175.

⁷⁴ *Id.* at 422.

⁷⁵ *Id.*

⁷⁶ *Id.* at 423. By contrast, CAFC judges review about forty patent cases per year. *Id.*

⁷⁷ See, e.g., Yan Leychikis, *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*, 9 YALE J.L. & TECH. 193, 206, 209–10 (2007) (describing the reputational value and efficiency of the Eastern District of Texas that has made it popular with patentees).

⁷⁸ *Id.* at 205 (finding that the number of cases in the Eastern District of Texas doubled between 2004–2006).

⁷⁹ *Id.* at 206, 210–11. Additionally, the Eastern District of Texas hears few criminal cases, clearing the way for patent cases to have greater priority. *Id.* at 209. Moreover, changes in Texas law limited damages in malpractice cases, resulting in a proportionate decline in medical malpractice cases being filed in Texas federal trial courts and thus easing congestion in the courts. *Id.* at 209–10.

⁸⁰ *Id.* at 213 & nn.91–94.

⁸¹ *Id.* at 209.

⁸² *Id.*

⁸³ See, e.g., Dan Klerman & Greg Reilly, *Forum Selling*, 89 S. CAL. L. REV. 241, 243, 253 & nn.47–48 (2016) (describing institutional practices of the Eastern District of Texas that result in a favorable outcome for patentees).

Greg Reilly argue that judges in the Eastern District of Texas actually have affirmatively targeted patentee-plaintiffs to file more cases by “distort[ing]” common rules concerning how cases are assigned, joined or transferred, how discovery is conducted, and the standards for summary judgment.⁸⁴ For instance, judges in the Eastern District of Texas rarely grant summary judgment motions, thus placing more cases before patentee-friendly juries.⁸⁵ Finding patents invalid is also rare; it took eighteen years before the first jury in the Eastern District of Texas found a patent claim invalid.⁸⁶ The factors that make the Eastern District of Texas attractive to patentees, however, also make it attractive to “patent trolls,” which are holding companies that do not practice the invention themselves and that are set up primarily to license patents.⁸⁷ Cases filed by these non-practicing entities (“NPEs”) are more common than ever, particularly in the Eastern District of Texas.⁸⁸

Additionally, district courts have self-segregated and developed different reputations for speed and expertise in certain technologies.⁸⁹ Some district courts, such as the Eastern District of Texas and the Northern District of California, have local rules that are designed to allow for “more efficient” management of patent cases.⁹⁰ The Eastern District of Virginia is commonly referred to as the “rocket docket” due to its reputation for speediness.⁹¹ Trials are more common in the District of Delaware, where nearly a quarter of patent cases proceed to trial.⁹² By contrast, cases filed in the Central and Northern Districts of California tend to have earlier resolutions.⁹³ District courts also have developed *de facto* reputations for expertise in certain fields.⁹⁴ Many pharmaceutical cases are filed in the District of New Jer-

⁸⁴ *Id.* at 243.

⁸⁵ *See id.* at 251, 252 & tbl.2 (comparing the rate of summary judgment in prolific patent districts and the impact of summary judgment on case outcomes). Additionally, judges in the Eastern District of Texas avoid granting transfer motions, thus contributing to an environment where defendants may be forced to settle. *Id.* at 260–61, 262–63.

⁸⁶ *See* Leychkis, *supra* note 77, at 211.

⁸⁷ *Id.* at 213, 214.

⁸⁸ *See id.* (“The combination of the local juries’ respect for personal property rights and government agencies and their distrust of large corporate defendants makes the Eastern District of Texas an ideal venue for ‘patent trolls.’”); *see also* MARGARET S. WILLIAMS ET AL., FED. JUDICIARY CTR., PATENT PILOT PROGRAM: FIVE-YEAR REPORT 29 (2016), <https://www.fjc.gov/content/316142/patent-pilot-program-five-year-report> [<https://perma.cc/W7BZ-5WGA>] (defining non-practicing entities (“NPE”)).

⁸⁹ *See, e.g.,* Leychkis, *supra* note 77, at 209 (describing the efficiency of certain districts’ rule regimes).

⁹⁰ *Id.*

⁹¹ *Id.* at 210.

⁹² *Id.* at 202; Moore, *supra* note 43, at 578 tbl.5.

⁹³ Leychkis, *supra* note 77, at 203; Moore, *supra* note 43, at 578 tbl.5.

⁹⁴ *See, e.g.,* WILLIAMS ET AL., *supra* note 88, at 9 n.14 (describing trends in the District of New Jersey); Moore, *supra* note 43, at 572 (hypothesizing trends in the Northern District of California).

sey, which is home to several of the largest pharmaceutical companies who often file Abbreviated New Drug Applications.⁹⁵ Similarly, many computer and software cases are filed in the Northern District of California, the home of Silicon Valley.⁹⁶ These differences have led patentee-win rates to vary among the districts; although patentees win over two-thirds of the time in the Northern District of California, they prevail less than half the time in Delaware and in the Northern District of Illinois.⁹⁷ The trend toward *de facto* specialization in the district courts combined with the high rate of reversal at the CAFC are causing alarm among the patent bar.⁹⁸

II. SCHOLARLY LITERATURE ON SPECIALIZED COURTS

Does the system foster too much opportunity to forum shop? Does the lack of specialization at the trial court level prevent the CAFC from accomplishing its purpose of setting uniform patent law? This Part addresses these questions.⁹⁹

A. Arguments For and Against Specialized Trial Courts

In recent years, advocates of patent reform have increasingly bemoaned the rampant forum shopping in patent law and that patent decisions are disproportionately appealed relative to other areas of law.¹⁰⁰ Across all appellate courts, civil cases are appealed about 10% of the time, yet in patent law, appeals are filed in nearly 50% of cases.¹⁰¹ An experienced trial court, some argue, is needed even more than a specialized appellate court as the former dispose of cases in a more efficient manner and with greater accuracy.¹⁰² Because trial courts deal mainly with facts, they can leverage

⁹⁵ WILLIAMS ET AL., *supra* note 88, at 9 n.14.

⁹⁶ See Moore, *supra* note 43, at 572 (considering influences on the high rate of cases in the Northern District of California).

⁹⁷ See Leychkis, *supra* note 77, at 203 (comparing patentee win rates in various districts).

⁹⁸ See Kesan & Ball, *supra* note 1, at 416 (highlighting concerns with reversal rates); Moore, *supra* note 43, at 560 n.5 (considering concerns with forum shopping).

⁹⁹ See *infra* notes 100–161 and accompanying text.

¹⁰⁰ See, e.g., Klerman & Reilly, *supra* note 83, at 242 (offering reasons for why forum shopping is harmful to litigation); Michel, *supra* note 39, at 1193 (comparing appeal rates for federal civil cases).

¹⁰¹ Michel, *supra* note 39, at 1193.

¹⁰² See *id.* (discussing the disproportionate rate of appeals of patent cases from the trial courts compared to the rate of appeals of civil cases); see also Jeanne C. Fromer, *Patentography*, 85 N.Y.U. L. REV. 1444, 1446–47, 1472 & n.173 (2010) (arguing for changing venue rules to encourage specialization among district court judges); Kesan & Ball, *supra* note 1, at 402–03 (supporting specialization at the trial court level); Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 767 (2000) (arguing for specialization in the U.S. Court of International Trade (“CIT”)); Gregory J. Wallace, Note, *Toward Certainty and Uniformity in Patent Infringement Cases After Festo and Markman: A Proposal for a Specialized Patent Trial Court with a Rule of*

their expertise on technical matters to better understand how to apply patent law.¹⁰³

As Kesan and Ball contend, there are four arguments as to why courts may want to specialize: (1) “the development of judicial human capital;” (2) to foster uniformity and consistent precedent; (3) the impact specialization has on the “political economy of the legal system”; and (4) to increase the efficiency of the trial courts.¹⁰⁴ The argument for court specialization is especially strong with respect to complex matters like patent litigation.¹⁰⁵ As Dreyfuss notes, “[t]he more intricate the law, the more likely it is that a generalist will get things wrong, confuse matters, and encourage additional litigation.”¹⁰⁶ Specialist courts are likely better able to gauge the nuances behind bright line rules.¹⁰⁷ They may also, by extension, devise precedent that is uniform and consistent across time and fact patterns.¹⁰⁸ The need for a specialized forum is especially felt when the cases address a subject matter of national concern, the Supreme Court rarely provides oversight, and the availability of forum shopping encourages “parties [to] game the system”—all attributes of the modern patent system.¹⁰⁹ Moreover, specialized judges might act less ideologically and be less inclined to rule in line with “ideological fads” than non-specialized judges.¹¹⁰ Specialized judges decide cases faster as they do not need to take the time to get up to speed with arcane areas of law.¹¹¹ Specialization can also combat forum shopping by encouraging consistency and reducing administrative costs.¹¹²

Greater Deference, 77 S. CAL. L. REV. 1383, 1384 (2004) (proposing reform through specialization of trial courts).

¹⁰³ See Paul R. Gugliuzza, *Rethinking Federal Circuit Jurisdiction*, 100 GEO. L.J. 1437, 1476 (2012) (arguing that trial court judges, as opposed to the CAFC judges, can more easily specialize in the “complexity of the technology underlying” patent law cases); Arti K. Rai, *Engaging Facts and Policy: A Multi-Institutional Approach to Patent System Reform*, 103 COLUM. L. REV. 1035, 1065 (2003) (considering the impact of inaccurate factual determinations by the CAFC); Rai, *supra* note 54, at 878–81 (discussing the pitfalls of factual determinations by the CAFC and the arguments for specialized trial courts).

¹⁰⁴ Kesan & Ball, *supra* note 1, at 400–01.

¹⁰⁵ See *id.* at 414 (supporting trial court specialization).

¹⁰⁶ Dreyfuss, *supra* note 51, at 409.

¹⁰⁷ *Id.* at 378.

¹⁰⁸ See *id.* (encouraging specialization to create “single voice” and “[g]reater consistency in court opinions”); Kesan & Ball, *supra* note 1, at 402 (“A specialized court that allows judges to gain an in-depth understanding of existing law may promote uniformity and predictability across jurisdictions . . .”).

¹⁰⁹ Kesan & Ball, *supra* note 1, at 403–04.

¹¹⁰ See Stempel, *supra* note 51, at 104 (describing the ideological influences that plague generalist judges).

¹¹¹ Kesan & Ball, *supra* note 1, at 408.

¹¹² *Id.* at 408; see also Charles W. Adams, *The Court of Appeals for the Federal Circuit: More Than a National Patent Court*, 49 MO. L. REV. 43, 46 (1984) (discussing similar benefits of

Specialized trial courts have their disadvantages.¹¹³ Generalist judges may be more adept at linking patent law with other legal quagmires.¹¹⁴ Most of the judges on the CAFC, a specialized court with limited jurisdiction, do not have science backgrounds.¹¹⁵ So “many distinguished opinions” in patent law have been written by generalist appellate judges—some with minimal technical training or experience in patent law.¹¹⁶ Further, like most civil cases, many patent cases concern routine procedural matters, like jurisdiction or standing, or concern areas of law like contract interpretation, anti-trust, libel, or state-law trade secret claims—issues on which a specialized patent trial court offers no special insight.¹¹⁷ In turn, the lack of diversity of cases in specialized courts could lead to “tunnel vision,” stagnating the development of precedent consistent with changing times.¹¹⁸ Specialized judges, especially those located within administrative agencies, may be subject to capture by the very interest they oversee.¹¹⁹ In particular, a specialized court like the CAFC could be biased toward the federal government and thus more likely rule that the USPTO committed no error and that the patent is valid.¹²⁰ The judicial appointment process for specialized judges may also be more partisan as special interests clamor to get their favored

specialized appellate courts). The costs of litigation can be lessened with “more efficient administration.” Kesan & Ball, *supra* note 1, at 409.

¹¹³ Kesan & Ball, *supra* note 1, at 409.

¹¹⁴ Lemley et al., *supra* note 16, at 1123; Sarang Vijay Damle, Note, *Specialize the Judge, Not the Court: A Lesson from the German Constitutional Court*, 91 VA. L. REV. 1267, 1281 (2005). See generally Simon Rifkind, *A Special Court for Patent Litigation? The Danger of a Specialized Judiciary*, 37 A.B.A. J. 425 (1951) (arguing strongly, from the perspective of a federal district judge, against the creation of a specialized patent court).

¹¹⁵ See Kesan & Ball, *supra* note 1, at 400 (defining the CAFC); Rai, *supra* note 103, at 1068 & n.148 (reflecting on the expertise of judges on the CAFC).

¹¹⁶ See Dreyfuss, *supra* note 46, at 24–25, 25 n.152 (describing the backgrounds of key CAFC patent law judges).

¹¹⁷ See Ellen R. Jordan, *Specialized Courts: A Choice?*, 76 NW. U. L. REV. 745, 748 (1981) (noting the boundary issues raised by specialized courts); Rifkind, *supra* note 114, at 426 (reflecting on the undesirability of a specialized patent court).

¹¹⁸ See Dreyfuss, *supra* note 51, at 381 (considering the downsides of a specialized court); Fromer, *supra* note 102, at 1472 (reviewing critiques of specialized trial courts).

¹¹⁹ See Lawrence Baum, *Specializing the Federal Courts: Neutral Reforms or Efforts to Shape Judicial Policy?*, 74 JUDICATURE 217, 224 (1991) (noting that specialized courts represent “the efforts of interest groups to secure advantages for themselves”); Richard A. Posner, *Will the Federal Courts of Appeals Survive Until 1984? An Essay on Delegation and Specialization of the Judicial Function*, 56 S. CAL. L. REV. 761, 785 (1983) (“Specialists are more likely than generalists to identify with the goals of a government program . . .”).

¹²⁰ See Gugliuzza, *supra* note 103, at 1449, 1466 (discussing drawbacks to specialization and potential bias); Clarisa Long, *The PTO and the Market for Influence in Patent Law*, 157 U. PA. L. REV. 1965, 1970, 1971 (2009) (positing that the USPTO has had increasing influence on the CAFC as the latter has become more pro-patentee).

candidate appointed.¹²¹ As a result of partisan influences, specialized judges might be more ideological or less qualified than non-specialists, thus lending less stability to decision making in general.¹²² Further, specialization may lead to increased error if appellate courts defer more often to specialized expertise at the trial court level.¹²³ Specialized judges may be less likely to set forth their reasoning in clear, well-reasoned decisions if the universe of judicial decision makers is small and specialized.¹²⁴

B. Empirical Studies of Specialized Patent Trial Courts

Several scholars have examined whether judicial expertise impacts trial court decision making in patent law by simply analyzing, in a non-statistical fashion, the appellate courts' reversal rate of patent decisions to uncover patterns.¹²⁵ Donna M. Gitter argued that reversal rates of claim construction are lower in England than in the United States because England hears cases through a specialized patent tribunal.¹²⁶ Similarly, Schwartz looked at how reversals vary depending on judicial experience but found it of little relevance.¹²⁷ Specifically, Schwartz contends that claim construction reversal rates do not decrease with an increase in the number of cases appealed to the CAFC or with more experience overall in patent

¹²¹ Andrew P. Morriss, Comment, *A Public Choice Perspective on the Federal Circuit*, 54 CASE W. RES. L. REV. 811, 816 (2004) (“[W]e would expect the repeat players concerned with [specialized issues] to invest in the judicial selection process to gain appointments of candidates they thought would favor their position.”); see also Posner, *supra* note 119, at 784 (noting that “an independent judiciary will tend on balance to reduce the scope of special interest politics in American life and . . . a generalist judiciary will be more independent than a specialist one”).

¹²² Posner, *supra* note 119, at 781; see Jordan, *supra* note 117, at 748 (discussing how specialized federal judgeships can be seen “as inferior” to generalist positions, affecting “the quality of decisions”); see also Damle, *supra* note 114, at 1285–86 (citing Jordan, *supra* note 117).

¹²³ See Lemley et al., *supra* note 16, at 1128 (discussing concerns with specialized trial courts, especially in patent law); Moore *supra* note 22, at 29 (weighing the pros and cons of increased deference).

¹²⁴ See Rifkind, *supra* note 114, at 426 (fearing that a specialized patent law system would become hyper-exclusive, resulting in “unintelligible” legal doctrine).

¹²⁵ See, e.g., Donna M. Gitter, *Should the United States Designate Specialist Patent Trial Judges? An Empirical Analysis of H.R. 628 in Light of the English Experience and the Work of Professor Moore*, 10 COLUM. SCI. & TECH. L. REV. 169, 185–86 (2009) (arguing that increasing the expertise of U.S. district court judges would lower reversal rates at the CAFC based on the specialized English model); Moore, *supra* note 22, at 29 (finding reversal rates do not improve with *de novo* review of claim construction); Schwartz, *Courting Specialization*, *supra* note 53, at 1702 (finding reversal rates are not correlated to judicial experience with patent law cases). See generally Kesan & Ball, *supra* note 1, at 418 (discussing the claim construction-focused studies by Gitter, *supra*, Olson, *infra* note 132, and Schwartz, *Courting Specialization*, *supra* note 53).

¹²⁶ Gitter, *supra* note 125, at 183, 185–86.

¹²⁷ Schwartz, *Courting Specialization*, *supra* note 53, at 1702; Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 255–56, 255 fig.5.

litigation or with experience on the bench.¹²⁸ Indeed, he found that judges have the highest reversals rate if they had multiple claim construction appeals.¹²⁹ In his 2009 study, Schwartz analyzed whether specialized judges at the U.S. International Trade Commission (“USITC”) are less likely to be reversed on appeal than district court judges.¹³⁰ He found that administrative law judges at the USITC are not more accurate than generalist judges, at least in terms of claim construction.¹³¹ In another study, Nancy Olson discerned no difference in claim construction rulings across varying tiers of judicial experience.¹³² In her data, Judge Moore also failed to see an increase in affirmance rates over time.¹³³ These studies, however, concern only one issue on appeal—claim construction—and were never designed to be robust statistical tests of the impact of judicial specialization on appellate reversal, partly because these analyses do not control for other variables that could impact results.¹³⁴

Other scholars argue that specialization has reduced reversal rates, though their studies are not designed to cover identical ground as the aforementioned scholarship and do not employ robust statistical techniques.¹³⁵ Looking at CAFC cases filed during the two-year period between 1998 and 2000, Christian A. Chu contends that “more active” district courts, defined as those where the CAFC heard more than ten cases, had lower reversal rates compared to “less active” districts, though his results lack statistical significance and are more descriptive than quantitative.¹³⁶ His analysis also omits Federal Circuit Rule 36 (“Rule 36”) opinions on summary affir-

¹²⁸ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 252, 256.

¹²⁹ *Id.* at 252.

¹³⁰ Schwartz, *Courting Specialization*, *supra* note 53, at 1703.

¹³¹ *Id.* at 1704.

¹³² Nancy Olson, Comment, *Does Practice Make Perfect? An Examination of Congress’s Proposed District Court Patent Pilot Program*, 55 UCLA L. REV. 745, 774–75, 779 (2008).

¹³³ Moore, *supra* note 22, at 29 (“[A]ffirmance rates have not improved substantially over the five years since *Markman*.”).

¹³⁴ Kesan & Ball, *supra* note 1, at 418–19.

¹³⁵ See, e.g., Chu, *supra* note 61, at 1122–23 (comparing districts based on the number of patent appeals they send to the CAFC); Shartzter, *supra* note 29, at 228, 233 (finding greater experience correlates with lower reversal rates).

¹³⁶ Chu, *supra* note 61, at 1092, 1122–23. Chu counts among the “more active” districts the following: the Central District of California, the District of Delaware, the District of Massachusetts, the District of Minnesota, the District of New Jersey, the Eastern District of Michigan, the Eastern District of Virginia, the Northern District of California, the Northern District of Illinois, the Southern District of Florida, and the Southern District of New York. *Id.* at 1122. He also includes appeals from the former Board of Patent Appeals and Interferences, the Court of Federal Claims, and the USITC in the “more active” category. *Id.* Chu examines cases where the CAFC expressly reviews the lower tribunal’s claim construction. See *id.* at 1092, 1100 & n.121 (limiting the study to written decisions issued by the CAFC on “all patent issues, including infringement, validity[,] and inequitable conduct” but also analyzing claim construction on its own). He, therefore, excludes Rule 36 judgments. *Id.* at 1100 n.121.

mances, which biases the results toward showing higher claim construction reversal rates.¹³⁷ In analyzing cases preemptively in 2009 to consider whether Congress's proposed pilot program would reduce reversals, Adam Shartzter concluded that when looking at all patent cases—not just claim construction cases—judges' increased experience with patent litigation resulted in higher affirmance rates on appeal.¹³⁸ He found that although the reversal rate for all judges was about 15%, judges eligible for the pilot program would have a reversal rate of approximately 11%.¹³⁹ Because Shartzter's analysis pre-dates the pilot program, however, he could not make any comparative statement about how non-pilot judges fared compared to pilot judges.¹⁴⁰

Scholars Banks Miller and Brett Curry found a relationship between judges' political ideologies and their specialization when making obviousness determinations.¹⁴¹ They argue successfully that judges with more technical scientific experience are more likely than non-specialists to consider patent cases "salient," thus magnifying the influence of ideology on vote choice for "expert" judges.¹⁴² Miller and Curry, also conclude, however, that experience at the CAFC has no effect on decision making for obviousness determinations.¹⁴³

More recently, Kesan and Ball expanded on these studies with a robust statistical analysis of how experience influences both the speed with which a trial court decides a patent case and the proclivity of the CAFC to overturn the case on appeal.¹⁴⁴ They found that judges with greater experience heard cases faster, thereby impacting the accuracy of decision making in

¹³⁷ See *id.* at 1102 (finding an increase in reversal rates for claim construction); Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 235 (summarizing and expanding upon Judge Moore's criticism of Chu's results for failing to include the CAFC's affirmative Rule 36 case construction rulings).

¹³⁸ Shartzter, *supra* note 29, at 228.

¹³⁹ *Id.* at 227–28, 233.

¹⁴⁰ *Id.* at 233.

¹⁴¹ See Miller & Curry, *supra* note 34, at 857 (finding that Clinton-appointed CAFC judges who are considered experts will invalidate patents on obviousness grounds at a rate of 55% compared to 25% for Reagan-nominated expert appointees). Miller and Curry defined "patent experts [as] those individuals who possessed technical degrees . . . and who were also members of the patent bar." *Id.* at 851 n.15. They find that ideology has no statistically significant impact on the decisions of ideologically opposed non-expert judges. *Id.* at 857. Political scientists have long theorized that individuals with greater knowledge or expertise have greater levels of ideological constraint. See, e.g., Philip E. Converse, *The Nature of Belief Systems Among Mass Publics*, in *IDEOLOGY AND DISCONTENT* 206, 206, 246–49 (David E. Apter ed., 1964) (confirming his hypothesis that those possessing greater political knowledge have more ideologically consistent opinions).

¹⁴² See Miller & Curry, *supra* note 34, at 840.

¹⁴³ *Id.* at 857.

¹⁴⁴ Kesan & Ball, *supra* note 1, at 420.

terms of whether the CAFC totally or partially reverses the trial court on appeal.¹⁴⁵ Their results applied not only to claim construction issues but also to other areas of patent law, including validity, infringement, inequitable conduct, damages, and preliminary injunction determinations.¹⁴⁶ Although they found that general experience in terms of years on the bench does not affect the results, they discovered that specialized patent law experience reduced the chance of the judgment being overturned on appeal in full and in part on non-claim construction infringement cases as well as when the CAFC had to decide cases emanating from preliminary injunctions or judgment as a matter of law.¹⁴⁷ Indeed, they found a 60% spread between experienced and unexperienced judges in terms of whether the CAFC overturned an infringement ruling.¹⁴⁸

Additionally, Mark A. Lemley et al. found that more experienced patent judges were less inclined to decide in favor of the patentee in infringement cases.¹⁴⁹ By contrast, they found experience to be inconsequential when ruling on validity.¹⁵⁰ This experience effect, however, was weak; only judges who rarely heard patent cases (defined as less than one final ruling per three-year period) were more likely to rule in favor of the patentee.¹⁵¹ These results, Lemley et al. contend, rebut the conventional wisdom that plaintiff forum shopping is driven in part by a perception that some district courts are friendlier to certain kinds of parties.¹⁵² Although they found that patentees holding patents in the biotechnology and pharmaceutical fields were among the most likely patentees to prevail, they did not uncover support for the popular perception that plaintiffs have an easier time of winning in the Eastern District of Texas.¹⁵³ Lemley et al. concluded that judges with more experience differ in their outcomes, but whether such a result is desirable is a matter of perspective.¹⁵⁴ They postulate several reasons for the results, contending that the effect could be due to evolutions in attitude, more familiarity with patent law that leads to greater confidence in one's rulings,

¹⁴⁵ *Id.*

¹⁴⁶ *Id.* at 420, 432.

¹⁴⁷ *Id.* at 439.

¹⁴⁸ *Id.* Specifically, they found that the probability of an infringement ruling being overruled for a judge of low patent experience was 45% compared to a 15% probability of a highly-experienced judge's ruling being overturned. *Id.*

¹⁴⁹ Lemley et al., *supra* note 16, at 1151 (arguing that “[f]amiliarity . . . breeds contempt”).

¹⁵⁰ *Id.*

¹⁵¹ *Id.* at 1143 (“Even a modest volume of patent cases . . . is enough to drive a significantly higher rate of non[-]infringement findings. Once a judge has even a modest volume of patent cases, the effect levels off and further specialization does not appear to affect outcomes.”).

¹⁵² *See id.* at 1124–25, 1139–40 (countering prevalent forum shopping theories with evidence that patentees are better off in front of judges who have little to no experience with patent cases).

¹⁵³ *Id.* at 1125, 1139.

¹⁵⁴ *Id.* at 1151–52.

or simply more exposure to the unique procedures incident to patent law.¹⁵⁵ A judge less versed in patent law may not feel as comfortable ruling on summary judgment, for instance.¹⁵⁶ Additionally, more experienced judges may feel that patentees “overclaim” their inventions and thus grow more skeptical once they see patentee after patentee claiming a broad invention.¹⁵⁷ Given that, Lemley et al. argue that accused infringers as opposed to patentees would benefit most from a specialized patent trial court.¹⁵⁸

More recently, Mark A. Lemley and Shawn P. Miller analyzed judicial factors that impact reversal rates.¹⁵⁹ Accounting for judicial tenure, they found that personal relationships between CAFC and district court judges impacted reversal rates in claim construction cases, noting that district court judges who previously sat by designation on the CAFC have reduced reversal rates.¹⁶⁰ They concluded that this result was not a function of experience but rather “reflects a personal connection between [district] judge and the members of the reviewing court.”¹⁶¹

III. REVIEWING THE PATENT LAW PILOT PROGRAM

A. Description of the Patent Pilot Program

First introduced in 2007 by U.S. Representative Darrell Issa of California, the patent pilot program is designed to foster greater specialization within the federal patent judiciary at the district court level.¹⁶² Appropriated for five million dollars, the program intends to mitigate some of the problems inherent in patent litigation, such as “the high cost of patent litigation, forum shopping, and high reversal rates on appeal” to the CAFC.¹⁶³ The legislative history implies that it was the hope of the pilot’s sponsors that increased expertise would lead to lower reversal rates.¹⁶⁴ The bill’s sponsors argued that the high rate of overturned district court decisions was due to “judicial inexperience and misunderstanding of patent law.”¹⁶⁵ Any district

¹⁵⁵ *Id.*

¹⁵⁶ *Id.* at 1151.

¹⁵⁷ *Id.* at 1151–52.

¹⁵⁸ *Id.* at 1125.

¹⁵⁹ Mark A. Lemley & Shawn P. Miller, *If You Can’t Beat ‘Em, Join ‘Em? How Sitting by Designation Affects Judicial Behavior*, 94 TEX. L. REV. 451, 457 (2016).

¹⁶⁰ *Id.* at 452.

¹⁶¹ *Id.* at 453.

¹⁶² Shartzler, *supra* note 29, at 192.

¹⁶³ *Id.* at 192 & n.6.

¹⁶⁴ Act of Jan. 4, 2011, Pub. L. No. 111-349, § 1(e)(1), 124 Stat. 3674, 3675–76 (2011); *see also* 156 CONG. REC. H8537 (2010) (“The premise underlying H.R. 628 is, succinctly stated, practice makes perfect, or at least better. Judges who focus more attention on patent cases will be expected to be better prepared to make decisions that can withstand appellate scrutiny.”).

¹⁶⁵ 153 CONG. REC. 3713 (2007).

court within the top fifteen district courts having the greatest number of patent cases in 2010 could participate in the program, with district courts that opted in having at least three judges in their district designated as patent judges.¹⁶⁶ If a non-designated generalist judge receives a patent law case within the confines of the district court's normal random allocation of cases, the district court may then randomly reassign the case to a patent judge within the district participating in the program.¹⁶⁷ To discourage forum shopping, the legislation requires that at least six districts in three circuits participate.¹⁶⁸ Only districts with at least ten judgeships were eligible initially, thus leaving out popular patent forums such as the District of Delaware and the Eastern District of Texas.¹⁶⁹ This provision was subsequently altered to allow these districts to participate.¹⁷⁰ The program's funding allows judges to hire scientifically-trained law clerks and to provide training for judges who decide to participate in the pilot.¹⁷¹ Participants in the program remain free to take on cases of other subject matters as their schedule allows.¹⁷² The program is designed to last for ten years and requires that periodic reports be made to Congress.¹⁷³ It went into operation in September 2011.¹⁷⁴ Figure 1 details the district courts participating in the pilot program and Table 1 displays the number of judges participating in each of the pilot districts at the start of the program in September 2011.¹⁷⁵ Where the case lists multiple judges, the pilot status of the presiding judge in the outcome of the case is

¹⁶⁶ Act of Jan. 4, 2011 § 1(a)(1)(A), (b)(2)(A)(i), (b)(2)(B), 124 Stat. at 3674–75; *see also* H.R. 34, 110th Cong. § 1(a)–(b) (2007) (providing the initial proposal from the House of Representatives).

¹⁶⁷ Act of Jan. 4, 2011 § 1(a)(1)(C)(D), (a)(3), 124 Stat. at 3674.

¹⁶⁸ *Id.* § 1(b)(1).

¹⁶⁹ *See* 153 CONG. REC. 3713 (discussing the parameters of the proposed legislation); Shartzler, *supra* note 29, at 198, 199 n.65 (reviewing the requirements of the patent pilot program).

¹⁷⁰ *See* Act of Jan. 4, 2011 § 1(b)(2)(B)(ii), 124 Stat. at 3675 (providing eligibility criteria for districts with fewer than ten judges).

¹⁷¹ Shartzler, *supra* note 29, at 199; *see also* H.R. 34 § 1(f) (outlining the House's funding proposal).

¹⁷² *See* 153 CONG. REC. 3715 (2007) (describing the randomized assignment of cases in the district courts). Additionally, senior judges may opt in as participants if an active judge also participates. Act of Jan. 4, 2011 § 1(a)(2), 124 Stat. at 3674.

¹⁷³ Act of Jan. 4, 2011 § 1(c), (e), 124 Stat. at 3675–76.

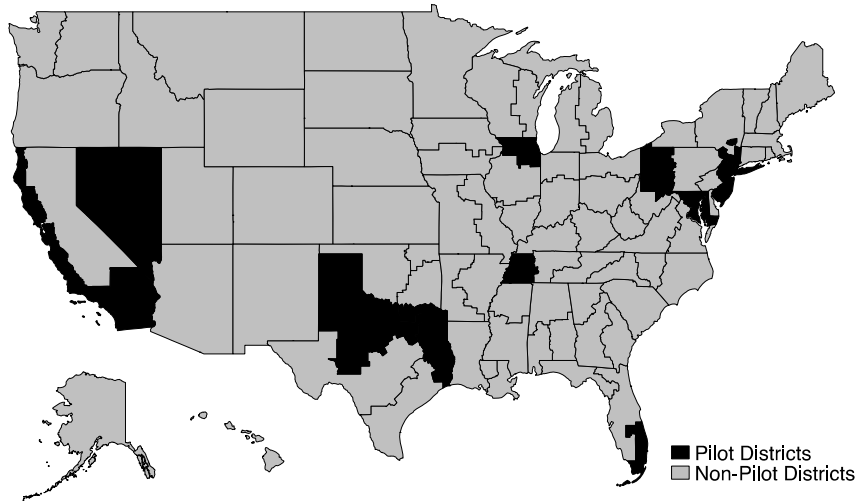
¹⁷⁴ WILLIAMS ET AL., *supra* note 88, at 2 n.5. The program passed the House several times with unanimous bipartisan support—a rarity in the existing political climate. Lemley et al., *supra* note 16, at 1129.

¹⁷⁵ *See* Ron Vogel, *The Patent Pilot Program: Reassignment Rates and the Effect of Local Patent Rules*, N.Y. INTELL. PROP. L. ASS'N BULL. (N.Y. Intell. Prop. Law Ass'n, Fort Lee, N.J.), Oct.–Nov. 2013, at 13, 17–18 (providing a full list of judges participating in the pilot program). Some districts subsequently added judges to the program. *See, e.g.*, General Order Regarding Pilot Patent Project, General Order 16-3 (E.D. Tex. Feb. 11, 2016), <http://www.txed.uscourts.gov/sites/default/files/goFiles/16-03.pdf> [<https://perma.cc/N6JQ-UBKQ>] (adding Judge Schroeder to the pilot program).

used.¹⁷⁶ At the program's inception in 2011, there were eighty-five district court judges and sixteen pilot magistrate judges.¹⁷⁷

Figure 1*

District Courts Chosen to Participate in Pilot Program



¹⁷⁶ In some cases, using this measure may be misleading. It is possible that a judge spent significant time on a case, then retired, and the case was assigned to a new judge. Some courts also periodically transfer cases due to workload. The line needs to be drawn somewhere, however, and the judge who presided over the trial or authored the summary judgment motion or other opinion is most likely the one who spent the most time on the case.

¹⁷⁷ See Steven Gray, *The Designated Judges for the New Specialized Patent Pilot Program for U.S. Courts*, IP BASICS BLOG (Feb. 9, 2012), <http://patentmyinvention.blogspot.com/2012/02/new-specialized-patent-pilot-program.html> [<https://perma.cc/C483-LZ6M>] (listing the pilot judges).

* All graphs and tables in this Article are also available online at <https://www.bc.edu/content/dam/bc1/schools/law/pdf/law-review-content/BCLR/60-2/semet-graphics.pdf> [<https://perma.cc/8VVD-PU4K>].

Table 1: Pilot Program Patent Cases and Judgeships

(as originally chosen on September 2011)

District	Cases Filed from Sept. 2011-Sept. 2016	Pilot Program Judge- ships	Percent of Dis- trict's Judges
N.D.Cal.	1,122	5 District Judges, 7 Magistrate Judges	39%
S.D.Cal.	616	5	29%
C.D.Cal.	1,901	6	16%
D.Nev.	182	4	30%
E.D.Tex.	7,943	6	71%
N.D.Tex.	382	3	21%
N.D.Ill.	1,012	10	26%
S.D.N.Y.	698	10	20%
E.D.N.Y.	179	6 District Judges, 9 Magistrate Judges	53%
D.N.J.	1,030	11	44%
W.D.Pa.	100	6	38%
D.Md.	149	3	17%
W.D.Tenn.	59	2	43%
S.D.Fla. ¹⁷⁸	699	3	12%

B. Patent Pilot Program 2016 Update

The FJC produced a report on the patent pilot program at the five-year mark in April 2016.¹⁷⁹ Its authors, Margaret S. Williams et al., found that 24% of district judges hearing at least one patent case (a total of sixty-six judges) had participated in the pilot program thus far and that pilot judges heard more than 76% of patent cases in the pilot districts.¹⁸⁰ This figure varies among districts, with the lowest being 13% in the Eastern District of New York and the highest being 33% in the Eastern District of Texas.¹⁸¹ As

¹⁷⁸ The Southern District of Florida left the pilot program in 2014. *Patent Pilot Program in Southern District of Florida Scrubbed*, ASSOULINE & BERLOWE (Aug. 13, 2014), <https://assoulineberlowe.wordpress.com/2014/08/13/patent-pilot-program-in-southern-district-of-florida-scrubbed/> [<https://perma.cc/6EJA-BWMX>].

¹⁷⁹ WILLIAMS ET AL., *supra* note 88, at v.

¹⁸⁰ *Id.*

¹⁸¹ *Id.* at 2, 3 tbl.3.

a whole, pilot judges have more patent experience than non-pilot judges, with judges in the Eastern District of Texas having substantially more patent experience than judges in other districts.¹⁸² Overall, the authors concluded that pilot judges work more expeditiously in terminating cases, with the differences in total duration time being statistically significant.¹⁸³ Controlling for the number of transfers and the judge's experience, the FJC reported that pilot judges terminate cases 8% faster than non-pilot judges.¹⁸⁴

The number of pilot cases also varies by district, with pilot cases comprising only 23% of the Northern District of California's total patent cases, but accounting for about 90% of patent cases in the Eastern District of Texas, the Western District of Tennessee, and the Western District of Pennsylvania.¹⁸⁵ Despite this variation, Williams et al. found that the rate of appeal did not differ between pilot and non-pilot judges, and that most cases—no matter who presided over them—resulted in affirmances on appeal.¹⁸⁶ The study uncovered a great deal of variation among districts in the rates of appeal.¹⁸⁷ For instance, as a portion of the overall case docket, appeals from the Eastern District of Texas were relatively rare, although there was a larger than expected number of appeals from the three California districts in the pilot program and the Southern District of New York.¹⁸⁸ Appeals from the Eastern District of Texas may have been low because only 1% of cases from that district resulted in judgment, with the other aforementioned districts having a greater percentage of their cases resulting in final judgment.¹⁸⁹

Regarding the outcome on appeal, although Williams et al. looked only at descriptive statistics, they found no statistically significant difference in results between pilot and non-pilot judges.¹⁹⁰ In all, they concluded that “pilot and non[-]pilot cases are ‘correct’ at approximately the same rate” with 72% of cases upheld in full by the CAFC on appeal.¹⁹¹ Loosening the definition of “correct” to include partial affirmances and dismissals, the FJC reported that the CAFC affirmed the lower court 91% in pilot cases and 88% for non-pilot cases, a difference that was not statistically significant.¹⁹²

¹⁸² *Id.* at 5, 6.

¹⁸³ *Id.* at v, 22.

¹⁸⁴ *Id.* at 23.

¹⁸⁵ *Id.* at 8.

¹⁸⁶ *Id.* at 32, 36.

¹⁸⁷ *See id.* at 31–36 (exploring the impact on appeals to the CAFC from district judges).

¹⁸⁸ *Id.* at 32, 33.

¹⁸⁹ *Id.* at 33.

¹⁹⁰ *Id.* at 36.

¹⁹¹ *Id.*

¹⁹² *Id.*

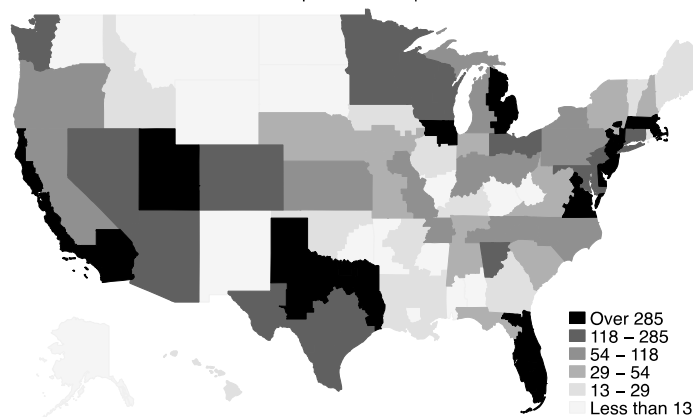
More recently, a forum studying the pilot program in the Northern District of Illinois reached similar conclusions about the pilot program.¹⁹³

C. Data Collection for the Present Analysis

Using data from the database Lex Machina, this analysis draws from 25,223 patent cases filed from September 19, 2011 through September 30, 2016 with a termination date of December 31, 2018.¹⁹⁴ Cases that had previously been filed prior to the pilot program initiation were then eliminated. For instance, a case could have been filed in another district and transferred after the September 19 date or the case could have been attached to a previously filed case.¹⁹⁵ Figure 2 shows a map detailing the number of cases filed per district. The most popular district, not surprisingly, is the Eastern District of Texas, with 7,943 cases filed during this period, with the District of Delaware trailing in second place with 4,194 filed cases. About a fifth of the District of Delaware's entire docket is allocated to patent cases.¹⁹⁶ As Figure 2 displays, other districts have very few cases filed comparably; for example, the District of Alaska has only one.

Figure 2

Number of Patent Cases Filed
Filed Sept. 2011 to Sept. 2016



¹⁹³ RIPL Volume 17 Executive Board, Comment, *Patent Pilot Program Perspectives: Patent Litigation in the Northern District of Illinois*, 17 J. MARSHALL REV. INTELL. PROP. L. 348, 359 (2018) [hereinafter *Patent Pilot Program Perspectives*].

¹⁹⁴ See generally LEX MACHINA, <https://lexmachina.com/> [https://perma.cc/39BP-XG7C] (providing legal analytics).

¹⁹⁵ Lex Machina counts a case multiple times if a case has been transferred either inter-district or intra-district. I looked at the docket sheets of the 1,001 inter-district transfer cases and the sixty-seven intra-district cases filed during this period to ensure appropriately that the case would be allocated to the district court where it was filed when discussing filing and where it was ruled on when discussing case merits.

¹⁹⁶ Shartzter, *supra* note 29, at 237 (noting that about 17% of cases filed in the District of Delaware are patent cases).

1. Global Differences in Cases in Pilot and Non-Pilot Districts

Overall, more patent cases are filed or transferred to the pilot districts, though certain pilot districts hear few cases. For instance, the Western District of Pennsylvania and the Western District of Tennessee had ninety-six and fifty-five cases, respectively, filed during the period under study. As the FJC also reports, although the courts transfer some cases to include them in the pilot, the average number of transfers is zero.¹⁹⁷ A district court internally transfers cases within a district for many reasons, such as recusal or because the case is closely connected to another case; some districts also transfer cases to other divisions to balance out caseload.¹⁹⁸ The FJC reports that 72% of transfers are because of the pilot program.¹⁹⁹ For the most part, as time goes on, few judges kick the case back into the patent pool, though the differences vary by district.²⁰⁰ As of 2013, for instance, only about 10% of judges in the Southern District of New York were declining an initial patent assignment.²⁰¹ According to the database, transfers are more common in the Southern District of Florida, the Central District of California, and the Western District of Pennsylvania, whereas transfers are less common in the Northern District of California and the Southern District of New York, partly due to the fact that a low percentage of judges participate in the pilot in the latter districts.²⁰²

Looking at the data by unique plaintiffs asserting different patents, some districts are more popular among either repeat plaintiffs filing on the same patent (for example, a pharmaceutical company filing multiple infringement cases against generic manufacturers) or so-called “patent trolls” filing multiple cases. Controlling for repeat filers, however, the number of

¹⁹⁷ WILLIAMS ET AL., *supra* note 88, at 10.

¹⁹⁸ *See id.* (discussing various reasons for transferring a case).

¹⁹⁹ *Id.* Although there are intra-district transfers because of the pilot program, they are probably less than what the program’s developers anticipated. *See id.*

²⁰⁰ *See, e.g.,* Robert Gunther & Omar Khan, *Patent Pilot Program: One Year Later*, N.Y. L.J., Jan. 7, 2013, at S6 (describing trends in the pilot program with a focus on the Southern District of New York).

²⁰¹ *Id.*

²⁰² Some districts make it easier to tell whether a transfer is actually due to reassignment under the pilot program. The docket sheet for the Western District of Pennsylvania, for instance, notes when a judge declines an assignment because of the pilot program, while other districts’ docket sheets note the appropriate local rule to signify an intra-district transfer because of the pilot program. In other districts, however, it is impossible to tell from the docket sheet why a transfer was made. Moreover, sometimes cases are transferred due to cases being related, which may mask the true extent to which patent cases are being disproportionately reassigned to pilot judges. The docket sheet will note that the transfer is due to the cases being related, even though the first case was transferred due to the pilot program. In some districts such as the Western District of Pennsylvania or the Central District of California, a large majority of the district’s patent cases are heard by pilot judges and are transferred internally, whether by official transfer through the pilot program, intradistrict transfer because the cases are related, or transfers to balance out workload.

cases in some districts dramatically declines. For instance, using this more limited definition of case type limited by patent, there are only about 1,200 patent cases sharing the same plaintiff and patents asserted filed in the Eastern District of Texas, a near six-fold decline. This change indicates that the district is a popular forum for filing with patent trolls and serial filers.²⁰³

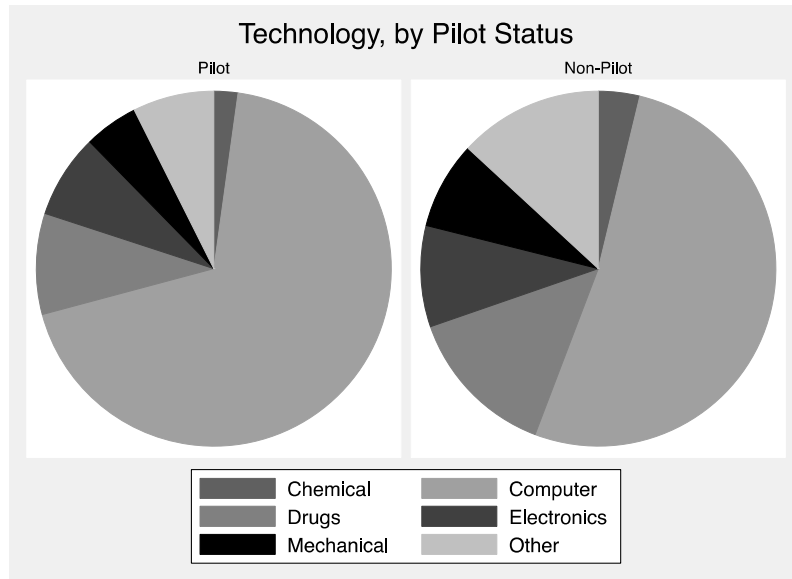
Figure 3 displays a comparison of technology by pilot and non-pilot judges. Overall, 69% of cases before pilot judges concern computers and communications, compared to just 52% before the non-pilot judges, a figure that is statistically significant.²⁰⁴ The spread between technology categories, however, equalizes by excluding the Eastern District of Texas, a forum popular for filing computer cases, from the analysis. In addition, more medical and drug cases are filed in the non-pilot districts (14% versus 9%) overall, perhaps due to the fact that so many medical and drug cases are filed in the District of Delaware, a non-pilot district. Overall, non-pilot judges see more chemical, electronics, medical and drug, mechanical, and “other” technologies as a percent of its docket than do pilot dockets. Non-pilot judges also see more unique cases. For instance, an individual patentee not affiliated with a corporation may file a patent infringement suit in their local district court whereas large corporations with an extensive patent portfolio may file in popular patent districts. Looking at the breakdown by pilot districts versus non-pilot districts, rather than pilot versus non-pilot judges, the percentages are similar, mirroring that of the judge analysis overall.²⁰⁵

²⁰³ See WILLIAMS ET AL., *supra* note 88, at 29–30, 30 tbl.26 (analyzing “serially filed cases,” noting that 86% of cases are serially filed in the Eastern District of Texas).

²⁰⁴ These trends persist examining the data by eliminating cases with the same plaintiff involving the same patent portfolio. Under those circumstances, 48% of all cases filed before pilot judges concern computers and communications compared to 33% before non-pilot judges. Non-pilot judges also see more cases involving the other categories, though the percent of drug cases is about the same, partly because so many pharmaceutical cases are also heard in the District of New Jersey as well as the District of Delaware. Some scholars do not conduct significance tests because their database, like the present study’s, consists of the entire population of cases under study. See, e.g., William N. Eskridge, Jr. & Lauren E. Baer, *The Continuum of Deference: Supreme Court Treatment of Agency Statutory Interpretations from Chevron to Hamdan*, 96 GEO. L.J. 1083, 1095 (2008) (“[B]ecause our dataset consists of the entire population of cases of interest . . . and not a sample of cases from the population, . . . for most issues there is no need to conduct significance tests on the basic summary figures . . .”). In statistics, one can assess whether a difference in two sample means is statistically significant by conducting various statistical tests, such as t-tests. The present study, however, consists of the full population of cases, not simply a randomly drawn sample. Nonetheless, hypothesis testing was conducted using chi-squared analysis to determine whether the means of select groups differ from one another and those results are presented where applicable.

²⁰⁵ It is difficult to tease out the direction of causality; that is, whether certain cases are filed deliberately in districts for their technical expertise on a given technology, or whether coincidentally, the geographic concentration of certain industries results in more patent cases of a given technological type filed in a given district.

Figure 3



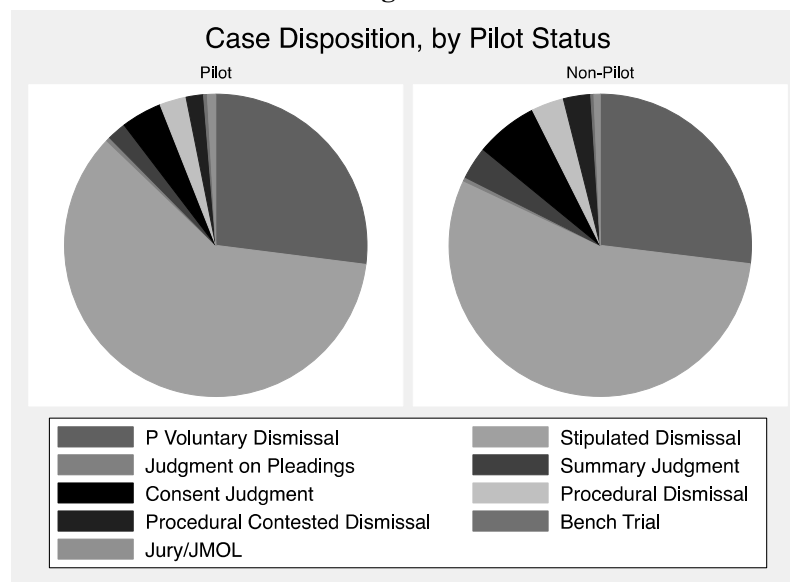
Case disposition varies among the districts. Overall, almost 90% of cases settle in some way, either by stipulated dismissal (57%) or with the plaintiff voluntarily dismissing the case (29%).²⁰⁶ Another 4% of cases get resolved by consent judgment, and about 1% of cases are default judgments. Only about 2% of all cases ever filed go to trial (with slightly more proceeding to a jury trial as opposed to a bench trial), with about 6% of cases dismissed on motion for substantive or procedural reasons and 2% of cases resolved by summary judgment.²⁰⁷ Many of the consent judgment cases actually occur after the court issues a claim construction ruling in these cases and the parties stipulate to non-infringement or validity of the patent based on the claim construction ruling.

²⁰⁶ Sometimes parties will voluntarily dismiss a case only to refile the case in another district, further complicating the analysis. This occurs most often with parties filing in the Eastern District of Texas or the District of Delaware and then abandoning the case only to refile somewhere else. In addition, about 2% of cases are procedurally stayed pending review of another case or pending review of the patent at the Patent and Trademark Appeals Board (“PTAB”). About 1% of cases also are subject to multidistrict litigation and 3% are consolidated. A small percentage of cases are also subject to severance motions or are transferred inter-district or intra-district. The above percentages ignore these procedural postures.

²⁰⁷ These figures include all cases, including cases filed by repeat litigants or cases filed by the same plaintiff against different defendants. District courts have different rules regarding joinder so these numbers may vary depending on how one collates the cases under study. *See, e.g.*, Klerman & Reilly, *supra* note 83, at 257–59 (noting the unique joinder rules in the Eastern District of Texas).

As detailed in Figure 4, case disposition is similar between pilot and non-pilot judges, although differences between them are statistically significant. Pilot judges see more stipulated dismissals (61% v. 54%) as well as more consolidated cases.²⁰⁸ Overall, stipulated dismissals and plaintiff voluntary dismissals comprise 89% of pilot judge resolutions compared to 84% in the non-pilot courts. Moreover, non-pilot judges resolve cases more frequently with dismissal motions (7% v. 3%). Excluding the Eastern District of Texas, however, the differences between pilot and non-pilot judges in terms of case disposition become less noticeable. Differences between pilot and non-pilot judges on the percent of cases resolved by motions to dismiss or summary judgment are no longer statistically significant excluding the Eastern District of Texas, partly because judges in the Eastern District of Texas disfavor summary judgment motions.²⁰⁹ Stipulated dismissals are similar between pilot and non-pilot judges excluding the Eastern District of Texas, although the difference is still statistically significant. These trends continue when one eliminates duplicate plaintiffs asserting cases involving the same patent. In that analysis, non-pilot judges resolve more cases through summary judgment than pilot judges while pilot judges hold more trials than their non-pilot counterparts.

Figure 4



²⁰⁸ Both stipulated dismissals and voluntary dismissals are, in essence, settlements. Stipulated dismissals are sometimes necessary in cases involving counterclaims, such as cases in which the defendant asks for a declaratory judgment of invalidity and/or non-infringement.

²⁰⁹ See *id.* at 251 (characterizing the Eastern District of Texas “hostile” to summary judgments).

2. Judge Differences Across Pilot Versus Non-Pilot Judges

Pilot judges on the whole have more patent experience than non-pilot judges, though they have had a shorter tenure as judges than non-pilot judges. Overall, among the cases appealed, non-pilot judges have a median of twelve years of experience as a federal district court judge compared to eleven years for pilot judges. Not surprisingly, however, pilot judges have more experience with patent cases. Within the last five years from February 2014 through January 2019, pilot judges have presided over a median of eighty-one patent cases compared to twenty-eight for non-pilot judges. Eliminating the Eastern District of Texas in the pilot cases and the District of Delaware for the non-pilot cases, pilot judges presided over a median of more than seventy-three patent cases compared to just twenty-eight for non-pilot judges. Pilot judges also have almost double the amount of trial and claim construction experience, overseeing a median number of seven claim construction hearings over the past five years compared to just three for non-pilot judges. Moreover, pilot judges oversaw a median of two trials compared to just one trial for judges in the non-pilot districts. Notable outliers exist among district court judges, as well. For example, Judge James Rodney Gilstrap in the Eastern District of Texas has presided over 5,000 cases to termination; Judge Sue Robinson in the District of Delaware presided over the next highest figure—almost 700 cases to termination in the last five years. Likewise, some judges who have served as many as forty years on the bench have presided on only one or two patent cases.

Table 2: Patent Experience by Pilot Judge Status

	Pilot Judge	Non-Pilot Judges
Mean Judicial Tenure	11.1	13.0
Median Judicial Tenure	11	12
Mean Terminated Patent Cases	201.7 (101.1)*	93.2 (69.2)*
Median Terminated Patent Cases	81 (73)*	28 (28)*
Mean Claim Construction Hearings	17.0 (8.7)*	8.3 (4.6)*
Median Claim Construction Hearings	7 (6)*	3 (2)*
Mean Patent Trials	4.4 (2.5)*	2.4 (1.4)*
Median Patent Trials	2 (1)*	1 (1)*

* Numbers in parentheses represent figures excluding judges from the Eastern District of Texas in pilot courts and the District of Delaware in the non-pilot courts.

3. Appealed Cases Comparing Pilot Versus Non-Pilot Judges

Pilot and non-pilot judges also differ in the type of cases that are decided on the merits and that are ultimately appealed to the CAFC. Less than 5% of cases in the database continue the appeal process through completion.²¹⁰ The appeal rate is slightly higher for cases before non-pilot judges (5% v. 3%).²¹¹ It is difficult to assess how to measure the “appeal” rate, however. In many cases, parties file a notice to appeal, only to settle the case or for the case to be dismissed under Federal Circuit Rule 42(a).²¹²

The present analysis reinforces the notion that variation exists among districts in their appeal trends. Williams et al. found that almost 50% of appeals hail from one of the California pilot districts, with 33% of appealed pilot cases being filed from one of the three California pilot courts.²¹³ They also found that, as a percent of its total cases, the Eastern District of Texas saw relatively few of its cases appealed, primarily due to how few cases in the Eastern District of Texas end in a judgment on the merits.²¹⁴ The FJC report, however, analyzed all cases, including procedural cases.²¹⁵ The present analysis finds that some districts, like the Western District of Pennsylvania, have a high appeal rate because they resolve a greater percentage of substantive patent law cases, whereas other districts, like the Eastern District of New York, have a much lower appeal rate with no appealed cases involving patent trolls. Table 3 shows the appeal rate for cases for all of the pilot districts and select non-pilot districts that heard more than 300 patent cases during the time frame under study or who had the most number of

²¹⁰ During the period under study, about one-hundred cases heard on appeal concerned procedural issues, which are not analyzed here but which are included in the calculation of the appeal rate. See *infra* notes 223–230 and accompanying text.

²¹¹ These figures cover all cases including both substantive and procedural issues. Limited to only cases sharing unique plaintiffs asserting the same patents, the appeal rate increases to 6%, with a greater percentage of appeals coming from the non-pilot judges (7% v. 6%). Calculations based on uniqueness may underestimate the number of unique cases since it may be that two cases are alike except that one case involves an additional patent not asserted in the other case.

²¹² To measure appeal rate, this analysis relies on Lex Machina’s codings on appeal rate. This measure is somewhat over-inclusive due to the fact that many parties do not continue prosecuting their appeal. About 7% of cases were coded with an “appeal” tag on Lex Machina. Cases that terminated before January 1, 2016, were then eliminated on the assumption that if the CAFC has not issued an opinion as of December 31, 2018, the appeal is no longer pending three years later, which brought down the number of completed or pending appealed cases to 4%. There may be cases that terminated prior to 2016 that are still pending as of January 1, 2019, as there may be some cases that were terminated after 2015 that have since been settled or dismissed. In addition, it is impossible to measure the number of potentially appealable issues that may be pending for current or past cases. For instance, parties may file an appeal after the grant or denial of a preliminary injunction.

²¹³ WILLIAMS ET AL., *supra* note 88, at 32.

²¹⁴ *Id.* at 32, 33.

²¹⁵ *Id.* at 35.

cases appealed. For instance, non-pilot technology-centered districts like the Western District of Washington or the Eastern District of Virginia have a disproportionate number of cases appealed. The second column displays the appeal rate for all cases, while the third column shows the appeal rate for cases involving unique plaintiffs and patents. Generally, the appeal rate is often higher limiting the analysis to cases involving a unique set of patents. For instance, the appeal rate drops to 5% in the Eastern District of Texas from 1.9% since almost half of the appealed cases involve patent trolls. Overall, these findings coincide with those of Williams et al., namely that appeals disproportionately come from the California districts, most notably from the Northern District of California.²¹⁶

²¹⁶ *See id.* at 32 (hypothesizing reasons for varied appeal rates among pilot districts).

Table 3: Rate of Appeal for Patent Cases

	All Cases	Unique Cases
C.D.Cal.	4.3 (3.1)*	5.6 (4.7)*
N.D.Cal.	10.2 (6.7)*	9.6 (5.6)*
S.D.Cal.	6.9 (5.9)*	8.2 (9.2)*
E.D.Tex.	1.9 (1.7)*	5.0 (4.8)*
N.D.Tex.	5.5 (5.0)*	6.4 (5.8)*
S.D.N.Y.	6.2 (8.1)*	6.8 (7.5)*
E.D.N.Y.	3.3 (2.9)*	2.0 (1.4)*
S.D.Fla.	4.4 (5.6)*	8.0 (13.0)*
D.Nev.	5.6 (5.5)*	7.4 (7.0)*
N.D.Ill.	3.8 (3.9)*	5.5 (5.1)*
D.N.J.	6.0 (7.5)*	6.0 (7.5)*
D.Md.	4.1 (3.6)*	5.9 (2.9)*
W.D.Pa.	7.5 (7.7)*	10.8 (11.3)*
W.D.Tenn.	5.2 (5.3)*	4.2 (4.4)*
D.Del.	5.8	9.4
D.Mass.	6.5	9.2
N.D.Tex.	5.5	6.4
W.D.Wash.	11.2	9.2
W.D.Wis.	8.4	11.0
M.D.Fla.	3.1	4.3
E.D.Va.	9.8	14.5
W.D.Tex.	4.8	4.4
D.Minn.	4.3	3.1
D.Utah	3.9	4.2
E.D.Mich.	0	0

*Signifies cases from pilot judge in a pilot district.

Almost half of appealed patent cases arise from summary judgment motions or consent or stipulated judgments based on the district court's prior decision on a dispositive motion or after its decision on claim construction. Dismissals make up about a quarter of appealed patent cases with trials and judgment as a matter of law ("JMOL") motions splitting the remaining quarter. Figure 5 details the spread of case disposition across pilot and non-pilot judges for cases in which the CAFC either has heard an appeal as of December 31, 2018 or an appeal is pending given the definition of appealed cases. The types of cases appealed are similar across pilot and non-pilot districts. Although Williams et al. concluded that summary judgment motions made up only 2% of total case dispositions before pilot judges, summary judgment motions are the most common disposition of cases heard on appeal, likely because the stakes are so high for the losing party, which

makes the costs of appeal very low.²¹⁷ Judges may grant summary judgment only when litigants do not dispute the case's facts, so more frivolous or clear-cut cases may simply be decided in the local tribunal—often a non-pilot court—in which the case is first filed.²¹⁸ That a greater percentage of summary judgment (24% v. 22%), dismissal on the pleadings (9% v. 7%), and stipulated dismissal (18% v. 15%) appeals originate from non-pilot judges provides further support for this assessment.²¹⁹ Consequently, competitors may move to transfer the case away from the non-pilot judge later on in the process should dismissal be denied. Appeals from consent judgments arising most frequently from claim construction rulings are more common in cases before pilot judges (9% v. 7%). Figure 6 details the case disposition by pilot status involving cases with unique plaintiffs asserting a unique group of patents. Here, appeals from jury/JMOL motions (18% v. 15%) and bench trials (13% v. 10%) are more common before pilot judges. As with the analyses on all cases, non-pilot judges have more appealed cases emanating from judgment on the pleadings than pilot judges (27% v. 19%), but cases dismissed procedurally (18% v. 14%) or by consent judgment (8% v. 5%) are more common before pilot judges. These trends concerning case disposition among appeals involving unique plaintiffs and patents also are seen when examining just the subset of appealed cases that have an issued CAFC opinion as of December 31, 2018 on a substantive patent issue.

²¹⁷ *Id.* at 28 tbl.23; *see also* Klerman & Reilly, *supra* note 83, at 254 (discussing the pros and cons for patentees in seeking trial and avoiding summary judgment).

²¹⁸ *See* FED. R. CIV. P. 56(a) (providing the requirements for summary judgment).

²¹⁹ The FJC similarly reports that there is a statistically significant difference between pilot and non-pilot judges in terms of dismissals, finding that non-pilot cases see more voluntarily dismissals, a finding which is replicated here. WILLIAMS ET AL., *supra* note 88, at 14. The present analysis also indicates that these differences extend to dismissals granted by stipulated motions to dismiss or motions on the pleadings. However, pilot judges have a greater percent of cases on appeal concerning procedural motions to dismiss.

Figure 5

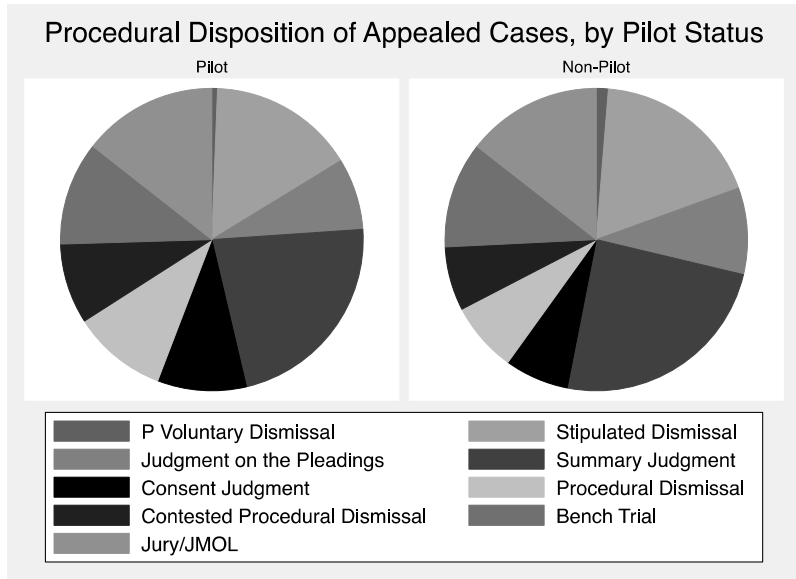


Figure 6

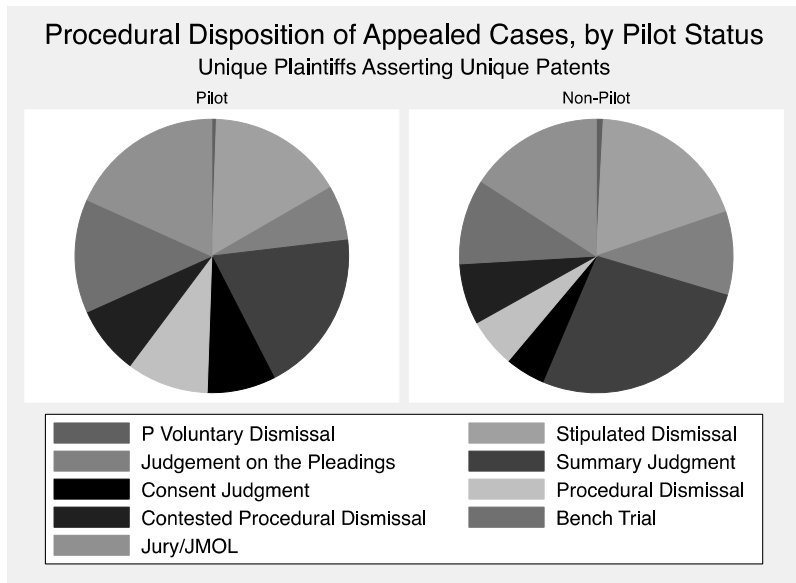
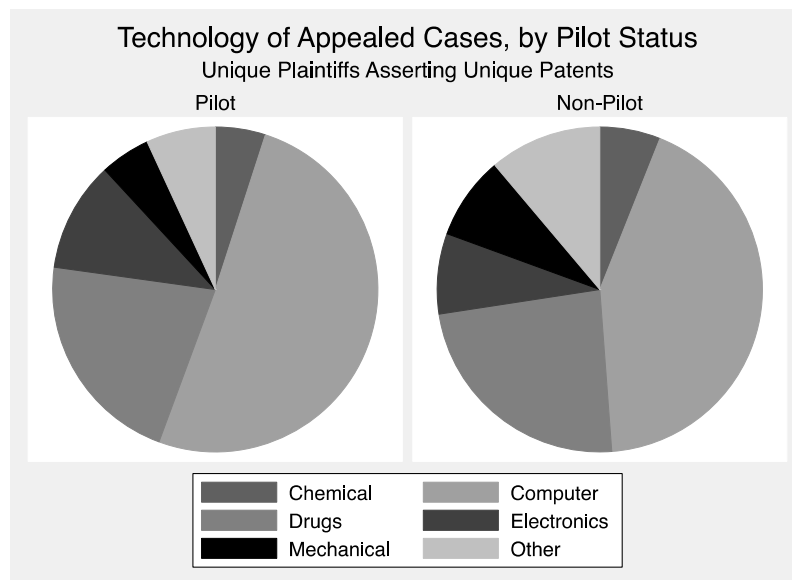


Figure 7 details the type of technology at issue in appealed cases broken down by unique plaintiffs asserting unique patents in order to get a better sense of the technology spread. Patents concerning computers and communications take up the largest share of appealed cases. Over 46% percent of patent cases arising before pilot judges concern computers and communications compared to 40% cases before non-pilot judges. Drug cases are the next highest category, making up slightly less than a quarter of appealed cases from both groups. While cases involving electronic patents are more common in appeals from pilot judges, cases concerning the other technologies—chemical, mechanical, and the catch-all “other” category—are more common in the appealed cases coming from the non-pilot judges compared to the pilot judges. These patterns persist even if one excludes the Eastern District of Texas from the analysis. These broad trends also persist when limiting the analysis to only cases where the CAFC has issued an opinion as of December 31, 2018 on a substantive patent law issue except that chemical cases are more prevalent in the non-pilot group and electronics cases are more common in the pilot group.

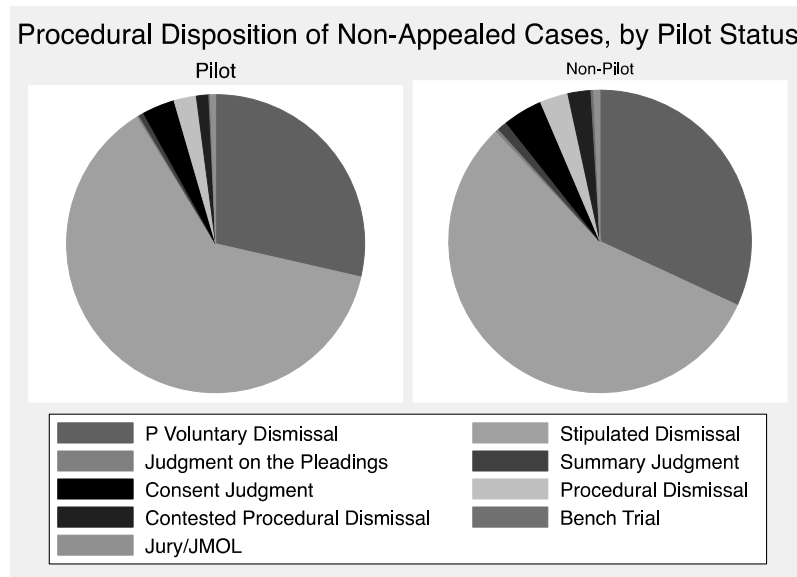
Figure 7



What does this data suggest about the cases that are not appealed? Of the approximately 25,000 cases in the database, 92% of the cases are not appealed or the appeals end in dismissal or settlement. Figure 8 details a graph of the case disposition of cases that are not considered appealed. Across districts, the vast majority of non-appealed cases end up settling or

being resolved by consent decrees. But, there are some noticeable differences across pilot and non-pilot judges. For instance, of the non-appealed cases before pilot judges, pilot judges see more stipulated dismissals (64% v. 56%) and cases in which the plaintiff voluntarily agrees to dismiss the case.²²⁰ The opposite is true for cases resolved by summary judgment motions; of the non-appealed cases, non-pilot judges resolve more cases by summary judgment or procedural motions to dismiss. Although a fuller description of the characteristics of non-appealed cases is beyond the scope of this Article, the data nonetheless suggest differences between appealed and non-appealed cases and between pilot and non-pilot judges.²²¹

Figure 8



IV. STATISTICAL ANALYSIS: HOW HAS THE PILOT PATENT PROGRAM FARED?

This Part details the statistical analysis of the impact of the pilot program so far in terms of how district court judges decide cases and how those cases are ultimately resolved on appeal.²²²

²²⁰ Further, the difference is even less stark when excluding the Eastern District of Texas from the pilot group and the District of Delaware from the non-pilot group from the analysis (54% v. 53% for stipulated dismissals and 33% v. 30% for plaintiff voluntary dismissals).

²²¹ In a separate article, I study how pilot judges differ from non-pilot judges in how they decide cases. See Amy Semet, *An Empirical Examination of Patent Law in the District Courts* (working paper) (on file with author) (examining district court decision making in patent cases over the last ten years).

²²² See *infra* notes 223–300 and accompanying text.

A. Case Selection

The present analysis relies upon all substantive patent law cases filed from September 19, 2011 to September 30, 2016 and decided by the CAFC through December 2018.²²³ As a separate measure, the analysis also reviews district court rulings drawn from all CAFC decisions published on the CAFC website that were decided after January 1, 2012. Additionally, the database of Finnegan, Henderson, Farabow, Garrett & Dunner, LLP assisted with the tracking of appellate patent cases.²²⁴ Each trial court and appellate court decision was coded for both the specific patent law issue addressed as well as the overall result as to whether the patentee or the competitor prevailed. Applicable data was cross-checked using the Compendium of Federal Circuit decisions.²²⁵ This analysis includes all decisions from the CAFC, including summary affirmances under Rule 36, but omits cases that were dismissed under Federal Rule of Appellate Procedure 42(b) because those decisions were not on the merits.²²⁶ The analysis focuses on the following key issues: validity, infringement, claim construction, inequitable conduct, and preliminary injunctions.

Notably, several broad categories of cases are excluded from the analysis. Jury verdict cases are eliminated unless they are accompanied by the

²²³ Eight of the pilot districts started the program on the recommended date of September 19, 2011: Central District of California, Southern District of California, Northern District of Illinois, District of Maryland, District of Nevada, Western District of Pennsylvania, Western District of Tennessee, and the Eastern District of Texas. WILLIAMS ET AL., *supra* note 88, at 2 n.5. The other pilot courts started on the following dates: September 1, 2011, for the Northern District of Texas, September 18, 2011, for the District of New Jersey, November 21, 2011, for the Southern District of New York, January 1, 2012, for the Northern District of California, and January 10, 2012, for the Eastern District of New York. *Id.* For the ease of the analysis, this study uses a uniform start date of September 19, 2011.

²²⁴ *Federal Circuit IP Decisions*, FINNEGAN, <https://www.finnegan.com/en/tools/index.html> [<https://perma.cc/F3XX-D7UY>]. The Lex Machina database omitted some cases that were located on Finnegan's website and confirmed on the Federal Circuit website. Those cases are not included in the study.

²²⁵ *Federal Circuit Decisions Database*, U. IOWA, <https://fedcircuit.shinyapps.io/federal> compendium [<https://perma.cc/T6GL-4874>]. For discussion of the methodology and contents of the Compendium of Federal Circuit decisions, see *The Compendium of Federal Circuit Decisions*, U. IOWA, <https://empirical.law.uiowa.edu/compendium-federal-circuit-decisions> and Jason Rantanen, *The Landscape of Modern Patent Appeals*, 67 AM. U. L. REV. 985 (2018).

²²⁶ *Compare* FED. CIR. R. 36 (allowing “[t]he court [to] enter a judgment of affirmance without opinion”), *with* FED. R. APP. P. 42(b) (providing for voluntary dismissal of an appeal “if the parties file a signed dismissal agreement”). Although the CAFC may affirm without a written opinion, it cannot use Rule 36 to reverse. Rule 36 affirmances are used most often for minor issues or frivolous appeals but they are also used occasionally when the district court writes so thorough an opinion that it is not necessary for the CAFC to add its own reasoning by issuing an opinion. Ultimately, claim construction issues are less likely to be affirmed under Rule 36 than are other patent-related issues. Olson, *supra* note 132, at 772.

court ruling on a JMOL motion.²²⁷ Default judgments, or cases in which the parties do not resolve any substantive patent law issue and the court awards relief to the non-defaulting party, are excluded, as are non-final judgments, such as denials of motions to dismiss or denials of summary judgment because these issues are not appealed. Furthermore, cases do not appear where the issue in dispute primarily concerns an issue of state law, with the patent law issue being tangential to the main issue of the case.²²⁸ The few cases in which the district court hears the case on remand from the CAFC or the Supreme Court and the appeal comes up for a second or even a third time are also excluded. Because the CAFC may give detailed guidance on the law in the case in the prior appeal, inclusion of these cases in the analysis could cloud the results. Therefore, the case is included only if the issues were separate; that is, one case includes a preliminary injunction motion and the second case is decided on the merits.²²⁹

The analysis focuses solely on cases in which the court makes a decision on a substantive patent law issue. As such, purely procedural cases are excluded, such as cases concerning whether to transfer a case from one district court to another by seeking a writ of mandamus; whether personal jurisdiction should be exercised over a given company; various discovery matters, such as whether to include or exclude expert testimony or whether to issue a subpoena; whether the complaint properly pleads the facts; and cases that primarily concern damages or willful infringement. Moreover, cases dealing with whether a party should be held in contempt for violating an injunction or should be sanctioned for engaging in discovery abuse are eliminated. Cases concerning whether there should be a stay pending reexamination or *inter partes* review are also not included because the decision does not rest on the merits. Cases in which the CAFC rules on the frivolousness of the patentee's case and the accordant award of attorneys' fees to the losing party do not appear in the analysis. Also not included are cases based on jurisdiction, personal or subject matter, or whether legal principles preclude a patent infringement claim, such as if a pending arbitration or li-

²²⁷ A jury verdict without a JMOL motion is rare, so only a few cases are excluded under this criterion.

²²⁸ Based on the data, cases focused on state law with tangential patent law issues occur frequently in cases involving licenses. Although as a factual matter, the CAFC has jurisdiction in patent license cases, the issue in those cases centers more on contract interpretation than patent law. See, e.g., Adams, *supra* note 112, at 65 n.176, 68 (outlining the patent-related jurisdiction of the CAFC); Rifkind, *supra* note 114, at 425 (discussing areas of the law overlapping with patent law). Some of these cases are coded by Lex Machina as contract cases and were not included in the database.

²²⁹ For more details about the statistical analysis, see the online Appendix at <https://www.bc.edu/content/dam/bc1/schools/law/pdf/law-review-content/BCLR/60-2/semet-appendix.pdf> [<https://perma.cc/VRK9-KJZ5>].

cense bars suit. Finally, the analysis excludes all appeals from the former Board of Patent Appeals and Inferences (now the Patent Trial and Appeals Board, or PTAB) and the USITC, two administrative agencies within which the CAFC holds exclusive review, because the object of this study is to analyze the impact of specialization in the district courts, not in the administrative state.²³⁰

B. Key Variables of Interest

1. Dependent Variable: Predicting Reversal

The key dependent variable is whether the CAFC overturns the district court decision. There were two alternative variables, similar to Kesan and Ball's study: complete reversal and partial reversal.²³¹ In some cases, relying on the label given by the CAFC to a given case is misleading; for instance, the CAFC may affirm and remand the case but the case is remanded on a purely technical or minor issue that has nothing to do with the "wrongness" of the lower court's decision. As such, each case was read to discern whether the CAFC actually found fault with all or part of the lower court's decision. In most cases, these findings comport with the CAFC's classifications, but to the extent they do not, this analysis relies on an independent reading of the case.

The outcome of each case is coded on a sliding scale to measure the accuracy of the decision in one of the following categories: affirmed; affirmed, vacated, and remanded; affirmed, reversed, and vacated; affirmed and reversed; vacated and remanded; vacated; reversed, vacated, and remanded; reversed and remanded; and reversed. The variable is then dichotomized into two binary choices: whether the decision is fully affirmed or there is an error in part.²³² In determining whether there is an error in part, different criteria create two different versions of the variable. One version of the variable considers all cases that are "vacated and remanded," "vacated," "reversed, vacated, and remanded," "reversed and remanded," and "reversed" to be ones in which there is an "error." Each case is examined to ascertain the seriousness of the error. For instance, if the CAFC largely affirms the trial court, but refuses to find that the defendant acts willfully,

²³⁰ Because this analysis is organized by case instead of by appeal, it does not risk including cross appeals, which would result in double counts. Cross appeals are noted and the case facts were considered when discerning whether the ruling favored the patentee or the competitor. The case was then coded accordingly.

²³¹ See Kesan & Ball, *supra* note 1, at 433 (characterizing "appellate rulings as either fully affirming a district court's decision . . . or not").

²³² See *id.* at 434 ("Second, and separately, we distinguished appellate rulings on issues as either affirmed 'fully or in part' or found to be completely in error . . ."). This study includes as overturned in full both reversed and vacated cases.

damages would increase three-fold. That scenario is an affirmance in spirit, especially if the main issues in the case are ones of infringement and validity; the court is simply declining to award more damages.²³³ By contrast, if the patentee appeals a damage issue and the CAFC devotes all or most of its opinion to analyze the damage issue, the CAFC's decision on willfulness is the primary issue in the case and thus is not included in the analysis, because the universe of cases only concerns substantive patent law issues.

Overall, across pilot and non-pilot judges, the CAFC overwhelmingly affirms cases, at least in part. Limited to only substantive cases involving infringement, validity, inequitable conduct, claim construction, and preliminary injunctions and including Rule 36 affirmances, the CAFC overrules about 15% of cases in full and between 20–25% in part, depending upon the definition of “in part.” Although pilot judges have a slightly higher overrule rate, the difference is not statistically significant. Restricting the analysis to cases resolved by opinion, as opposed to Rule 36, the spread between pilot and non-pilot courts increases.

Each “main mistake” made by the district court, as perceived by the appellate court, is coded as belonging to one of eight categories: (1) claim construction; (2) infringement → non-infringement; (3) non-infringement → infringement; (4) patent invalid → patent valid; (5) patent valid → patent invalid; (6) ruling that a preliminary injunction should not issue → ruling that it should issue; (7) ruling that a preliminary injunction should issue → ruling that it should not issue; and (8) other errors such as errors concerning damages or regarding inequitable conduct. In particular, coding for error in claim construction analysis can be difficult. When ruling on infringement or invalidity, courts must often construe the claims to aid in their analysis, so sometimes it can be difficult to tell if the CAFC reverses a lower court decision because of claim construction or because of some other issue like infringement or invalidity. Moreover, because interlocutory appeal is not available for claim construction issues, claim construction only arises in the context of an infringement or invalidity action.²³⁴ As such, each case is read to determine if claim construction is the “main mistake.” Sometimes it is easy to discern where the case primarily concerns claim construction because the CAFC makes it clear or because the case results from a consent judgment where the parties stipulate to infringement based on the district court's claim construction. Other times the determination requires an individualized judgment call. In most of the infringement cases, the issue boils down to claim construction. Parties may also contest the written description,

²³³ The database excludes the cases that only considered as an issue whether to grant or deny attorneys' fees. If fees were one of several issues, however, the case was included.

²³⁴ 28 U.S.C. § 1292(c) (2018).

definiteness, best mode, or enablement of the patent under 35 U.S.C. § 112.²³⁵ Such determinations, especially analysis under section 112, require interpretation of the claims and could arguably be considered claim construction cases, but because application of the law of validity is paramount in such an analysis, the cases were counted as validity cases (or validity mistakes in this instance).

Non-pilot judges make different kinds of mistakes than pilot judges. Non-pilot judges in particular are more likely than pilot judges to make errors when claim construction is a dispositive issue in the case (39% of the primary mistakes for non-pilot judges versus 31% for pilot judges). Another third of the primary mistakes made by non-pilot judges concern improperly finding a patent invalid while almost a quarter of the primary mistakes by pilot judges concern improper denial of preliminary injunctions. Pilot judges also have a greater percentage of cases than non-pilot judges with infringement mistakes.

2. Key Independent Variable: Judicial Experience and Inclusion in Pilot Program

The key independent variable in the case is judicial experience. Other scholars code for judicial experience.²³⁶ Shartzter, for instance, looks at previous appellate experience, whereas Schwartz relies specifically on patent trial experience.²³⁷ Kesan and Ball analyze general experience, measured as the number of years the judge serves on the bench, as well as specialized experience, measured by experience in patent law cases.²³⁸ They also look at both cumulative experience, measured by the judge's total number of patent cases heard over their time on the bench, as well as recent patent law experience ascertained by looking at how many cases they heard in the three years prior to the filing date of the case in question.²³⁹

The present analysis uses a direct account of judicial experience to test whether the judges participating in the pilot program act differently than judges not participating in the program. As such, one version of the “experience” variable is a dummy variable coded “1” for whether the judge in

²³⁵ 35 U.S.C. § 112 (2018).

²³⁶ See, e.g., Kesan & Ball, *supra* note 1, at 420 (considering how experience might influence patent law litigation metrics); Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 240–41 (considering judicial experience on the bench and with patent cases); Shartzter, *supra* note 29, at 228 (coding for judicial experience with patent cases).

²³⁷ Compare Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 240–41 (gathering career biographical information and the number of patent cases heard by the judge between 1995–2005), with Shartzter, *supra* note 29, at 228 (considering years served and “history of appellate review at the [CAFC]”).

²³⁸ Kesan & Ball, *supra* note 1, at 420, 423.

²³⁹ *Id.* at 423 & n.187.

question participates in the pilot program (and coded “0” if the judge is not a participant). An alternative experience variable focuses on whether the trial judge in question is part of a district participating in the pilot program. Although that particular judge may not be a part of the project, judges sitting in districts participating in the project may have *de facto* access, greater resources, or more knowledge by being in close physical proximity to judges who are part of the pilot program.

Other “experience” variables that may be a better reflection of experience are also included. The patent pilot program proposed by the House of Representatives initially excluded some of the judges who hear the greatest number of patent cases by requiring that any participating district have at least ten judgeships.²⁴⁰ The final statute, however, includes smaller districts, like the Eastern District of Texas.²⁴¹ Notably, the pilot program excludes the District of Delaware, which historically is one of the most popular patent filing districts.²⁴² One judge in Delaware, Judge Sue Robinson, heard more cases that were subsequently appealed than any other judge in the database. Furthermore, certain judges in Massachusetts, Arizona, Wisconsin, the District of Columbia, Virginia, and other states have developed regional experience in patent law cases, as measured by the number of appeals in the short time frame under study. As such, this analysis created two alternative measures of “experience.” In the first measure, judges from the District of Delaware are added to the list of pilot program judges as 16% of the cases in the database hail from Delaware. Alternatively, a variable coded as “1” any judge in the database who has above the median number of patent trials (fifty-eight) in the past five years.

These measures may not necessarily be a fair measure of “experience.” Particular judges may have a lot of experience in patent litigation, but for whatever reason, many of the cases from their courtroom end up settling. A judge could have experience in infringement analysis but not in validity determinations or in holding *Markman* hearings. As the FJC reported, although *Markman* hearings are held in 4% of cases, more than half (60%) of *Markman* hearings are held before pilot judges.²⁴³

In addition to the pilot judge variable, this analysis includes an additional measure of patent experience, measured by the number of patent cas-

²⁴⁰ See 153 CONG. REC. 3713 (2007) (outlining the proposed requirements); Shartzter, *supra* note 29, at 198, 199 n.65 (discussing the program’s initial requirements).

²⁴¹ See Act of Jan. 4, 2011, Pub. L. No. 111-349, § 1(b)(2)(B), 124 Stat. 3674, 3675 (2011) (providing two sets of eligibility criteria based on the district’s number of judgeships); WILLIAMS ET AL., *supra* note 88, at 2 n.5 (naming the districts participating in the patent pilot program).

²⁴² U.S. GOV’T ACCOUNTABILITY OFF., *supra* note 9, at 17 fig.3 (tracking the “[n]umber of [d]efendants in [p]atent [i]nfringement [s]uits” in Delaware).

²⁴³ WILLIAMS ET AL., *supra* note 88, at 23.

es filed before a given judge in the last five years. As alternative measures of “trial experience,” this study uses (1) the number of patent trials presided over by the judge; and (2) the number of formal claim construction hearings presided over by the judge.²⁴⁴ These results stem from the Lex Machina database by researching judges and matching their patent case, trial, and claim construction experience from February 2014 through January 2019. Because all of these variables present similar patterns, for ease of analysis, only the first measure is used in the regressions presented here. The analysis also measures the number of years the judge has served on the bench since their initial presidential appointment. Further, the study constructs a variable for whether the judge previously sat by designation at the CAFC with the hypothesis that judges who previously sat by designation are less likely to be reversed on appeal.²⁴⁵ Overall, 18% of the judges who have substantive patent cases heard on appeal previously served as visitors on the CAFC.²⁴⁶

3. Other Independent Variables

This study collects information about the patent, including the patent number and whether there are multiple patents asserted in the litigation. It also notes the technological category of the patent. John R. Allison, Mark A. Lemley, and Joshua Walker concluded that software-related patents are among the most litigated patent types.²⁴⁷ For ease of analysis of the data presented, cases are characterized according to one of the six National Bureau of Economic Research (“NBER”) categories: (1) chemical; (2) computer and communications; (3) drug and medical; (4) electronics and electrical; (5) mechanical; and (6) other, including design patents.²⁴⁸

In addition to using the technological category to classify patent types, it is also important to assess the patent’s complexity. Judges in certain districts may hear cases involving more complex technology than are heard in other districts, and as such, failure to control for complexity could obscure

²⁴⁴ Judges do not need to interpret the claims through a formal *Markman* hearing. They could also interpret the claims in the context of deciding a motion such as a summary judgment motion.

²⁴⁵ See Lemley & Miller, *supra* note 159, at 466 (finding that judges who previously sat by designation at the CAFC were 15% less likely to be reversed on an appeal, a statistically significant result).

²⁴⁶ See U.S. COURT OF APPEALS FOR THE FED. CIRCUIT, VISITING JUDGES (2015), <http://www.cafc.uscourts.gov/sites/default/files/judicial-reports/vjchartforwebsite2006-2015.pdf> [<https://perma.cc/PG5W-UTZB>] (listing visiting judges).

²⁴⁷ John R. Allison et al., *Extreme Value or Trolls on Top? The Characteristics of the Most-Litigated Patents*, 158 U. PA. L. REV. 1, 31 (2009).

²⁴⁸ See Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 242 (positing that diverse case characteristics “are not randomly distributed throughout the judicial districts”).

the results because reversals may be more common in complex cases.²⁴⁹ Kesan and Ball coded for “the presence of a dissenting opinion,” reasoning that “a dissent is a proxy for the complexity of the technology in issue(s) . . . and . . . the difficulty of the decision.”²⁵⁰ Instead of the presence of a dissent, this analysis codes for the number of entries on the district court docket sheet, opining that more complex cases will have more entries on their docket sheet. To better capture complexity, in other specifications not reported here, the analysis notes how many citations each patent has to other patents and other non-patent literature, as well as the number of citations other patents make to that specific patent, on the theory that patents of greater economic consequence tend to get cited more and that more complex patents would have more citations.²⁵¹

For each case, a variety of other data was collected relating to the litigants and the judges hearing the case at the district court and appellate level. The analysis accounts for the procedural posture of the case. Lemley and Miller found higher reversal rates for appeals involving claim construction than for cases involving summary judgment, a jury trial, or JMOL when compared to the reference category of bench trials.²⁵² For purposes of the present analysis, consent judgments are coded as summary judgment motions, because in the patent realm, parties often stipulate to non-infringement when claim construction is the primary issue on appeal. In addition, cases are coded on whether they are precedential as well as whether they are resolved under Rule 36.

This study also analyzes information about the parties in the case, including whether the plaintiff filed multiple patent suits against other parties signifying that they were a “high-volume” plaintiff.²⁵³ Overall, patent trolls, or NPEs, may be more likely to be affirmed as they may be less risk adverse and appeal more often.²⁵⁴ Also collected is information about the federal

²⁴⁹ Kesan & Ball, *supra* note 1, at 418–19.

²⁵⁰ *See id.* at 432 (discussing key variables).

²⁵¹ *See Allison et al.*, *supra* note 247, at 4–5, 14 (noting which patents are frequently cited).

²⁵² Lemley & Miller, *supra* note 159, at 466 (noting, however, that these procedural results were significant at 90% confidence).

²⁵³ This analysis assesses whether a plaintiff is a “high-volume” plaintiff by analyzing whether the same plaintiff filed other suits against the same or multiple defendants involving the same patents from September 2011 through January 2019. If a plaintiff filed ten or more such suits, the plaintiff is characterized as “high-volume.” Lex Machina also codes for “High-Volume Plaintiff” to capture patentees who routinely file lawsuits. In alternative specifications, this analysis used the Lex Machina measure as well as a combined measure using both criteria. Using the first-measure, 19% of appealed cases in the present analysis involve a “high-volume” plaintiff whereas 16% of considered cases were “high-volume” using the second measure, with 28% of cases being high-volume using the third measure. This measure is more expansive than simply including patent trolls. For instance, large pharmaceutical companies are considered “high-volume” plaintiffs.

²⁵⁴ Mark A. Lemley & A. Douglas Melamed, *Missing the Forest for the Trolls*, 113 COLUM. L. REV. 2117, 2163–65 (2013) (arguing that NPEs may express less anxiety about reputation and

court judges and the CAFC panel, including the ideology of the judges as represented by the party of the appointing president, whether they have a scientific background, and their general judicial and patent experience.²⁵⁵ Judge Moore found that political ideology played little to no role in decision making.²⁵⁶ Other scholars conclude that ideology is especially pertinent in influencing decision making for specialized judges.²⁵⁷ Miller and Curry theorized that concerns related to patent rights mirror concerns about monopolies in general, with Democrats wanting to invalidate patents more frequently and Republicans desiring to preserve the property right.²⁵⁸ Each judge is assigned an ideology score based on the party of the appointing president, which is a common technique in judicial politics for the study of the federal judiciary.²⁵⁹

Unobservable, non-random differences may exist among district courts or between courts in the pilot program and those outside it.²⁶⁰ To control for differences among districts, dummy variables are used per district.²⁶¹ Some district courts hear more cases than others.²⁶² Kesan and Ball found that patent cases as a proportion of all civil cases ranged from a high of 6.75% in Delaware to a low of almost zero in courts like the Southern District of Mississippi.²⁶³ Additionally, other differences could exist between districts in terms of how cases are managed or workload is allocated.²⁶⁴ Most of the district level dummy variables are dropped because those variables often

appeal anyway); Shawn P. Miller, “Fuzzy” Software Patents Boundaries and High Claim Construction Reversal Rates, 17 STAN. TECH. L. REV. 809, 830 (2014), <http://stlr.stanford.edu/pdf/fuzzysoftware.pdf> [<https://perma.cc/263C-732X>].

²⁵⁵ Information on judges’ scientific backgrounds can be found by the using the Almanac of the Federal Judiciary. *Almanac of the Federal Judiciary*, WOLTERS KLUWER (last visited Dec. 26, 2018), https://almanacofthefederaljudiciary.com/terms_conditions [<https://perma.cc/R335-8BXB>]; see, e.g., Shartzter, *supra* note 29, at 228 n.304 (using the Almanac for the same purpose).

²⁵⁶ Moore, *supra* note 22, at 27 & n.99 (finding no difference between Democratic and Republican judges in claim construction).

²⁵⁷ See, e.g., Golden, *supra* note 8, at 557 & n.22 (analyzing political ideology in the Court of Appeals for the D.C. Circuit); Miller & Curry, *supra* note 34, at 857 (finding that differences that exist in decision making in patent cases are correlated to judges’ perceived ideologies).

²⁵⁸ Miller & Curry, *supra* note 34, at 850 (construing differences between Democrats and Republicans as based on economic philosophies).

²⁵⁹ Such scores are called “DW-NOMINATE” scores and were used to calculate the median score for the CAFC panel. See DESCRIPTION OF NOMINATE DATA (July 13, 2004), <http://k7moa.com/page2a.htm> [<https://perma.cc/ZQX9-RRCL>] (explaining types of “NOMINATE Coordinates”).

²⁶⁰ Kesan & Ball, *supra* note 1, at 425.

²⁶¹ Alternative specifications are used to assess court congestion by using the weighted average of all case filings per judge, per Kesan and Ball. See *id.* at 424–25 (controlling for court congestion).

²⁶² *Id.* at 424.

²⁶³ *Id.* Kesan and Ball found that “the number of patent cases per judge varie[s] from 17.61 in [the District of] Delaware to 0.04 in [the District of] New Mexico.” *Id.*

²⁶⁴ *Id.* at 425 & n.192.

perfectly predict the outcome of the case given that so many district judges hear only one or two cases during the period under study. As such, the analysis included dummy variables only for the Eastern District of Texas, the District of Delaware, and the Northern District of California. The lower court decision is also controlled for because it may be more common to simply affirm the lower court regardless of whether the lower court decision is pro-patentee.

Alternative specifications not reported here used the variable “summary motion” to control for the degree of fact-finding by the lower court. When the lower court rules on a motion for summary judgment or a motion to dismiss on the pleadings, the court purportedly is only supposed to grant the motion if no genuine disputes about any material facts exist or if the party fails to state a case at the pleading stage.²⁶⁵ Miller and Curry found that cases involving a summary motion had a 25% increased chance of the CAFC invalidating the patent.²⁶⁶ Additionally, although the period of study is fairly short, “a time-varying effect” could exist, as changes in the economy or national political events could impact decision making.²⁶⁷ Time was measured by using year dummy variables for each year from 2011 to 2016 based on the filing date of the case as well as a time trend variable in alternative specifications.

The presented specification uses standard errors clustered by judge.²⁶⁸ Unobserved characteristics of a given judge that impact the analysis may be left unmeasured by other variables. Some judges such as Judge Sue Robinson from Delaware or Judge James Rodney Gilstrap have more than twenty cases heard on appeal. One might also expect correlation between cases presided over by the same judge. In alternative specifications, standard errors were clustered at the case-level. However, less than 5% of the cases involved appeals of different issues in the same case. Table 4 presents the summary statistics.

²⁶⁵ See FED. R. CIV. P. 56 (setting forth the standard for summary judgment).

²⁶⁶ Miller & Curry, *supra* note 34, at 857.

²⁶⁷ See Kesan & Ball, *supra* note 1, at 425 (considering influences that could result in “a time-varying effect”).

²⁶⁸ In alternative specifications, errors were clustered by court. Moreover, since judges are nested within district courts, alternative models used a multilevel measure to assess the relationship.

**Table 4: Descriptive Statistics of Select Variables, Substantive
Appealed Cases**

Variable	Med.	Mean	Std. Dev.	Min.	Max.
Pilot Judge	0	0.41	0.49	0	1
Pilot District	1	0.60	0.49	0	1
Pilot Judge+DE	1	0.57	0.50	0	1
Median Cases	1	0.67	0.47	0	1
# Patent Cases	1,991	2,917.52	1,974.81	1	5,115
Tenure	3	4.99	6.17	0	50
Designated Judge	0	0.18	0.39	0	1
Docket	28	59.93	96.58	5	1,952
High-Volume P	0	0.39	0.49	0	1
Pleadings	0	0.22	0.41	0	1
Sum. Jud.	1	0.84	0.37	0	1
Bench Trial	0	0.12	0.33	0	1
Jury Trial/JMOL	0	0.13	0.33	0	1
PI	0	0.04	0.19	0	1
Claim	0	0.34	0.47	0	1
Infringe	0	0.14	0.35	0	1
Validity	1	0.57	0.50	0	1
Inequit. Cond.	0	0.02	0.15	0	1
Chemical	0	0.03	0.17	0	1
Computers	1	0.59	0.49	0	1
Drug	0	0.12	0.33	0	1
Electronics	0	0.08	0.28	0	1
Mechanical	0	0.07	0.25	0	1
Other Technology	0	0.11	0.31	0	1
Lower Court	0	0.48	0.50	0	1
Filing Year	2014	2013	0.145	2011	2016
CAFC Ideology	-0.48	-0.48	-0.48	-0.48	0.72

C. The Statistical Models

1. Overview

The statistical model uses two approaches: logit regression analysis and regression analysis after conducting propensity score matching. Because assortment into the pilot and non-pilot districts is not random, the results of any statistical analysis could be biased if not properly accounting for the factors that influence the probability of being in or out of the “treatment” group. In regression analysis, despite attempts to “control” for factors that may influence the propensity to be in one group or another, lingering bias in the results may still exist. As such, to further buttress the robustness of the analysis, in addition to using regression, a propensity score matching is also used as an alternative measure. Propensity score matching seeks to predict the probability of being in the treatment category, which here would be having a case heard before a pilot judge. The first stage regression estimates the probability of receiving the treatment; that is, what factors influence the propensity to be in the “treatment” group before a pilot judge? After estimating that probability based on a propensity score, treatment and control cases can be matched based on their propensity score so as to mimic randomization through the creation of both a treatment and control group that are comparable on all covariates except for the treatment (here, pilot status).

An example illustrates the point. Suppose there are two cases involving invalidity on a chemical patent, with the only difference being that one is heard before a pilot judge and the other before a non-pilot judge. Those cases are “matched” so that they would be comparable on all relevant covariates except for the treatment category. Doing the analysis in this way overcomes some of the causality issues that occur when, as here, the treatment (being in the pilot program) is not a random occurrence.²⁶⁹

2. Results

Moving to test the hypotheses, a logit regression model is employed first to estimate the impact that inclusion in the pilot program has on whether the decision of the judge in question is overturned in full or in part on appeal. Logit models estimate the impact of a given variable on the probability that a given event will occur. If the coefficient on the variable is positive, then the probability of the event occurring increases whereas if the

²⁶⁹ An instrumental variable approach can also be used to combat some of the causality issues. It is difficult, however, to find an instrument to explain the treatment (for example, being in the pilot program) that would not otherwise influence the result (for example, being overruled).

event is negative, then the probability of a reversal, either in whole or in part, decreases. The equation is as follows:

$$\Pr(\text{Overule}_i = 1) = \Phi(\alpha_0 + \beta_1 \text{Specialized Court}_i + \beta_2 \text{Case Characteristics}_i + \beta_3 \text{Judge Characteristics}_i + \lambda \text{ Other Controls}_i)$$

Table 5 gives the results when the impact is measured across legal issues where there is a complete reversal. The variable of interest—specialized judge—is measured in a few different ways as discussed in Section B.²⁷⁰ This variable does not reach statistical significance for any construction of the dependent variable. Variables directed at the number of patent cases filed before that particular judge—or alternatively, in other specifications, number of trials, or the number of claim construction hearings—also do not affect the outcome. However, judges with more experience are more likely to be overruled, though the effect is small and barely statistically significant. For each additional ten years on the bench, the judge has a 5% greater chance of being overruled.

Interestingly, the results indicate to a statistically significant degree that district court judges who previously served as designated judges on the CAFC are 11% less likely to have their cases reversed on appeal holding all other variables at their median. This is a stunning result which suggests that Lemley and Miller's findings to that effect extend beyond claim construction decisions.²⁷¹

Other variables reach statistical significance at conventional levels of 95% confidence. Holding other variables at their median, a case with the main issue being claim construction has an 9% greater chance of being overruled whereas cases involving high-volume plaintiffs are 17% more likely to be reversed in full. In addition, the CAFC is 8% more likely to reverse in full when issuing a precedential opinion. It is also 12% less likely to reverse in infringement cases, owing perhaps to the large number of non-infringement cases that are affirmed on appeal under Rule 36. Other variables such as the most of the technological categories (except mechanical) and variables dealing with the procedural posture of the case are not significant. Since nearly 75% of CAFC panels during this period have a liberal median ideology score owing to so many CAFC judges being appointed by Democratic presidents, it is of no surprise that the ideology variable is not significant here. Judges from Delaware are 11% more likely to be reversed in full.

²⁷⁰ See *supra* notes 231–268.

²⁷¹ See Lemley & Miller, *supra* note 159, at 460 (finding lower reversal rates for judges who have sat by designation at the CAFC). Appealed cases in which a Federal Circuit judge sat by designation on the lower court are eliminated.

Table 5: Logit Estimation of Likelihood of CAFC Overruling Decision in Full

	Model 1	Model 2	Model 3	Model 4
	Pilot	Pilot Dist.	Pilot+DE	Median
Specialized	-0.118 (0.462)	-0.081 (0.456)	-0.118 (0.462)	-0.168 (0.442)
Patent Cases	-0.0001 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)	-0.0001 (0.0002)
Tenure	0.046* (0.019)	0.046* (0.020)	0.046* (0.019)	0.048** (0.018)
Designated	-1.019* (0.470)	-1.027* (0.467)	-1.019* (0.470)	-1.005* (0.480)
Docket	0.001 (0.0008)	0.001 (0.0008)	0.001 (0.0008)	0.001 (0.0008)
Claim	0.843* (0.369)	0.844* (0.371)	0.843* (0.369)	0.856* (0.382)
High-Vol.	1.574*** (0.385)	1.570*** (0.386)	1.574*** (0.385)	1.600*** (0.384)
Infringe	-1.130** (0.424)	-1.121** (0.426)	-1.130** (0.424)	-1.114** (0.432)
Validity	-0.387 (0.378)	-0.379 (0.377)	-0.387 (0.378)	-0.370 (0.374)
Inequ. Cond.	0.276 (1.160)	0.275 (1.154)	0.276 (1.160)	0.247 (1.161)
Precedent	0.780* (0.370)	0.780* (0.371)	0.780* (0.370)	0.774* (0.376)
Procedural	Included	Included	Included	Included
Lower Ct.	Included	Included	Included	Included
Technology	Included	Included	Included	Included
Ideology	Included	Included	Included	Included
District Ct.	Included	Included	Included	Included
Year	Included	Included	Included	Included
_cons	-2.965*** (0.765)	-2.953*** (0.831)	-2.965*** (0.765)	-2.956*** (0.778)
N	434	434	434	434

Standard errors in parentheses clustered by judge. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 shows the results broken down by partial reversals. The results are similar to those displayed in Table 5, with neither the pilot variables nor the patent experience variables reaching statistical significance. The effect of having served as a designated judge is enhanced; judges who previously sat by designation had a 15% decreased likelihood of being reversed in part. As with the analysis involving full reversals, holding other variables at their median results in a 14% increased likelihood of reversal in part for cases involving claim construction. High-volume plaintiffs and precedential cases both have about 17-18% increased likelihood of being reversed in part, with other variables at their median. Judges who served longer are 5% more likely to be reversed in part with ten additional years of service.

The results on partial reversals display some differences from total reversals. Unlike the analysis for full reversals, the infringement variable is not significant but those seeking summary judgment have a 14% decreased chance of being reversed in part holding other variables at their median. More complex cases, as measured by the number of docket entries, have a 3% increased chance of getting reversed in part with an additional one-hundred pages added to the docket sheet. Like the analysis involving full reversals, neither the technological or most of the procedural variables are statistically significant. Nonetheless, as shown in the statistical results, little difference exists in appellate court treatment based on the specialization of the judge. This specification is robust to alternative codings of some of the variables and to different ways of clustering the standard errors. Alternative specifications are listed in the online appendix, which also provides a fuller treatment of each table.²⁷²

²⁷² For more information on additional specifications and to see each table in full, see the online Appendix, *supra* note 229.

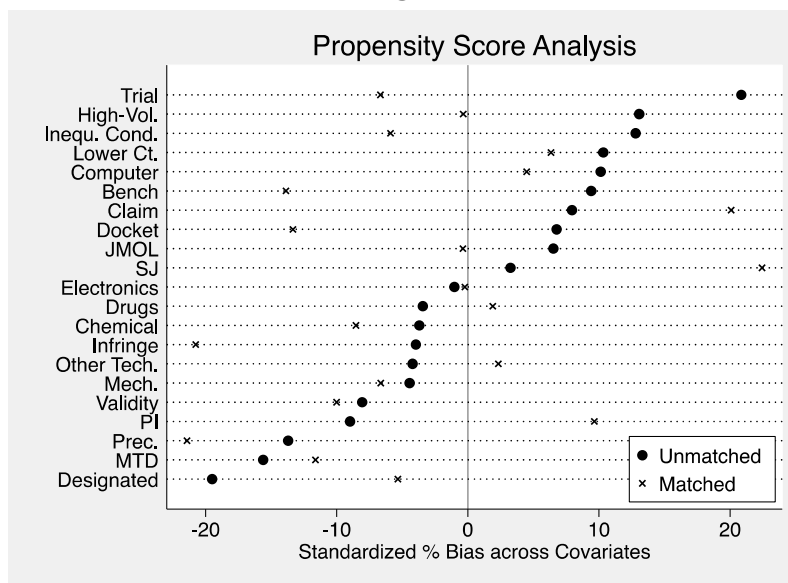
**Table 6: Logit Estimation of Likelihood of CAFC
Overruling Decision in Part**

	Model 1	Model 2	Model 3	Model 4
	Pilot	Pilot Dist.	DE+Pilot	Median
Specialized	-0.257 (0.389)	-0.110 (0.370)	-0.257 (0.389)	-0.141 (0.352)
Patent Cases	0.00002 (0.0002)	-0.00006 (0.0002)	0.00002 (0.0002)	0.000007 (0.0002)
Tenure	0.033* (0.016)	0.033* (0.017)	0.033* (0.016)	0.034* (0.016)
Designated	-1.044** (0.357)	-1.064** (0.355)	-1.044** (0.357)	-1.048** (0.356)
Docket	0.002*** (0.0006)	0.002*** (0.0006)	0.002*** (0.0006)	0.002*** (0.0006)
Claim	0.964** (0.325)	0.960** (0.327)	0.964** (0.325)	0.969** (0.332)
High-Vol.	1.296** (0.408)	1.283** (0.407)	1.296** (0.408)	1.307** (0.407)
Infringe	-0.594 (0.328)	-0.577 (0.333)	-0.594 (0.328)	-0.575 (0.332)
Validity	0.011 (0.352)	0.024 (0.351)	0.011 (0.352)	0.028 (0.349)
Inequ. Cond.	0.178 (1.178)	0.183 (1.165)	0.178 (1.178)	0.172 (1.162)
Precedent	1.236*** (0.260)	1.244*** (0.261)	1.236*** (0.260)	1.245*** (0.261)
Procedural	Included	Included	Included	Included
Lower Ct.	Included	Included	Included	Included
Technology	Included	Included	Included	Included
Ideology	Included	Included	Included	Included
District Ct.	Included	Included	Included	Included
Year	Included	Included	Included	Included
_cons	-2.061** (0.701)	-2.074** (0.723)	-2.061** (0.701)	-2.100** (0.703)
N	434	434	434	434

Standard errors in parentheses clustered by judge. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Next, the study considers the results using the propensity score method.²⁷³ To do this analysis, first the propensity to be included in the pilot group is estimated using many of the same independent variables discussed in Section B to predict whether a case would be considered part of the “treatment.” Based on the qualitative analysis previously discussed, several factors suggest a greater proclivity to be included in a pilot district.²⁷⁴ Figure 9 displays the results by calculating the standardized percentage bias across covariates. Symbols marked by a black circle represent the values for the treatment category, in this case, being a pilot judge. Symbols marked by an “x” show the values after the matching, and ideally one wants to get as close as possible to the “0” line so as to minimize the bias across covariates. Not surprisingly, cases concerning computers and communications are more likely to be heard in a pilot district as are cases with longer docket sheets, indicating more complexity as well as cases involving high-volume plaintiffs. Pilot judges also have more trial experience. Case disposition could also affect the chance of being in a pilot group as dismissals are less common and trials and cases concerning claim construction are more common in the pilot group. After matching, there is no statistically significant effect of pilot status on cases being overruled in full or in part.

Figure 9



²⁷³ For details on the propensity score method, see *id.*

²⁷⁴ See *supra* notes 162–177 and accompanying text.

3. Limitations from Statistical Studies

As with any statistical analysis, limitations exist in the data study. Any study of judicial decision making is necessarily influenced by other factors that may not be controlled for in the analysis. It is hard to tell whether the measure of specialization is the right one. Perhaps the most experienced judges are not showing up as “experienced” in the database because specialized judges are so versed in patent law that they have a special knack for encouraging settlements. In turn, a better method could exist for analyzing case complexity—the variable that would likely be the key confounding variable in this analysis in addition to the selection effect issue. Moreover, an analysis should account for the interaction between specialization and issue type.²⁷⁵ Technical expertise could also vary by case; judges with chemistry backgrounds would find them of little relevance if the invention concerns computers.²⁷⁶ The analysis also does not account for the fact that a judge’s law clerk may have scientific skills that could influence how the judge decides a given case.²⁷⁷

The findings are sensitive to other variations in coding. Unless it is made explicit, for instance, how do we tell that the trial court’s invalidity ruling rests on a claim construction analysis if the CAFC summarily affirms the decision? This problem is especially acute when the CAFC decides a case by a Rule 36 opinion. The present analysis looks at the lower court’s decision to resolve this dilemma when it comes up, but it is impossible to determine on what basis the CAFC affirms when it does not issue a written opinion.²⁷⁸

Moreover, the results depend on the issue actually appealed, and in some cases the CAFC may not resolve an issue if it is moot. For instance, the trial court may find that a patent is both invalid and not infringed. The CAFC’s decision, however, may discuss only infringement, because if that issue is resolved in the competitor’s favor, then the court need not rule on the merits of any affirmative defense, like invalidity or inequitable conduct.

²⁷⁵ Although this study added in a judge’s “scientific” background in some specifications, the measure was dropped since so few district judges graduated with a bachelors degree in science or worked in the scientific field. Moreover, such a measure is necessarily crude, as a judge’s undergraduate or graduate training in a science discipline may not be a reflection of scientific knowledge, and those with significant scientific expertise could be “hidden from view” when education is used as the sole metric. *See* Lemley et al., *supra* note 16, at 1153 (considering how to “measure expertise”).

²⁷⁶ *See id.* (discussing the shortcomings of educational background as the measurement of expertise).

²⁷⁷ *See* Shartzer, *supra* note 29, at 230 (explaining the proliferation of technical law clerks).

²⁷⁸ *See* David L. Schwartz, *Pre-Markman Reversal Rates*, 43 LOY. L.A. L. REV. 1073, 1095 n.146 (2010) (discussing the challenges with understanding the CAFC’s basis for Rule 36 affirmances).

The CAFC may equally disagree with the invalidity decision, but because the issue is moot, it is not resolved, and thus the database would not include it.

Additionally, a pressing issue is how to measure the dependent variable. By centering the dependent variable around the CAFC decision, the analysis implicitly makes the assumption that the CAFC decision is the “correct” one. Whether this assumption holds up empirically is up for debate, as the CAFC may not necessarily make more “correct” decisions than the lower court. Further analysis could look at alternative dependent variables such as time to disposition so as to measure whether pilot judges may be more efficient in their decision making.

Selection effects may also be at work, presenting the most concerning methodological difficulty in analyzing the workings of the pilot program. Patent case filings across various district courts are not a random sample, and as an element of trial strategy, a litigant may file in one district over another.²⁷⁹ Parties may engage in judge shopping.²⁸⁰ Some districts, like the Eastern District of Texas, facilitate this practice by letting parties essentially choose their judge by deciding in which division within the district to file, which could impact the results.²⁸¹ Indeed, the Eastern District of Texas has continued this practice even though the rules of the pilot program officially provide for random assignment.²⁸² In any event, the nature of the pilot program assignment process makes it so that litigants know with at least a one-third chance who will be their judge in some districts.²⁸³

Appealed cases are also not representative and are more likely to be considered close cases.²⁸⁴ The type of litigant may correlate with the propensity to appeal.²⁸⁵ As Schwartz notes, generic pharmaceutical companies “may be more likely to appeal” due to the high stakes involved.²⁸⁶ Patent trolls may also approach litigation differently.²⁸⁷ Furthermore, the choice of whether to appeal is endogenous; in deciding whether to appeal, litigants

²⁷⁹ Shartzer, *supra* note 29, at 228.

²⁸⁰ See Klerman & Reilly, *supra* note 83, at 254–55 (discussing how the pilot program still results in “[j]udge [s]hopping”).

²⁸¹ *Id.* at 255.

²⁸² *Id.* at 256.

²⁸³ *Id.* at 255.

²⁸⁴ Moore, *supra* note 22, at 9–10.

²⁸⁵ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 242.

²⁸⁶ *Id.*

²⁸⁷ Christopher A. Cotropia, Jay P. Kesan & David L. Schwartz, *Heterogeneity Among Patent Plaintiffs: An Empirical Analysis of a Patent Case Progression, Settlement, and Adjudication*, 15 J. EMPIRICAL LEGAL STUD. 80, 116–17 (2018) (explaining how patent trolls litigate differently than other entities and even how different types of patent trolls operate differently from one another).

may consider the reputation and expertise of the trial court judge.²⁸⁸ Thus, sorting out the direction of causation can be difficult.

Inconsistent joinder of parties could also bias the results. Historically, the Eastern District of Texas has interpreted loosely the joinder rules, allowing parties to sue multiple defendants in the same suit.²⁸⁹ In other districts, however, the same type of suit would be considered multiple lawsuits instead of one joint one.²⁹⁰ In recent years, Congress sought to address this issue through the America Invents Act (“AIA”) and the CAFC has tried to deal with the issue to little avail as the Eastern District of Texas simply altered the way it consolidated cases.²⁹¹ Additionally, the Eastern District of Texas also has a habit of allowing multiple defendants to be tried in the same trial.²⁹² In 2015, Congress altered the Federal Rules of Civil Procedure in an attempt to reduce the number of defendants sued by patent trolls.²⁹³ These practices wreak havoc on any statistical model trying to predict behavior because we are comparing apples to oranges with the Eastern District of Texas’s disparate practices. The results are the same whether the Eastern District of Texas is included in the analysis, but nonetheless, less obvious practices between courts could impact the results.

Moreover, the procedural posture of the case could influence the propensity for the parties to settle. Defendant-patentees who are sued in declaratory judgment actions and parties who hold license agreements may be more willing to settle because they do not want to risk having their patents being invalidated.²⁹⁴ We also cannot underestimate the extent to which public opinion and the status of the litigants in the wider society could influence results as well. Some patents are more societally useful than others and public opinion about a case could conceivably affect how courts rule. A case involving the Apple iPhone could implicate societal and public opinion concerns not present for other run of the mill patent cases on inventions not widely used.

²⁸⁸ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 242–43.

²⁸⁹ Klerman & Reilly, *supra* note 83, at 258.

²⁹⁰ *See id.* (comparing number of defendants in patent cases in different districts)

²⁹¹ *Id.* at 258–59.

²⁹² *Id.* at 259.

²⁹³ Matthew Bultman, *Stricter Patent Pleading Requirements Take Effect Dec. 1*, LAW360 (Nov. 30, 2015), <https://www.law360.com/articles/717900> [<https://perma.cc/2KUM-CJRW>]. The 2015 amendments to the Federal Rules of Civil Procedure changed the pleading model that had allowed patentees to file complaints by simply listing the “name and number of the patent and an allegation of infringement.” *Id.*; see Patricia W. Hatamyar Moore, *The Anti-Plaintiff Pending Amendments to the Federal Rules of Civil Procedure and the Pro-Defendant Composition of the Federal Rulemaking Committees*, 83 U. CIN. L. REV. 1083, 1125–29 (2015) (critiquing changes to Federal Rule of Civil Procedure 84 and the abolishment of forms).

²⁹⁴ Shartzter, *supra* note 29, at 229.

Further, the CAFC's inconsistent claim construction jurisprudence could cloud any statistical analysis.²⁹⁵ It is no secret among patent practitioners that panels on the CAFC have at least two divergent approaches to claim construction, and that they use these approaches "interchangeably."²⁹⁶ High reversal rates or failure to find a statistically significant result could be as much about what panel at the CAFC hears the case as the experience of the pilot judge.²⁹⁷ Although the present analysis expands beyond claim construction, understanding the claims is key in any infringement or validity analysis. To the extent district court judges are not given consistent guidance, it is difficult to assess accurately how reversal rates may change with the pilot program.

Some of these concerns may be overblown. Patent law is different than other litigation in terms of the stakes involved, so the selection effects measured by appeal rate may not be as worrisome. The American Intellectual Property Law Association estimates that an individual patent lawsuit can cost upwards of three million dollars through the close of discovery when more than twenty-five million dollars is at risk.²⁹⁸ Such high stakes encourage parties to appeal no matter the circumstance or the identity of the judge or panel hearing the case.²⁹⁹ Moreover, the *de novo* nature of appellate review increases the propensity to appeal.³⁰⁰ Although statistical analysis can try to deal with some of these concerns, recognition of the limits of statistical analysis to conclusively explain decision making is important in discerning how well the pilot program is working.

²⁹⁵ See Etan S. Chatlyne, *On Measuring the Expertise of Patent-Pilot Judges: Encouraging Enhancement of Claim-Construction Uniformity*, 12 J. MARSHALL REV. INTELL. PROP. L. 309, 313 (2013) (testing whether the pilot program's reduction in reversal rates could be "difficult" given the CAFC's inconsistent claim construction jurisprudence).

²⁹⁶ *Id.* at 310; see Wagner & Petherbridge, *supra* note 67, at 1111 (observing two judicial theories on claim construction).

²⁹⁷ Chatlyne, *supra* note 295, at 321 (noting how "claim-construction reversal rates may be an erroneous indicator of success").

²⁹⁸ AM. INTELLECTUAL PROP. LAW ASS'N, 2015 REPORT OF THE ECONOMIC SURVEY 37 (2015) [hereinafter AM. INTELLECTUAL PROP. LAW ASS'N]. The American Intellectual Property Law Association notes that patent suits can cost two million dollars when between one million dollars and ten million dollars is at stake, and as much as five million dollars when more than ten million dollars is at stake. *Id.*; see Gaia Bernstein, *The Rise of the End User in Patent Litigation*, 55 B.C. L. REV. 1443, 1483–84 (2014) (exploring the exorbitant costs associated with patent litigation as opposed to other types of civil litigation).

²⁹⁹ See AM. INTELLECTUAL PROP. LAW ASS'N, *supra* note 298, at 37 (comparing the costs of litigation to the amount of money at risk in the suit).

³⁰⁰ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 244.

V. DISCUSSION AND PROPOSALS FOR REFORM

As companies increasingly rely on intellectual property assets as a source of revenue and strategic advantage, it is clear that we need to do more to resolve the levels of unpredictability and inaccuracy in the current system.³⁰¹ Patent litigation is in a rapid ascent and costs of litigation are sky high.³⁰² Though the patent law pilot program represents a sound attempt to achieve greater predictability and uniformity, so far, as this study indicates, it is only a first step at best in reducing errors on appeal.

Despite the clear benefits brought about by specialization, the results of the pilot program five years out indicate that—at least as measured by reversal rates—specialized trial court tribunals are not offering a greater benefit to litigants than generalist ones. This realization should not close the door for the patent pilot project; indeed, some of the results are promising, suggesting ways in which the program could be adjusted to achieve its goals more expeditiously. In recent years, some districts, like the Southern District of Florida, have exited from participating, finding that the program does not foster the benefits touted.³⁰³ Importantly, the FJC's five-year report echoes the findings of the present analysis concerning the limited influence of the pilot program.³⁰⁴ But, there are ways to reform the program and the legal system for patents so as to achieve the pilot program's goals. These reforms include the following: (1) altering the system to provide resources to individual judges irrespective of the district in which they sit; (2) reforming patent law internally by focusing on rules and internal USPTO practices; and (3) readjusting the system to give the USPTO more responsibility to make decisions on patent law.

³⁰¹ See Shartzter, *supra* note 29, at 209 (discussing the economic importance of patents). Indeed, some companies like IBM rely extensively on patent rights for revenue. *Id.* As of 2006, IBM generated over one billion dollars in revenue yearly from patents alone. *Id.* As another example of the lucrateness of patents, in 2010, an Apple-led group bought several Nortel patents for four-and-a-half billion dollars. See Philip Elmer-DeWitt, *Consortium Led by Apple Buys Nortel's Patents for \$4.5 Billion*, FORTUNE (July 1, 2011), <http://fortune.com/2011/07/01/consortium-led-by-apple-buys-nortels-patents-for-4-5-billion/> [<https://perma.cc/F9G6-HMSZ>] (explaining the buying and selling of patents).

³⁰² Shartzter, *supra* note 29, at 210–11. Between 2000 and 2007, patent litigation increased nearly 20%. *Id.* at 210. A patent worth more than twenty-five million dollars can cost millions to litigate with litigation costs rising over 67% between 2001 and 2007, a figure that far outpaces the rate of inflation. *Id.* at 211.

³⁰³ See *Patent Pilot Program in the Southern District of Florida Scrubbed*, *supra* note 178 (pontificating on the Southern District of Florida's withdrawal from the pilot program).

³⁰⁴ See WILLIAMS ET AL., *supra* note 88, at 39 (discussing the findings as they currently stand and indicating the need for future research).

A. Reform of the Patent Pilot Program

A specialized patent judiciary may work but either the wrong judges are included in the current program or the current judges need more time to gain the necessary experience for the pilot program to bear fruit. Some district courts, such as the Eastern District of Virginia or the District of Delaware, have developed national reputations in patent law, and so their exclusion from the pilot program is puzzling.³⁰⁵ Moreover, some district courts have developed regional expertise. According to the present analysis, Judge T.S. Ellis in the Eastern District of Virginia or Judge Nathaniel Gorton in the District of Massachusetts hear many patent cases. Also, the pilot program may simply be allocating resources to the wrong judges, relying on district court numbers of patent litigation rather than looking at which individual judges are actually developing expertise in patent law. Indeed, the initial bill authorizing the patent pilot program excludes about 85% of district court judges from participating, including all district court judges within the Fourth and Tenth Circuits.³⁰⁶ A glaring omission is the District of Delaware, which is precluded from participating because it lacks the minimum ten judgeships per program rules.³⁰⁷

A finer-grained understanding of legal issues would assess where specialized courts help and where they do not. Schwartz found that over a longer period of time, compared to the present study, at least one *de facto* semi-specialized district court—the District of Delaware—had lower reversal rates than other districts.³⁰⁸ But, it took Delaware many years for its judges to gain expertise. Regardless, reversal rates are heavily dependent on the case facts themselves. In order for the patent pilot program to work, more time must be afforded for judges to fully understand the intricacies of patent law. As Shartzer finds and the present results confirm, on an individual basis, the CAFC hears only a few cases each year, even those of judges participating in the pilot program, thereby reducing the opportunity for judges to get appropriate feedback from the CAFC.³⁰⁹ The pilot program may simply need more time to work.

It is also not clear which barometer should be used to measure “success.” Pilot judges may be more efficient, but studies conducted over a

³⁰⁵ See Leychkis, *supra* note 77, at 202, 210 (describing reputations of the Eastern District of Virginia and the District of Delaware).

³⁰⁶ Olson, *supra* note 132, at 758. Moreover, the law requires that at least six district courts participate and that the districts are spread out among at least three different circuits. Act of Jan. 4, 2011, Pub. L. No. 111-349, § 1(b)(1), 124 Stat. 3674, 3674 (2011).

³⁰⁷ Olson, *supra* note 132, at 760.

³⁰⁸ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 283.

³⁰⁹ See Shartzer, *supra* note 29, at 233 (predicting that each judge participating in the pilot program “can expect to receive approximately two decisions per year from the [CAFC]”).

longer period of time and with a larger data set could show more differences across issue types. Another problem may be that the pilot program improperly equates experience with expertise whereas these concepts are distinct analytically.³¹⁰ Quite possibly, the pilot program is helping judges gain more experience, but what the system really needs is judicial decision makers with greater expertise in the scientific fields at issue. Indeed, since the inception of the pilot program, only about 5% of all patent cases appointed a special masters or technical assistant, with 83% of those appointments occurring before pilot judges and most taking place in the Eastern District of Texas.³¹¹ There is always a chance that reliance on a technical expert or technical law clerk means that the judge depends on that expert to the detriment of the case. But, because lay judges often lack the technical know-how to understand complex technologies without expert assistance, adding more resources to aid in that understanding may help the pilot better achieve its goals.³¹² Alternatively, segregating cases by the judge's scientific subject matter expertise is also an option.

Further, a panel of judges in the Northern District of Illinois discussing the pilot program was asked whether they believed that reversal rates are a good indicator of success.³¹³ They argued that the issue of reversal rates had more to do with the CAFC than them.³¹⁴ As one judge noted, the problem had to do with the unwillingness of the CAFC to defer to the lower courts, especially on issues like claim construction.³¹⁵ One judge speaking about the pilot program opined that a better measure of success than reversal rates is talking with lawyers about their experiences before particular judges.³¹⁶

Indeed, instead of trying to work within the confines of the current judicial machinery, perhaps the time is ripe to consider more radical alternatives, like creating a national-level specialized trial court akin to the U.S. Tax Court, a specialized tax tribunal located in Washington, D.C. whose judges "ride circuit" to hear cases regionally.³¹⁷ Such an approach is not

³¹⁰ Miller & Curry, *supra* note 34, at 858.

³¹¹ WILLIAMS ET AL., *supra* note 88, at 26.

³¹² See Olson, *supra* note 132, at 763–64, 769 (discussing the pitfalls of technical law clerks, one of the resources funded by the patent pilot program). Olson notes that the use of technical patent experts could also influence the clerks. *Id.* at 764.

³¹³ *Patent Pilot Program Perspectives*, *supra* note 193, at 358.

³¹⁴ *Id.* at 358–59.

³¹⁵ *Id.* at 358.

³¹⁶ *Id.* at 359.

³¹⁷ See 26 U.S.C. §§ 7441, 7443 (2018) (establishing the U.S. Tax Court and its operations). Although the Tax Court has concurrent jurisdiction with the district courts, "approximately 90% of tax cases . . . are brought in the Tax Court." John B. Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction Concurrent with That of the District Courts?*, 32 HOUS. L. REV. 67, 94 (1995) [hereinafter, Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction?*].

new in American law; in addition to the Tax Court, the Court of International Trade (“CIT”) and the U.S. Court of Federal Claims also provide specialized trial-level jurisprudence.³¹⁸ Alternatively, a move to an adjudicatory system might also be desirable.³¹⁹

This move toward specialized trial courts would follow the lead of countries like England that have created a separate patent law trial court.³²⁰ England has both a Patents Court and a Patents County Court—a newer patent-focused trial court with concurrent jurisdiction that has reduced wait times since its onset.³²¹ Germany’s system authorizes certain district courts with “judges . . . experienced in intellectual property matters” to hear patent cases.³²² These courts are known for their speed, often resolving cases in under a year.³²³

In particular, it may be desirable to give greater jurisdiction to the USITC to resolve patent cases.³²⁴ Presently, USITC hears patent cases when a party files a complaint against a trade involving a patent infringement.³²⁵ Winning in the USITC excludes the product from being imported into the United States and results in an order to cease and desist the infringing activity.³²⁶ The USITC is a desirable alternative for patent cases because it lacks a criminal and tort docket and is designated as an Article III court—an important attribute to consider because patent litigants have a right to a jury trial.³²⁷

Further analysis is needed to assess whether the program has had the intended effect of reducing forum shopping. The FJC reports that four pilot districts—the Eastern District of Texas and the Central, Northern, and

³¹⁸ Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction?*, *supra* note 317, at 91. “The Court of Federal Claims has original jurisdiction over a variety of claims against the United States for [monetary] compensation . . .” *Id.* at 93.

³¹⁹ *See id.* at 95–96 (discussing current adjudicatory systems).

³²⁰ *See* Thomas K. McBride, Jr., *Patent Practice in London—Local Internationalism: How Patent Law Magnifies the Relationship of the United Kingdom with Europe, the United States, and the Rest of the World*, 2 *LOY. U. CHI. INT’L L. REV.* 31, 48 (2004) (discussing the creation of the specialized patent trial court known as the Patents County Court).

³²¹ Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 774–75; Olson, *supra* note 132, at 750.

³²² Olson, *supra* note 132, at 750.

³²³ *See* Olson, *supra* note 132, at 750 (noting that Germany’s specialized system adjudicates patent cases “within one year”); Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 775 (noting that in the British Patents County Court, “the average length of a trial is twelve hours, or two and a half days”).

³²⁴ Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction?*, *supra* note 317, at 71–72; Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 782.

³²⁵ Pegram, *Should the U.S. Court of International Trade Be Given Patent Jurisdiction?*, *supra* note 317, at 74.

³²⁶ *Id.* Monetary damages are not awarded. *Id.*

³²⁷ Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 782–83.

Southern Districts of California—all saw greater patent filings relative to civil case filings.³²⁸ The results thus far do not suggest that the pilot program has reduced forum shopping.³²⁹ Some notable districts, such as the Eastern District of Virginia and the Western District of Wisconsin, are popularly known as “rocket docket” due to their speed and efficiency in resolving all cases, not just patent ones.³³⁰ Thus, litigants still have an incentive to file in those districts. Moreover, some districts, such as the Eastern District of Texas, have a reputation for being pro-patentee due to the series of local rules they have adopted.³³¹ In the Eastern District of Texas, for instance, now retired Judge T. John Ward required parties to turn over discovery at the onset, sanctioning them if they failed to comply.³³² Moreover, he required both parties to come up with a list of agreed upon claim terms, thus narrowing the number of terms in dispute.³³³ The pilot program could fix this problem of inconsistent rules by requiring districts subscribing to the program to adhere to universal local patent rules. Further, some pilot program districts have a greater percentage of their judges participating in the program than other pilot program districts. Thus, litigants know *a priori* that in some districts there is very high chance of getting a pilot judge whereas in other districts the odds are much lower due to the smaller percentage of pilot judges per total number of district judges.³³⁴ Additionally, nothing in the law actually requires litigants to file in any particular forum, and so it appears, at least on first blush, that the pilot program has not mitigated forum shopping as much as intended. But, simple reforms could help alleviate the problem.

In addition to requiring nationwide, uniform patent rules, recent developments in patent law jurisprudence may help alleviate forum shopping concerns irrespective of any pilot program. In 2017, in *T.C. Heartland LLC v. Kraft Foods Group Brands LLC*, the Supreme Court narrowed how the patent venue statute should be read, holding that a domestic corporation only “resides” in its state of incorporation.³³⁵ Prior to the decision, a plaintiff could sue in any district where an infringing product was sold, making it

³²⁸ WILLIAMS ET AL., *supra* note 88, at 37.

³²⁹ *See id.* at 37–38 (finding that the pilot program has not definitively lessened or had any effect on forum shopping).

³³⁰ *See* Olson, *supra* note 132, at 760–61, 763 (discussing the speed of case resolution in certain courts).

³³¹ Leychkis, *supra* note 77, at 209; Olson, *supra* note 132, at 765–67.

³³² Olson, *supra* note 132, at 766–67.

³³³ *Id.* at 767.

³³⁴ *See* WILLIAMS ET AL., *supra* note 88, at 8 (discussing number of pilot cases per participating district). Moreover, the Northern District of California often relies on magistrate judges to decide patent cases. *Id.* at 9 n.5.

³³⁵ *T.C. Heartland LLC v. Kraft Foods Grp. Brand LLC*, 137 S. Ct. 1514, 1517 (2017).

easy for almost any plaintiff to sue in the patentee-friendly Eastern District of Texas.³³⁶ In interpreting the Supreme Court's decision, in September 2017, the CAFC further narrowed the Eastern District of Texas's interpretation of the venue provisions, requiring a tightly-linked physical nexus in order for a party to sue in that district.³³⁷ The *T.C. Heartland* decision and the subsequent CAFC decision may do more to alter plaintiff filing behavior and have more of an impact on alleviating forum shopping—if interpreted strictly—than any pilot program. “In the immediate aftermath of the [*T.C. Heartland*] decision, filings in the Eastern District of Texas . . . decreased, but filings in the District of Delaware . . . increased,” resulting in 40% of all patent filings remaining in those two districts—the same percentage as before the Supreme Court's decision.³³⁸

B. Reforming Patent Law Internally

Patent law—and its emphasis on interpreting the patent's claims—may be too indeterminate for proper resolution because little common understanding of claim terms exists through either definitional or legal standards.³³⁹ Patent office rules have not kept up with modern times as the USPTO requires that claims be drafted within “a single sentence, regardless of the number of clauses or concepts.”³⁴⁰ Courts are required to interpret the claims as “one of ordinary skill in the pertinent art.”³⁴¹ But, because the judge is often a person who is not of ordinary skill in the art, claim construction amounts to an impossible task.³⁴²

As such, if the system continues to rely on generalist judges to decide patent cases, more resources should be added at the trial court level to aid in interpretation. The federal judiciary could follow the lead of other countries, such as Japan, and set up blue-ribbon panels composed of university researchers and experts from the private sector to advise on cases.³⁴³ Specialized intellectual property divisions of the trial courts in Tokyo and Osaka

³³⁶ See *id.* (rejecting a broader definition of jurisdiction for “a patent infringement lawsuit against a corporation”).

³³⁷ See *In re Cray Inc.*, 871 F.3d. 1355, 1356–57 (Fed. Cir. 2017) (requiring a defendant to have “a regular and established place of business” in the district in which the case is filed).

³³⁸ Cohen et al., *supra* note 18, at 1779 & n.24. Because *T.C. Heartland* introduces a new complication to the data, this study does not include any district court decisions that were decided after this decision. Coincidentally, because this study only considers the first five years of the pilot program, the database cuts off before this decision was issued.

³³⁹ See Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 260.

³⁴⁰ *Id.*

³⁴¹ *Id.*

³⁴² See *id.* at 259–60 (discussing the enormous challenges for district court judges in claim construction).

³⁴³ Shartzter, *supra* note 29, at 203–04.

now hear more than three-quarters of patent cases in Japan.³⁴⁴ Technical assistants, akin to USPTO examiners, aid judges in deciding cases.³⁴⁵ For instance, to aid judges in understanding complex technology, the Japanese Intellectual Property High Court, the appellate body similar to the CAFC, created an “Expert Commissioner System” that includes “over 140 researchers and experts” from academia and both the public and private sectors.³⁴⁶

The USPTO can play its part in reforming the system by encouraging or even requiring patentees to provide more real-world guidance on the content of the patent claims and what the actual invention entails in plain English. Further, with the rise of technology, perhaps the time is ripe to start thinking of alternative ways to supplement the record to identify what the invention covers, how it differs from the prior art, and what it actually does. Video of how an invention works in practice could be considered part of the record as a supplement to the plain meaning of the words to aid in interpreting what the patent covers.

The problem also lies in part with the CAFC. It has “near-total authority” over how patent policy is implemented in this country, in contrast to appellate jurisdiction in most other areas of law, where cases are heard in dispersed, regional appellate courts.³⁴⁷ As Jonathan S. Masur notes, the CAFC:

[H]as been roundly criticized for promulgating overly formalistic doctrines that ignore pragmatic considerations, tolerating uncertainty and confusion on key points of law, enhancing the power of patent holders to the point of diminishing innovation, and failing to distinguish technological fields in which patents are necessary from those in which they are not.³⁴⁸

In fact, scholars predicted that the pilot program would not be a success because the CAFC’s jurisprudence lacks consistency.³⁴⁹ R. Polk Wagner and Lee Petherbridge contend that CAFC claim construction is “panel-dependent” as their empirical analysis reveals that the CAFC has two different modes of claim construction.³⁵⁰ This heavy panel-dependent nature of claim construction jurisprudence at the CAFC may lead to less stability and

³⁴⁴ Pegram, *Should There Be a U.S. Trial Court?*, *supra* note 51, at 777.

³⁴⁵ *See id.* at 776–77 (describing the Japanese system).

³⁴⁶ Shartzer, *supra* note 29, at 204.

³⁴⁷ Jonathan S. Masur, *Regulating Patents*, 2010 SUP. CT. REV. 275, 277.

³⁴⁸ *Id.*

³⁴⁹ *See Wagner & Petherbridge, supra* note 67, at 1111–12 (arguing that the CAFC is growing more polarized from within).

³⁵⁰ *Id.* These two methods are a procedural and a holistic method. *Id.*

clarity of jurisprudence for lower courts to apply. Moreover, whatever consistent precedent the CAFC does come up with may not be translated to the lower courts in an optimal matter, as the CAFC may do a poor job of translating precedent into workable principles for district courts to apply.³⁵¹ Indeed, district judges bemoan that they do not receive any “real guidance” from the CAFC.³⁵² The CAFC could do more to strengthen the currently tenuous connection between formation of precedent and its application by adopting more supervision over the lower courts. As Rochelle Dreyfuss argues, the CAFC could engage in a more in-depth assessment of a district’s court fact-finding, better oversee lower court judges, and hear more interlocutory appeals.³⁵³ Moreover, express recognition of the factual underpinnings of claim construction could lower the high reversal rate by the CAFC irrespective of specialized courts.³⁵⁴

C. Administrative Reform

Finally, the solution may lie in changing the focus of the entire system to leverage administrative expertise in deciding patent cases. Unlike other areas of law, like torts, in which legislatures are very active, patent law is characterized by an “overmatched judiciary and an absent legislature.”³⁵⁵ Reform of the patent system must be multi-institutional, focusing on the role that Congress, the administrative bureaucracy, and the courts play in implementing policy. The current system puts too much power in the hands of the CAFC as a promulgator of policy by not installing inferior institutions, such as the USPTO and the lower federal courts, while not providing the CAFC with the adequate support necessary for it to actually formulate policy.³⁵⁶

The current patent system gives too much judicial discretion to courts, allowing them to run rampant in crafting legal doctrine. Some argue that complexity in patent law is no different than in other fields.³⁵⁷ Even the Supreme Court has hinted that it prefers that patent law not be treated differ-

³⁵¹ Schwartz, *Practice Makes Perfect?*, *supra* note 66, at 225–26.

³⁵² *Patent Pilot Program Perspectives*, *supra* note 193, at 358.

³⁵³ Dreyfuss, *supra* note 46, at 61–62.

³⁵⁴ Paul M. Schoenhard, *Reversing the Reversal Rate: Using Real Property Principles to Guide Federal Circuit Patent Jurisprudence*, 11 *FORDHAM INTELL. PROP. MEDIA & ENT. L.J.* 299, 335–36 (2007) (arguing against specialized courts and for more deference given to fact-finding trial courts to reduce reversal rates of claim construction issues).

³⁵⁵ Masur, *supra* note 347, at 294–95.

³⁵⁶ *See id.* (questioning the lack of authority of the USPTO); Rai, *supra* note 103, at 1040 (pinpointing flaws with the current system that overly relies on the CAFC).

³⁵⁷ *See* Howard T. Markey, *On Simplifying Patent Trials*, 116 *F.R.D.* 369, 372 (1987) (arguing that “patent trials would be greatly simplified if patent lawyers made no effort to have their trials conducted differently” and instead simply followed the Federal Rules of Civil Procedure).

ently, but the question remains why patent law is different than other fields of law, like environmental law, where a federal administrative agency has plenary authority.³⁵⁸ Unlike areas of law, such as securities, pharmaceuticals, transportation, and environmental, patent law remains an outlier in that it is a “highly technically complex regulatory field controlled entirely by courts.”³⁵⁹ Masur argues that the time has come to bring patent law’s institutional arrangements in line with the rest of the administrative state by, *inter alia*, empowering the USPTO with greater rulemaking authority.³⁶⁰

Courts—even specialized courts—may simply find themselves poorly equipped to understand deeply the intricacies of patent law and its application to new and emerging technologies. Scientifically untrained judges and their law clerks may lack the institutional and technical capability to weigh whether an invention is obvious to those of ordinary skill in the art.³⁶¹ Patent law involves two layers of technical competence: considering the economic consequences of setting the rule and an application of the rule to the technical facts of a case.³⁶² Specialized trial courts do not solve either problem; decision makers in these courts do not apply the right rule, or lack the technical competence to devise the rule in the first place.³⁶³ Thus, instead of relying on the federal courts to decipher legal rules for patent cases, the task could instead be given to the very experts for whom the taxpayers pay to oversee the patent system: the USPTO or another administrative agency suitable for the job.³⁶⁴

Patent law is different statutorily from other fields where courts can effectively implement policy. The Patent Act sets the broad, outer bounds for patentability and infringement, but the courts decide how those principles apply.³⁶⁵ To do so, the courts have created and applied doctrines based on their understanding of how patent policy *should* be implemented.³⁶⁶ But, courts devise such doctrines piecemeal without full consideration of how to properly balance patent rights versus innovation. Giving power to the courts would be appropriate if the Patent Act was already clear about what eco-

³⁵⁸ See Masur, *supra* note 347, at 275–76 (highlighting the similarities between environmental and patent law and their different treatments by Congress and the courts).

³⁵⁹ *Id.* at 279.

³⁶⁰ *Id.*

³⁶¹ See *id.* at 316 (arguing that the courts cannot perform the requisite interpretations of standards required in patent law, whereas the USPTO is more than capable to do so).

³⁶² Rai, *supra* note 103, at 1040–41 (identifying these “two institutional deficiencies” within the current patent law adjudication process).

³⁶³ See *id.* at 1068 (discussing the limitations of technical knowledge in the judiciary).

³⁶⁴ *Id.* at 1068–69.

³⁶⁵ Masur, *supra* note 347, at 276–77.

³⁶⁶ See Dan L. Burk & Mark A. Lemley, *Policy Levers in Patent Law*, 89 VA. L. REV. 1575, 1638–39 (2003) (discussing how rules and standards shape patent law policy).

conomic and societal judgments courts should make in determining validity.³⁶⁷ But, the Patent Act is vague and has not been amended in over seventy-five years, meaning that it predates the immense technological innovation that has occurred since then, especially in the software and medical fields.³⁶⁸ Courts simply have no guidance or expertise to weigh the often competing demands of encouraging innovation and protecting property rights.

Moreover, some scholars argue that patents should function differently across different industries, with some industries benefiting from broader benefits and others needing narrower ones to encourage innovation.³⁶⁹ Dan L. Burk and Mark A. Lemley argue that courts already have the necessary tools, in the form of what they call “patent levers,” to adjust patent scope depending on the industry.³⁷⁰ But, the disparate nature of decision making—combined with the CAFC’s failure to embrace its role as a patent policy-maker as opposed to being solely an adjudicator—necessarily results in patent policy being left in disarray. Courts may have the tools at their disposal to properly make patent policy, but the CAFC and the district courts quite simply have not embraced their role in making the patent system work.

Other institutional actors are similarly ill-equipped to carry out policy. Congress could legislate to ensure divergent standards depending on the industry, but relying on a legislative solution in this circumstance is impractical and involves too much administrative cost and uncertainty.³⁷¹ Technology changes too often for Congress to keep up with it.³⁷² Additionally, most of the inquiries needed to dictate rules are fact-specific, requiring case-by-case application.³⁷³ The problem of intense industry lobbying may also result in policy that better reflects special interest influence rather than sound economic policy on what actions actually encourage innovation.³⁷⁴ Congress’s foray into legislating patent law—the Biotechnological Process Patents Act of 1995, which codifies “that biotechnological processes that use or result in a novel and nonobvious product are always nonobvious”—illustrates the role that special interests play in the process.³⁷⁵

³⁶⁷ Masur, *supra* note 347, at 286–87.

³⁶⁸ *See id.* at 287 (critiquing the Patent Act and patent policy).

³⁶⁹ *Id.* at 289; *see* Burk & Lemley, *supra* note 366, at 1639 (arguing for “a standards-based patent statute” that could be responsive to the vast array of patent technologies).

³⁷⁰ *See* Burk & Lemley, *supra* note 366, at 1674–75 (positing how the CAFC could use patent levers in crafting policy).

³⁷¹ *Id.* at 1635.

³⁷² *Id.* at 1636. As an example, the Semiconductor Chip Protection Act “is obsolete because of changes in the way semiconductor chips are made.” *Id.* at 1636–37.

³⁷³ *See id.* at 1634–35 (cautioning against “industry-specific patent legislation”).

³⁷⁴ *Id.* at 1637.

³⁷⁵ Rai, *supra* note 103, at 1128 (discussing several drawbacks to this legislation).

Rather than the CAFC or Congress setting forth rules for guiding validity, the USPTO could instead use its rulemaking power to make more explicit how patent claims should be construed and how the results vary depending upon technology.³⁷⁶ The USPTO has not exercised its limited rulemaking power, thus relegating the power to decide many questions concerning patent laws to the courts.³⁷⁷ But, in order to understand whether an invention should be patentable requires a thorough understanding of not only the technology in question but also the economic markets involved to properly resolve the balance between innovation and protection.³⁷⁸ Congress may also want to delegate to the agency the power to treat different classes of subject matter differently, by, for instance, allowing patents on software to last for shorter time periods than those on pharmaceutical products, which would address the different incentives in each industry regarding innovation.³⁷⁹ USPTO examiners with thousands of hours of experience in surveying patents across a range of technologies would be most equipped to decide whether a patent is valid or at least provide better guidance via rulemaking on how claims in particular fields should be construed. Moreover, the USPTO is best equipped to keep up with modern technology and the evolution of claim interpretation.

Reform of the system in an administrative fashion mirrors what many other countries already do with respect to their patent jurisprudence. Rather than rely on specialized judges, most of whom do not have scientific training, reallocation of the task—at least on validity determinations—could be given to a federal agency. The courts would then be tasked with following these rules and would instead focus their energy on adjudicating infringement disputes rather than worrying about construing claims or making invalidity determinations. The results of the present analysis indicate that most mistakes concern either claim construction or validity determinations; courts do a pretty good job in infringement analysis, so a proposal where administrative agencies undertake more of the scientific analysis may be a better path. Cohen et al., for instance, propose a Patent Litigation Review Board that they argue would “discourage . . . weak patent infringement suits[,] . . . strengthen the hands of patentees[,] . . . flag weaknesses [in the

³⁷⁶ Masur, *supra* note 347, at 279.

³⁷⁷ *Id.* at 276–77.

³⁷⁸ *Id.* at 278.

³⁷⁹ See David S. Olson, *Taking the Utilitarian Basis for Patent Law Seriously: The Case for Restricting Patent Law Subject Matter*, 82 TEMP. L. REV. 181, 238–39 (2009) (discussing whether Congress could create “variable patent terms”).

patent,] . . . and . . . provide policymakers with more . . . information” to evaluate the patent system.³⁸⁰

Adaptation of rulemaking comes at the expense of judicial discretion and flexibility.³⁸¹ But, what are the benefits of flexibility in this current situation that could not otherwise be realized by the PTO? One concern is that the time involved in rulemaking could necessitate delay in getting answers in patent disputes. Such a concern is not trivial and the current system of court action may give quicker answers, but those answers are not necessarily correct or consistent.

The administrative trend toward patent law reform has been set in motion by the U.S. Supreme Court’s recent decision in *Oil States Energy Services, LLC v. Greene’s Energy Group, LLC*.³⁸² In this case, the Court held that the *inter partes* review process undertaken by the USPTO is constitutional and does not violate either “Article III or the Seventh Amendment of the Constitution.”³⁸³ In *inter partes* review, parties can contest the validity of a patent, though there is not currently an administrative system where parties could resolve disputes entirely at the PTAB rather than through the courts.³⁸⁴ In other words, if parties have infringement issues, they must still proceed through the court system, even though they could contest validity at the PTAB instead of the courts.³⁸⁵ In total, as of February 2019, the PTAB had received over 8,000 PTAB petitions challenging patent validity under procedures instituted under the AIA.³⁸⁶ In the coming years, how the district courts interact with this new system and whether parties choose to resolve validity disputes at the PTAB instead of the district courts will impact how the pilot program turns out. For instance, instead of filing before pilot judges, litigators may instead elect to file a petition before the PTAB. It is impossible to tell how much the *inter partes* process will cannibalize validity decision making in the district courts.³⁸⁷ Some scholars have found that the

³⁸⁰ Cohen et al., *supra* note 18, at 1782–83 (setting forth the proposed new agency and noting that it would offer “non-binding assessments” of claim construction, infringement, unenforceability, and validity issues).

³⁸¹ See Burk & Lemley, *supra* note 366, at 1639 (weighing various degrees of discretion in rule-based and standards-based statutory regimes).

³⁸² See *Oil States Energy Servs., LLC v. Greene’s Energy Grp., LLC*, 138 S. Ct. 1365, 1370 (2018) (upholding *inter partes* review by the USPTO).

³⁸³ *Id.*

³⁸⁴ See *id.* at 1370–72 (describing the *inter partes* review process).

³⁸⁵ In a separate article, I compare and contrast outcomes between validity undertaken through *inter partes* review compared to the district court. See Amy Semet, *Comparing Inter Partes Review with District Court Proceedings in Patent Law* (working paper) (on file with author) (comparing district court cases with cases decided in *inter partes* review).

³⁸⁶ This information was compiled from Lex Machina. See LEX MACHINA, *supra* note 194.

³⁸⁷ For more on the *inter partes* process, see Christopher J. Walker & Melissa F. Wasserman, *The New World of Agency Adjudication*, 107 CALIF. L. REV. (forthcoming 2019), <https://ssrn.com/abstract=3129560> [<https://perma.cc/P7PR-JVGQ>].

majority of parties are substituting the PTAB process for district court litigation, at least when their claims concern validity.³⁸⁸ The *Oil States* decision paves the way for altering the PTAB process to expand its reach.³⁸⁹ The long-term viability of the pilot project may come down to how the program intersects with that process.

In all, a fundamental rebalancing of the system to place decision making back in the hands of experts would do much to balance out the entire system to get better results. As Arti K. Rai argues, “[i]f greater fact-finding and policy application expertise were vested at the administrative and trial court levels, the role of appellate review within the patent system could substantially be reconceived.”³⁹⁰ The USPTO is already beginning to take these steps. Although a full examination of the issue is beyond the scope of this Article, *inter partes* review—where a third party can challenge the validity of a patent before the PTO—may be a mechanism that should be used more frequently to gauge validity of patents in a consistent manner. This study’s preliminary analysis of *inter partes* review reveals that many patents are declared invalid before the PTO, yet district courts continue to find that parties infringe them. Some courts even find the patents valid, contrary to the PTO’s conclusion. The system needs to do better. A system where the USPTO shapes, as much as possible, the validity determinations would create greater consistency and predictability in patent law decision making.³⁹¹

CONCLUSION

The patent law system needs reform.³⁹² Given the high volume of cases and the monetary stakes involved, the system is too unpredictable. Recent attempts to solve the problem by encouraging specialized expertise in the patent system are a promising first step, but do not go far enough. Although the results in this study do not indicate that specialization translates into more accurate decision making, the jury is still out for the final verdict, as we need to give the pilot project more time for judges to adapt to the pilot. Moreover, by refocusing resources toward regional judges who hear many patent cases, the program might achieve greater accuracy on appeal.

³⁸⁸ Saurabh Vishnubhakat, Arti K. Rai & Jay P. Kesan, *Strategic Decision Making in Dual PTAB and District Court Proceedings*, 31 BERKELEY TECH. L.J. 45, 49 (2016).

³⁸⁹ For more on the PTAB in the administrative state, see Walker & Wasserman, *supra* note 387.

³⁹⁰ Rai, *supra* note 103, at 1041.

³⁹¹ The Seventh Amendment of the U.S. Constitution provides for jury trials, so this amendment raises constitutional issues on whether the USPTO could have exclusive jurisdiction to hear and decide infringement and validity cases. See *Oil States Energy Servs.*, 138 S. Ct. at 1379 (discussing the “Seventh Amendment challenge”).

³⁹² Policymakers and lawmakers have made many proposals in recent years to reform the system. See, e.g., Cohen et al., *supra* note 18, at 1777–78 (discussing various proposals).

The time is also ripe to ask whether radical alternatives are necessary; that is, instead of adjudicating patent cases through the judicial system, engaging in a more vigorous debate about whether patent law should be drastically altered to give more power back to the administrative agency, which could then leverage its technical expertise to properly resolve patent cases, at least in part. Ultimately, the time has come for a discussion on whether a nationally-based specialized trial court is a better alternative to the recent patent pilot program.

