

**HYPERACTIVE JUDGES:
AN EMPIRICAL STUDY OF JUDGE-DEPENDENT
“JUDICIAL HYPERACTIVITY” IN THE FEDERAL CIRCUIT**

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INTRODUCTION

Many patent practitioners believe that decision-making by the U.S. Court of Appeals for the Federal Circuit¹ is highly judge-dependent.² Indeed, attorneys practicing before the Federal Circuit often

prepare “judge charts” outlining how each judge has voted on each of the relevant cases. They summarize the state of the law by “counting noses”—that is, by seeing how many different judges (and which ones) have signed off on a controversial legal doctrine. And they tailor their oral arguments to particular judges, because they think that who is on the panel matters greatly to the outcome.³

Additionally, a widespread belief exists that the judges of the Federal Circuit engage in what William C. Rooklidge and Matthew F. Weil call “judicial hyperactivity.”⁴ According to Rooklidge and Weil, an appellate court engages in “judicial hyperactivity” when it “lose[s] track of the important distinction between trial and appellate roles and engages in . . . a form of decision-making at odds with traditional notions of appellate review.”⁵ This Article defines judicial hyperactivity as a form of judicial activism in which a judge improperly “elevate[s] his or her judgment above that of another constitutionally significant actor (e.g., Congress, the President, [or] other Article III courts),”⁶ where this improper behavior is

1. The U.S. Court of Appeals for the Federal Circuit has nationwide appellate jurisdiction over appeals from patent infringement cases brought in all U.S. district courts. 28 U.S.C. §§ 1295(a)(4)(A), 1295(a)(4)(B) (2000). Moreover, the Federal Circuit also has jurisdiction over a variety of other subject areas, most of which are unrelated to patent law. *Id.* § 1295(a)(4)(C). See *infra* Part I.A for a more detailed description of the Federal Circuit’s jurisdiction.

2. John R. Allison & Mark A. Lemley, *How Federal Circuit Judges Vote in Patent Validity Cases*, 27 FLA. ST. U. L. REV. 745, 745 (2000). See also Paul R. Michel, *The Court of Appeals for the Federal Circuit Must Evolve to Meet the Challenges Ahead*, 48 AM. U. L. REV. 1177, 1191 (1999) (noting that “practitioners, particularly in the patent field, often maintain that the outcome, as well as the rationale of court decisions, are strongly reflective of the identity of the three judges” who make up the panel hearing the case); Craig Allen Nard & John F. Duffy, *Rethinking Patent Law’s Uniformity Principle*, 101 NW. U. L. REV. 1619, 1627 (2007) (“[O]ne of the prominent criticisms of the Federal Circuit is that the court exhibits ‘panel dependency.’”).

3. Allison & Lemley, *supra* note 2. For example, the author of this article engaged in this exact sort of behavior when he practiced before the Federal Circuit.

4. William C. Rooklidge & Matthew F. Weil, *Judicial Hyperactivity: The Federal Circuit’s Discomfort with Its Appellate Role*, 15 BERKELEY TECH. L.J. 725, 726 (2000).

5. *Id.*

6. Corey Rayburn Yung, *Flexing Judicial Muscle: An Empirical Study of Judicial Activism in the Federal Courts*, 105 NW. U. L. REV. 1, 2 (2011).

not necessarily driven by politics or ideology as is traditional judicial activism.⁷

Although most empirical studies of judicial activism or hyperactivity focus solely on the U.S. Supreme Court and its Justices,⁸ the study described in this Article focuses solely on the judges of the Federal Circuit. Studies that focus on judicial activism or hyperactivity at the court-of-appeals level can be even more valuable than those that focus on the Supreme Court.⁹ And with respect to patent law, an empirical study of the judges of the Federal Circuit is even more valuable than a study centering on Supreme Court Justices because the Supreme Court decides very few patent cases,¹⁰ thus giving the Federal Circuit the final word on most patent-law issues.¹¹

This Article presents an empirical study of whether individual judges of the U.S. Court of Appeals for the Federal Circuit engage in judicial hyperactivity using reversal¹² rates and data calculated from those rates

7. See Rooklidge & Weil, *supra* note 4, at 726–27 (contrasting judicial hyperactivity with the traditional notion of judicial activism). See *infra* Part I.B for a more detailed discussion of judicial activism and judicial hyperactivity.

8. Yung, *supra* note 6, at 3.

9. See Frank B. Cross & Stefanie Lindquist, *Judging the Judges*, 58 DUKE L.J. 1383, 1385 (2009) (“[T]he circuit court judiciary is probably the single most important level of the federal judiciary in light of its extensive caseload and policy making authority.”); David S. Law, *Strategic Judicial Lawmaking: Ideology, Publication, and Asylum Law in the Ninth Circuit*, 73 U. CIN. L. REV. 817, 829 (2005) (“Judicial researchers have long been preoccupied with the Supreme Court, to the neglect of other courts that are equally deserving of study but lack the same cachet.”); Yung, *supra* note 6, at 3 (“Although the actions of the Supreme Court are higher profile, studying the courts of appeals for activism has been substantially more informative about judges and the judiciary.” (footnotes omitted)); cf. Richard A. Posner, *Judicial Behavior and Performance: An Economic Approach*, 32 FLA. ST. U. L. REV. 1259, 1273 (2005) (“[T]he Supreme Court reviews only a minute percentage . . . of court of appeals decisions. Entire fields of law are left mainly to the courts of appeals to shape.”).

10. David Olson & Stefania Fusco, *Rules Versus Standards: Competing Notions of Inconsistency Robustness in Patent Law*, 64 ALA. L. REV. 647, 688 (2013). Although the Supreme Court has relatively recently begun to review more patent cases than it ever has since the creation of the Federal Circuit, the number of patent cases that the Supreme Court reviews each year nonetheless remains small. *Id.* at 688 n.206 (citing John M. Golden, *The Supreme Court as “Prime Percolator”: A Prescription for Appellate Review of Questions in Patent Law*, 56 UCLA L. REV. 657, 667–70 (2009)).

11. See Mark D. Janis, *Patent Law in the Age of the Invisible Supreme Court*, 2001 U. ILL. L. REV. 387, 387 (“The Court of Appeals for the Federal Circuit . . . has become the de facto supreme court of patents.”).

12. “Reversal . . . is an important tool available to appellate courts for controlling the law and guiding lower courts.” Joseph L. Smith, *Patterns and Consequences of Judicial Reversals: Theoretical Considerations and Data from a District Court*, 27 JUST. SYS. J. 28, 28 (2006). An appellate court uses the tool “of a reversal . . . to signal that the lower court has made an error and to guide all courts within the jurisdiction of the appellate court toward more uniform legal decisions.” *Id.* Importantly, “reversals are critical for maintaining coherence and consistency in judicial systems and for steering legal policy.” *Id.* Indeed, reversals are “the most definitive and forceful mechanism for communication of legal policy

under different standards of review. This study is a follow-up to an earlier study done by the author that investigated whether the overall reversal rates of the Federal Circuit as a court are greater than the corresponding reversal rates of other circuits.¹³ This earlier study supported the hypothesis that the Federal Circuit engages in “judicial hyperactivity,” particularly in patent cases.¹⁴ It revealed that the Federal Circuit’s overall reversal rate of lower courts was statistically significantly greater than the overall reversal rates of several representative regional circuits treated as an aggregate, thus tending to show that the Federal Circuit is more judicially hyperactive than the representative regional circuits.¹⁵ Moreover, the earlier study showed that the Federal Circuit’s reversal rates in patent cases were statistically significantly greater than the Federal Circuit’s reversal rates in non-patent cases, thus tending to show that the Federal Circuit is more judicially hyperactive in patent cases than in non-patent cases.¹⁶

The follow-up empirical study described in this Article considers the extent of judicial hyperactivity exhibited by the individual Federal Circuit judges, rather than that of the court as a whole. A study such as this one that examines the behavior of individual judges rather than the behavior of the court as a whole is advantageous because it may reveal important information about how individual judges behave in their roles as appellate-court judges that cannot otherwise be observed.¹⁷ This study examines two types of data to measure the judicial hyperactivity of individual Federal Circuit judges: (1) raw reversal rates;¹⁸ and (2) data calculated using techniques devised by Professor Corey Rayburn Yung, which factor in reversal rates under different standards of review.¹⁹ The use of Yung’s techniques in addition to the sole use of raw reversal rates is advantageous because his techniques can reveal patterns of judicial behavior that cannot be observed by examining raw reversal rates alone.

possessed by a higher court[. . . and they] are likely to play an important role in maintaining uniformity in judicial decisions.” *Id.* at 30.

13. See generally Ted L. Field, “Judicial Hyperactivity” in *The Federal Circuit: An Empirical Study*, 46 U.S.F. L. REV. 721 (2012). See *infra* Part I.B.3.iii for a detailed discussion of this previous study.

14. *Id.* at 723.

15. *Id.* at 724.

16. *Id.* at 725.

17. See Law, *supra* note 9, at 864 (“Significant patterns in judicial behavior can go undetected if researchers consider only how *groups* of judges act, to the exclusion of how *individual* judges behave.” (emphasis in original)).

18. See *infra* Part III.A for a description of the results based on reversal rates.

19. See Yung, *supra* note 6, at 18–29 (explaining methodology used and graphing correlation between level of deference in standard of review and reversal rate). Yung applied his method to all the circuits except for the Federal Circuit. *Id.* at 26 n.130.

To measure judicial activism or hyperactivity, Yung's method involves the calculation of what he calls "activism differentials" and "scaled activism scores" from the reversal rates of cases having different standards of review.²⁰ According to Yung, these calculations

examine[] situations in which one might have expected an appellate judge to be more deferential to another constitutionally significant actor (in this case, a federal district court) as well as situations in which an appellate judge was less likely to defer. By examining how individual judges respected both deferential and nondeferential standards of review in the aggregate, [Yung's method] was able to determine the rate, relative to other judges, at which a judge substituted her judgment for that of a district court judge.²¹

This substitution of judgment is the defining characteristic of judicial hyperactivity,²² thus making Yung's method an ideal measure of judicial hyperactivity.

Yung's method involves using a judge's reversal rate under the *de novo* standard of review as a baseline.²³ Using this baseline "remove[s] cases decided only by ideology or other factors separate from the concept of activism"²⁴ or judicial hyperactivity. Thus, the use of activism differentials and scaled activism scores provides a better measure of judicial hyperactivity than studying reversal rates alone.²⁵

The results of this study support several interesting conclusions. One such conclusion is that the judges of the Federal Circuit exhibit a seemingly

20. *Id.* at 18–22, 28–29. Professor Yung used the term "judicial activism" instead of "judicial hyperactivity." *E.g., id.* at 18–22. But the concept of "judicial activism" that Professor Yung measured is identical to the concept of "judicial hyperactivity" measured using his techniques in this study—namely, that a judge engages in judicial hyperactivity or judicial activism where that judge improperly "elevate[s] his or her judgment above that of another constitutionally significant actor (e.g., Congress, the President, [or] other Article III courts)." *Id.* at 2. This article uses the term "judicial hyperactivity," except when discussing Professor Yung's methods. For consistency, this article uses Professor Yung's terminology and does not rename Professor Yung's "activism differential" and "scaled activism score" as "hyperactivity differential" and "scaled hyperactivity score."

21. *Id.* at 3.

22. *See id.* at 11–12 (explaining that the core concept of judicial activism is when judges substitute their own judgment in place of other significant actors).

23. *Id.* at 22.

24. *Id.*

25. One finding of this article that supports this proposition is that Professor Yung's activism differential is measuring something different than what raw reversal rates measure because there was no statistically significant correlation between activism differentials and raw reversal rates in this study. See *infra* note 156 and accompanying text for a discussion of this finding.

beneficial range of judicial hyperactivity.²⁶ Although there is no such thing as “judicial Ritalin”²⁷ for Federal Circuit judges to take, such a remedy for judicial hyperactivity is not necessary. Indeed, the results of this study tend to show that the composition of the Federal Circuit may be ideal in terms of the range of judicial hyperactivity.²⁸ The court appears to include judges from both ends and the middle of the judicial-hyperactivity continuum.²⁹ Because the court includes a mix of judges whose judicial hyperactivity is high, low, and in-between, the court may be well positioned to evolve patent law as appropriate under ever-changing technological and economic circumstances while at the same time providing sufficient predictability and stability.³⁰

Perhaps the most interesting conclusion implied by the results of this study is that in patent cases, Federal Circuit judges with prior patent-law experience are more judicially hyperactive than judges without prior patent-law experience, but the same does not hold true in non-patent cases.³¹ Judges with prior patent-law experience thus appear to be more comfortable in substituting their own judgment for that of the district court judges whose decisions they are reviewing in patent cases, possibly because they, consciously or, more likely, subconsciously, believe they have a better understanding of patent-law issues than the district court judges. In contrast, in non-patent cases, prior patent-law experience is irrelevant, putting judges with prior patent-law experience on par with judges with no prior patent-law experience. The data here reveal that in non-patent cases, judges with

26. See *infra* Part IV.A for a detailed discussion relating to this conclusion.

27. “Ritalin” is the brand name of methylphenidate, which is a drug used to treat attention deficit hyperactivity disorder (“ADHD”). *Methylphenidate (Oral Route)*, MAYO CLINIC, <http://www.mayoclinic.com/health/drug-information/DR601847> (last visited Apr. 15, 2014). The use of this drug to treat ADHD in children is controversial. See, e.g., Bronwen Hruska, *Raising the Ritalin Generation*, N.Y. TIMES, Aug. 18, 2012, http://www.nytimes.com/2012/08/19/opinion/sunday/raising-the-ritalin-generation.html?pagewanted=all&_r=0.

28. See *infra* Part IV.A for an explanation of the weaknesses of a court with either too many or too few judicially hyperactive judges.

29. See *infra* Part IV.A for a discussion of the range of judicial hyperactivity on the court.

30. See Cross & Lindquist, *supra* note 9, at 1425 (discussing the negatives of having a court comprised of solely one type of judge or the other).

A court consisting entirely of judicial entrepreneurs might be unduly activist and, to the extent that their judicial preferences differ, might produce many conflicting precedents and instability in the law. . . . A court of only judicial minimalists, though, might leave the law stagnant and unable to respond to changing societal circumstances.

Id.

31. See *infra* Part IV.B for a detailed discussion relating to these conclusions, and Table 7 for a summary of the data supporting these conclusions.

prior patent-law experience are no more or less likely than judges with no prior patent-law experience to substitute their own judgment for that of the judge of the tribunal being reviewed. This level of judicial hyperactivity shown by the Federal Circuit judges studied here may indeed be ideal because judges with prior patent-law experience who are hyperactive in patent-law cases may be best at jumping in and correcting errors by district court judges who lack a sound understanding of patent law. Thus, a court with several judges like these would best be able to fulfill Congress's goals in creating the Federal Circuit.³²

Finally, another conclusion of this study is that the political party of the President who appointed each judge of the Federal Circuit seems to have no effect on the extent to which the judge is judicially hyperactive.³³ Indeed, for all three categories of cases studied—all cases (patent and non-patent), patent cases only, and non-patent cases only—there was no statistically significant difference between the mean activism differentials of Republican-appointed judges and Democrat-appointed judges.³⁴ This finding goes against the traditional, though over-simplified, notion that Republican Presidents tend to appoint “conservative” judges who are less activist than “liberal” judges appointed by Democratic Presidents.³⁵ But it is consistent with the idea that because of its jurisdiction, the Federal Circuit generally does not decide cases that involve highly charged political or ideological issues, whereas the other circuits might decide such issues more often.

This Article describes this empirical study in detail. Part I begins by providing background information relating to the Federal Circuit, as well as the concepts of judicial activism and judicial hyperactivity. Next, Part II details the methodology used in conducting the study described in this Article. After that, Part III analyzes the results of this study. And finally, Part IV discusses some implications of these results.

I. THE FEDERAL CIRCUIT, JUDICIAL ACTIVISM, AND JUDICIAL HYPERACTIVITY

This Part provides background information on the U.S. Court of Appeals for the Federal Circuit, as well as the concepts of judicial activism and judicial hyperactivity. First, Part I.A below describes the origins and

32. See *infra* Part I.A for a description of Congress's goals in creating the Federal Circuit.

33. See *infra* Part IV.C for a detailed discussion of this conclusion.

34. See *infra* Table 8 for a summary of this data.

35. See, e.g., Yung, *supra* note 6, at 7 (“[J]udicial activism was historically a label hurled at liberal judges . . .”).

jurisdiction of the Federal Circuit. Second, Part I.B defines and discusses the concept of traditional judicial activism and the concept of judicial hyperactivity as used in this Article.

A. *The United States Court of Appeals for the Federal Circuit*

The U.S. Court of Appeals for the Federal Circuit has exclusive appellate jurisdiction over most patent cases as well as a variety of other subject areas.³⁶ Congress created the Federal Circuit when it enacted the Federal Court Improvements Act of 1982 (FCIA).³⁷ Unlike the other twelve courts of appeals, Congress defined the Federal Circuit's jurisdiction by subject matter rather than geography.³⁸ The Federal Circuit is best known for its nearly exclusive jurisdiction over appeals of patent decisions of the U.S. Patent and Trademark Office and the district courts.³⁹ But the Federal Circuit also has jurisdiction involving a number of other disparate areas of

36. 28 U.S.C. § 1295 (2000).

37. *E.g.*, Charles W. Adams, *The Court of Appeals for the Federal Circuit: More Than a National Patent Court*, 49 MO. L. REV. 43, 43 (1984) (citing 28 U.S.C.A. § 171 note (West Supp. 1983)); Rochelle Cooper Dreyfuss, *The Federal Circuit: A Case Study in Specialized Courts*, 64 N.Y.U. L. REV. 1, 3 (1989) (citing Federal Courts Improvement Act of 1982, Pub. L. No. 97-164, 96 Stat. 25 (codified as amended in scattered sections of 28 U.S.C.)); Lee Petherbridge & R. Polk Wagner, *The Federal Circuit and Patentability: An Empirical Assessment of the Law of Obviousness*, 85 TEX. L. REV. 2051, 2056–57 (2007) (citing Federal Court Improvements Act of 1982, Pub. L. No. 97-164, 96 Stat. 25). *See also* Marion T. Bennett, *The United States Court of Appeals for the Federal Circuit—Origins*, in THE UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT: A HISTORY 1982–1990, at 1 (1991) (describing the history of how the Federal Circuit was created); Adams, *supra*, at 46–80 (describing the FCIA and the history of the Federal Circuit's creation). In addition to creating the Federal Circuit, the FCIA also dissolved the U.S. Court of Claims and the U.S. Court of Customs and Patent Appeals, and merged the appellate functions of these two courts into the Federal Circuit. Bennett, *supra*, at 4–5.

38. Adams, *supra* note 37, at 44 (“The CAFC is unique among the circuit courts because its jurisdiction is defined by subject matter instead of geography.”).

39. 28 U.S.C. §§ 1295(a)(4)(A), 1295(a)(4)(B). Although the Federal Circuit has exclusive appellate jurisdiction over the vast majority of patent cases decided by the district courts, the Federal Circuit does not have jurisdiction over every case that involves patents. *Holmes Group, Inc. v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 834 (2002) (“Not all cases involving a patent-law claim fall within the Federal Circuit's jurisdiction.”). In *Vornado*, the Supreme Court held that the Federal Circuit has jurisdiction only where “a patent-law claim appears on the face of the plaintiff's well-pleaded complaint.” *Id.* Thus, the Federal Circuit does not have jurisdiction over patent-law claims that arise solely in counterclaims. *See id.* at 833–34; *see also* Christopher A. Cotropia, “*Arising Under*” *Jurisdiction and Uniformity in Patent Law*, 9 MICH. TELECOMM. & TECH. L. REV. 253, 279–84 (2003) (summarizing the *Vornado* case); Larry D. Thompson, Jr., *Adrift on a Sea of Uncertainty: Preserving Uniformity in Patent Law Post-Vornado Through Deference to the Federal Circuit*, 92 GEO. L. J. 523, 540–63 (2004) (describing the *Vornado* decision and analyzing whether it was correctly decided).

law, including “trademark, tariff and customs law, technology transfer regulations, and government contract and labor disputes.”⁴⁰

The driving force behind the creation of the Federal Circuit was to bring national uniformity to patent law⁴¹ and to “yield a clearer, more coherent, more predictable legal infrastructure for the patent system.”⁴² Before the creation of the Federal Circuit, “patent cases [were] inconsistently adjudicated” by the regional circuit courts of appeals.⁴³ Indeed, before the Federal Circuit existed, certain circuits were perceived as “pro-patent” and others were perceived as “anti-patent.”⁴⁴ Business leaders

40. Dreyfuss, *supra* note 37, at 4; *accord* Adams, *supra* note 37, at 82 (arguing that the FCIA gave the Federal Circuit jurisdiction over “a variety of areas of federal law”). *See also id.* at 65–75 (describing the Federal Circuit’s jurisdiction); Joseph R. Re, *Brief Overview of the Jurisdiction of the U.S. Court of Appeals for the Federal Circuit Under § 1295(a)(1)*, 11 FED. CIR. B.J. 651, 651 (2002) (discussing the Federal Circuit’s predecessor courts and jurisdiction).

41. *See, e.g.*, S. REP. NO. 97-275, at 2–6 (1981), *reprinted in* 1982 U.S.C.C.A.N. 11, 12–16 (stating that the purpose of the Federal Courts Improvement Act of 1982 was to create administrative efficiency through uniformity); *see also* *Vornado*, 535 U.S. at 838 (Stevens, J., concurring in part and concurring in the judgment) (describing the Federal Circuit as a “specialized court that was created, in part, to promote uniformity in the development of [patent] law”); *Midwest Indus., Inc. v. Karavan Trailers, Inc.*, 175 F.3d 1356, 1359 (Fed. Cir. 1999) (en banc in relevant part) (“[O]ne of the principal purposes for the creation of this court [was] to promote uniformity in the law with regard to subject matter within our exclusive appellate jurisdiction.”); Dreyfuss, *supra* note 37, at 2–4 (discussing the Federal Circuit’s specialization in patent law); Joan E. Schaffner, *Federal Circuit “Choice of Law”*: *Erie Through the Looking Glass*, 81 IOWA L. REV. 1173, 1178–79 (1996) (arguing that the Federal Circuit’s specialization brings uniformity and certainty to patent law).

42. R. Polk Wagner & Lee Petherbridge, *Is the Federal Circuit Succeeding? An Empirical Assessment of Judicial Performance*, 152 U. PA. L. REV. 1105, 1108 (2004).

43. S. REP. NO. 97-275, at 5.

44. H.R. REP. NO. 97-312, at 20–21 (1981) (“[S]ome circuit courts are regarded as ‘pro-patent’ and other[s] ‘anti-patent’ . . .”); Melville Church, *Reasons Why the Appellate Jurisdiction of the Supreme Court in Patent Causes Should Be Restored*, 8 YALE L.J. 291, 292–93 (1899); Henry J. Friendly, *The “Law of the Circuit” and All That*, 46 ST. JOHN’S L. REV. 406, 413 (1972) (characterizing some circuits as “‘tough’ on patents” and others as “more favorably disposed”); *see also* Adams, *supra* note 37, at 57 (“[A] patent’s validity depended on where it was litigated.”); Bennett, *supra* note 37, at 10 (“Some of the regional circuit courts, expressing strong feelings about the dangers of monopoly and having a low regard for the expertise of the Patent Office, tended not to give any deference to the administrative examination process and invalidated many patents.”); Dreyfuss, *supra* note 37, at 7 (“Statistics demonstrate that in the period 1945–1957, a patent was twice as likely to be held valid and infringed in the Fifth Circuit than in the Seventh Circuit, and almost four times more likely to be enforced in the Seventh Circuit than in the Second Circuit.”). Indeed, the problem of inconsistent patent adjudication among the circuits existed for many decades before the Federal Circuit was created. For example, in 1899, one commentator noted:

[T]he appellate court of each circuit takes on a local color. That of one circuit is avowedly opposed to patents and sustains not one in twenty, thereby encouraging infringements and tending to throw the whole patent system into disrepute; that in another is liberally inclined toward patents, going, perhaps, in some instances, to extremes to sustain them, with the result of localizing litigation and congesting business in that particular court.

contended that this inconsistent adjudication led to uncertainty, and this uncertainty stifled innovation.⁴⁵ Thus, the FCIA created the Federal Circuit largely to “provid[e] for uniformity of doctrinal development in the patent area.”⁴⁶ Moreover, Congress hoped that this “uniformity [would] reduce the forum-shopping that is common to patent litigation.”⁴⁷

Congress included additional subject matter within the Federal Circuit’s jurisdiction in response to the objection that the court would be too specialized if its jurisdiction were limited solely to patent law.⁴⁸ The fear was that if the Federal Circuit’s jurisdiction were limited to only patent law, it would produce “substantively inferior law.”⁴⁹ Thus, the legislative history of the FCIA shows that Congress added additional subject matter to the Federal Circuit’s jurisdiction to create

a new intermediate appellate court markedly less specialized than either of its predecessors and [to] provide[] the judges of the new court with a breadth of jurisdiction that rivals in its variety that of the regional courts of appeals. The proposed new court is not a “specialized court.” Its jurisdiction is not limited to one type of case, or even to two or three types of cases. Rather, it has a varied docket spanning a broad range of legal issues and types of cases.⁵⁰

Church, *supra*, at 292–93.

45. Petherbridge & Wagner, *supra* note 37, at 2058.

46. S. REP. NO. 97-275, at 5.

47. *Id.*

48. H.R. REP. NO. 97-312, at 19; Bennett, *supra* note 37, at 12; Dreyfuss, *supra* note 37, at 4.

49. Dreyfuss, *supra* note 37, at 25. The reasons that the court might produce “substantively inferior law” if it specialized solely in patent law include:

The repetitious nature of the docket might lead to greater coherency but it would take patents out of the mainstream of legal thought, expose the court to a one-sided view of the issues, and discourage qualified people from serving as judges. . . . [E]fficiency may be the result, but channeling cases to a single forum also would deprive patent law of the collective wisdom of the circuit courts. Losing the tension produced by the percolation of ideas within the judiciary would, in addition, reduce the court’s incentive to reason clearly or to write persuasively.

Id. Additionally, “[s]pecialization also could cause procedural complexities.” *Id.*

50. H.R. REP. NO. 97-312, at 19; Bennett, *supra* note 37, at 12 (quoting H.R. REP. NO. 97-312, at 19).

Therefore, the Federal Circuit decides cases involving many areas of the law in addition to patent law.⁵¹

B. Judicial Activism and “Judicial Hyperactivity”

The empirical study described in this Article seeks to determine whether and to what extent the judges of the Federal Circuit engage in what Rooklidge and Weil have called “judicial hyperactivity.”⁵² This Article defines judicial hyperactivity as a form of judicial activism in which a judge improperly “elevate[s] his or her judgment above that of another constitutionally significant actor (e.g., Congress, the President, [or] other Article III courts),”⁵³ where this improper behavior is not necessarily driven by politics or ideology.⁵⁴ Part I.B.1 below describes the traditional concept of judicial activism. Part I.B.2 then discusses judicial hyperactivity and its relationship with the traditional notion of judicial activism. Finally, Part I.B.3 describes previous contentions that the Federal Circuit as a whole engages in a degree of judicial hyperactivity.

51. See 28 U.S.C. § 1295 (2000) (defining the Federal Circuit’s appellate jurisdiction). The Federal Circuit currently

has nationwide jurisdiction in a variety of subject areas, including international trade, government contracts, patents, trademarks, certain money claims against the United States government, federal personnel, veterans’ benefits, and public safety officers’ benefits claims. Appeals to the court come from all federal district courts, the United States Court of Federal Claims, the United States Court of International Trade, and the United States Court of Appeals for Veterans Claims. The court also takes appeals of certain administrative agencies’ decisions, including the United States Merit Systems Protection Board, the Boards of Contract Appeals, the Board of Patent Appeals and Interferences, and the Trademark Trial and Appeals Board. Decisions of the United States International Trade Commission, the Office of Compliance, an independent agency in the legislative branch, and the Government Accountability Office Personnel Appeals Board, and the Department of Justice Bureau of Justice Assistance also are reviewed by the court. The court’s jurisdiction consists of administrative law cases (55%), intellectual property cases (31%), and cases involving money damages against the United States government (11%). The administrative law cases consist of personnel and veterans claims. Nearly all of the intellectual property cases involve patents. Suits for money damages against the United States government include government contract cases, tax refund appeals, unlawful takings, and civilian and military pay cases.

Court Jurisdiction, U.S. CT. OF APPEALS FOR THE FED. CIR., <http://www.cafc.uscourts.gov/the-court/court-jurisdiction.html> (last visited Apr. 15, 2014).

52. See Rooklidge & Weil, *supra* note 4, at 726–27 (describing term judicial hyperactivity).

53. Yung, *supra* note 6.

54. See Rooklidge & Weil, *supra* note 4, at 726–27 (contrasting judicial hyperactivity with the traditional notion of judicial activism).

1. The Traditional Concept of Judicial Activism

Many people have used the term “judicial activism” for many years.⁵⁵ In 1947, Arthur Schlesinger Jr. became the first person to use the term “judicial activism” in print in an article in *Fortune* magazine.⁵⁶ In this article, Schlesinger described Supreme Court Justices Hugo Black, William O. Douglas, Frank Murphy, and Wiley Rutledge as being “activist.”⁵⁷ But Schlesinger never defined precisely what he meant by “activist” or “activism.”⁵⁸ The term first appeared in a judicial opinion in 1959,⁵⁹ and after that, judges have frequently used the term to “criticiz[e] other judges.”⁶⁰ Traditionally, people have used the term “judicial activism” to criticize liberal judges,⁶¹ but today, the term is seeing increased use in criticizing conservative judges, as well.⁶²

Many people have used the term “judicial activism,” but they usually fail to define it precisely.⁶³ Indeed, the term has been “defined in a number of disparate, even contradictory, ways; scholars and judges recognize this problem, yet persist in speaking about the concept without defining it.”⁶⁴ Although people continue to use the term loosely without defining it precisely,⁶⁵ the term normally has a strongly negative meaning.⁶⁶ Indeed, labeling a judge as a “judicial activist” normally implies that that judge has engaged in improper behavior such as: “(1) invalidation of the arguably constitutional actions of other branches, (2) failure to adhere to precedent, (3) judicial ‘legislation,’ (4) departures from accepted interpretive methodology, and (5) result-oriented judging.”⁶⁷

55. Yung, *supra* note 6, at 6–7.

56. *Id.* at 6 & n.20 (citing Arthur M. Schlesinger Jr., *The Supreme Court: 1947*, FORTUNE, Jan. 1947, at 73, 74–76).

57. *Id.*

58. *Id.* at 6.

59. *Id.* at 7 (citing *Theriot v. Mercer*, 262 F.2d 754, 760 n.5 (5th Cir. 1959) (Hutcheson, J.); Keenan D. Kmiec, Comment, *The Origin and Current Meanings of “Judicial Activism”*, 92 CALIF. L. REV. 1441, 1456 (2004)).

60. *Id.*

61. *Id.*

62. *Id.*; Rooklidge & Weil, *supra* note 4, at 726.

63. Yung, *supra* note 6, at 7 (citing Kmiec, *supra* note 59, at 1443).

64. Kmiec, *supra* note 59, at 1443.

65. *See id.* (“[A]s the term has become more commonplace, its meaning has become increasingly unclear.”).

66. Yung, *supra* note 6, at 7 (citing Kmiec, *supra* note 59, at 1444) (“[T]he term normally has been overwhelmingly loaded with negative connotations.”); *see also* Rooklidge & Weil, *supra* note 4, at 726–27 (describing the use of the term “judicial activism” as “pejorative”).

67. Kmiec, *supra* note 59, at 1444.

2. The Concept of Judicial Hyperactivity

Rooklidge and Weil coined the term “judicial hyperactivity,” defining it to mean when an appellate court “lose[s] track of the important distinction between trial and appellate roles and engages in . . . a form of decision-making at odds with traditional notions of appellate review.”⁶⁸ In contrast to traditional judicial activism, judicial hyperactivity on the part of a judge is not necessarily motivated by the political or ideological views of the judge.⁶⁹ Thus, even though a judge engaging in judicial hyperactivity does not seek to improperly alter the substantive law based on his or her political or ideological motivations, a judicially hyperactive judge nonetheless fails to act in accordance with the norms of an appellate court judge.⁷⁰

Additionally, judicial hyperactivity can be examined through the lens of whether a judge is more of a “judicial entrepreneur” or more of a “judicial minimalist.” Professors Frank B. Cross and Stefanie Lindquist propose that individual judges may lie on “a continuum, with different judges having different degrees of entrepreneurial spirit on different legal issues.”⁷¹ A judge who lies on the judicial-entrepreneur end of this continuum

may be a judge who is alert to the opportunity for innovation, who is willing to invest the resources and assume the risks necessary to offer and develop a genuinely unique legal concept, and who must strategically employ the written word to undertake change. A judicial entrepreneur exhibits a certain swashbuckling flair in decisionmaking.⁷²

Such a judicial entrepreneur may “take a definite lead in innovating in the law—even at the risk of being overruled.”⁷³

68. Rooklidge & Weil, *supra* note 4, at 726.

69. *Id.* (describing traditional judicial activism as being “drenched in political overtones” and contrasting judicial activism with judicial hyperactivity). Rooklidge and Weil define “judicial activism” as “a tribunal going beyond the substantive statutory or common law to reach ideologically-motivated outcomes (whether to engage in a bit of social engineering or to give shape to a radical new jurisprudence).” *Id.*

70. *Id.* at 727.

71. Cross & Lindquist, *supra* note 9, at 1421. Cross and Lindquist use the term “judicial entrepreneur” analogously to the term “policy entrepreneur” used in the political-science literature. *Id.* at 1419–21. And they attribute the popularization of the term “judicial minimalist” to Professor Cass Sunstein. *Id.* at 1422 (citing CASS R. SUNSTEIN, ONE CASE AT A TIME: JUDICIAL MINIMALISM ON THE SUPREME COURT (1999)).

72. *Id.* at 1420 (internal quotation marks and citations omitted).

73. *Id.*

In contrast to a judicial entrepreneur, a judge who lies on the judicial-minimalist end of the continuum will tend to agree with the following principles:

[C]ourts should not decide issues unnecessary to the resolution of a case; . . . courts should refuse to hear cases that are not “ripe” for decision; . . . courts should avoid deciding constitutional questions; . . . courts should respect their own precedents; . . . courts should not issue advisory opinions; . . . courts should follow prior holdings but not necessarily prior dicta; . . . courts should exercise the “passive virtues” associated with maintaining silence on great issues of the day.⁷⁴

Moreover, “[m]inimalists prefer narrower opinions that don’t have application well beyond the case facts and shallower opinions that are grounded in a more pragmatic foundation than in a philosophical one.”⁷⁵

Thus, a judicial entrepreneur is more likely than a judicial minimalist to exhibit characteristics of judicial hyperactivity as it is defined in this Article. As mentioned above, this Article defines judicial hyperactivity as a form of judicial activism in which a judge improperly “elevate[s] his or her judgment above that of another constitutionally significant actor (e.g., Congress, the President, [or] other Article III courts),”⁷⁶ where this improper behavior is not necessarily driven by politics or ideology.⁷⁷ A judicial entrepreneur who seeks to innovate and develop unique legal concepts⁷⁸ is likely to “elevate[] his or her judgment above that of” a district court judge⁷⁹—thus behaving in a judicially hyperactive manner. In contrast, a judicial minimalist is less likely to do so—thus behaving in a non-judicially hyperactive manner.

Although judicial entrepreneurs may contribute positively to the development of the law, the judicial-entrepreneur style of judging has notable shortcomings.⁸⁰ A judicial entrepreneur may very well engage in

74. SUNSTEIN, *supra* note 71, at 4–5; Cross & Lindquist, *supra* note 9, at 1422 (quoting SUNSTEIN, *supra* note 71, at 4–5).

75. Cross & Lindquist, *supra* note 9, at 1422.

76. Yung, *supra* note 6.

77. See Rooklidge & Weil, *supra* note 4, at 726–27 (contrasting judicial hyperactivity with the traditional notion of judicial activism).

78. Cross & Lindquist, *supra* note 9, at 1420.

79. Yung, *supra* note 6.

80. Cross & Lindquist, *supra* note 9, at 1422; cf. Lawrence B. Solum, *A Tournament of Virtue*, 32 FLA. ST. U. L. REV. 1365, 1393 (2005) (“[I]t is hardly clear that novelty makes for good law or that

improper judicial activism or judicial hyperactivity by “undermin[ing] other widely held values of judging.”⁸¹ Indeed, the judicial entrepreneur may “seek[] to increase [his or her] influence . . . [by] reach[ing] for broader holdings by ignoring the factual nuances of specific cases or ignoring the factual record entirely.”⁸² Thus, there are both positives and negatives to judicial entrepreneurs.⁸³ Therefore, there are both positives and negatives to judicial hyperactivity. Indeed, perhaps an ideal court would feature a normal distribution of judges on the judicial entrepreneur–judicial minimalist continuum, with a few judicial entrepreneurs on one side of the continuum, a few judicial minimalists on the opposite side, and majority of judges somewhere in the middle.⁸⁴

3. Contentions that the Federal Circuit Is a Judicially Hyperactive Court

This Part discusses previous contentions by commentators that the Federal Circuit is a judicially hyperactive court. Part I.B.3.i describes such contentions by Rooklidge and Weil. Next, Part I.B.3.ii discusses contentions by a number of commentators that the Federal Circuit is judicially hyperactive in the context of claim construction. Finally, Part I.B.3.iii discusses a previous empirical study by the author of this Article that supported the conclusion that the Federal Circuit is a judicially hyperactive court.

originality is a judicial virtue. This is not to say that originality is never appropriate, but a truly virtuous judge will only be original when the law itself requires originality.”).

81. Cross & Lindquist, *supra* note 9, at 1422.

82. *Id.* (quoting Daniel A. Farber, *Supreme Court Selection and Measures of Past Judicial Performance*, 32 FLA. ST. U. L. REV. 1175, 1179 (2005)) (internal quotation marks omitted).

83. *Id.*

84. *See id.* at 1425 (suggesting that a court solely composed of judicial entrepreneurs or judicial minimalists would lead to highly different decisions and precedent).

A court consisting entirely of judicial entrepreneurs might be unduly activist and, to the extent that their judicial preferences differ, might produce many conflicting precedents and instability in the law. . . . A court of only judicial minimalists, though, might leave the law stagnant and unable to respond to changing societal circumstances.

Id.

i. Rooklidge and Weil

In an essay published in 2000, Rooklidge and Weil persuasively argued that the Federal Circuit engages in judicial hyperactivity.⁸⁵ They argued that the Federal Circuit has engaged in judicial hyperactivity in several different ways.⁸⁶ As Rooklidge and Weil explained:

Almost since its inception, the Federal Circuit has been dogged with criticism for straying from the path carefully delineated for appellate tribunals. Disappointed litigants and commentators alike have criticized the court for fact-finding and other forms of hyperactive judging. Increasingly, the bar is expressing concern over the court's decision-making procedures and its apparent willingness to take over the roles of patent examiner, advocate and trier of fact.⁸⁷

Rooklidge and Weil argued that the Federal Circuit engaged in judicial hyperactivity by improperly acting as an advocate⁸⁸ and as a fact-finder.⁸⁹ They gave two examples of how the court improperly acts as an advocate: by “(1) ignoring the general rule that appellate courts should not normally consider arguments the parties raise for the first time on appeal; and (2) deciding issues that the parties failed to properly preserve in the district court.”⁹⁰ Moreover, Rooklidge and Weil contended that the Federal Circuit improperly acts as a fact-finder, for example, “(1) by finding facts instead of remanding after reversing a district court's judgment; and (2) after reversing a grant of summary judgment in favor of one party, by granting summary judgment in favor of the other party, even in the absence of a cross-motion for summary judgment.”⁹¹

Judicial hyperactivity, Rooklidge and Weil claimed,

85. Rooklidge & Weil, *supra* note 4. See also Field, *supra* note 13, at 728–32 (summarizing Rooklidge and Weil's arguments that the Federal Circuit engages in judicial hyperactivity). “[J]udicial hyperactivity is where an appellate court steps out of its proper role as an appellate court and instead makes decisions that a lower court should properly make.” *Id.* at 728 (citing Rooklidge & Weil, *supra* note 4, at 726–27).

86. See Rooklidge & Weil, *supra* note 4, at 735–48 (explaining instances in which the Federal Circuit has engaged in advocacy and fact-finding).

87. *Id.* at 729–30.

88. *Id.* at 735–39.

89. *Id.* at 739–48.

90. Field, *supra* note 13, at 729 (citing Rooklidge & Weil, *supra* note 4, at 735–36).

91. *Id.* at 730 (citing Rooklidge & Weil, *supra* note 4, at 740, 743).

dramatically reduces certainty and predictability in patent appeals. This in turn will cause the number of appeals to continue to increase as disappointed litigants are encouraged to roll the dice in hope that the Federal Circuit will . . . think up some new arguments that had not occurred to counsel, or find facts not found by the lower tribunal.⁹²

“They conclude[d] that the Federal Circuit, like any other appellate court, should strive to confine its decision-making procedures to those traditionally associated with an appellate court, and leave . . . innovative advocacy and fact-finding to others.”⁹³

ii. Claim Construction

Additionally, a number of commentators have criticized the Federal Circuit for being judicially hyperactive in its treatment of claim construction decisions.⁹⁴ The Federal Circuit treats claim construction as a pure question of law and reviews claim construction decisions de novo.⁹⁵ A number of researchers have empirically studied the Federal Circuit’s reversal rate in claim construction decisions and have concluded that this reversal rate is quite high.⁹⁶ Indeed, these studies show that the court’s reversal rate in claim-construction decisions ranges from 33.0%⁹⁷ to 44.0%.⁹⁸ Such high reversal rates may strongly indicate that the Federal Circuit engages in judicial hyperactivity in claim construction decisions.⁹⁹

92. *Id.* at 732 (quoting Rooklidge & Weil, *supra* note 4, at 751–52) (footnotes omitted).

93. *Id.* (quoting Rooklidge & Weil, *supra* note 4, at 752) (internal quotation marks omitted).

94. *See id.* at 732–33 (describing how commentators have accused the Federal Circuit of engaging in judicial hyperactivity in its claim-construction decisions). “Claim construction is the necessary first step in any determination of patent infringement. When construing patent claims, a judge interpret[s] the specific terms or phrases used by the patentee to define the technology covered by the patent.” *Id.* (footnotes and internal quotation marks omitted; alteration in original).

95. *Cyber Corp. v. FAS Techs., Inc.*, 138 F.3d 1448, 1456 (Fed. Cir. 1998) (en banc) (citing *Markman v. Westview Instruments, Inc.*, 52 F.3d 967, 981 (Fed. Cir. 1995)).

96. Field, *supra* note 13, at 734 (citing Gretchen Ann Bender, *Uncertainty and Unpredictability in Patent Litigation: The Time Is Ripe for a Consistent Claim Construction Methodology*, 8 J. INTELL. PROP. L. 175 (2001); Christian A. Chu, *Empirical Analysis of the Federal Circuit’s Claim Construction Trends*, 16 BERKELEY TECH. L.J. 1075 (2001); Kimberly A. Moore, *Are District Court Judges Equipped to Resolve Patent Cases?*, 15 HARV. J.L. & TECH. 1 (2001); Kimberly A. Moore, *Markman Eight Years Later: Is Claim Construction More Predictable?*, 9 LEWIS & CLARK L. REV. 231 (2005) [hereinafter Moore, *District Court Judges*]; Andrew T. Zidel, 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 (2003)).

97. *Id.* at 735 (citing Moore, *District Court Judges*, *supra* note 96, at 11–12).

98. *Id.* (citing Chu, *supra* note 96, at 1104).

99. *Id.* at 737.

iii. Previous Empirical Study by the Author

Moreover, a previous empirical study by this author suggested that the Federal Circuit, as a court, is more judicially hyperactive than other circuit courts of appeals, particularly in patent cases.¹⁰⁰ This study involved contrasting the overall reversal rates and reversal rates for particular standards of review between the Federal Circuit and several representative regional circuits, as well as contrasting the Federal Circuit's reversal rates in patent cases with its reversal rates in non-patent cases.¹⁰¹ Therefore, the overall results of this study supported the proposition that the "Federal Circuit is more judicially hyperactive in patent cases than in non-patent cases and with respect to the representative regional circuits."¹⁰²

The study showed that the overall reversal rate of the Federal Circuit in all cases was statistically significantly greater than the overall reversal rates of the representative regional circuits treated as an aggregate.¹⁰³ Additionally, when examining the particular standards of review, the Federal Circuit's reversal rates for all standards of review were statistically significantly greater than the corresponding reversal rates of the representative regional circuits.¹⁰⁴ These findings tended to show that the Federal Circuit is more judicially hyperactive than the other circuits.¹⁰⁵

Moreover, the Federal Circuit's reversal rates in patent cases were statistically significantly greater than in non-patent cases.¹⁰⁶ This finding tended to show that the Federal Circuit is more judicially hyperactive in patent cases than in non-patent cases.¹⁰⁷ And the Federal Circuit's reversal rates in patent cases were significantly greater than the regional circuits' reversal rates, but the Federal Circuit's reversal rates in non-patent cases were not significantly greater than the regional circuits' reversal rates.¹⁰⁸ This finding showed that the Federal Circuit is more judicially hyperactive in patent cases than the regional circuits, but the Federal Circuit's judicial

100. *See id.* at 749.

101. *Id.* at 738. Additionally, a second part of this study contrasted reversal rates of the Federal Circuit and the representative regional circuits while controlling for several exemplary procedural postures. *Id.* This second part of the study also supported the conclusion that the Federal Circuit is more judicially hyperactive than other circuits. *Id.* at 771.

102. *Id.* at 726.

103. *Id.* at 749.

104. *Id.* at 756.

105. *Id.*

106. *Id.* at 757.

107. *Id.* at 758.

108. *Id.*

hyperactivity in non-patent cases is comparable to the judicial hyperactivity of the regional circuits.¹⁰⁹

II. METHODOLOGY

This Part describes the methodology used in the empirical study described in this Article. Part II.A below describes the process of data gathering, and Part II.B describes the analysis performed on this data.

A. Data Gathering

This study was based on the same dataset used in the author's previous study that investigated whether the overall reversal rates of the Federal Circuit are greater than the corresponding reversal rates of other circuits.¹¹⁰ The major difference between the data gathered in this study and the previous study was that in this study, additional data were gathered regarding the identity of the judges who voted to affirm or reverse each issue.

The first step was gathering the necessary data. The data gathered were entered into a Microsoft Access database.¹¹¹ The data included 828 different issues in 299 different cases.¹¹² Of these cases, 110 involved patent issues and 189 involved non-patent issues.

109. *Id.* at 764.

110. *See id.* at 738–40 (discussing the methodology of the author's previous study).

111. This relational database included the following fields: citation, circuit, year, and fields for tracking up to nine discrete issues per case. The fields for tracking the discrete issues included a pair of fields for each issue: (1) standard of review; and (2) corresponding disposition. The standard of review fields were relationally linked to a lookup table comprising the different standards of review studied, and the disposition fields were relationally linked to a lookup table comprising possible dispositions (i.e., affirmed, reversed, vacated, and affirmed in part/reversed in part). Additionally, the database contained fields for recording each judge who participated in the decision, including the identity of the judge who authored the majority opinion, and the judges who authored any concurring or dissenting opinions. The judge fields were relationally linked to a lookup table comprising each judge's name, as well as fields recording: (1) the political party of the President who appointed the judge; and (2) whether the judge had patent-law experience before being appointed to the Federal Circuit. Finally, the database included a field to record whether each case was a patent case or a non-patent case.

112. *See* Field, *supra* note 13, at 738 n.109 (describing how the author chose the case included in the previous analysis). For this study, the cases included are the Federal Circuit's first 299 cases of 2010, excluding en-banc opinions. This time period ran from January 2010 through June 2010. These cases were retrieved using either Westlaw or Lexis. The cases examined included both published and unpublished opinions. Including unpublished decisions in a study such as this one improves its results. *See* Law, *supra* note 9, at 866 (“[R]esearchers would be well advised either to incorporate a sample of unpublished decisions, or to justify their reliance on published opinions in light of the research questions posed.”); *cf.* Yung, *supra* note 6, at 25 (including unpublished opinions in an empirical study of judicial activism).

For each of the issues, it was determined whether the court of appeals affirmed, reversed, vacated, or affirmed in part and reversed in part the lower court on that particular issue. Each major issue was examined separately. Where a case discussed multiple “minor” issues, these minor issues were grouped together as one major issue. For example, in a case involving multiple related evidentiary rulings, these rulings were not treated as individual issues . . . ; instead, they were grouped together as one [single] issue If the court affirmed or reversed all the rulings, then the issue was recorded as “affirmed” or “reversed,” respectively; if the court affirmed some and reversed some of the rulings, then the issue was recorded as “affirmed in part-reversed in part.”¹¹³

Additionally, the standard of review that applied to each issue was also recorded,¹¹⁴ which allowed comparison of the judges’ reversal statistics with respect to both deferential (i.e., *de novo*) and non-deferential¹¹⁵ standards of review. Also, the names of each judge who participated in the decision were recorded, including the identity of the judge who authored the majority opinion, and the judges who authored any concurring or dissenting opinions.

Moreover, particular disposition types were eliminated from the data:

For example, the database does not include decisions granting or denying motions made to the court of appeals, resolving petitions to appeal, and deciding petitions for writs of mandamus. Also excluded were any issues for which the court did not articulate a standard of review.¹¹⁶

Finally, all en-banc decisions were excluded.¹¹⁷

All judges who participated in decisions during the time period studied were tracked. These judges included active judges, senior judges, and

113. Field, *supra* note 13, at 738–39 & n.110.

114. The standards of review recorded were *de novo*, clear error, substantial evidence/reasonable juror, and abuse of discretion. *See id.* at 744 (categorizing four standards of review used in previous study).

115. The non-deferential standards of review consisted of a combination of clear error, substantial evidence/reasonable juror, and abuse of discretion. *See id.* at 743 (explaining characterization of standards of review used in previous study).

116. *Id.* at 739 (footnotes omitted).

117. The Federal Circuit issued three en-banc decisions during the period studied: *Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336 (Fed. Cir. 2010) (en banc); *Braza v. Office of Pers. Mgmt.*, 598 F.3d 1315 (Fed. Cir. 2010) (en banc); and *Neb. Pub. Power Dist. v. United States*, 590 F.3d 1357 (Fed. Cir. 2010) (en banc). All three cases were excluded from this study.

judges from other courts sitting by designation.¹¹⁸ But the final analysis was limited to only those judges who participated in at least fifteen decisions during the time period studied.¹¹⁹

B. Data Analysis

The data from the Microsoft Access database were transferred to Microsoft Excel spreadsheets for analysis. The first step was to count the raw data in appropriate categories for each judge. Dispositions for all issues were tallied under each standard of review for each writing judge, concurring judge (whether writing or not), and dissenting judge. Next, these numbers were combined into two tables: (1) dispositions voted-for by each judge when in the majority; and (2) dispositions voted-for by each judge when in dissent. Next, these tables were combined into a single table with total votes to affirm and total votes to reverse, at least in part,¹²⁰ for each judge.¹²¹ Finally, a table was created that grouped the results for all the individual deferential standards of review¹²² into a single category. This

118. The following seventeen Federal Circuit judges participated in these decisions: Glen L. Archer, Jr.; William C. Bryson; Raymond C. Clevenger III; Timothy B. Dyk; Daniel M. Friedman; Arthur J. Gajarsa; Richard Linn; Alan D. Lourie; Howard T. Markey; Haldane R. Mayer; Paul R. Michel; Kimberly A. Moore; Pauline Newman; S. Jay Plager; Sharon Prost; Randall R. Rader; and Alvin A. Schall. Additionally, also participating in the decisions studied were the following five judges from other courts sitting on the Federal Circuit by designation: Ron Clark (Eastern District of Texas), David Folsom (Eastern District of Texas), James F. Holderman (Northern District of Illinois), Virginia M. Kendall (Northern District of Illinois), and Claudia A. Wilken (Northern District of California).

119. The fifteen judges included in the study because they participated in at least fifteen decisions were Judges Bryson, Clevenger, Dyk, Friedman, Gajarsa, Linn, Lourie, Mayer, Michel, Moore, Newman, Plager, Prost, Rader, and Schall. All these judges were Federal Circuit judges. The five judges sitting by designation did not participate in at least fifteen decisions, so they were excluded from the study, as were Federal Circuit Judges Archer and Markey.

120. Total votes to reverse (at least in part) included votes to reverse, vacate, and affirm-in-part and reverse-in-part.

121. For judges in the panel majority for each case (either writing the majority opinion or concurring), a vote in favor of affirming an issue was counted as a vote to affirm, and a vote in favor of reversing (at least in part) was counted as a vote to reverse (at least in part). In contrast, for judges in the panel minority (i.e., writing the dissenting opinion), a vote in favor of affirming an issue was counted as a vote to reverse (at least in part), a vote in favor of reversing or vacating was counted as a vote to affirm, and a vote in favor of affirming-in-part and reversing-in-part was counted as a vote to affirm-in-part and reverse-in-part.

122. These standards of review were clear error, substantial evidence/reasonable juror, and abuse of discretion. Field, *supra* note 13, at 743 (explaining standards of review characterization used in previous study). This study followed Yung's rationales for grouping deferential standards of review together, rather than dealing with them individually. Yung, *supra* note 6, at 22 n.113. Yung's three reasons for grouping together standards of review were: (1) the differences between reversal rates for each deferential standard of review were relatively small; (2) there really is no meaningful distinction between standards of review other than "deferential and nondeferential"; and (3) "the distribution of the

final table showed results for each judge under (1) totals for issues reviewed de novo; (2) totals for issues reviewed with deference; and (3) totals for all issues. Data for judges who participated in fewer than fifteen decisions¹²³ were then deleted. Rates of affirmance and reversal (at least in part) were calculated based on these totals.

These steps were repeated for two subsets of this data: (1) patent cases and (2) non-patent cases. For each of these subsets, patent and non-patent cases, two further subsets of data were tabulated: (1) judges appointed by Republican Presidents versus Democratic Presidents;¹²⁴ and (2) judges with patent-law experience before joining the Federal Circuit versus judges with no such previous patent-law experience.¹²⁵ Appropriate tables and charts were created using Microsoft Excel for reporting the results in this Article.

The second step in tabulation of the data was to calculate “activism differentials” and “scaled activism scores” for each judge based on Yung’s

use of the various standards was not an important factor with the variables analyzed.” *Id.* (citing *United States v. Boyd*, 55 F.3d 239, 242 (7th Cir. 1995)).

123. See *supra* note 119 for the identity of the judges who were included and excluded.

124. Of the Federal Circuit judges considered in this study, Judges Clevenger, Lourie, Mayer, Michel, Moore, Newman, Plager, Prost, Rader, and Schall were appointed by Republican Presidents. Judges Bryson, Dyk, Friedman, Gajarsa, and Linn were appointed by Democratic Presidents. *Biographical Directory of Federal Judges, 1789-present*, FED. JUDICIAL CTR., <http://www.fjc.gov/history/home.nsf/page/judges.html> (enter name of each judge into the search field to access a biography of each judge, which includes the identity of the appointing President) (last visited Apr. 13, 2014).

125. The definition used here of judges having previous patent-law experience followed that used by Allison & Lemley: “[W]e defined a judge as having a patent background if they had regularly practiced patent law, or if they had scientific or technical expertise.” Allison & Lemley, *supra* note 2, at 751. Five of the judges in this study had previous patent-law experience before joining the Federal Circuit: Judges Linn, Lourie, Moore, Newman, and Rader.

Judge Linn, who has a B.E.E. degree, worked as a patent agent and practiced intellectual-property law before joining the court. *Richard Linn, Circuit Judge*, U.S. CT. OF APPEALS FOR THE FED. CIR., <http://www.cafc.uscourts.gov/judges/richard-linn-circuit-judge.html> (last visited Apr. 13, 2014).

“Judge Lourie, who has an advanced degree in chemistry, was corporate counsel for SmithKline Beecham, practiced and wrote about patent law before his appointment.” Allison & Lemley, *supra* note 2, at 751 n.23.

Judge Moore, who has an advanced degree in engineering, “has written and presented widely on patent litigation.” *Kimberly A. Moore, Circuit Judge*, U.S. CT. OF APPEALS FOR THE FED. CIR., <http://www.cafc.uscourts.gov/judges/kimberly-a-moore-circuit-judge.html> (last visited Apr. 13, 2014). She co-wrote a legal casebook and served as a law professor specializing in patent law before her appointment. *Id.*

“Judge Newman, who has an advanced degree in chemistry, was a research chemist and a patent lawyer before her appointment.” Allison & Lemley, *supra* note 2, at 751 n.23.

“Judge Rader, who was counsel to the Senate subcommittee on patents, copyrights and trademarks, and has written on patent law,” including co-writing a legal casebook. *Id.*

methodology.¹²⁶ First, a raw “activism differential” was calculated for each judge using the following formula:

$$\text{Activism differential} = \text{Reversal rate using deferential standards} - \text{Reversal rate using de novo standard.}^{127}$$

Next, these scores were “scale[d] from 0 to 100” to create the scaled activism scores.¹²⁸ These scaled activism scores help to “clarify the relationships between judges” raw activism differentials because these scaled scores necessarily range from 0 to 100, as opposed to raw activism differentials,¹²⁹ which in this study were decimal fractions between -0.5 and 0.5.

The reversal rates and activism scores are based on data that comprise a population, rather than a sample, because the data are based on all relevant cases¹³⁰ decided within a particular time frame.¹³¹ And because this study is

126. See Yung, *supra* note 6, at 18–22, 25–29, 49–50 (describing Professor Yung’s methodology for analyzing reversal rate data to measure substitution of judgment and providing sample calculations using this methodology).

127. *Id.* at 22. Professor Yung’s two adjustment steps were not performed in this analysis: (1) a “case-mix adjustment” and (2) a “circuit adjustment.” *Id.* at 26, 28, 49–50.

“Because criminal and civil cases have very different reversal rates,” Professor Yung used a “case-mix adjustment” “to account for the mix of civil and criminal cases” decided by each judge. *Id.* at 49; see also *id.* at 26 (describing in more detail the “case-mix adjustment” methodology). This step was eliminated because criminal cases do not fall within the Federal Circuit’s jurisdiction. See 28 U.S.C. § 1295 (2000) (explaining that the Federal Circuit is a court of limited jurisdiction). This study could have used an analogous adjustment for patent and non-patent cases because these types of cases analogously have very different reversal rates. But instead, this study calculated reversal rates and activism scores for patent and non-patent cases separately, as well as in the aggregate. Additionally, this study did not use Professor Yung’s “circuit adjustment.” Professor Yung used this circuit adjustment to allow for judges of different circuits to be included in the same calculations because “circuits confront varied substantive and procedural law and diverse cultures and norms.” Yung, *supra* note 6, at 28; see also *id.* at 50 (providing an example calculation). But this adjustment is not necessary in this study because only Federal Circuit judges are being analyzed; this study makes no inter-circuit comparisons.

128. *Id.* at 28–29, 50. The scaled activism scores were calculated by “determining the highest and lowest [a]ctivism [d]ifferentials” for each group of judges studied. *Id.* at 29. “The judge with the highest score in that group was assigned an [a]ctivism [s]core of 100[,] and the judge with the lowest score was assigned a 0. All other judges were scaled linearly in relation to the high and low values.” *Id.* For each group of judges to be compared, the linear scaling of the scaled activism scores was accomplished using the following formula:

$$\text{scaled score} = \text{unscaled score} \times 100(\text{max} - \text{min}) - \text{min} \times 100(\text{max} - \text{min}),$$

where *scaled score* is the scaled activism score, *unscaled score* is the raw activism differential, and *max* and *min* are the maximum and minimum values, respectively, of the raw activism differentials for the group of judges being compared.

129. *Id.* at 28–29, 50.

130. For a description of cases that were excluded because they were not relevant or useful to this study, see *supra* notes 112–117 and accompanying text.

based on a population, all the data and calculations presented in this article about the population “are by definition ‘statistically significant’” with respect to the population.¹³² But because the period of time spanned by the cases of the population is relatively short,¹³³ the population is also treated “as a subset of an indeterminate ‘superpopulation’ consisting of [cases] across a range of time.”¹³⁴ By so doing, “[t]echniques of statistical inference” can be used to “test a number of hypotheses about the relationship between various factors in the superpopulation”¹³⁵—in other words, to determine whether particular differences are statistically significant. To test hypotheses relating to the difference between mean values relating to particular subsets of the data, an independent-samples *t*-test¹³⁶ was used, and *p*-values¹³⁷ were calculated based on the resulting

131. Cf. Allison & Lemley, *supra* note 2, at 746 (characterizing a study of “all written, final patent validity decisions by the Federal Circuit reported in the U.S.P.Q. during” a particular time period as “a population, not a sample”). A “population” includes “all members of the group in question,” whereas a “sample” is “a subset drawn from a larger population.” SARAH BOSLAUGH & PAUL ANDREW WATTERS, *STATISTICS IN A NUTSHELL* 54 (Mary Treseler, ed. 2009).

132. Allison & Lemley, *supra* note 2, at 747.

133. See *supra* note 112 and accompanying text for a description of the cases examined in this study.

134. Allison & Lemley, *supra* note 2, at 748.

135. *Id.*

136. An independent-samples *t*-test is used “to determine whether two population means are significantly different.” BOSLAUGH & WATTERS, *supra* note 131, at 157. The *t*-test is particularly useful “where sample sizes are small.” *Id.* at 151. To calculate *t*-values to test null hypotheses that there was no difference between the population means of two groups, the following formula was used:

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\frac{s_p^2}{n_1} + \frac{s_p^2}{n_2}}},$$

where \bar{x}_1 and \bar{x}_2 are the means of sample groups 1 and 2, respectively; n_1 and n_2 are the sample sizes of sample groups 1 and 2, respectively; and s_p^2 is the pooled sample variance. Pooled sample variance was calculated using the following formula:

$$s_p^2 = \frac{(n_1 - 1)s_1^2 + (n_2 - 1)s_2^2}{n_1 + n_2 - 2},$$

where s_1^2 and s_2^2 are the variances of sample groups 1 and 2, respectively. Variance is the square of standard deviation, and standard deviation was calculated using the “STDEV” function in Microsoft Excel.

137. A *p*-value represents the probability that an observed difference was due to chance as opposed to being a true, significant difference. *Id.* at 609. For example, if $p = 0.05$, then there is a 5% chance that an observed difference is due to chance, and there is a 95% chance that the observed difference is real. See *id.* The traditionally accepted definition of statistical significance is where $p < 0.05$ —i.e., where there is at most a 5% chance that the observed difference is due to chance and at least

values of t .¹³⁸ Additionally, to determine whether and to what extent a correlation exists between two observed quantities, the author calculated r -values¹³⁹ and corresponding p -values were calculated based on the r -value.¹⁴⁰

III. RESULTS

This Part describes the results of the empirical study. Part III.A begins by discussing the results relating to the judge dependency of reversal rates. Next, Part III.B discusses the results relating to the judge dependency of activism differentials and scaled activism scores using Yung's techniques as described above.¹⁴¹

A. Reversal Rates

This Part discusses the results of the empirical study relating to the judge dependency of reversal rates. Figure 1 below summarizes the reversal rate data used in this Part for each of the categories of all cases (i.e., patent and non-patent cases), patent cases only, and non-patent cases only.

a 95% chance that the observed difference is real. *Id.* at 591. The lower the value of p is below 0.05, the more statistically significant the difference is. *See id.*

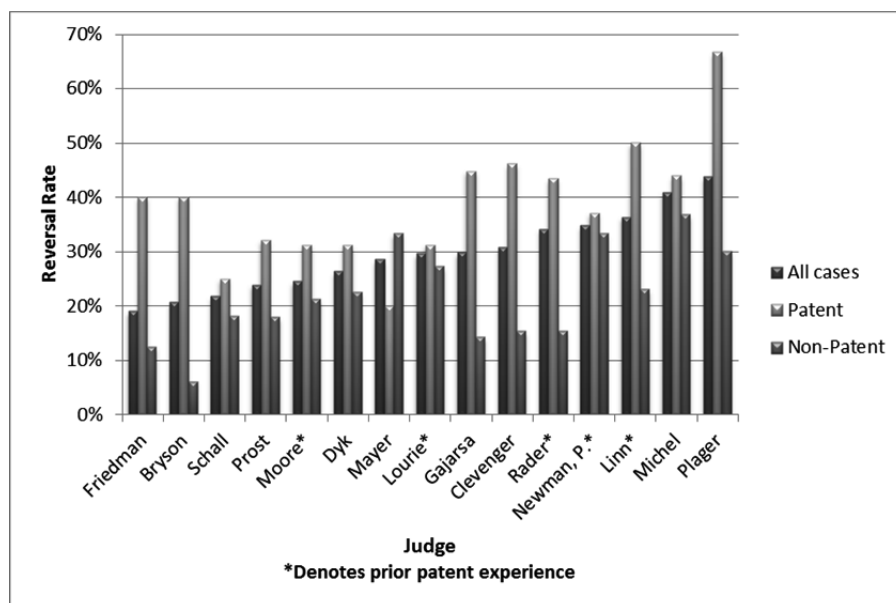
138. Values of p were calculated based on values of t using an online statistical calculator. Statistical Tables Calculator, <http://www.vassarstats.net/tabs.html> (last visited Apr. 13, 2014).

139. An r -value represents the "Pearson's product-moment correlation coefficient" between two samples. BOSLAUGH & WATTERS, *supra* note 131, at 176 (emphasis omitted). The value of " r always ranges . . . from -1 to 1, with values close to zero representing weak relationships, and high values representing strong relationships (either strongly negative or strongly positive)." *Id.* at 177.

140. Values of p were calculated based on values of r using an online statistical calculator. STATISTICAL TABLES CALCULATOR, <http://www.vassarstats.net/tabs.html> (last visited Apr. 13, 2014).

141. See *supra* Part II.B for a detailed discussion of how Yung's techniques were used in the study described in this article.

**Figure 1. Summary of Reversal Rates for Each Judge
(Listed in Order from Lowest to Highest Reversal Rates in All Cases)**



First, Part III.A.1 discusses the results for all cases. Second, Part III.A.2 discusses the results for patent cases only. Finally, Part III.A.3 discusses the results for non-patent cases only.

1. All Cases

Table 1 and Figure 2 below show the results for reversal rates for each judge of the Federal Circuit in all cases, patent and non-patent. The overall mean reversal rate for the issues studied was 29.7%. As expected, the mean reversal rate for the de novo standard of review (39.8%) was greater than that for deferential standards of review (21.2%). The reversal rates ranged from a low of 19.0% for Judge Daniel Friedman up to 43.8% for Judge S. Jay Plager. As Figure 2 illustrates, there is a high correlation between the identity of the judge and reversal rate, and this correlation is highly statistically significant.¹⁴²

142. $r = 0.985, p < 0.0001$.

**Table 1. Reversal Rates of Federal Circuit Judges—
All Cases (Patent and Non-Patent)¹⁴³**

Judge	Reversal Rate (at least in part)		
	De novo standard of review	Deferential standards of review	Overall (all standards of review)
Bryson	31.8%	13.9%	20.7%
Clevenger	40.0%	18.2%	30.8%
Dyk	34.4%	20.0%	26.4%
Friedman	20.0%	18.2%	19.0%
Gajarsa	43.5%	20.6%	29.8%
Linn*	43.8%	31.1%	36.4%
Lourie*	36.2%	20.6%	29.6%
Mayer	38.1%	19.0%	28.6%
Michel	52.0%	26.3%	40.9%
Moore*	39.1%	11.5%	24.5%
Newman, P.*	36.0%	34.1%	34.8%
Plager	60.0%	36.4%	43.8%
Prost	44.0%	11.9%	23.9%
Rader*	32.5%	35.9%	34.2%
Schall	45.5%	0.0%	21.7%
Mean	39.8%	21.2%	29.7%

143. In all tables and figures in this article, an asterisk indicates a judge that had patent-law experience before joining the Federal Circuit. See *supra* note 125 for a discussion of the criteria used to determine which judges had such previous patent-law experience.

**Figure 2. Overall Reversal Rates of Federal Circuit Judges—
All Standards of Review, All Cases (Patent and Non-Patent)**

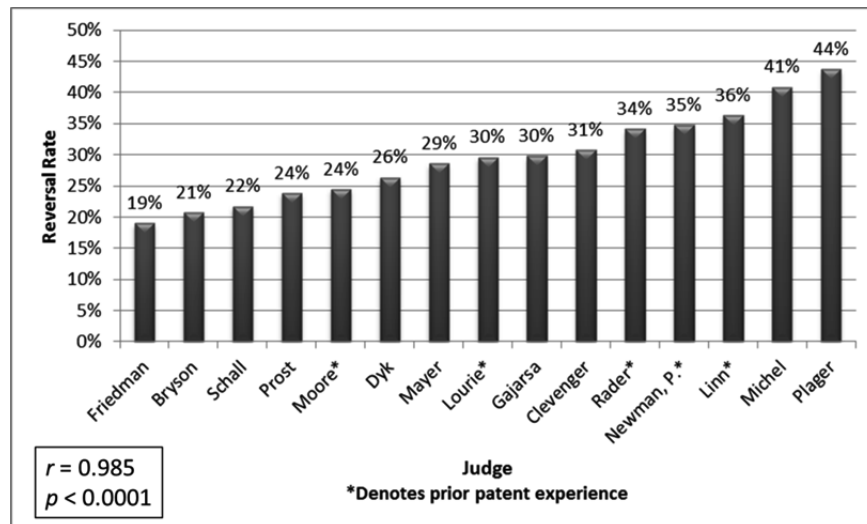


Figure 3 below shows the distribution of overall reversal rates for all standards of review and all cases, including both patent and non-patent cases. As can be seen from this figure, the distribution appears to approximate a normal, though skewed, distribution.

**Figure 3. Distribution of Reversal Rates—
All Standards of Review, All Cases (Patent and Non-Patent)**

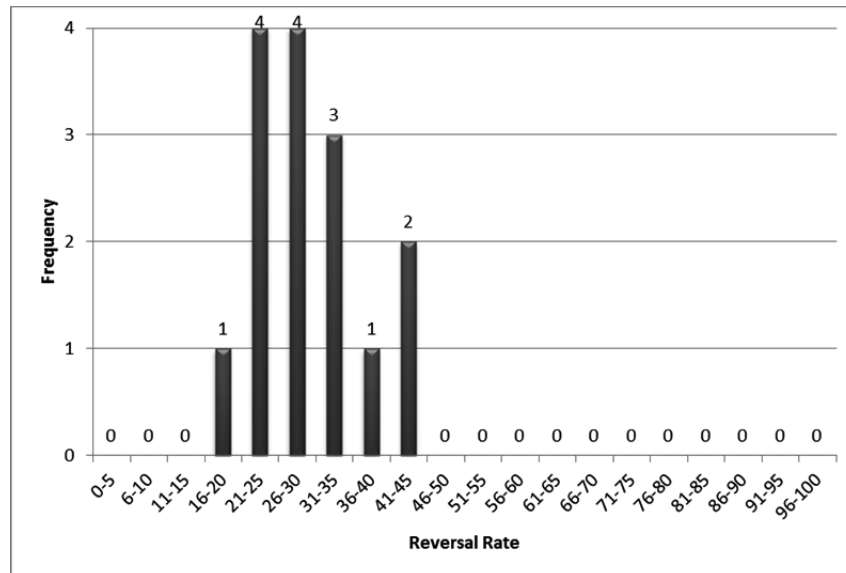
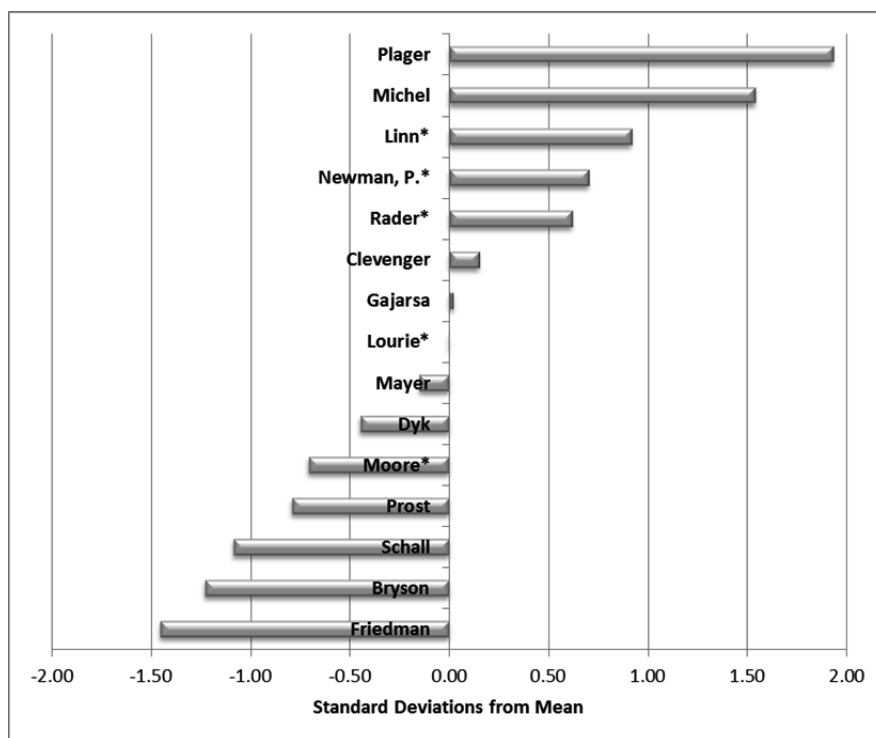


Figure 4 below shows the number of standard deviations from the mean for the overall reversal rate of each judge. Eight judges had reversal rates less than the mean,¹⁴⁴ and seven judges had reversal rates greater than the mean.¹⁴⁵ Judge Alan Lourie's reversal rate (29.6%) was almost exactly equal to the mean (29.7%). There were no outliers¹⁴⁶—in other words, no judge's reversal rate was greater than two standard deviations above or below the mean.

**Figure 4. Standard Deviations from Mean—
All Standards of Review, All Cases (Patent and Non-Patent)**



144. These were Judges Bryson, Dyk, Friedman, Lourie, Mayer, Moore, Prost, and Schall.

145. These were Judges Clevenger, Gajarsa, Linn, Michel, Newman, Plager, and Rader.

146. The definition of “outlier” used here is a value that is “two or more standard deviations above or below the mean.” *See, e.g.,* BOSLAUGH & WATTERS, *supra* note 131, at 62 (defining an outlier as a data point or observation that is different from others being analyzed in the data set).

2. Patent Cases Only

Table 2 and Figure 5 below show the results for overall reversal rates for each judge of the Federal Circuit in patent cases only. The overall mean reversal rate for patent cases only was 38.9%. As expected, the mean reversal rate for the de novo standard of review (46.7%) was again greater than that for deferential standards of review (25.7%). The reversal rates ranged from a low of 19.0% for Judge Friedman up to 43.8% for Judge Plager. Figure 5 illustrates there is again a high correlation between the identity of the judge and reversal rate for patent cases only, and this correlation is highly statistically significant.¹⁴⁷ Interestingly, the overall reversal rate for patent cases only (38.9%) was substantially greater than that of all cases (29.7%).

**Table 2. Reversal Rates of Federal Circuit Judges—
Patent Cases Only**

Judge	Reversal Rate (at least in part)		
	De novo standard of review	Deferential standards of review	Overall (all standards of review)
Bryson	46.7%	30.0%	40.0%
Clevenger	55.6%	25.0%	46.2%
Dyk	38.9%	21.4%	31.3%
Friedman	50.0%	0.0%	40.0%
Gajarsa	50.0%	40.0%	44.8%
Linn*	52.6%	47.4%	50.0%
Lourie*	34.4%	25.0%	31.3%
Mayer	28.6%	12.5%	20.0%
Michel	62.5%	11.1%	44.0%
Moore*	40.0%	16.7%	31.3%
Newman, P.*	33.3%	40.0%	37.0%
Plager	75.0%	50.0%	66.7%
Prost	50.0%	18.8%	32.1%
Rader*	40.6%	47.6%	43.4%
Schall	42.9%	0.0%	25.0%
Mean	46.7%	25.7%	38.9%

147. $r = 0.941, p < 0.0001$.

**Figure 5. Overall Reversal Rates of Federal Circuit Judges—
All Standards of Review, Patent Cases Only**

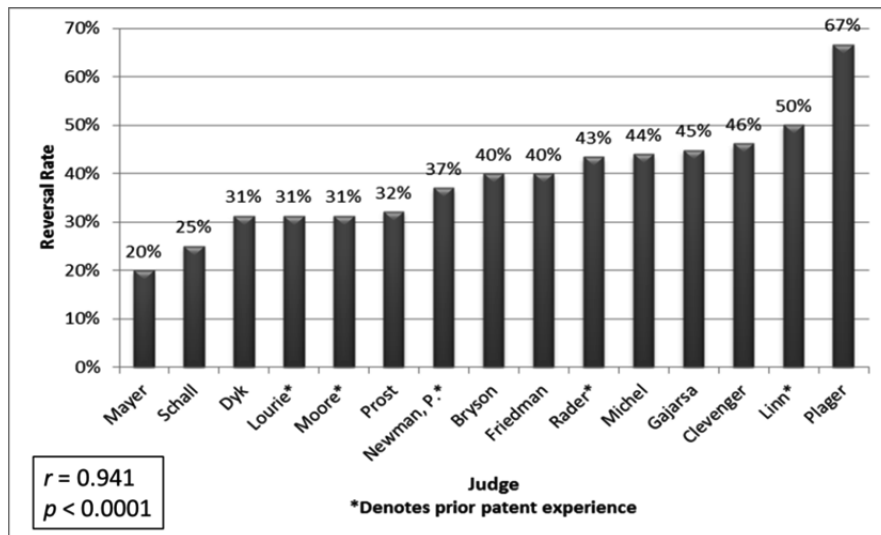


Figure 6 below shows the distribution of overall reversal rates for all standards of review for patent cases only. As can be seen from this Figure, as for all cases, the distribution of reversal rates for patent cases only appears to again approximate a normal, though skewed, distribution.

**Figure 6. Distribution of Reversal Rates—
All Standards of Review, Patent Cases Only**

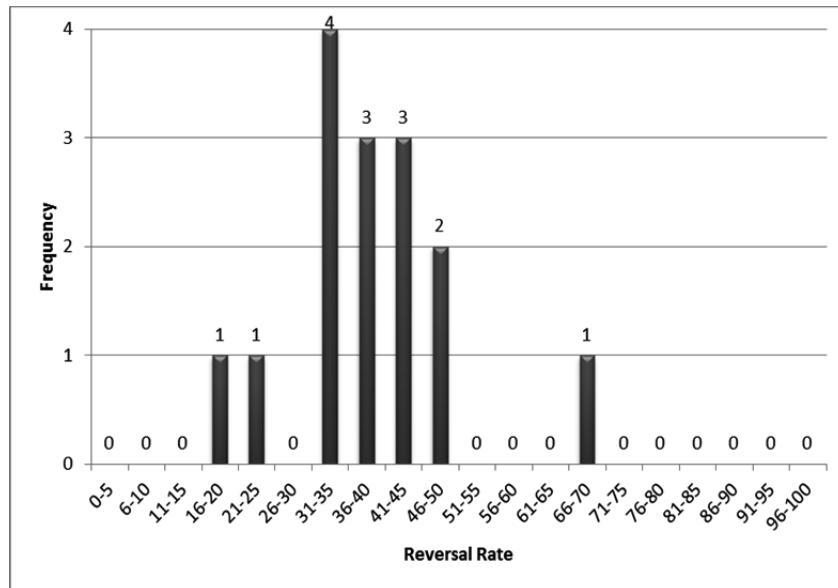
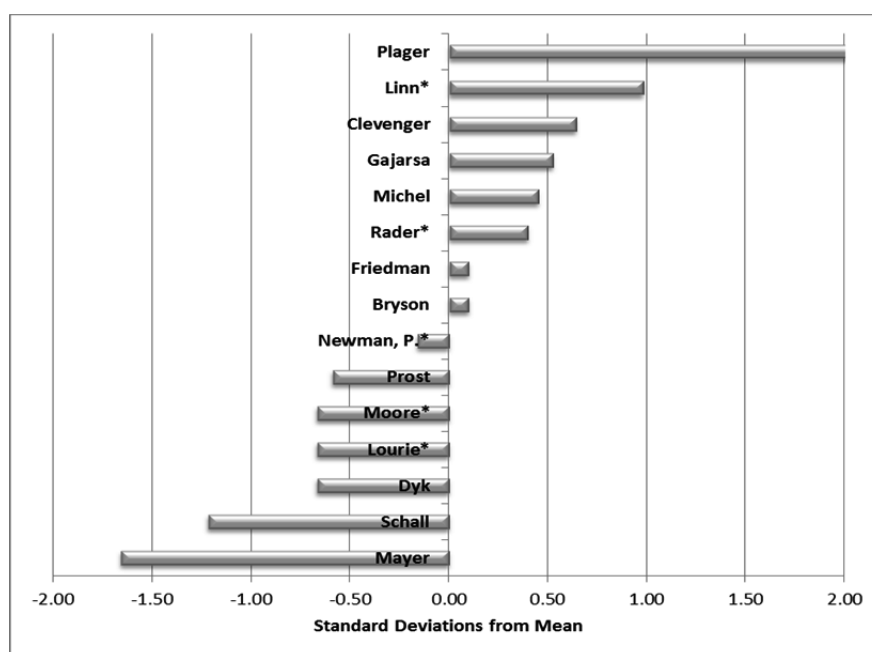


Figure 7 below shows the number of standard deviations from the mean for the overall reversal rate of each judge for patent cases only. This time, seven judges had reversal rates less than the mean,¹⁴⁸ and eight judges had reversal rates greater than the mean.¹⁴⁹ Judges Bryson and Friedman's reversal rates (40.0% each) were the closest to the mean for patent cases only (38.9%). Again, no judge was an outlier.

**Figure 7. Standard Deviations from Mean—
All Standards of Review, Patent Cases Only**



3. Non-Patent Cases Only

Table 3 and Figure 8 below show the results for overall reversal rates for each judge of the Federal Circuit in non-patent cases only. The overall mean reversal rate for non-patent cases only was 21.8%. As expected, the mean reversal rate for the de novo standard of review (26.1%) was yet again greater than that for deferential standards of review (18.0%). The reversal

148. These were Judges Dyk, Lourie, Mayer, Moore, Newman, Prost, and Schall.

149. These were Judges Bryson, Clevenger, Friedman, Gajarsa, Linn, Michel, Plager, and Rader.

rates ranged from a low of 6.1% for Judge Bryson up to 36.8% for Judge Michel. Figure 8 indicates, as with all cases and patent cases only, there is yet again a high correlation between the identity of the judge and reversal rate for non-patent cases only, and this correlation is highly statistically significant.¹⁵⁰ Interestingly, the overall reversal rate for non-patent cases only (21.8%) was substantially less than that of patent cases only (38.9%) and that of all cases (29.7%).

**Table 3. Reversal Rates of Federal Circuit Judges—
Non-Patent Cases Only**

Judge	Reversal Rate (at least in part)		
	De novo standard of review	Deferential standards of review	Overall (all standards of review)
Bryson	0.0%	7.7%	6.1%
Clevenger	16.7%	14.3%	15.4%
Dyk	28.6%	19.2%	22.5%
Friedman	0.0%	20.0%	12.5%
Gajarsa	33.3%	5.3%	14.3%
Linn*	30.8%	19.2%	23.1%
Lourie*	40.0%	16.7%	27.3%
Mayer	42.9%	23.1%	33.3%
Michel	33.3%	40.0%	36.8%
Moore*	38.5%	10.0%	21.2%
Newman, P.*	38.5%	31.0%	33.3%
Plager	0.0%	33.3%	30.0%
Prost	38.5%	7.7%	17.9%
Rader*	0.0%	22.2%	15.4%
Schall	50.0%	0.0%	18.2%
Mean	26.1%	18.0%	21.8%

150. $r = 0.984, p < 0.0001$.

**Figure 8. Overall Reversal Rates of Federal Circuit Judges—
All Standards of Review, Non-Patent Cases Only**

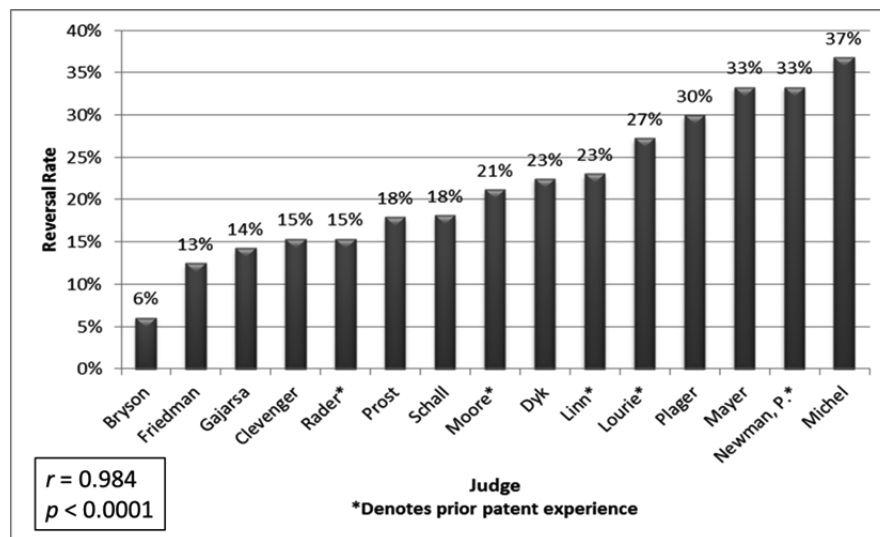


Figure 9 below shows the distribution of overall reversal rates for all standards of review for non-patent cases only. As can be seen from this figure, as for all cases and patent cases only, the distribution of reversal rates for non-patent cases only appears to once again approximate a normal, though skewed, distribution.

**Figure 9. Distribution of Reversal Rates—
All Standards of Review, Non-Patent Cases Only**

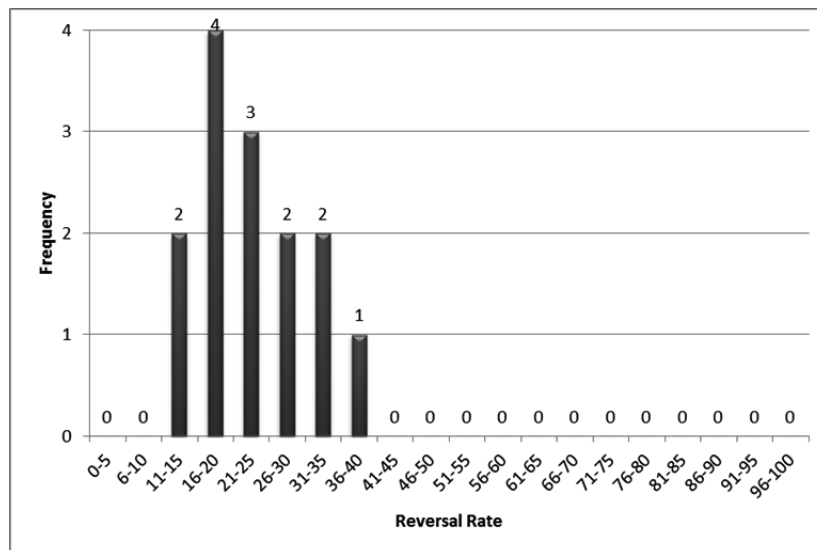
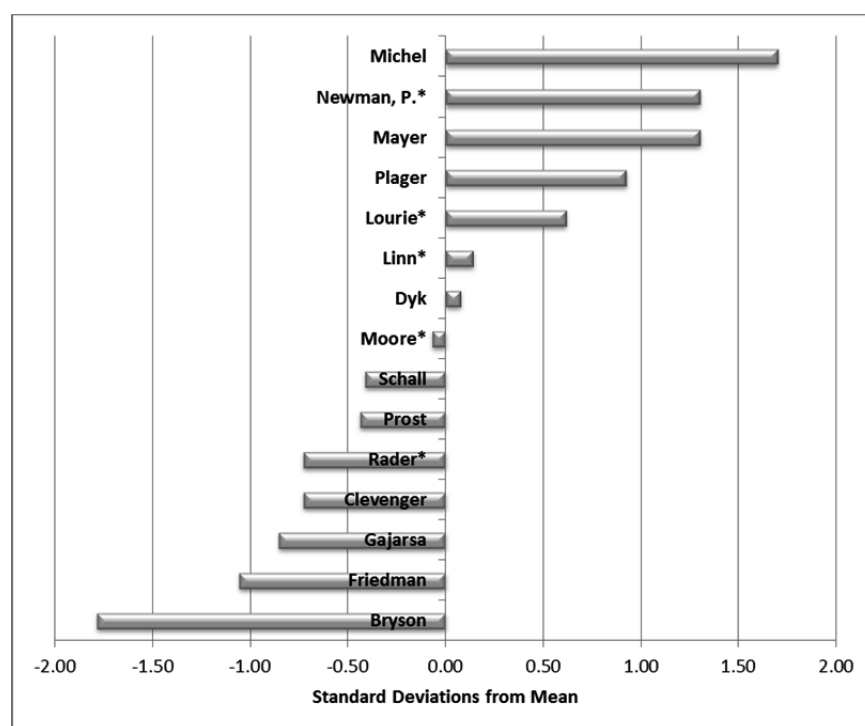


Figure 10 below shows the number of standard deviations from the mean for the overall reversal rate of each judge for non-patent cases only. This time, eight judges had reversal rates less than the mean,¹⁵¹ and seven judges had reversal rates greater than the mean.¹⁵² Judge Moore's reversal rate (21.2%) was closest to the mean for non-patent cases only (21.8%). Again, no judge was an outlier.

**Figure 10. Standard Deviations from Mean—
All Standards of Review, Non-Patent Cases Only**



151. These were Judges Bryson, Clevenger, Friedman, Gajarsa, Moore, Prost, Rader, and Schall.

152. These were Judges Dyk, Linn, Lourie, Mayer, Michel, Newman, and Plager.

B. Activism Differentials

This Part discusses the results of the empirical study relating to activism differentials and scaled activism scores using Yung's method.¹⁵³ Analyzing judicial hyperactivity using Yung's activism differentials and scaled activism scores is superior to using raw reversal rates. Yung's method uses a judge's reversal rate with the de novo standard of review as a baseline.¹⁵⁴ Using this baseline "remove[s] cases decided only by ideology or other factors separate from the concept of activism"¹⁵⁵ or judicial hyperactivity. Thus, the use of activism differentials and scaled activism scores provides a better measure of judicial hyperactivity than studying reversal rates alone.

The absence of a statistically significant correlation between activism differentials and reversal rates for the population analyzed supports the finding that activism differentials are measuring a different type of judicial behavior than reversal rates. If activism differentials were measuring the same type of judicial behavior as reversal rates, then a strong positive correlation would be expected to exist between these two measures. But this study observed only a weak positive correlation, and this correlation was not statistically significant.¹⁵⁶ Thus, activism differentials are likely measuring something different than reversal rates.

First, Part III.B.1 below discusses the results for all cases. Second, Part III.B.2 discusses the results for patent cases only. Third, Part III.B.3 discusses the results for non-patent cases only.

1. All Cases

Table 4 and Figure 11 below show the activism differentials and scaled activism scores¹⁵⁷ for each judge of the Federal Circuit in all cases, patent and non-patent. The lowest activism differential and scaled activism score belonged to Judge Schall (-0.455 and 0,¹⁵⁸ respectively). And the highest

153. See *supra* Part II.B for a detailed discussion of how Yung's techniques were used to calculate activism differentials and scaled activism scores in the study described in this article.

154. Yung, *supra* note 6, at 22.

155. *Id.*

156. For activism differentials and reversal rates calculated from the data for all judges in all cases (patent and non-patent), $r = 0.164$ and $p = 0.280$. This value of p is far greater than the value of $p = 0.05$, a value below which would be required under the traditional definition of statistical significance.

157. See *supra* Part II.B for a detailed discussion of how Yung's techniques were used to calculate activism differentials and scaled activism scores in the study described in this article.

158. The lowest scaled activism score for a group of judges is zero by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

activism differential and scaled activism score belonged to Judge Rader (0.034 and 100,¹⁵⁹ respectively). Thus, by this measure, Judge Schall was the least judicially hyperactive judge in the population of cases studied, and Judge Rader was the most judicially hyperactive judge in the population. Figure 11 ranks the judicial hyperactivity of judges in the population as measured by activism differential. Also, as Figure 11 illustrates, there is a high correlation between the identity of the judge and scaled activism score, and this correlation is highly statistically significant.¹⁶⁰

Interestingly, Figure 11 also reveals that judges with prior patent-law experience before joining the Federal Circuit¹⁶¹ appeared to show a somewhat greater degree of judicial hyperactivity than judges with no such prior patent-law experience. Indeed, Figure 11 shows that three of the top four ranked judges had prior patent-law experience. A statistical analysis of these results, described below, revealed that in fact there was a statistically significant difference between the mean activism differentials of judges with prior patent-law experience and judges with no prior patent-law experience in all cases.¹⁶²

159. The highest scaled activism score for a group of judges is 100 by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

160. $r = 0.957, p < 0.0001$.

161. The judges in this study with prior patent-law experience were Judges Linn, Lourie, Moore, Newman, and Rader. See *supra* note 125 for the criteria used to differentiate between Federal Circuit judges with and without prior patent-law experience.

162. The mean activism differential for judges with prior patent-law experience was -0.109 in all cases, and the mean activism differential for judges with no prior patent-law experience was -0.225. This difference was statistically significant ($p = 0.0452$). See *infra* Part IV.B for a detailed discussion of this analysis.

**Table 4. Activism Differentials and Scaled Activism Scores—
All Cases (Patent and Non-Patent)**

Judge	Activism Differential	Scaled Activism Score
Bryson	-0.179	56.3
Clevenger	-0.218	48.4
Dyk	-0.144	63.6
Friedman	-0.018	89.3
Gajarsa	-0.229	46.2
Linn*	-0.126	67.2
Lourie*	-0.156	61.1
Mayer	-0.190	54.1
Michel	-0.257	40.5
Moore*	-0.276	36.6
Newman, P.*	-0.019	89.1
Plager	-0.236	44.7
Prost	-0.321	27.3
Rader*	0.034	100.0
Schall	-0.455	0.0

Figure 11. Scaled Activism Scores—All Cases (Patent and Non-Patent)

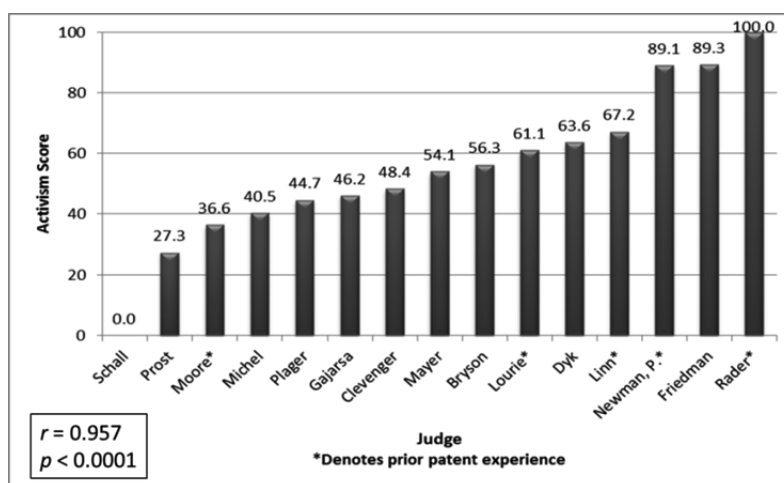


Figure 12 below shows the distribution of scaled activism scores for all cases (i.e., patent and non-patent). This Figure shows the distribution appears to approximate a normal, though skewed, distribution.

**Figure 12. Distribution of Scaled Activism Scores—
All Cases (Patent and Non-Patent)**

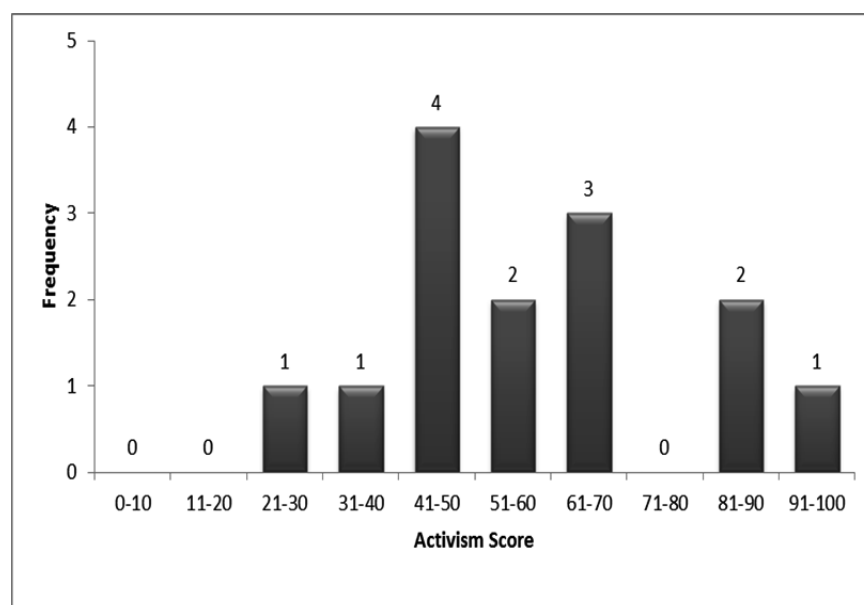


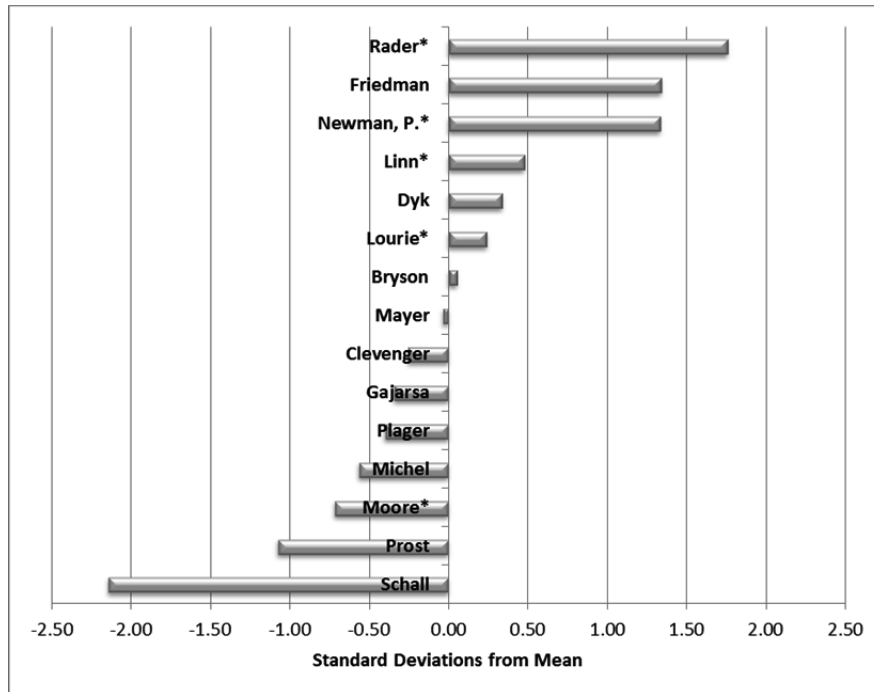
Figure 13 further aides in understanding the extent to which each judge in the population of cases studied was judicially hyperactive. Figure 13 shows the number of standard deviations from the mean for the activism differential of each judge. Eight judges had activism differentials less than the mean,¹⁶³ and seven judges had activism differentials greater than the mean.¹⁶⁴ Judge Bryson's activism differential (-0.179) was almost exactly equal to the mean activism differential (-0.186). This time, there was one judge—Judge Schall—who might be considered an outlier¹⁶⁵ because his activism differential was slightly greater than two standards of deviation less than the mean (-2.14).

163. These were Judges Clevenger, Gajarsa, Mayer, Michel, Moore, Plager, Prost, and Schall.

164. These were Judges Bryson, Dyk, Friedman, Linn, Lourie, Newman, and Rader.

165. The definition of "outlier" used here is a value that is "two or more standard deviations above or below the mean." *See, e.g., BOSLAUGH & WATTERS, supra* note 131, at 62 (defining an outlier as a data point or observation that is different from others being analyzed in the data set).

**Figure 13. Standard Deviations from Mean of Activism Differentials—
All Cases (Patent and Non-Patent)**



2. Patent Cases Only

Table 5 and Figure 14 below show the activism differentials and scaled activism scores¹⁶⁶ for each judge of the Federal Circuit in patent cases only. The lowest activism differential and scaled activism score for patent cases only belonged to Judge Michel (-0.514 and 0,¹⁶⁷ respectively). And the highest activism differential and scaled activism score for patent cases only belonged to Judge Rader (0.070 and 100,¹⁶⁸ respectively). Thus, by this measure, Judge Michel was the least judicially hyperactive judge in the population of patent cases studied, and Judge Rader was the most judicially

166. See *supra* Part II.B for a detailed discussion of how Yung's techniques were used to calculate activism differentials and scaled activism scores in the study described in this Article.

167. The lowest scaled activism score for a group of judges is 0 by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

168. The highest scaled activism score for a group of judges is 100 by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

hyperactive judge in the population of patent cases. Figure 14 clearly shows how the judges in the population of patent cases rank with respect to judicial hyperactivity as measured by activism differential. Also, Figure 14 shows that there is a high correlation between the identity of the judge and scaled activism score, and this correlation is highly statistically significant.¹⁶⁹

Interestingly, Figure 14 also reveals that judges with prior patent-law experience before joining the Federal Circuit¹⁷⁰ appeared to show a greater degree of judicial hyperactivity in patent cases than judges with no such prior patent-law experience. Indeed, Figure 14 shows that the top four ranked judges in patent cases all had prior patent-law experience, and four of the five judges with prior patent-law experience were ranked one through four in scaled activism scores in patent cases, with scores all greater than or equal to 72.0.¹⁷¹ A statistical analysis of these results, described below, revealed that in fact there was a strong, statistically significant difference between the mean activism differentials of judges with prior patent-law experience and judges with no prior patent-law experience in patent cases.¹⁷²

169. $r = 0.982, p < 0.0001$.

170. The judges in this study with prior patent law-experience are Judges Linn, Lourie, Moore, Newman, and Rader. See *supra* note 125 for the criteria used to differentiate between Federal Circuit judges with and without prior patent-law experience.

171. The only judge with prior patent-law experience that did not rank high in scaled activism score for patent cases was Judge Moore, who ranked ninth with a score of 48.1.

172. The mean activism differential for judges with prior patent-law experience was -0.049 in patent cases and the mean activism differential for judges with no prior patent-law experience was -0.291 in patent cases. This difference was strongly statistically significant ($p = 0.0040$). See *infra* Part IV.B for a detailed discussion of this analysis.

**Table 5. Activism Differentials and Scaled Activism Scores—
Patent Cases Only**

Judge	Activism Differential	Scaled Activism Score
Bryson	-0.167	59.5
Clevenger	-0.306	35.7
Dyk	-0.175	58.1
Friedman	-0.500	2.4
Gajarsa	-0.100	70.9
Linn*	-0.053	79.0
Lourie*	-0.094	72.0
Mayer	-0.161	60.5
Michel	-0.514	0.0
Moore*	-0.233	48.1
Newman, P.*	0.067	99.4
Plager	-0.250	45.2
Prost	-0.313	34.5
Rader*	0.070	100.0
Schall	-0.429	14.6

Figure 14. Scaled Activism Scores—Patent Cases Only

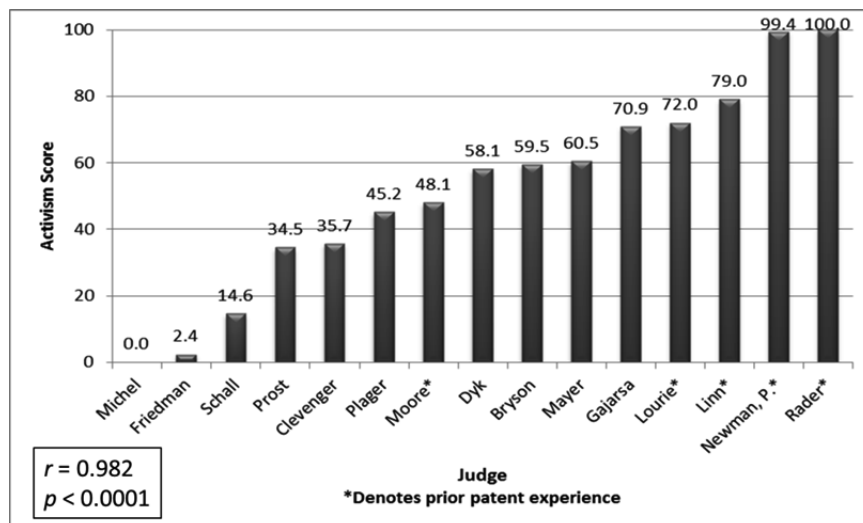


Figure 15 below shows the distribution of scaled activism scores for patent cases only. As can be seen from this figure, unlike results for other categories, the distribution of scaled activism scores for patent cases does not appear to be normal. Instead, the scaled activism scores appear to be uniformly distributed among the judges studied.

Figure 15. Distribution of Scaled Activism Scores—Patent Cases Only

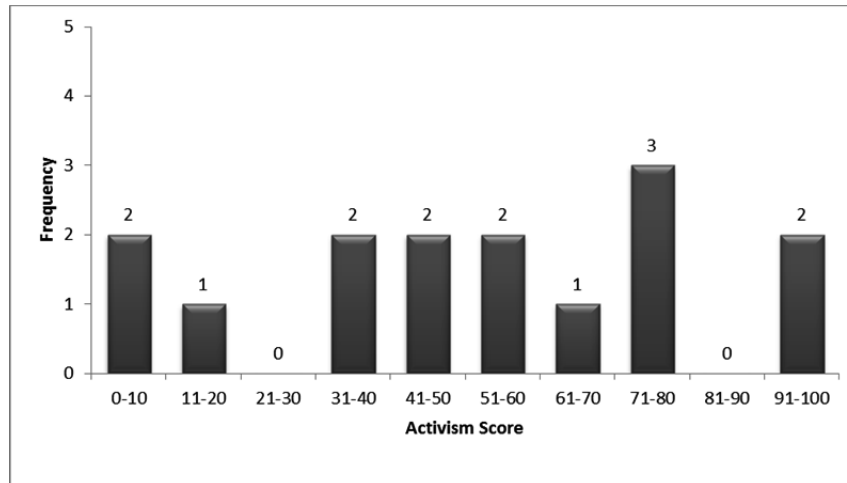
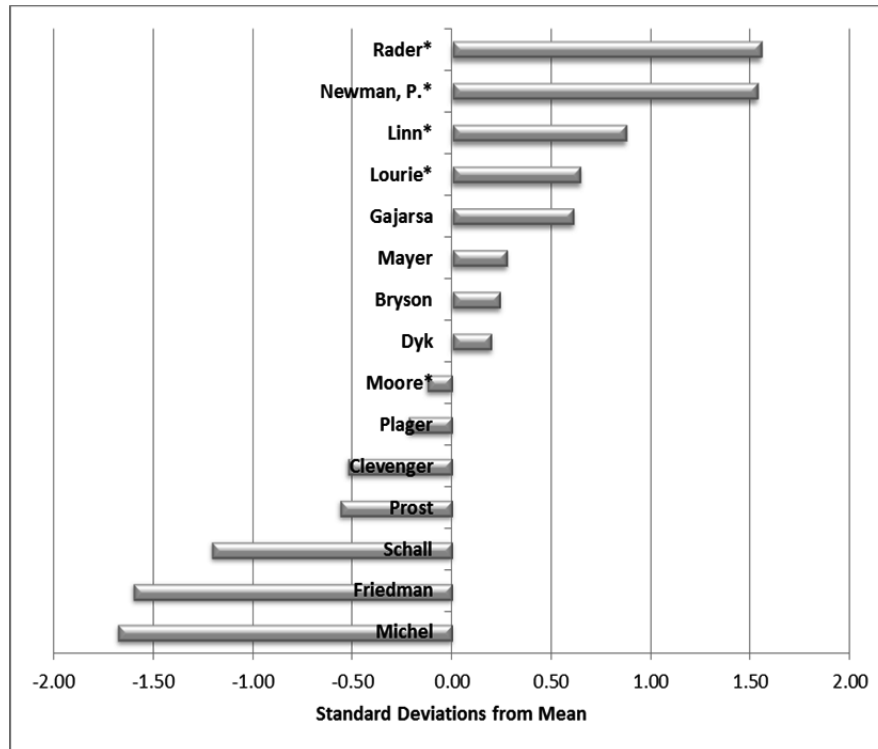


Figure 16 further aides in understanding the extent to which each judge in the population of cases studied was judicially hyperactive in patent cases. Figure 16 shows the number of standard deviations from the mean for the activism differential of each judge for the population of patent cases only. Seven judges had activism differentials less than the mean,¹⁷³ and eight judges had activism differentials greater than the mean.¹⁷⁴ Judge Moore's activism differential (-0.233) was closest to the mean activism differential (-0.210). No judge was an outlier.

173. These were Judges Clevenger, Friedman, Michel, Moore, Plager, Prost, and Schall.

174. These were Judges Bryson, Dyk, Gajarsa, Linn, Lourie, Mayer, Newman, and Rader.

**Figure 16. Standard Deviations from Mean of Activism Differentials—
Patent Cases Only**



3. Non-Patent Cases Only

Table 6 and Figure 17 below show the activism differentials and scaled activism scores¹⁷⁵ for each judge of the Federal Circuit in non-patent cases only. The lowest activism differential and scaled activism score for non-patent cases only belonged to Judge Schall (-0.500 and 0,¹⁷⁶ respectively). And the highest activism differential and scaled activism score for non-patent cases only belonged to Judge Plager (0.333 and 100,¹⁷⁷ respectively).

175. See *supra* Part II.B for a detailed discussion of how Yung's techniques were used to calculate activism differentials and scaled activism scores in the study described in this Article.

176. The lowest scaled activism score for a group of judges is 0 by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

177. The highest scaled activism score for a group of judges is 100 by definition. See *supra* notes 128–129 and accompanying text for a description of how raw activism differentials were converted to scaled activism scores.

Thus, by this measure, Judge Schall was the least judicially hyperactive judge in the population of non-patent cases studied, and Judge Plager was the most judicially hyperactive judge in the population of non-patent cases. Figure 17 clearly shows how the judges in the population of non-patent cases rank with respect to judicial hyperactivity as measured by activism differential. Also, Figure 17 shows there is a high correlation between the identity of the judge and scaled activism score, and this correlation is highly statistically significant.¹⁷⁸

Unlike in the all-cases and patent-only-cases categories, Figure 17 reveals that the judicial hyperactivity of judges with prior patent-law experience¹⁷⁹ seems equally distributed throughout the continuum of judicial hyperactivity. A statistical analysis of these results, described below, revealed that in fact there was no statistically significant difference between the mean activism differentials of judges with prior patent-law experience and judges with no prior patent-law experience in non-patent cases.¹⁸⁰

178. $r = 0.984, p < 0.0001$.

179. The judges in this study with prior patent law-experience are Judges Linn, Lourie, Moore, Newman, and Rader. See *supra* note 125 for the criteria used to differentiate between Federal Circuit judges with and without prior patent-law experience.

180. The mean activism differential for judges with prior patent law-experience was -0.0971 in non-patent cases, and the mean activism differential for judges with no prior patent-law experience was -0.0726 in non-patent cases. This difference was not statistically significant ($p = 0.427$). See *infra* Part IV. B for a detailed discussion of this analysis.

**Table 6. Activism Differentials and Scaled Activism Scores—
Non-Patent Cases Only**

Judge	Activism Differential	Scaled Activism Score
Bryson	0.077	69.2
Clevenger	-0.024	57.1
Dyk	-0.093	48.8
Friedman	0.200	84.0
Gajarsa	-0.281	26.3
Linn*	-0.115	46.2
Lourie*	-0.233	32.0
Mayer	-0.198	36.3
Michel	0.067	68.0
Moore*	-0.285	25.8
Newman, P.*	-0.074	51.1
Plager	0.333	100.0
Prost	-0.308	23.1
Rader*	0.222	86.7
Schall	-0.500	0.0

Figure 17. Scaled Activism Scores—Non-Patent Cases Only

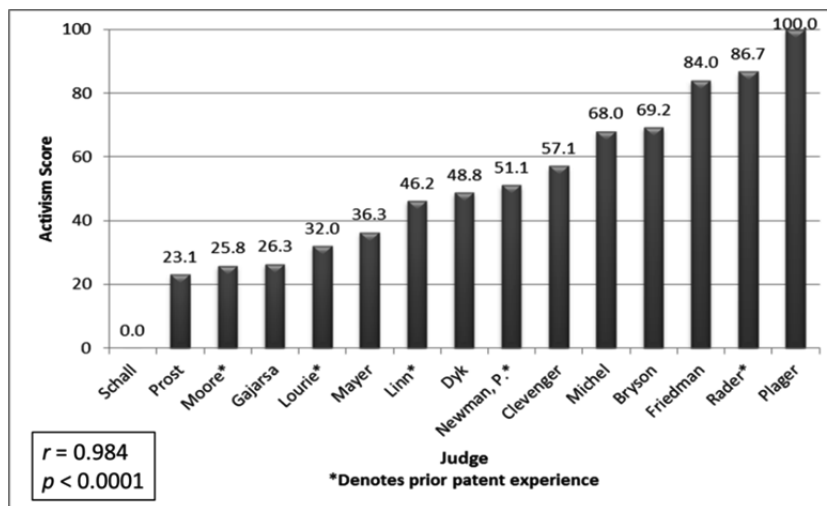


Figure 18 below shows the distribution of scaled activism scores for non-patent cases only. As this figure shows, the distribution of scaled activism scores for non-patent cases does not appear to be normal. Instead, the scaled activism scores appear to be somewhat uniformly distributed among the judges studied.

Figure 18. Distribution of Scaled Activism Scores—Non-Patent Cases Only

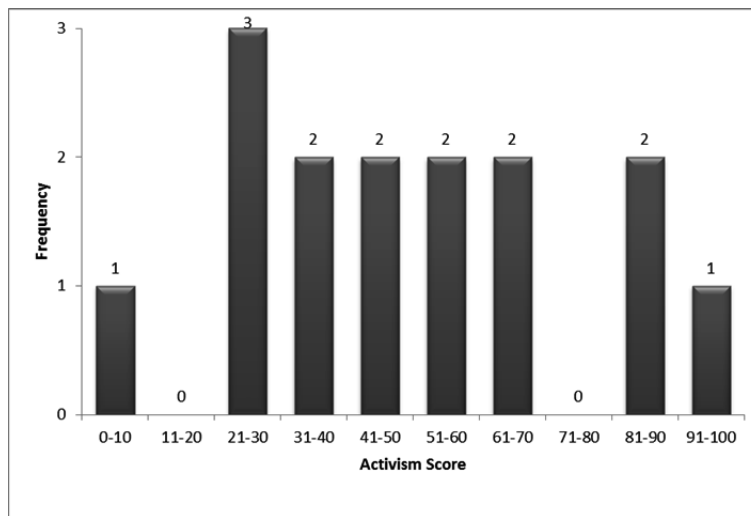
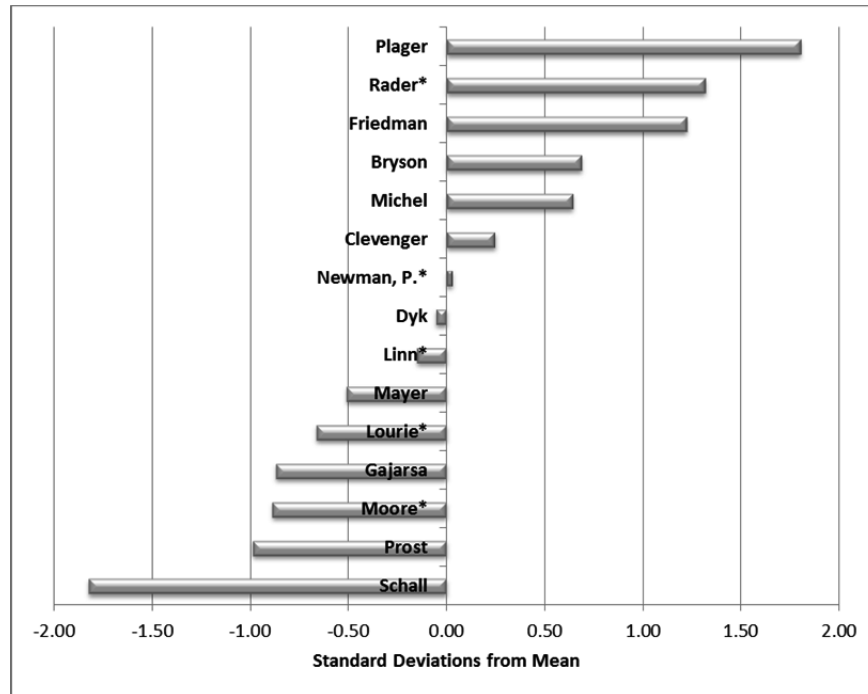


Figure 19 further aides in understanding the extent to which each judge in the population of cases studied was judicially hyperactive in non-patent cases. This Figure shows the number of standard deviations from the mean for the activism differential of each judge for the population of non-patent cases only. Eight judges had activism differentials less than the mean,¹⁸¹ and seven judges had activism differentials greater than the mean.¹⁸² Judge Newman's activism differential (-0.074) was closest to the mean activism differential (-0.081). Finally, no judge was an outlier.

181. These were Judges Dyk, Gajarsa, Linn, Lourie, Mayer, Moore, Prost, and Schall.

182. These were Judges Bryson, Clevenger, Friedman, Michel, Newman, Plager, and Rader.

**Figure 19. Standard Deviations from Mean of Activism Differentials—
Non-Patent Cases Only**



IV. IMPLICATIONS OF THE RESULTS

This Part discusses some implications of the study's results described in this Article. Part IV.A starts by discussing the implication that the judges of the Federal Circuit exhibit a beneficial range of judicial hyperactivity. Next, Part IV.B discusses the conclusion that Federal Circuit judges with prior patent-law experience are more judicially hyperactive in patent cases, but not in non-patent cases. Finally, Part IV.C concludes that Federal Circuit judges appointed by Republican Presidents are no more or less judicially hyperactive than those appointed by Democratic Presidents.

A. The Judges of the Federal Circuit Exhibit a Beneficial Range of Judicial Hyperactivity

The data in this study show that the judges of the Federal Circuit exhibit a seemingly beneficial range of judicial hyperactivity. Looking at either reversal rates or activism differentials, the results show that during

the time period of this study, the Federal Circuit was composed of judges who showed various degrees of judicial hyperactivity. In all three categories of cases studied—all cases (patent and non-patent), patent only, and non-patent only—the reversal rate data revealed a somewhat normal (though skewed) distribution.¹⁸³ When examining the activism differential results, in the all-cases category, a similar normal-but-skewed distribution was observed.¹⁸⁴ But using the activism differential results for the categories of patent cases and non-patent cases, activism differential was evenly rather than normally distributed among the judges.¹⁸⁵

These results reveal that the composition of the Federal Circuit may be ideal in terms of range of judicial hyperactivity. The court appears to include judges from both ends and the middle of the judicial-hyperactivity continuum. A court with too few judicially hyperactive judges might be less effective than one with a greater number of judicially hyperactive judges. Indeed, a court with few or no judicially hyperactive judges may lack the innovative, risk-taking characteristics of the “judicial entrepreneur,”¹⁸⁶ which are necessary to allow the court to evolve the law as appropriate under changing circumstances.¹⁸⁷ Such evolution is particularly important in patent law if it is to keep up with ever-changing technologies.¹⁸⁸

In contrast, a court with too many judicially hyperactive judges might be less effective than one with fewer judicially hyperactive judges. Such a court may lack the stability that minimalist judges provide.¹⁸⁹ Moreover, such a court may lack the ability to fulfill one of the central purposes of the Federal Circuit: to “yield a clearer, more coherent, more predictable legal

183. See *supra* Part III.A for a discussion of reversal rate data.

184. See *supra* Part III.B.1 for a discussion of activism differential data for the all-cases category.

185. See *supra* Parts III.B.2 and III.B.3 for discussions of activism differential data for patent cases and non-patent cases, respectively.

186. See Cross & Lindquist, *supra* note 9, at 1419–21 (describing distinguishing characteristics of the judicial entrepreneur). See *supra* Part I.B.2 for a discussion of judicial entrepreneurs.

187. See Cross & Lindquist, *supra* note 9, at 1425 (“A court consisting entirely of judicial entrepreneurs might be unduly activist and, to the extent that their judicial preferences differ, might produce many conflicting precedents and instability in the law.”).

188. See, e.g., Sean B. Seymore, *Atypical Inventions*, 86 NOTRE DAME L. REV. 2057, 2058 (2011) (“Patent law is one of the most dynamic areas of the law because it must respond as the nature of the invention landscape changes to reflect advances in science and technology.”); Teri-Lynn A. Evans, Note, *The Effect of the Supreme Court’s Decision in KSR on the System of Patent Litigation*, 40 RUTGERS L.J. 669, 674 (2009) (“Patent law is a constantly evolving system of jurisprudence because it is based on the demands of the ever-changing technological community . . .”).

189. See Cross & Lindquist, *supra* note 9, at 1419–21 (describing distinguishing characteristics of the judicial minimalist); SUNSTEIN, *supra* note 71, at 5. See *supra* Part I.B.2 for a discussion of judicial minimalists.

infrastructure for the patent system.”¹⁹⁰ Indeed, a court with too many judicially hyperactive entrepreneurs may decrease the predictability of the patent system because the court’s results would be too judge-dependent.¹⁹¹ Thus, the Federal Circuit has a beneficial mix of judges with respect to judicial hyperactivity because the data of this study show that the judges of the Federal Circuit exhibit a range of judicially hyperactive behavior.

B. Federal Circuit Judges with Prior Patent-Law Experience Are More Judicially Hyperactive Than Judges Without Prior Patent-Law Experience in Patent Cases, but Not in Non-Patent Cases

The activism differential data calculated in this study support the conclusion that in patent cases, Federal Circuit judges with prior patent-law experience are more judicially hyperactive than judges without prior patent-law experience.¹⁹² Judges with prior patent-law experience thus appear to be more comfortable in substituting their own judgment for that of the district court judges whose decisions they are reviewing in patent cases, possibly because they (consciously or, more likely, subconsciously) believe they have a better understanding of patent-law issues than the district court judges whose decisions they are reviewing. But the data do not support the conclusion that in non-patent cases, judges with prior patent-law experience are any more or less judicially hyperactive than judges with no prior patent-law experience.

190. Wagner & Petherbridge, *supra* note 42; see also Cross & Lindquist, *supra* note 9, at 1425 (“A court of only judicial minimalists . . . might leave the law stagnant and unable to respond to changing societal circumstances.”).

191. *Id.*

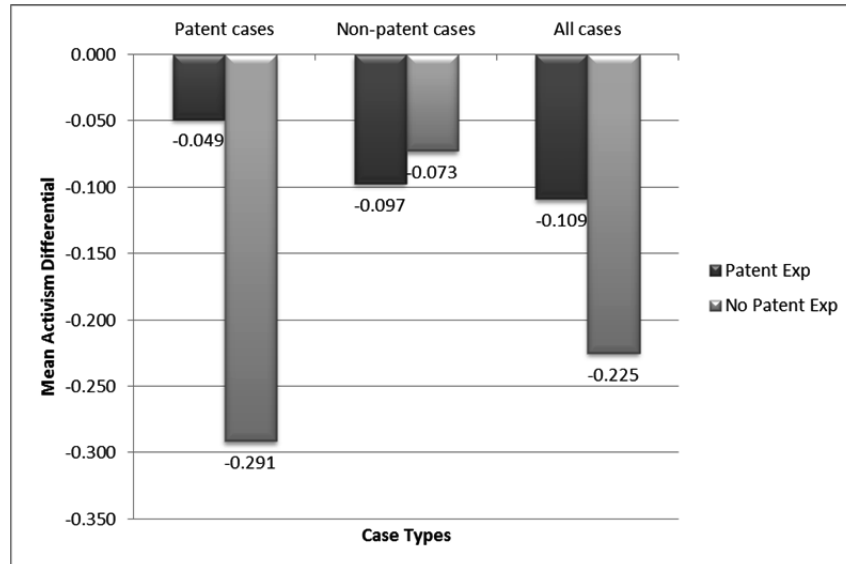
192. See *supra* note 125 for the criteria used to differentiate between Federal Circuit judges with and without prior patent-law experience, as well as the identities of the judges falling into each category.

Table 7 and Figure 20 below summarize the data used in this Part.

Table 7. Mean Activism Differentials—Judges with Prior Patent-Law Experience versus Judges with No Prior Patent-Law Experience

	Mean Activism Differential—Judges with Prior Patent-Law Experience	Mean Activism Differential—Judges with No Prior Patent-Law Experience	<i>t</i>	<i>p</i>	Stat. Sig.? (Conf. level)
Patent Cases	-0.049	-0.291	3.129	0.0040	YES (99.6%)
Non-Patent Cases	-0.0971	-0.0726	0.187	0.427	NO
All Cases	-0.109	-0.225	1.829	0.0452	YES (95.5%)

Figure 20. Mean Activism Differentials—Judges with Prior Patent-Law Experience versus Judges with No Prior Patent-Law Experience



To test whether the activism differentials calculated here tend to support the conclusion that in patent cases, judges with prior patent-law experience are more judicially hyperactive than those without prior patent-law experience, the following null hypothesis¹⁹³ was used:

In patent cases, there is no difference between the mean activism differential of Federal Circuit judges with prior patent-law experience and the mean activism differential of judges with no prior patent-law experience.

The following alternative hypothesis¹⁹⁴ was used:

In patent cases, the mean activism differential of Federal Circuit judges with prior patent-law experience is greater than the mean activism differential of judges with no prior patent-law experience.

In patent cases, the mean activism differential of judges with prior patent-law experience (-0.049) was substantially greater than that of judges with no prior patent-law experience (-0.291). This difference was statistically significant to a confidence level of 99.6%.¹⁹⁵ Thus, this evidence strongly supports the rejection of the null hypothesis and acceptance of the alternative hypothesis. Assuming that the mean activism differential of a group of judges is a valid indicator of the level of judicial hyperactivity of this group, then this study strongly supports the conclusion that Federal Circuit judges with prior patent-law experience are more judicially hyperactive than judges with no prior patent-law experience.

To test whether the activism differentials calculated here tend to support the conclusion that in non-patent cases judges with prior patent-law experience are no more or less judicially hyperactive than those without prior patent-law experience, the following null hypothesis was used:

193. A “null hypothesis” is a hypothesis that a researcher will accept “unless the statistical evidence is very strong in the other direction.” CHARLES LIVINGSTON & PAUL VOAKES, WORKING WITH NUMBERS AND STATISTICS 84 (Jennings Bryant & Dolf Zillmann eds., 2005).

194. An “[a]lternative [h]ypothesis is the opposite of the [n]ull [h]ypothesis.” *Id.* If the statistical evidence is sufficiently strong to overcome the null hypothesis, then a researcher will accept the alternative hypothesis as true. See D.G. REES, ESSENTIAL STATISTICS 141 (4th ed. 2001) (“[I]f we reject the null hypothesis we should accept the alternative hypothesis . . .”).

195. $t = 3.129$, $p = 0.0040$. Because of the way in which these null and alternative hypotheses were constructed, a one-tailed p -value was used.

In non-patent cases, there is no difference between the mean activism differential of Federal Circuit judges with prior patent-law experience and the mean activism differential of judges with no prior patent-law experience.

The following alternative hypothesis was used:

In non-patent cases, the mean activism differential of Federal Circuit judges with prior patent-law experience is either greater than or less than the mean activism differential of judges with no prior patent-law experience.

In non-patent cases, the mean activism differential of judges with prior patent-law experience (-0.0971) was slightly less than that of judges with no prior patent-law experience (-0.0726). This difference was not even close to being statistically significant.¹⁹⁶ Thus, this evidence does not support the rejection of the null hypothesis. Therefore, the alternative hypothesis cannot be accepted. Again, assuming that the mean activism differential of a group of judges is a valid indicator of the level of judicial hyperactivity of this group, then this study does not support the conclusion that Federal Circuit judges with prior patent-law experience are more or less judicially hyperactive than judges with no prior patent-law experience.

The level of judicial hyperactivity shown by the Federal Circuit judges studied here may indeed be ideal. On the whole, Federal Circuit judges with prior patent-law experience seem to be more judicially hyperactive than those without prior patent-law experience. But this judicial hyperactivity seems to come in patent cases only, not in non-patent cases. This situation may be ideal because hyperactive judges with prior patent-law experience may be best at jumping in and correcting errors by district court judges who lack a sound understanding of patent law. Thus, a court with several judges like these would best fulfill Congress's goals in creating the Federal Circuit—to bring national uniformity to patent law¹⁹⁷ and to “yield a

196. $t = 0.187$, $p = 0.854$. Because of the way in which these null and alternative hypotheses were constructed, a two-tailed p -value was used.

197. See, e.g., S. REP. NO. 97-275, at 2–6 (1981), reprinted in 1982 U.S.C.C.A.N. 11, 12–16 (discussing congressional intent to create uniformity by centralizing patent cases); see also *Holmes v. Vornado Air Circulation Sys., Inc.*, 535 U.S. 826, 838 (2002) (Stevens, J., concurring in part and concurring in the judgment) (arguing specialized courts seeks uniformity in laws); *Midwest Indus., Inc. v. Karavan Trailers, Inc.*, 175 F.3d 1356, 1359 (Fed. Cir. 1999) (en banc in relevant part) (“[O]ne of the principal purposes for the creation of this court [was] to promote uniformity in the law with regard to subject matter within our exclusive appellate jurisdiction.”); Dreyfuss, *supra* note 37, at 2–4 (discussing benefits of specialized courts); Schaffner, *supra* note 41 (stating Congress created the Federal Circuit to create uniformity in patent law).

clearer, more coherent, more predictable legal infrastructure for the patent system.”¹⁹⁸ But in non-patent cases, these judges with prior patent-law experience would not need to be any more judicially hyperactive than judges with no prior patent-law experience, and this study implies that such a situation exists.

Importantly, however, the court should not have too many judges with prior patent-law experience.¹⁹⁹ During the study period, the court had five judges with prior patent-law experience and ten judges without prior patent-law experience.²⁰⁰ Judges with no prior patent-law experience are desirable because they may inject an outsider’s perspective into patent-law. Such a perspective may be useful given that patent-law issues do not have the ability to “percolate” in other circuits as do the vast majority of other issues.²⁰¹ Thus, such an outside perspective may serve as a small substitute for such percolation with respect to patent issues. With respect to non-patent issues, judges with prior experience in fields other than patent-law may bring important experience that directly bears upon other subject areas of the Federal Circuit’s jurisprudence. Therefore, the composition of the court during the period of this study may be ideal to fulfill the Federal Circuit’s goals of uniformity and stability in patent-law without experiencing the problems that arise with overspecialization.²⁰²

*C. Federal Circuit Judges Appointed by Republican Presidents Are No
More or Less Judicially Hyperactive Than Federal Circuit Judges
Appointed by Democratic Presidents*

The activism differential data calculated in this study do not support the conclusion that there is any difference in the judicial hyperactivity between Federal Circuit judges appointed by Republican Presidents and judges appointed by Democratic Presidents. This statement is true for all

198. Wagner & Petherbridge, *supra* note 42.

199. *Cf.* Golden, *supra* note 10, at 659 (arguing that specialized courts may be problematic due to “tendencies toward interest-group capture, bias in favor of an overly muscular view of the laws under its special care, and an esotericism or tunnel vision that disconnects the circuit from broader social or legal concerns” (citations omitted)).

200. *See supra* notes 119, 125.

201. *See* Dreyfuss, *supra* note 37, at 25 (“[C]hanneling cases to a single forum also would deprive patent law of the collective wisdom of the circuit courts. Losing the tension produced by the percolation of ideas within the judiciary would, in addition, reduce the court’s incentive to reason clearly or to write persuasively.”); Nard & Duffy, *supra* note 2, at 1629–30 (describing the benefits of decentralized decision-making).

202. *See* H.R. REP. NO. 97-312 (1981), at 19; Bennett, *supra* note 37, at 12 (suggesting that rejection of specialization was a Congressional goal); Dreyfuss, *supra* note 37, at 4, 25–26 (discussing procedural flaws resulting from specialization).

three categories examined: all cases (i.e., patent and non-patent cases), patent cases only, and non-patent cases only. The traditional view is that judges appointed by Democratic Presidents are more activist or judicially hyperactive than judges appointed by Republican Presidents.²⁰³ On the surface, the differences in mean activism differentials between judges appointed by Republican Presidents and Democratic Presidents seems to follow this traditional view: for all three categories studied, the mean activism differential of the judges appointed by Democratic Presidents was greater than that of the judges appointed by Republican Presidents. But, as described below, none of these differences were statistically significant. Thus, the mean activism differential data here do not support the conclusion that there is any difference between the judicial hyperactivity of judges based on the political party of their appointing Presidents.

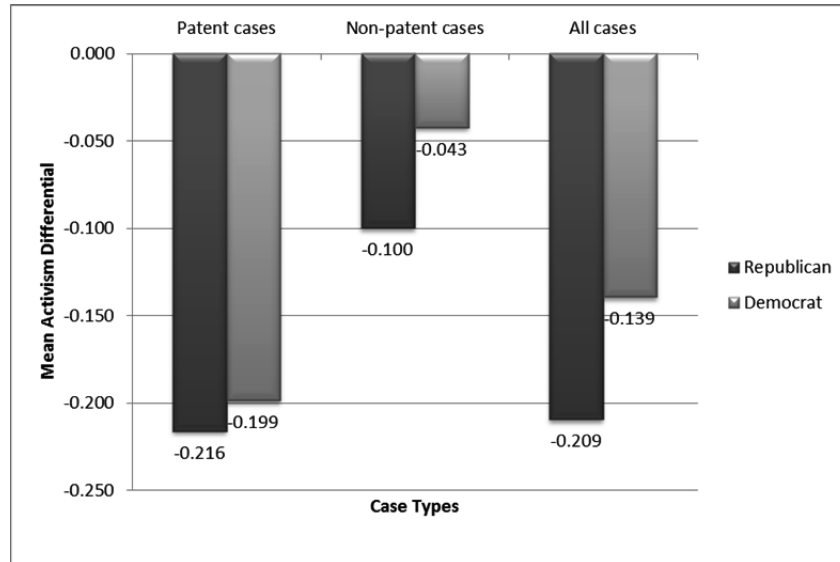
Table 8 and Figure 21 below summarize the data used in this Part.

Table 8. Mean Activism Differentials—Judges Appointed by Republican Presidents versus Judges Appointed by Democratic Presidents

	Mean Activism Differential— Judges Appointed by Rep. Pres.	Mean Activism Differential— Judges Appointed by Dem. Pres.	<i>t</i>	<i>p</i>	Stat. Sig.?
Patent Cases	-0.216	-0.199	0.170	0.868	NO
Non- Patent Cases	-0.100	-0.043	0.443	0.665	NO
All Cases	-0.209	-0.139	1.024	0.324	NO

203. See, e.g., Yung, *supra* note 6, at 7 (“[J]udicial activism was historically a label hurled at liberal judges . . .”). But in recent times, many judges appointed by Republican Presidents have also been accused of being activist. See *id.* (“[J]udicial activism . . . has more recently been an equal-opportunity epithet launched at conservatives.”).

Figure 21. Mean Activism Differentials—Judges Appointed by Republican Presidents versus Judges Appointed by Democratic Presidents



To test whether the activism differentials calculated here tend to support the conclusion that Federal Circuit judges appointed by Republican Presidents are either more or less judicially hyperactive than judges appointed by Democratic Presidents, the following null hypothesis was used:

There is no difference between the mean activism differential of Federal Circuit judges appointed by Republican Presidents and the mean activism differential of judges appointed by Democratic Presidents.

The following alternative hypothesis was used:

The mean activism differential of Federal Circuit judges appointed by Republican Presidents is greater than or less than the mean activism differential of judges appointed by Democratic Presidents.

In all cases (i.e., patent and non-patent), the mean activism differential of judges appointed by Republican Presidents (-0.209) was less than that of

judges appointed by Democratic Presidents (-0.139). This difference was not statistically significant.²⁰⁴ Similarly, in patent cases, the mean activism differential of judges appointed by Republican Presidents (-0.216) was also less than that of judges appointed by Democratic Presidents (-0.199). This difference was also not statistically significant.²⁰⁵ Finally, in non-patent cases, the mean activism differential of judges appointed by Republican Presidents (-0.100) was again less than that of judges appointed by Democratic Presidents (-0.043). Yet again, this difference was not statistically significant.²⁰⁶ Thus, for all three categories examined—all cases (i.e., patent and non-patent cases), patent cases only, and non-patent cases only—this evidence does not support the rejection of the null hypothesis. Therefore, the alternative hypothesis cannot be accepted. Again assuming that the mean activism differential of a group of judges is a valid indicator of the level of judicial hyperactivity of this group, then this study does not support the conclusion that Federal Circuit judges appointed by Republican Presidents are more or less judicially hyperactive than judges appointed by Democratic Presidents.

CONCLUSION

This study revealed that during the period studied, the judges of the Federal Circuit exhibited varying degrees of judicial hyperactivity. The court appeared to include judges from both ends and the middle of the judicial-hyperactivity continuum. Because the court includes a mix of judges whose judicial hyperactivity is high, low, and in-between, the court may be well-positioned to evolve patent law as appropriate under ever-changing technological and economic circumstances while at the same time providing sufficient predictability and stability.²⁰⁷ Thus, the judges of the Federal Circuit exhibit a seemingly beneficial range of judicial hyperactivity.

Additionally, this study shows that in patent cases, Federal Circuit judges with prior patent-law experience are more judicially hyperactive than judges without prior patent-law experience, but the same does not hold true in non-patent cases. Judges with prior patent-law experience thus

204. $t = 1.024$, $p = 0.324$. Because of the way in which these null and alternative hypotheses were constructed, a two-tailed p -value was used.

205. $t = 0.170$, $p = 0.868$. Because of the way in which these null and alternative hypotheses were constructed, a two-tailed p -value was used.

206. $t = 0.443$, $p = 0.665$. Because of the way in which these null and alternative hypotheses were constructed, a two-tailed p -value was used.

207. See Cross & Lindquist, *supra* note 9, at 1425 (discussing the need for judges on both ends of the judicial-hyperactivity continuum).

appear to be more comfortable in substituting their own judgment for that of the district court judges decisions in patent cases. A possible reason for this observation is that these judges believe—consciously or, more likely, subconsciously—that they have a better understanding of patent-law issues than the district court judges. In contrast, in non-patent cases, prior patent-law experience is irrelevant, putting judges with prior patent-law experience on par with judges with no prior patent-law experience. The data here reveal that in non-patent cases, judges with prior patent-law experience are no more or less likely than judges with no prior patent-law experience to substitute their own judgment for that of the judge of the tribunal being reviewed. The level of judicial hyperactivity shown by the Federal Circuit judges studied here may indeed be ideal because hyperactive judges with prior patent-law experience may be best at jumping in and correcting errors by district court judges who lack a sound understanding of patent law. Thus, a court with several judges like these would best be able to fulfill Congress's goals in creating the Federal Circuit.

Finally, this study also concludes that the political party of the President who appointed each judge of the Federal Circuit seems to have no effect on the extent to which the judge is judicially hyperactive. Indeed, for all three categories of cases studied—all cases (patent and non-patent), patent cases only, and non-patent cases only—there was no statistically significant difference between the mean activism differentials of judges appointed by Republican Presidents and judges appointed by Democratic Presidents. This finding goes against the traditional, though over-simplified, notion that Republican Presidents tend to appoint “conservative” judges who are less activist than “liberal” judges appointed by Democratic Presidents.²⁰⁸ But it is consistent with the idea that because of its jurisdiction, the Federal Circuit generally does not decide cases that involve highly charged political or ideological issues, whereas the other circuits might decide more such issues.

208. See, e.g., Yung, *supra* note 6, at 7 (noting that the term “judicial activism” was historically used to criticize liberal judges).