

THE ROLE OF EMPIRICAL SCHOLARSHIP IN FOURTH AMENDMENT PRIVACY JURISPRUDENCE

CHRISTINE S. SCOTT-HAYWARD, HENRY F. FRADELLA,
AND GERALD EASTWOOD*

ABSTRACT

In Katz v. United States, the U.S. Supreme Court held that the Fourth Amendment protects against unreasonable searches and seizures that violate a person's reasonable expectation of privacy. Courts routinely assess rights in this context by applying Justice Harlan's concurring opinion in Katz, which involves "a twofold requirement, first that a person has exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as [objectively] 'reasonable.'" When applying the second part of Harlan's test, courts traditionally use normative legal principles even though it poses what many scholars consider to be an empirical question. Using the methods of social science, a small but growing body of research sheds light on the circumstances in which society expects privacy. This scholarship could help attorneys support Fourth Amendment arguments and, correspondingly, assist judges in resolving such claims. This Article presents the results of a systematic content analysis examining how lawyers use empirical research in briefs submitted to courts in which they make Fourth Amendment privacy arguments and, correspondingly, how courts then engage with the research findings brought to their attention. The results suggest that few courts have embraced the use of empirical research to support their opinions even though doing so could improve the quality of their legal reasoning and increase the legitimacy of case outcomes and courts as institutions.

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* Christine S. Scott-Hayward is a Professor in the School of Criminology, Criminal Justice, and Emergency Management at California State University, Long Beach. She earned a Bachelor of Civil Law from University College Dublin, a Master of Arts in social science from the University of Chicago, and a Ph.D. in law and society from New York University.

Henry F. Fradella is a Professor in Arizona State University's School of Criminology and Criminal Justice and an Affiliate Professor of Law in Arizona State University's Sandra Day O'Connor College of Law. He earned a B.A. in psychology from Clark University; a master's in forensic science and a J.D. from The George Washington University; and a Ph.D. in interdisciplinary justice studies from Arizona State University.

Gerald Eastwood is a Ph.D. candidate in Arizona State University's School of Criminology and Criminal Justice. He earned a B.S. in criminal justice from Ferris State University and an M.S. in criminal justice and criminology from San Diego State University.

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INTRODUCTION

In 1954, when the U.S. Supreme Court held in *Brown v. Board of Education* that racial segregation in schools violated the Fourteenth Amendment's Equal Protection Clause, the Court relied on social science research that demonstrated the harmful psychological effects of segregation in public schools.¹ Indeed, the social scientific studies the Court cited in *Brown's* eleventh footnote not only "contributed to an increasing empirical equal educational opportunity doctrine,"² but also increased the importance of social scientific research in the adjudication process, especially with regard to constitutional fact-finding.³

In the wake of *Brown*, courts—including the Supreme Court of the United States—began to rely on empirical social science data in many key "decisions concerning school desegregation, obscenity, segregation

1. 347 U.S. 483, 494 (1954).

2. Michael Heise, *Brown v. Board of Education, Footnote 11, and Multidisciplinarity*, 90 CORNELL L. REV. 279, 293 (2005).

3. Henry F. Fradella, *A Content Analysis of Federal Judicial Views of the Social Science "Researcher's Black Arts"*, 35 RUTGERS L.J. 103, 108 (2003). Michael Rustad and Thomas Koenig pointed out in 1993 that the use of data in judicial decisionmaking is often traced to Louis Brandeis, who, while practicing law at the turn of the twentieth century, incorporated social scientific studies into his argument in the brief for the petitioner in *Muller v. Oregon*. Michael Rustad & Thomas Koenig, *The Supreme Court and Junk Social Science: Selective Distortion in Amicus Briefs*, 72 N.C. L. REV. 91, 105 (1993) (citing Brief for the State of Oregon, Defendant in Error, *passim*, *Muller v. Oregon*, 208 U.S. 412, 415-16 (1908) (No. 107), 1908 WL 27605 (1908)) (other internal citations omitted). "[B]y the 1930's, classifying social science as fact was deeply ingrained in the thinking of the Court, and the amicus brief became the mechanism for receiving social fact into judicial decisionmaking." Fradella, *supra*, at 107 (quoting John Monahan & Laurens Walker, *Social Authority: Obtaining, Evaluating, and Establishing Social Science in Law*, 134 U. PA. L. REV. 477, 481 (1986)).

by gender, jury size, discriminatory death penalty, death-qualified juries, juvenile delinquency, discrimination, and Eighth Amendment death penalty challenges.”⁴ But things have changed since the post-*Brown* era. Judicial officers often express skepticism, if not outright hostility, to empirical social scientific evidence.⁵ The oral arguments before the U.S. Supreme Court in *Gill v. Whitford* in 2017 illustrate this point.

Democratic voters unsuccessfully argued in *Whitford* that the Wisconsin state legislature’s redistricting maps were gerrymandered to the point of violating the First and Fourteenth Amendments of the U.S. Constitution.⁶ The plaintiffs relied heavily on empirical research to support their claim that Republicans had skewed the statewide political map in their party’s favor.⁷ Their statistical evidence “measure[d] deviations from ‘partisan symmetry,’” a social scientific concept positing “that [districting] maps should treat parties symmetrically.”⁸ In particular, the data showed that a key partisan asymmetry metric, referred to as the “efficiency gap,” demonstrated significant disparities in the “wasted votes” of Democrats compared to Republicans.⁹

4. Rustad & Koenig, *supra* note 3, at 111-12 (internal citations omitted).

5. See generally Fradella, *supra* note 3 (reporting significant level of judicial hostility to social scientific evidence based on a content analysis of 338 federal cases decided over a thirteen-year period in which any variation on the term “social science” appeared). The study concluded “the heyday of social science as persuasive evidence in courts of law is firmly in the past.” *Id.* at 170. That study noted that other researchers suggested that judges “rely on empirical research when it fits a court’s particular needs, but eschew it when it does not.” *Id.* at 113 (citing Donald N. Bersoff, *Psychologists and the Judicial System: Broader Perspectives*, 10 LAW & HUM. BEHAV. 151, 155-56 (1986); Norbert L. Kerr, *Social Science & the U.S. Supreme Court*, in THE IMPACT OF SOCIAL PSYCHOLOGY ON PROCEDURAL JUSTICE 56, 64-65 (Martin F. Kaplan ed., 1986)); see also J. Alexander Tanford, *The Limits of a Scientific Jurisprudence: The Supreme Court and Psychology*, 66 IND. L.J. 137, 138-39 (1990) (reporting that not one of the ninety-two cases decided by the U.S. Supreme Court addressing evidentiary and procedural issues that impact jurors relied on the vast body of social scientific evidence about juror behavior).

6. *Gill v. Whitford*, 585 U.S. 48, 53-54 (2018).

7. *Id.* at 57-58.

8. *Id.* (internal quotation marks omitted) (quoting Brief for Appellees at 37, *Gill v. Whitford*, 585 U.S. 48, 71 (2018) (No. 16-1161), 2017 WL 3726003).

9. *Id.* at 71 (citing Nicholas O. Stephanopoulos & Eric M. McGhee, *Partisan Gerrymandering and the Efficiency Gap*, 82 U. CHI. L. REV. 831 (2015); Eric M. McGhee, *Measuring Partisan Bias in Single-Member District Electoral Systems*, 39 LEG. STUD. Q. 55 (2014)).

The plaintiffs asserted in their complaint that the “efficiency gap captures in a single number all of a district plan’s cracking and packing.” That number is calculated by subtracting the statewide sum of one party’s wasted votes from the statewide sum of the other party’s wasted votes and dividing the result by the statewide sum of all votes cast, where “wasted votes” are defined as all votes cast for a losing candidate and all votes cast for a winning candidate beyond the 50% plus one that ensures victory. The larger the number produced by that calculation, the greater the asymmetry between the parties in their efficiency in converting votes into legislative seats. Though they take no firm position on the matter, the plaintiffs have

During oral arguments in *Whitford*, some of the Justices expressed deep skepticism about the plaintiffs' statistical analyses.¹⁰ Relying on his own experience with previous gerrymandering cases, Chief Justice John Roberts referenced two prior cases in which data allegedly demonstrated that one party or the other could never achieve a majority of the votes cast.¹¹ Still, in both instances, they were able to attain it, leading him to conclude that “[p]redicting on the basis of the statistics that are before [the Court] has been a very hazardous enterprise.”¹² When discussing the three different statistical methods social scientists use to measure the effects of gerrymandering, Justice Neil Gorsuch compared the selection bias of a test with the equivalent to the spices he likes on his steak:

So . . . what is the formula that achieves [the] method by which the extreme gerrymander, the one that is fundamentally anti-democratic and is going to last for the full decade, can be identified and held unconstitutional? Because the court below didn't rely on efficiency gap entirely. It looked also at the partisan symmetry test. It reminds me a little bit of my steak rub. I like some turmeric, I like a few other little ingredients, but I'm not going to tell you how much of each. And so what's this Court supposed to do, a pinch of this, a pinch of that?¹³

Justice Samuel Alito talked about how one of the experts had mentioned, in other work, that redistricting was not a problem, a statement that contradicted the plaintiffs' gerrymandering argument.¹⁴ Perhaps most illustrative of the Court's hostility to empirical social scientific findings, Chief Justice Roberts referred to the use of statistics in constitutional fact-finding as “sociological gobbledygook.”¹⁵ With such skepticism in mind, the Court voted unanimously that evidence of partisan asymmetry—including, but not limited to an efficiency gap—could not establish the effect that gerrymandering has on the votes of particular citizens as required to satisfy the injury-in-fact element of Article III standing.¹⁶

suggested that an efficiency gap in the range of 7% to 10% should trigger constitutional scrutiny.

Id. at 71 (internal citations omitted).

10. See Audio Recording of Oral Argument, *Gill v. Whitford*, 585 U.S. 48 (No. 16-1161) (Oct. 3, 2017), https://www.supremecourt.gov/oral_arguments/audio/2017/16-1161 [<https://perma.cc/4KHU-5CQK>].

11. Transcript of Oral Argument at 48-49, *Gill v. Whitford*, 585 U.S. 48 (No. 16-1161) (Oct. 3, 2017) [hereinafter *Gill* Oral Arg. Transcript], https://www.supremecourt.gov/oral_arguments/argument_transcripts/2017/16-1161_mjn0.pdf [<https://perma.cc/A5VW-XUV6>] (referencing *Vieth v. Jubelirer*, 541 U.S. 267 (2004), and *Davis v. Bandemer*, 478 U.S. 109 (1986)).

12. *Id.* at 48-49.

13. *Id.* at 50-51.

14. *Id.* at 62.

15. *Id.* at 40.

16. *Gill v. Whitford*, 585 U.S. 48, 72 (2018).

The judicial skepticism of social science evidence during the oral arguments in *Whitford* is not new. Consider that in its 1976 decision in *Craig v. Boren*, the Court stated that “proving broad sociological propositions by statistics is a dubious business, and one that inevitably is in tension with the normative philosophy that underlies the Equal Protection Clause.”¹⁷ Similarly, in his concurring opinion in *Missouri v. Jenkins*, Justice Clarence Thomas said, “the judiciary is fully competent to make independent determinations concerning the existence of state action without the unnecessary and misleading assistance of the social sciences.”¹⁸

One of the co-authors of this Article published a study in 2003 presenting a content analysis of 338 federal cases decided over a thirteen-year period in which any variation on the term “social science” appeared.¹⁹ The results were mixed, often depending on the type of case in which such evidence was proffered.²⁰ Assuming proper research methodology and statistical procedures were used, courts were largely willing to examine social scientific evidence in cases involving anti-trust, intellectual property, or false advertising claims; voting rights; age, sex, or racial discrimination cases; and social welfare/child protection cases.²¹ Conversely, courts were reluctant to accept social science evidence in cases involving free speech and expression; school desegregation; prisoners’ civil rights cases; the constitutionality of prison operations; and a range of constitutional questions in criminal cases, especially those involving the death penalty.²² Overall, 56.1% of decisions expressed negative views of the relevant social science evidence, while 41.5% viewed it positively.²³ Notably, however, even when courts relied on social science evidence, they frequently “d[id] so reluctantly, often voicing their mistrust of statistical analyses.”²⁴ After analyzing the themes that emerged in these cases, Fradella offered a list of ten potential reasons for judges expressing more negative views about social science evidence than positive ones.²⁵ These reasons included judicial distrust of statistics; distrust of “hired gun[s]” who produce the proverbial “Battle of Experts”; faith in common sense over empirical methods; and a perception that social scientists are not objective scientists, but rather researchers who use “their craft as a smokescreen to cloak their personal values with the label of objective science.”²⁶ In

17. Fradella, *supra* note 3, at 109 (quoting *Craig v. Boren*, 429 U.S. 190, 204 (1976)).

18. *Missouri v. Jenkins*, 515 U.S. 70, 121 (1995) (Thomas, J., concurring).

19. *See generally* Fradella, *supra* note 3.

20. *Id.* at 165-68.

21. *Id.*

22. *Id.*

23. *Id.* at 123.

24. *Id.* at 165.

25. *Id.* at 168-70.

26. *Id.* at 168-69 (quoting Rustad & Koenig, *supra* note 3, at 115).

addition, Fradella concluded that judges are wary of social science when it goes against typical legal practices and theories, including normative legal reasoning.²⁷

Whatever the causes of judicial cynicism toward social scientific evidence may be, and despite this skepticism, it is clear that many social scientists and empirically trained legal scholars continue to conduct rigorous research in hopes of assisting judges in making decisions.²⁸ One area of the law in which social science research has the potential to aid judicial decisionmaking is the contours of the Fourth Amendment's protection of privacy. The present study examines how courts have dealt with social scientific data in this emerging area of empirical research. Part II briefly reviews the two legal tests that courts use to resolve Fourth Amendment privacy questions. It notes the difficulties of applying the "expectation of privacy" test and highlights the role that social science research can play in addressing those difficulties. Part III describes the study's data and analytic strategy. Part IV presents the study's findings. Part V discusses the implications of these findings. We conclude in Part VI by offering some final thoughts for the future.

I. EMPIRICAL RESEARCH ON FOURTH AMENDMENT PRIVACY

Under the common law, the security of one's property was a sacred right, and the protection of that right was one of the primary purposes of government.²⁹ The U.S. Supreme Court first adopted this common-law approach to the protection of property interests as the basis for the interests protected by the Fourth Amendment.³⁰ Under this approach, analysis of Fourth Amendment issues centers on whether law enforcement physically intruded into a constitutionally protected area.³¹

27. *Id.* at 168-70.

28. For instance, geographers, political scientists, and empirical legal scholars filed amicus briefs in *Whitford* in which they explained how their research helped. *See* Brief of Political Geography Scholars as Amici Curiae in Support of Appellees, *Gill v. Whitford*, 585 U.S. 48 (2018) (No. 16-1161), 2017 WL 4311100 (filed Sept. 5, 2017); Brief of Amici Curiae Political Science Professors in Support of Appellees and Affirmance, *Gill v. Whitford*, 585 U.S. 48 (2018) (No. 16-1161), 2017 WL 4311101 (filed Sept. 5, 2017); Brief of 44 Election Law, Scientific Evidence, and Empirical Legal Scholars as Amici Curiae in Support of Appellees, *Gill v. Whitford*, 585 U.S. 48 (2018) (No. 16-1161), 2017 WL 3948430 (filed Sept. 1, 2017).

29. *Entick v. Carrington* (1765) 19 Howell's State Trials 1029, 1035-36, 95 Eng. Rep. 807, 817-18 (KB).

30. *Olmstead v. United States*, 277 U.S. 438, 466 (1928) ("Neither the cases we have cited nor any of the many federal decisions brought to our attention hold the Fourth Amendment to have been violated as against a defendant unless there has been an official search and seizure of his person, or such a seizure of his papers or his tangible material effects, or an actual physical invasion of his house 'or curtilage' for the purpose of making a seizure.").

31. *Id.*; *Silverman v. United States*, 365 U.S. 505, 509-510 (1961) ("Eavesdropping accomplished by means of such a physical intrusion is beyond the pale of even those decisions

Katz v. United States significantly expanded Fourth Amendment protections beyond a property rights approach.³² The Court in *Katz* reasoned that “the Fourth Amendment protects people, not places.”³³ Accordingly, what people knowingly expose to others cannot be considered private and thus protected by the Fourth Amendment, but what people seek “to preserve as private, even in an area accessible to the public, may be constitutionally protected.”³⁴

When analyzing a Fourth Amendment question under the privacy approach, most courts follow Justice Harlan’s suggestion in his concurring opinion in *Katz*.³⁵ His formulation involves “a twofold requirement, first that a person have exhibited an actual (subjective) expectation of privacy and, second, that the expectation be one that society is prepared to recognize as [objectively] ‘reasonable.’”³⁶ If these requirements are satisfied, any governmental intrusion on the expectation of privacy is a search for purposes of the Fourth Amendment.

The U.S. Supreme Court’s 2012 decision in *United States v. Jones* revived the property rights approach.³⁷ In *Jones*, the court reasons that “*Katz* did not repudiate” any understanding that the Fourth Amendment embodies “a particular concern for government trespass upon the areas (‘persons, houses, papers, and effects’) it enumerates.”³⁸ *Jones*, therefore, clarified that the reasonable expectation of privacy test announced in *Katz* supplemented the common-law trespass approach but did not replace it.³⁹ In the absence of a trespass, courts must determine whether law enforcement violated a suspect’s reasonable expectation of privacy, and because many alleged violations do not involve physical trespass, the *Katz* test continues to be relied on in courts. In practice, though, this test has been difficult to apply, particularly with the technological changes that have occurred over the last two decades. Two of us previously summarized leading criticisms of *Katz* as follows:

Broad critiques range from a rejection of privacy as the basis for Fourth Amendment protection, to concerns about the definition of privacy implicit in *Katz*. However, notwithstanding these criticisms, there is a somewhat unified conception of privacy as “control over personal

in which a closely divided Court has held that eavesdropping accomplished by other electronic means did not amount to an invasion of Fourth Amendment rights.”); *Goldman v. United States*, 316 U.S. 129, 135-36 (1942) (refusing to find a Fourth Amendment violation attendant to the use of sound-enhancing electronics to hear a telephone conversation from an adjacent office in the absence of a physical trespass to the speaker’s office).

32. *Katz v. United States*, 389 U.S. 347, 351 (1967).

33. *Id.*

34. *Id.* at 351-52 (internal citations omitted).

35. *Id.* at 360-62 (Harlan, J., concurring).

36. *Id.* at 361.

37. *United States v. Jones*, 565 U.S. 400, 406-07 (2012).

38. *Id.* at 406.

39. *Id.* at 409 (“[T]he *Katz* reasonable-expectation-of-privacy test has been *added to*, not *substituted for*, the common-law trespassory test.” (emphasis in original)).

information,” which is the basis for *Katz*. More specific critiques focus on the expectation of privacy framework itself. One such critique, by Professor Jed Rubenfeld, argues that the main problem of the *Katz* approach is “circularity”: once the government says for example that all telephone conversations will be monitored, then clearly any expectation of privacy will no longer be reasonable, and therefore, there will be no protection. Justice Alito agrees with this assessment and also has questioned how it has been applied, noting in *Jones* . . . “judges are apt to confuse their own expectations of privacy with those of the hypothetical reasonable person to which the *Katz* test looks.”⁴⁰

Whether an honestly held (subjective) expectation of privacy is ‘objectively reasonable’ ‘by societal standards poses an empirical question.’⁴¹ A small group of scholars has conducted empirical research designed to ascertain what actual privacy expectations are.⁴² Although these researchers ask different questions and rely on different methodological approaches, all report that “the public has higher expectations of privacy than those recognized by the courts in most Fourth Amendment jurisprudence.”⁴³

This small, but growing body of research offers courts important information about what society views as reasonable expectations of

40. Christine S. Scott-Hayward, Henry F. Fradella & Ryan G. Fischer, *Does Privacy Require Secrecy? Societal Expectations of Privacy in the Digital Age*, 43 AM. J. CRIM. L. 19, 25-26 (2015) (internal citations omitted); see also Erwin Chemerinsky, *Rediscovering Brandeis's Right to Privacy*, 45 BRANDEIS L.J. 643, 650 (2007) (noting that under *Katz*, “[t]he government seemingly can deny privacy just by letting people know in advance not to expect any”). But see Matthew B. Kugler & Lior Jacob Strahilevitz, *The Myth of Fourth Amendment Circularity*, 84 U. CHI. L. REV. 1747 (2017) (concluding, based on survey research, that expectations of privacy in digital information on cell phones did not change significantly as a result of the U.S. Supreme Court decision in *Riley v. California*, 573 U.S. 373 (2014), which clarified the law in that area.).

41. Scott-Hayward et al., *supra* note 40, at 46.

42. See *id.*; Jeremy A. Blumenthal, Meera Adya & Jacqueline Mogle, *The Multiple Dimensions of Privacy: Testing Lay “Expectations of Privacy,”* 11 U. PA. J. CONST. L. 331 (2009); Bernard Chao, Catherine Durso, Ian Farrell & Christopher Robertson, *Why Courts Fail to Protect Privacy: Race, Age, Bias, and Technology*, 106 CALIF. L. REV. 263 (2018); Henry F. Fradella, Weston J. Morrow, Ryan G. Fischer & Connie Ireland, *Quantifying Katz: Empirically Measuring “Reasonable Expectations of Privacy” in the Fourth Amendment Context*, 38 AM. J. CRIM. L. 289 (2011); Matthew B. Kugler & Lior Jacob Strahilevitz, *Actual Expectations of Privacy, Fourth Amendment Doctrine, and the Mosaic Theory*, 2015 SUP. CT. REV. 205 (2015); Emma W. Marshall, Jennifer L. Groscup, Eve M. Brank, Analay Perez & Lori A. Hoetger, *Police Surveillance of Cell Phone Location Data: Supreme Court versus Public Opinion*, 37 BEHAV. SCI. & L. 751 (2019); Marc McAllister, *The Fourth Amendment and New Technologies: The Misapplication of Analogical Reasoning*, 36 S. ILL. U. L.J. 475, 483 (2012); Christopher Slobogin & Joseph E. Schumacher, *Reasonable Expectations of Privacy and Autonomy in Fourth Amendment Cases: An Empirical Look at “Understandings Recognized and Permitted by Society,”* 42 DUKE L.J. 727 (1993); Alisa Smith, Sean Madden & Robert P. Barton, *An Empirical Examination of Societal Expectations of Privacy in the Digital Age of GPS, Cell Phone Towers, & Drones*, 26 ALB. L.J. SCI. & TECH. 111 (2016).

43. Scott-Hayward et al., *supra* note 40, at 49.

privacy. Specifically, these studies give courts the ability to make “evidence-based law”⁴⁴ by crafting precedents “derived from empirical data that ‘afford a far richer and more accurate framework for the process of constitutional fact-finding than the “suppositions that thoughtful reflection can provide.””⁴⁵ For instance, several of the aforementioned empirical Fourth Amendment scholars, including two of this Article’s co-authors, submitted an amicus brief to the U.S. Supreme Court in *United States v. Carpenter* in which we argued, based on our research, for preventing the government from tracking the location of cell phones without a warrant.⁴⁶ That brief explained that “multiple, well-designed, published, and replicated social science studies confirm that most Americans expect privacy in a given context, holding that an expectation of privacy presumptively exists under *Katz* would render Fourth Amendment law clearer and more predictable.”⁴⁷ Despite attorneys referencing this body of research during oral arguments in *Carpenter*,⁴⁸ the Court did not cite any of it in its majority decision.⁴⁹

By contrast, some state and lower federal courts have cited these studies when grappling with the scope of Fourth Amendment protections of privacy rights.⁵⁰ It is unclear, though, to what extent courts have *relied* on this scholarship in their decisions. Indeed, this presents other empirical questions—ones the present study aims to answer. But rather than cherry-picking a few citations that illustrate when courts have engaged with empirical data while making decisions about reasonable expectations of privacy in the Fourth Amendment context, this study presents more systematic insights using content analysis to answer the following research questions:

1. How frequently are empirical studies measuring reasonable expectations of privacy cited in briefs or judicial decisions in cases involving Fourth Amendment issues?

44. *Id.* at 46 (citing Jeffrey J. Rachlinski, *Evidence-Based Law*, 96 CORNELL L. REV. 901, 910 (2011)).

45. *Id.* at 46 (quoting Fradella, *supra* note 3, at 105).

46. Brief of Amici Curiae Empirical Fourth Amendment Scholars in Support of Petitioner, *Carpenter v. United States*, 585 U.S. 296 (2018) (No. 16-402), 2017 WL 3530963 (filed Aug. 14, 2017) [hereinafter *Carpenter*, Empirical Scholars Brief].

47. *Id.* at *13-14.

48. Transcript of Oral Argument at 17, *Carpenter v. United States*, 585 U.S. 296 (2018) (No. 16-402).

49. *Carpenter v. United States*, 585 U.S. 296 (2018). It should be noted, however, that a number of these articles were cited by dissenting Justices as more fully discussed *infra*, Part IV.B.

50. See, e.g., *Crawford v. U.S. Dep’t of Treasury*, No. 3:15-cv-250, 2015 WL 5697552, at *11 n.3 (S.D. Ohio Sept 29, 2015); *Love v. State*, 43 S.W.3d 835 (Tex. Ct. Crim. App. 2016). How these decisions and others engaged with the empirical studies cited is discussed *infra*, Part IV.B.

2. How do citing courts assess and use this empirical research on privacy expectations in the Fourth Amendment context?

II. METHODS

A. *Sampling Frame*

In 2017, a group of scholars authored an amicus brief in support of the petitioner in *Carpenter v. United States*.⁵¹ This brief identified seven published articles that, as of that time, had used empirical methods to measure reasonable expectation of privacy in contexts relevant to cell-phone location data.⁵² To supplement that list, the authors used Westlaw and Google Scholar to identify additional empirical articles either not cited in the amicus brief or published after the date on which the amicus brief was filed. We identified six additional empirical articles that investigated people's expectations of privacy for Fourth Amendment purposes.⁵³ Collectively, these thirteen articles form the sampling frame for this study, twelve of which were published in law reviews; the remaining one appeared in a social science journal.⁵⁴

51. *Carpenter*, Empirical Scholars Brief, *supra* note 46.

52. In order of their publication, from the first to the most recent, these articles include: (1) Slobogin & Schumacher, *supra* note 42; (2) Blumenthal et al., *supra* note 42; (3) Fradella et al. *supra* note 42; (4) Scott-Hayward et al., *supra* note 40; (5) Kugler & Strahilevitz, *supra* note 42; (6) Smith et al., *supra* note 42; (7) Chao et al., *supra* note 42.

53. James W. Hazel & Christopher Slobogin, "A World of Difference"? *Law Enforcement, Genetic Data, and the Fourth Amendment*, 70 DUKE L.J. 705 (2021); Matthew B. Kugler, *The Perceived Intrusiveness of Searching Electronic Devices at the Border: An Empirical Study*, 81 U. CHI. L. REV. 1165 (2014); Matthew B. Kugler & Thomas H. Rousse, *The Privacy Hierarchy: Trade Secret and Fourth Amendment Expectations*, 104 IOWA L. REV. 1223 (2019); Marshall et al., *supra* note 42; McAllister, *supra* note 42; Marc McAllister, *GPS and Cell Phone Tracking: A Constitutional and Empirical Analysis*, 82 U. CIN. L. REV. 207 (2013).

54. Empirical articles concerned with other dimensions of privacy (i.e., those that do not measure "reasonable expectations of privacy" for Fourth Amendment purposes) are not included in this study. *See, e.g.*, Étienne Charbonneau & Carey Doberstein, *An Empirical Assessment of the Intrusiveness and Reasonableness of Emerging Work Surveillance Technologies in the Public Sector*, 80 PUB. ADMIN. REV. 780 (2020) (reporting survey results of attitudes towards digital surveillance tools that can be used in the public sector to monitor employee work patterns); Matthew B. Kugler, *Carly Pace, Deepfake Privacy: Attitudes and Regulation*, 116 NW. U. L. REV. 611, 637 (2021) (assessing public attitudes toward deepfakes); Matthew B. Kugler, *From Identification to Identity Theft: Public Perceptions of Biometric Privacy Harms*, 10 UC IRVINE L. REV. 107 (2019) (reporting the results of two surveys about people's fears of potential biometric privacy harms); Matthew B. Kugler & Mariana Oliver, *Constitutional Pandemic Surveillance*, 111 J. CRIM. L. & CRIMINOLOGY 909 (2021) (examining perceptions of the intrusiveness of governmental public health surveillance during the COVID-19 pandemic); Matthew B. Kugler & Lior Jacob Strahilevitz, *Assessing the Empirical Upside of Personalized Criminal Procedure*, 86 U. CHI. L. REV. 489 (2019) (surveying people about expectations, behaviors, and knowledge relevant to customizable criminal procedure determinations, like *Miranda* determinations, and their relationships to demographic differences); Linda M. Merola & Ryan P. Murphy, *Understanding the Public's Opinions of UAV-Assisted Residential Monitoring by Police*, 49 FORDHAM URB. L.J. 763, 764 (2022) (surveying public opinions about local police use of drones for a variety of monitoring

B. Data

Our study includes all available briefs and opinions that cited the relevant empirical articles in this area. For each of the thirteen articles, we investigated whether they had been cited (1) by a party in a brief filed at any level of court; and (2) by a court in either a majority, concurring, or dissenting opinion. To identify such citations, we used Westlaw's "Key Cite" feature.⁵⁵ As Table 1 reveals, this yielded a sample of thirty-three distinct citations in briefs and thirteen distinct citations in cases, for a total of forty-six citations relevant to legal practice, a number dwarfed by the citations in other scholarly articles (546 to 990 cites, depending on the citation service used). Table 1 also shows that ten of the thirteen articles were represented in this total, while three articles were not cited in any brief or court decision.⁵⁶

functions); Matthew Tokson, *Knowledge and Fourth Amendment Privacy*, 111 NW. U. L. REV. 139 (2016) (surveying adult cell phone users about their knowledge of cell-phone providers' collection practices related to physical location). Similarly, articles published after this study's December 31, 2023, cut-off date are not included.

55. KeyCite is a citation research service that verifies the history of cases, statutes, administrative decisions, or regulations and retrieves citing references from judicial opinions, administrative decisions from federal agencies, secondary sources like annotations and law review articles, and briefs filed in trial and appellate courts. See *KeyCite*, THOMSON REUTERS, <https://legal.thomsonreuters.com/en/products/westlaw/keycite> [<https://perma.cc/5ZFS-8DFJ>].

56. The articles not cited are: Hazel & Slobogin, *supra* note 53; Kugler & Rouse, *supra* note 53; Marshall et al., *supra* note 42.

*Table 1: Citations to Empirical Articles Investigating Reasonable Expectations of Privacy in Fourth Amendment Contexts*⁵⁷

Article	Legal Practice Citations		Scholarly Citations	
	Briefs	Judicial Opinions	Westlaw	Google Scholar
Blumenthal et al., 2009	1	1	33	74
Chao et al., 2018 ⁵⁸	4	1	26	50
Fradella et al., 2011	1	2	42	78
Hazel & Slobogin, 2021	0	0	8	29
Kugler & Rousse, 2019	0	0	7	13
Kugler & Strahilevitz, 2015	6	5	48	90
Kugler, 2014	4	0	16	27
Marshall et al., 2020	0	0	3	10
McAllister, 2012	1	1	35	48
McAllister, 2013	1	0	11	21
Scott-Hayward et al., 2015-2016	6	1	33	78
Slobogin & Schumacher, 1993	7	2	275	458
Smith et al., 2016	2	0	9	14
Totals	33	13	546	990

57. These data are current as of March 8, 2024, the date on which this manuscript was submitted for publication consideration.

We stress that we are not relying on Google Scholar as a source of definitive citation metrics, but rather as a method of showing some citations that Westlaw does not count. That said, Google Scholar does not include citations in certain sources, including “news or magazine articles, book reviews, and editorials.” *Inclusion Guidelines for Webmasters*, GOOGLE SCHOLAR (n.d.), <https://scholar.google.com/intl/en/scholar/inclusion.html#content> [https://perma.cc/N2G4-FEL6] (last visited Mar. 8, 2024). Google Scholar might also not include some longer sources, like books and dissertations, which have not been uploaded to Google Book search. *Id.* And it appears that although Google Scholar includes most judicial citations to scholarly work, it does not include all of them, and it does not separate those citations from cites in scholarly articles, books, and other sources. For discussions of some shortcomings of Google Scholar, see Louis Coiffait, *Criticisms of the Citation System, and Google Scholar in Particular*, SOC. SCI. SPACE (Mar. 20, 2019), <https://www.socialsciencespace.com/2019/03/criticisms-of-the-citation-system-and-google-scholar-in-particular/> [https://perma.cc/HN2R-3827]; Romy Sauvayre, *Types of Errors Hiding in Google Scholar Data*, 24 J. MED. INTERNET RSCH. e28354 (2022), <https://doi.org/10.2196/28354> [https://perma.cc/DQN7-H7R5].

58. Westlaw actually reports a total of five citations in briefs for this article, but one of those represents an erroneous double-counting of a memorandum in support of a motion to suppress filed in a New Jersey trial court. *Compare* Brief In Support of the Defendant's Motion to Suppress Physical Evidence Seized Pursuant to a Warrantless Search, State v. Gibson, No. 19-01-73 (N.J. Super. Ct. Jan. 17, 2019), 2019 WL 13163319 (filed May 3, 2019) [hereinafter *Gibson* Brief], *with* Brief In Support of the Defendant's Motion to Suppress Physical Evidence Seized Pursuant to a Warrantless Search, State v. Gibson, No. 19-01-73 (N.J. Super. Ct. Jan. 17, 2019), 2019 WL 13220555 (filed May 3, 2019).

C. Analytic Strategy

Each of the forty-six citations in briefs and judicial opinions was analyzed using qualitative content analysis.⁵⁹ Content analysis, broadly speaking, is “a formal system for doing something we all do informally rather frequently—draw conclusions from observations of content.”⁶⁰ In contrast to informal observations, however, content analysis uses a systematic set of procedures “for making replicable and valid inferences from data to their context.”⁶¹

Qualitative content analysis is inductive, and in the legal context, is “a way of generating objective, falsifiable, and reproducible knowledge about what courts do and how and why they do it.”⁶² It is particularly appropriate when multiple cases are reviewed in an attempt to discover emergent patterns and differing emphases among and between the cases.⁶³ The present study employs this type of content analysis to provide insights into how litigators and judges alike used empirical research in cases presenting a Fourth Amendment question that turned on whether some governmental intrusion violated a reasonable expectation of privacy.

III. FINDINGS

Even though more than a dozen empirical studies report in-depth findings relevant to Fourth Amendment privacy expectations, overall, litigators and judges infrequently cited these studies, either in judicial opinions or in briefs filed with the court. Moreover, even when these

59. DAVID L. ALTHEIDE & CHRISTOPHER J. SCHNEIDER, *QUALITATIVE MEDIA ANALYSIS*, 3-4 (2d ed. 2013) (detailing the phases of qualitative content analysis); KIMBERLY A. NEUENDORF, *THE CONTENT ANALYSIS GUIDEBOOK* (2d ed. 2017).

60. GUIDO HERMANN STEMPEL, III, *Content Analysis*, in *MASS COMMUNICATION RESEARCH AND THEORY* 209 (Guido Hermann Stempel, David Hugh Weaver & G. Cleveland Wilhoit eds., 2003).

61. KLAUS KRIPPENDORFF, *CONTENT ANALYSIS: AN INTRODUCTION TO ITS METHODOLOGY* 21 (1980).

62. For an in-depth discussion about how systematic content analysis is particularly well suited for the study of legal cases, see generally, Mark A. Hall & Ronald F. Wright, *Systematic Content Analysis of Judicial Opinions*, 96 CALIF. L. REV. 63, 64 (2008). They maintained that the well-established social science research method of content analysis,

could form the basis for a uniquely legal empirical methodology. On the surface, content analysis appears simple, even trivial, to some. Using this method, a scholar collects a set of documents, such as judicial opinions on a particular subject, and systematically reads them, recording consistent features of each and drawing inferences about their use and meaning. This method comes naturally to legal scholars because it resembles the classic scholarly exercise of reading a collection of cases, finding common threads that link the opinions, and commenting on their significance. But content analysis is more than a better way to read cases. It brings the rigor of social science to our understanding of case law, creating a distinctively legal form of empiricism.

Id. at 64.

63. ALTHEIDE & SCHNEIDER, *supra* note 59, at 12-13.

studies were cited, they did not provide deep analytical frameworks for the resolution of Fourth Amendment issues.

A. *Role of Research in Briefs*

Litigators crafted Fourth Amendment arguments using the empirical articles in a total of twenty-three briefs filed in twenty-two cases.⁶⁴

64. In chronological order, these including the following: (1) Reply Brief for Appellant at 2, *In re FB*, 726 A.2d 361 (Pa. 1999) (No. 0064 EAP 1995), 1996 WL 33418115 at *2-3 (filed Mar. 1996) [hereinafter *FB* Brief] (citing Slobogin & Schumacher, *supra* note 42); (2) Brief of Appellant at 40, *State v. Allen*, 241 P.3d 1045 (Mont. 2010) (No. DA 09-0091), 2009 WL 2865382, at *40 (filed Aug. 2009) [hereinafter *Allen* Brief] (citing Slobogin & Schumacher, *supra* note 42); (3) Defendant's Motion to Compel Production of Cell-Site Data Application and Related Materials at 3, *United States v. Lewis*, No. 1:14-cr-0015 (E.D. Va Dec. 11, 2013), 2014 WL 3573155 (filed Feb. 12, 2014) [hereinafter *Lewis* Brief] (citing McAllister, *supra* note 42); (4) Brief of Massachusetts Association of Criminal Defense Lawyers as Amicus Curiae in Support of Appellee at 6, *Commonwealth v. Augustine*, 35 N.E.3d 688 (Mass. 2015) (No. SJC-11803), 2015 WL 1498995, at *6 (filed Mar. 20, 2015) [hereinafter *Augustine* Brief] (citing Fradella et al., *supra* note 42); (5) Amended Brief of Amicus Curiae New Mexico Criminal Defense Lawyers Association at 26, *State v. Adame*, No. A-1-CA-35156 (N.M. Ct. App. Nov. 24, 2015), 2016 WL 11690606, at *26 (filed May 17, 2016) [hereinafter *Adame* Brief] (citing Blumenthal et al., *supra* note 42; Slobogin & Schumacher, *supra* note 40), *certifying questions* to 476 P.3d 872 (N.M. 2020); (6) Brief of Amici Curiae National Association of Criminal Defense Lawyers et al. in Support of Petition for a Writ of Certiorari at 15-16, *Mohamud v. United States*, 583 U.S. 1060 (2018) (denying cert.) (No. 17-5126), 2017 WL 3575756, at *15-16 (filed Aug. 10, 2017) [hereinafter *Mohamud* Brief] (citing Chao et al., *supra* note 42; Scott-Hayward et al., *supra* note 40); (7) *Carpenter*, Empirical Scholars Brief at 5-9, 13, 15, *supra* note 46 (Chao et al., *supra* note 42; Kugler & Strahilevitz, *supra* note 42; Scott-Hayward et al., *supra* note 40; Slobogin & Schumacher, *supra* note 42; Smith et al., *supra* note 42); (8) Brief of Scholars of Criminal Procedure and Privacy as Amici Curiae in Support of Petitioner at 15, *Carpenter v. United States*, 585 U.S. 296 (2018) (No. 16-402), 2017 WL 3614233, at *15 (filed Aug. 14, 2017) [hereinafter *Carpenter*, Crim. Pro. Scholars Brief] (citing Kugler & Strahilevitz, *supra* note 42); (9) Brief of Amici Curiae the Brennan Center for Justice et al. at 15, *Alasaad v. Nielsen*, No. 17-cv-11730-DJC, 2018 WL 2170323 (D. Mass. May 9, 2018) (denying motion to dismiss), 2018 WL 1358322, at n.28 (filed Feb. 2, 2018) [hereinafter *Alasaad* Brief] (citing Kugler, *supra* note 53); (10) Brief of National Lawyers Guild et al. in Support of Petitioner at 2, 4-5, *Ulbricht v. United States*, 138 S. Ct. 2708 (2018) (denying cert.) (No. 17-950), 2018 WL 776097, at *2, 4-5 (filed Feb. 5, 2018) [hereinafter *Ulbricht* Brief] (citing Scott-Hayward et al., *supra* note 40); (11) Brief of Plaintiff-Appellant Richard Moran at 8-9, 22, *Moran v. Lewis*, 114 N.E.3d 1254 (Ohio Ct. App. 2018) (No. 106634), 2018 WL 4352073 at *8-9, 22 (filed Apr. 4, 2018) [hereinafter *Moran* Brief] (citing Chao et al., *supra* note 42; Kugler & Strahilevitz, *supra* note 42; McAllister, *supra* note 53; Scott-Hayward et al., *supra* note 40; Slobogin & Schumacher, *supra* note 42; Smith et al., *supra* note 42); (12) Defendant-Appellant's Brief and Record Appendix on Appeal from Judgments of the Plymouth Superior Court at 21, *Commonwealth v. Johnson*, 119 N.E.3d 669 (Mass. 2019) (No. SJC-12483), 2018 WL 4154300, at *21 (filed July 6, 2018) [hereinafter *Johnson* Brief] (citing Kugler & Strahilevitz, *supra* note 42); (13) Brief and Short Appendix for Defendant-Appellant at 34, *United States v. Wanjiku*, 919 F.3d 472 (7th Cir. 2019) (No. 18-1973), 2018 WL 3477306, at *34 (filed July 11, 2018) [hereinafter *Wanjiku* Brief] (citing Kugler, *supra* note 53); (14) Appellant's Opening Brief at 26, *United States v. Williams*, 942 F.3d 1187 (10th Cir. 2019) (No. 18-1299), 2018 WL 6837408, at *26 (filed Dec. 27, 2018) [hereinafter *Williams* Brief] (citing Kugler, *supra* note 53); (15) *Gibson* Brief at 9, *supra* note 58, at n.3 (citing Chao et al., *supra* note 42), *rev'd*, No. A-3410-19, 2022 WL 91632 (Jan. 10, 2022); (16) Brief for Appellant at 13-14, *Lollis v. Texas*, No. 09-18-00430-CR, 2020 WL 3848180 (Tex. App. July 8, 2020) [hereinafter *Lollis* Brief], 2019 WL 3783193, at *13-14 (filed Aug. 5, 2019) (citing Scott-Hayward et al., *supra* note 40); (17) Brief of Professors Brooks Holland and Benjamin Levin as Amici Curiae in Support of Petitioner at 12-14, *Morgan v.*

Fourteen of these briefs were filed by parties to the case, typically the defendant-appellant, while nine were filed by amici curiae.⁶⁵

As shown in Table 2, the purpose for which an article was cited varied. In three of these briefs, articles were cited for issues not relevant to expectations of privacy.⁶⁶ In six briefs, attorneys cited an article to support a general point about Fourth Amendment privacy without engaging with the empirical findings of that article. For example, in *United States v. Tuggle*, attorneys for the appellant quoted research by Matthew Kugler and Lior Strahiliwetz to explain the meaning of the mosaic theory.⁶⁷

Washington, 140 S. Ct. 1243 (2020) (No. 19-494) (denying cert.), 2019 WL 6170550 (filed Nov. 18, 2019) [hereinafter *Morgan* Brief] (citing Chao et al., *supra* note 42; Slobogin & Schumacher, *supra* note 42); (18) Appellant's Opening Brief at 41, *United States v. Rosenow*, 50 F.4th 715 (9th Cir. 2022), cert. denied, 143 S. Ct. 786 (2023) (No. 20-50052), 2020 WL 3846839, at *41 (filed June 29, 2020) [hereinafter *Rosenow* Brief] (citing Scott-Hayward et al., *supra* note 40); (19) Appellant's Brief and Appendix at 15, *United States v. Tuggle*, 4 F.4th 505 (7th Cir. 2021) (No. 20-2352), 2021 WL 320116, at 15 (filed Jan. 21, 2021) [hereinafter *Tuggle* Brief] (citing Kugler & Strahilevitz, *supra* note 42); (20) Brief of Amici Curiae Office of the Public Defender of the State of New Jersey and National Association for Public Defense in Support of the Petitioner at 16, *Andrews v. State*, 141 S. Ct. 2623 (2021) (denying cert.), (No. 20-937), 2021 WL 9218180, at *16 (filed Feb. 11, 2021) [hereinafter *Andrews* Brief] (citing Slobogin & Schumacher, *supra* note 42); (21) Appellant's Opening Brief at 46, *Doe v. Los Angeles*, No. B318070, 2023 WL 2174896 (Cal. Ct. App. Feb. 23, 2023), 2022 WL 17416811, at *46 (filed June 6, 2022) [hereinafter *Doe* Brief] (citing Kugler, *supra* note 53); (22) Brief for Defendants-Appellees at 39, *Bramble v. Moodys*, No. 23-506 (2d Cir. Apr. 4, 2023), 2023 WL 6622250, at *39 (filed Oct. 6, 2023) [hereinafter *Bramble* Brief] (citing Chao et al., *supra* note 42); (23) Plaintiff's Memorandum in Opposition to Defendants District of Columbia Housing Authority's and Highland Residential LP's Motion to Dismiss at 18, No. 1:22-cv-03706-RBW, 2023 WL 8454068, at *18 (D.C. Cir. Oct. 12, 2023), [hereinafter *Pondexter-Moore* Brief] (citing Kugler & Strahilevitz, *supra* note 42).

65. *Id.*

66. See e.g., *Morgan* Brief, *supra* note 64 (citing Chao, et al., *supra* note 42, on hindsight bias).

67. "The mosaic theory rests on the principle that the 'government can learn more from a given slice of information if it can put that information in the context of a broader pattern, a mosaic.'" *Tuggle* Brief, *supra* note 64, at *15 (quoting Kugler & Strahilevitz, *supra* note 42).

Table 2: Briefs Citing Empirical Articles by Citation Purpose⁶⁸

Brief	Non-Fourth Amendment Privacy Issue	General Fourth Amendment Privacy Issue	Specific Empirical Finding
<i>FB</i> Brief			X
<i>Allen</i> Brief			X
<i>Lewis</i> Brief		X	
<i>Augustine</i> Brief		X	
<i>Adame</i> Brief			X
<i>Mohamud</i> Brief			X
<i>Carpenter</i> , Empirical Scholars Brief			X
<i>Carpenter</i> , Crim. Pro. Scholars Brief		X	
<i>Alasaad</i> Brief			X
<i>Ulbricht</i> Brief			X
<i>Moran</i> Brief			X
<i>Johnson</i> Brief			X
<i>Wanjiku</i> Brief			X
<i>Williams</i> Brief			X
<i>Gibson</i> Brief	X		
<i>Lollis</i> Brief			X
<i>Morgan</i> Brief	X		
<i>Rosenow</i> Brief			X
<i>Tuggle</i> Brief		X	
<i>Andrews</i> Brief		X	
<i>Doe</i> Brief			X
<i>Bramble</i> Brief	X		
<i>Pondexter</i> Brief		X	

However, in a majority of the briefs ($n=14$), attorneys cited specific empirical findings from the articles to support their arguments. In *Lollis v. Texas*, for instance, attorneys for the defendant-appellant argued that the trial court erred in failing to suppress data obtained from a warrantless search of an electronic tablet that contained text messages

68. See *supra* note 64.

that had been synched from a paired cell phone.⁶⁹ In their brief, they wrote: “Over 90[%] of respondents to a recent survey reported that they felt that law enforcement should never have access, or at least require a level commensurate with probable cause to obtain access to text, multimedia, or voicemail messages on cell phones.”⁷⁰

Similarly, in *Mohamud v. United States*, attorneys for a group of *amici curiae*, including the National Association of Criminal Defense Lawyers, relied on empirical scholarship on expectations of privacy in emails in a brief to the U.S. Supreme Court, arguing that it should grant cert in the case.⁷¹ That case involved the warrantless collection of email and other communications under the Foreign Intelligence Surveillance Act. In arguing that the third-party doctrine should not apply, attorneys noted that “society expects the contents of emails to be private, and empirical research confirms this.”⁷²

More recently, in *United States v. Williams*, attorneys for the defendant-appellant argued that searches of electronic devices at the border are intrusive. In support of this claim, they cited research by Matthew Kugler, arguing that “ordinary Americans ‘see the intrusiveness of electronic-device searches as comparable to that of strip searches and body cavity searches.’”⁷³

Notably, however, drawing judicial attention to this research in the briefs usually did not lead to judges considering the cited articles in their subsequent opinions. In fact, there were only two cases (three opinions) in which research cited in briefs was also included in the opinions in those cases, two of which were dissenting opinions.⁷⁴ Moreover, in just one of these opinions were the citations germane to the issue of societal expectations of privacy: In his dissent in *Carpenter v. United States*, Justice Gorsuch cited two of the articles cited in the Empirical Legal Scholars brief as part of a discussion as to whether the *Katz* test poses an empirical or normative question.⁷⁵

It is not clear why so few courts engaged with the research cited in the briefs in the cases before them. In one case, the decision on the motion in which the research was cited was pending at the time of writing,⁷⁶ and in three more cases, attorneys cited research in petitions for certiorari to the U.S. Supreme Court that were denied; hence, there are no opinions in those cases that could have engaged with the cited

69. *Lollis* Brief, *supra* note 64, at *3-5.

70. *Id.* at *13-14 (citing Scott-Hayward et al., *supra* note 40, at 55).

71. *Mohamud* Brief, *supra* note 64, at *16 (citing Chao et al., *supra* note 40).

72. *Id.*

73. *Williams* Brief, *supra* note 64, at *26 (quoting Kugler, *supra* note 52).

74. *Carpenter v. United States*, 585 U.S. 296, 365-67 (2018) (Thomas J., dissenting); *id.* at 404 (Gorsuch J., dissenting); *United States v. Tuggle*, 4 F.4th 505, 517 (7th Cir. 2021).

75. See *infra* Part IV.B for a more detailed discussion of this opinion.

76. See *Pondexter-Moore v. D.C. Hous. Auth.*, No. 1:22-CV-03706, 2022 WL 17633653 (D.D.C. Dec. 12, 2022).

research.⁷⁷ Of course, denials of certiorari are rarely explained.⁷⁸ It is possible, though, that the Court did not find the arguments supported by the empirical evidence presented in briefs to be persuasive enough to warrant granting petitions for review.

In most cases, however, judges reached their decisions without discussing the empirical research cited in the briefs presented to them. In some cases, they decided the case without reaching the issue the research addressed. For example, in *United States v. Rosenow*, the Ninth Circuit addressed the appellant's claim that information obtained from messages he sent using a private electronic service provider (ESP) should be suppressed because it was obtained without a warrant.⁷⁹ The court did not reach the issue of whether the defendant had a reasonable expectation of privacy in the messages he had sent and instead ruled that there was no Fourth Amendment violation because a search by an ESP is not governmental conduct.⁸⁰ In other cases, courts decided expectations of privacy issues by relying on legal precedents. For example, in *Alasaad v. Neilson*, in ruling that border searches of electronic devices were not routine,⁸¹ the District of Massachusetts relied on the reasoning and holdings in the U.S. Supreme Court's decisions in *Riley v. California* and *Carpenter v. United States* without addressing the empirical research cited in the brief.⁸²

B. Role of Research in Judicial Decisions

Empirical research was cited in even fewer cases than briefs. Just ten judicial case opinions cited one of the thirteen empirical articles.⁸³

77. See *Andrews v. State*, 141 S. Ct. 2623, 2623 (2021) (denying cert.); *Mohamud v. United States*, 583 U.S. 1060, 1060 (2018) (denying cert.); *Morgan v. Washington*, 140 S. Ct. 1243, 1243 (2020) (denying cert.); *Ulbricht v. United States*, 138 S. Ct. 2708, 2708 (2018) (denying cert.).

78. See generally, e.g., Barry P. McDonald, *SCOTUS's Shadiest Shadow Docket*, 56 WAKE FOREST L. REV. 1021 (2021) (explaining the pitfalls of trying to read into denials of certiorari, even when Justices write dissents from such denials).

79. *United States v. Rosenow*, 50 F.4th 715 (9th Cir. 2022).

80. *Id.* at 729-35.

81. 419 F. Supp. 3d 142, at 157-58 (D. Mass. 2019), *aff'd in part, vacated in part, rev'd in part sub nom.* *Alasaad v. Mayorkas*, 998 F.3d 8 (1st Cir. 2021).

82. *Id.* at 157-163 (relying on *Riley v. California*, 573 U.S. 373 (2014); *Carpenter v. United States*, 585 U.S. 296 (2018)).

83. (1) *United States v. Tuggle*, 4 F.4th 505, 517 (7th Cir. 2021) (citing Kugler & Strahilevitz, *supra* note 42); (2) *United States v. Hay*, 601 F. Supp. 3d 943, 948 (D. Kan. 2022) (citing Kugler & Strahilevitz, *supra* note 42), *aff'd*, 95 F.4th 1304 (10th Cir. 2024); (3) *Crawford v. United States Dep't of the Treasury*, No. 3:15-CV-250, 2015 WL 5697552, at *11 n.3 (S.D. Ohio Sept. 29, 2015) (quoting Fradella et al., *supra* note 42); (4) *Brandin v. State*, 669 So. 2d 280, 282 n.2 (Fla. Dist. Ct. App. 1996) (citing Slobogin & Schumacher, *supra* note 42); (5) *State v. Price-Williams*, 973 N.W.2d 556, 570 n.40 (Iowa 2022) (Appel, J., dissenting) (citing Chao et al., *supra* note 42); (6) *Commonwealth v. Perry*, 184 N.E.3d 745, 757 (Mass. 2022) (citing Kugler & Strahilevitz, *supra* note 42); (7) *Commonwealth v. Johnson*, 75 N.E.3d 51, 72 (Mass. App. Ct. 2017) (Wolohojian, J., dissenting) (citing Kugler & Strahilevitz, *supra*

In an eleventh case, two of the dissenting opinions in *Carpenter v. United States* cited three of these articles, making it the only judicial opinion in the research sample to cite more than one of the relevant empirical articles.⁸⁴ Table 3 shows the purposes for which courts cited the empirical articles.

Table 3: Cases Citing Empirical Articles by Citation Purpose⁸⁵

Case	Non-Fourth Amendment Privacy Issue	General Fourth Amendment Privacy Issue	General Discussion of <i>Katz</i>	Specific Empirical Finding
<i>United States v. Tuggle</i>		X		
<i>United States v. Hay</i>		X		
<i>Crawford v. U.S. Dept. of Treasury</i>				X
<i>Brandin v. State</i>		X		
<i>State v. Price-Williams</i>	X			
<i>Commonwealth v. Perry</i>		X		
<i>Commonwealth v. Johnson</i>				X
<i>Commonwealth v. Gary</i>				X
<i>Love v. State</i>				X
<i>State v. Subidaz-Osorio</i>			X	
<i>Carpenter v. United States</i> (Thomas, J., dissenting)			X	
<i>Carpenter v. United States</i> (Gorsuch, J., dissenting)			X	

note 42); (8) *Commonwealth v. Gary*, 91 A.3d 102, 150 n.6 (Pa. 2014) (citing Fradella et al., *supra* note 42), *overruled by* *Commonwealth v. Alexander*, 243 A.3d 177 (Pa. 2020); (9) *Love v. State*, 543 S.W.3d 835, 844 (Tex. Crim. App. 2016) (citing Scott-Hayward et al., *supra* note 40), *abrogated on other grounds by* *Holder v. State*, 639 S.W.3d 704 (Tex. Crim. App. 2022); (10) *State v. Subdiaz-Osorio*, 849 N.W.2d 748, 763 (Wis. 2014) (citing McAllister, *supra* note 42).

84. *Carpenter*, 585 U.S. at 357 n.10 (Thomas, J., dissenting) (citing Kugler & Strahilevitz, *supra* note 42); *id.* at 393 (Gorsuch, J., dissenting) (citing Blumenthal et al., *supra* note 42; Slobogin & Schumacher, *supra* note 42).

85. *See supra* note 83.

Of the twelve opinions that cited at least one of the empirical articles, one opinion cited an article for a general legal proposition unrelated to Fourth Amendment privacy, while four cited articles for general Fourth Amendment privacy issues unrelated to the empirical research in the article.⁸⁶ For example, Kugler and Strahilewitz's article was quoted in three opinions to explain the meaning of the mosaic theory.⁸⁷ Three other opinions cited the articles generally in discussions of and reflections on the *Katz* test. For example, in his dissenting opinion in *Carpenter*, Justice Gorsuch cited two articles as part of a larger discussion of the reasonable expectations of privacy test—specifically the question as to whether the test is an empirical or normative one.⁸⁸

Even taken on its own terms, *Katz* has never been sufficiently justified. In fact, we still don't even know what its "reasonable expectation of privacy" test *is*. Is it supposed to pose an empirical question (what privacy expectations do people *actually* have) or a normative one (what expectations *should* they have)? Either way brings problems. If the test is supposed to be an empirical one, it's unclear why judges rather than legislators should conduct it. Legislators are responsive to their constituents and have institutional resources designed to help them discern and enact majoritarian preferences. Politically insulated judges come armed with only the attorneys' briefs, a few law clerks, and their own idiosyncratic experiences. They are hardly the representative group you'd expect (or want) to be making empirical judgments for hundreds of millions of people. Unsurprisingly, too, judicial judgments often fail to reflect public views. See Slobogin & Schumacher, Reasonable Expectations of Privacy and Autonomy in Fourth Amendment Cases: An Empirical Look at "Understandings Recognized and Permitted by Society," 42 DUKE L.J. 727, 732, 740-742 (1993). Consider just one example. Our cases insist that the seriousness of the offense being investigated does *not* reduce Fourth Amendment protection. *Mincey v. Arizona*, 437 U.S. 385, 393-394, 98 S. Ct. 2408, 57 L. Ed. 2d 290 (1978). Yet scholars suggest that most people *are* more tolerant of police intrusions when they investigate more serious crimes. See Blumenthal, Adya, & Mogle, The Multiple Dimensions of Privacy: Testing Lay "Expectations of Privacy," 11 U. PA. J. CONST. L. 331, 352-353 (2009). And I very much doubt that this Court would be willing to adjust its *Katz* cases to reflect these findings even if it believed them.⁸⁹

The remaining four opinions engaged with specific findings from the empirical studies. First, in *Commonwealth v. Johnson*, a Massachusetts case involving a challenge to long-term GPS tracking without

86. See Table 3.

87. See, e.g., *Commonwealth v. Perry*, 184 N.E.3d at 757 (Mass. 2022) (citing a case that quoted the definition of mosaic theory offered by Kugler and Strahilewitz, *supra* note 42).

88. *Carpenter*, 585 U.S. at 393 (Gorsuch, J., dissenting) (citing Blumenthal et al., *supra* note 42; Slobogin & Schumacher, *supra* note 42).

89. *Id.*

a warrant, the dissenting judge criticized the majority for concluding that society would not recognize an expectation of privacy in long-term GPS tracking without any support for that assertion and cited Kugler and Strahilewitz.⁹⁰

Next, two courts cited studies to support the notion that the public has higher expectations of privacy than the courts have generally recognized. For example, in *Crawford v. U.S. Dept. of Treasury*, the plaintiff claimed that the Foreign Account Tax Compliance Act requirement to report tax information of U.S. citizens directly to the Internal Revenue Service violated the Fourth Amendment.⁹¹ Although the Court relied on the U.S. Supreme Court's jurisprudence in ruling that there was no Fourth Amendment violation, it acknowledged in a footnote the disparity between the Court's jurisprudence and the reality of expectations of privacy, noting: "Here, the Supreme Court's estimation of what a reasonable person might expect appears to be diverging from reality."⁹²

In neither of these cases, however, did courts rely on this empirical evidence in making their decisions. The only case in which empirical

90. *Commonwealth v. Johnson*, 75 N.E.3d 51, 72 (Mass. App. Ct. 2017) (Wolohojian, J., dissenting).

91. *Crawford v. U.S. Dep't of the Treasury*, No. 3:15-CV-250, 2015 WL 5697552 (S.D. Ohio Sept. 29, 2015).

92. *Id.* at *11 n.3.

"A 2003 study conducted by Christopher Slobogin and Joseph E. Schumacher found that the 217 subjects considered 'perusing bank records' as more intrusive than a patdown or even an arrest for 48 hours." Samantha Arrington, *Expansion of the Katz Reasonable Expectation of Privacy Test Is Necessary to Perpetuate A Majoritarian View of the Reasonable Expectation of Privacy in Electronic Communications to Third Parties*, 90 U. DET. MERCY L. REV. 179, 180 (2013); see also, e.g., Henry F. Fradella et. al., *Quantifying Katz: Empirically Measuring "Reasonable Expectations of Privacy" in the Fourth Amendment Context*, 38 AM. J. CRIM. L. 289, 371 (2011) ("judges often fail to appreciate the degree to which 'society' believes privacy should be protected from law enforcement intrusions.").

Id. at *11 n.3; see also *Commonwealth v. Gary*, 91 A.3d 102, 150 n.6 (Pa. 2014) (Todd, J., dissenting), *overruled by* *Commonwealth v. Alexander*, 664 Pa. 145, 243 A.3d 177 (2020).

Interestingly, it would appear that our country's populace as a whole may possess a greater expectation of privacy in their automobiles than the high Court has traditionally recognized. See Henry F. Fradella, *Quantifying Katz: Empirically Measuring 'Reasonable Expectations of Privacy' in the Fourth Amendment Context*, 38 AM. J. CRIM. L. 289, 364 (2011) (noting that, respondents to a nationwide survey, "[b]y a 52.3% to 35.8% margin, rejected the so-called 'automobile exception' to the Fourth Amendment warrant requirement as set forth in *Carroll*.").

Gary, 91 A.3d at 150 n.6 (Todd, J., dissenting). The Supreme Court of Pennsylvania overruled *Gary* when it held that warrantless vehicle searches require both probable cause and exigent circumstances under the state constitution, but it did so without citing any empirical Fourth Amendment articles to support aligning its holding with prior research findings.

legal scholarship was cited to support the court's ruling was *Love v. State*.⁹³

In *Love*, the highest criminal court in Texas overturned a capital conviction.⁹⁴ In doing so, it relied on case law and both normative and empirical Fourth Amendment scholarship to support the key proposition that the content of the defendant-appellant's text messages could not be obtained without a warrant.⁹⁵ The court reasoned as follows:

There is a difference between emails and text messages, on the one hand, and letters and telephone calls on the other. A letter remains in its sealed envelope until it arrives at its destination, and the telephone company does not routinely record private telephone conversations. But internet and cell phone service providers do routinely store the content of emails and text messages, even if they do not necessarily take the time to read them. Why should the third-party doctrine of *Smith* and *Miller* not apply? Has the sender of the text message not voluntarily disclosed that content, knowing it will be stored in a server somewhere and subject to potential scrutiny by a third-party interloper? Can he really maintain a reasonable expectation for privacy under these circumstances?⁹⁶

In answering that question in the affirmative, the court quoted from a Fifth Circuit decision that made a distinction between whether third-party disclosure was voluntarily disclosed for a specific business-related purpose or was “merely transmitted using the services of the third party service provider,” as is the case with emails and text messages.⁹⁷ The court then quoted a law student's nonempirical case-note and comment that supported the court's analysis.⁹⁸ Finally, it quoted from one of the empirical articles relevant to the present study:

[E]mpirical data seem to support the proposition that society recognizes the propriety of assigning Fourth Amendment protection to the content of text messages: “Over 90%” of respondents to a recent survey reported that they “felt that law enforcement should never have access, or at least require a level commensurate with probable cause to obtain access to text, multimedia, or voicemail messages on cell phones.”⁹⁹

93. 543 S.W.3d 835, 844 (Tex. Crim. App. 2016), *abrogated on other grounds* by Holder v. State, 639 S.W.3d 704 (Tex. Crim. App. 2022).

94. *Id.* at 844.

95. *Id.*

96. *Id.* at 843.

97. *Id.* at 843-44 (quoting *In re Application of the U.S. for Hist. Cell Site Data*, 724 F.3d 600, 611 (5th Cir. 2013)).

98. *Id.* at 844 (quoting Alyssa H. DaCunha, Case-note: *Txts R Safe 4 2day: Quon v. Arch Wireless and the Fourth Amendment Applied to Text Messages*, 17 GEO. MASON L. REV. 295, 326-27 (2009)).

99. *Id.* (quoting Scott-Hayward et al., *supra* note 40, at 55).

C. Limited Substantive Engagement with Study Methods in both Briefs and Judicial Opinions

Finally, neither briefs nor judicial opinions engaged with the methods used in the empirical research studies that they cited, generally referring to them as a “study.” On a few occasions, attorneys or judges would mention that the relevant study involved a survey or describe it as “empirical,” however, we found little to no discussion of the methods used, including whether they were appropriate to the research question, or whether they were rigorous. For example, even though the court in *Love v. State* relied on survey research on expectations of privacy in text messages, it simply referred to the findings as “empirical data” and described the study as involving “a recent survey.”¹⁰⁰ Just one court opinion made any reference to methods beyond that, with the dissenting opinion in *Commonwealth v. Gary* describing the survey as “nationwide.”¹⁰¹

Except for the brief that empirical Fourth Amendment scholars filed in *Carpenter*, which engaged with the methods used in every study it cited, there was similarly little engagement with methods in the briefs that cited empirical research.¹⁰² The only other brief that made any references to the methodological rigor of a study was the *Mohamud* brief, in which attorneys described the survey conducted by Chao and colleagues as “[a] carefully constructed survey of 1200 participants.”¹⁰³ Instead, the results of the surveys were taken at face value.

IV. DISCUSSION

There is a small, but growing body of empirical research that could help courts make difficult decisions about how to interpret the Fourth Amendment, especially in the digital age. It is, therefore, disheartening that so few courts actually rely on this research. The potential usefulness of the research was illustrated in *Love*, where the court relied on both normative and empirical research to help answer a question about the Fourth Amendment’s protection of text messages. It is not clear why other courts fail to engage with this empirical research, but we consider several possible explanations.

A. Judicial Use of Legal Scholarship

In 1996, law professor Deborah J. Merritt and law librarian Melanie Putnam published an article in which they opined that although

100. *Id.*

101. *Commonwealth v. Gary*, 91 A.3d 102, 150 n.6 (Pa. 2014) (Todd, J., dissenting), *overruled by* *Commonwealth v. Alexander*, 664 Pa. 145, 243 A.3d 177 (2020).

102. *Carpenter*, Empirical Scholars Brief, *supra* note 46.

103. *Mohamud* Brief, *supra* note 64, at *16 (citing Chao, et al., *supra* note 40).

“[l]egal academics maintain a healthy appetite for the works of other legal scholars,” the same was not true for courts.¹⁰⁴ They noted judges had complained that “many of our law reviews are dominated by rather exotic offerings of increasingly out-of-touch faculty members,”¹⁰⁵ and there was “an increasing divergence between the theoretical interests of the aspiring academic lawyer and the pragmatic interests of the successful practitioner.”¹⁰⁶ Importantly, these alleged shortcomings of scholarly writing do not apply to the articles that undergird the present study. They are not devoted to obscure legal theories or impractical analyses of esoteric areas of the law. Quite the contrary, all of them offer salient insights of direct relevance to the common yet often complicated process of determining the scope of Fourth Amendment privacy rights.

Merritt and Putnam’s study compared the ten articles most cited by courts between 1989 and 1991 with the ten articles most cited by legal and social science scholars over that same three-year period.¹⁰⁷ Consistent with the finding reported in Table 1, they found a significant disparity in those citation numbers, but noted the difference might “stem partly from the tendency of courts to cite empirical or interdisciplinary work, which often requires collaboration.”¹⁰⁸ Indeed, half of the articles they identified as being highly cited by courts either reported original empirical results or distilled empirical information from other disciplines.¹⁰⁹ If that trend held true today, then the results of the present study should be different since all of the thirteen articles we trace present empirical results that could help courts adjudicate tough cases. But, as Tables 1 and 3 illustrate, that is simply not the case.¹¹⁰

104. Deborah J. Merritt & Melanie Putnam, *Judges and Scholars: Do Courts and Scholarly Journals Cite the Same Law Review Articles*, 71 CHI.-KENT L. REV. 871, 871 (1996).

105. *Id.* (quoting *United States v. Six Hundred and Thirty-Nine Thousand Five Hundred and Fifty-Eight Dollars in U.S. Currency*, 955 F.2d 712, 722 (D.C. Cir. 1992) (Silberman, J., concurring)).

106. *Id.*

107. *Id.* at 872-74.

108. *Id.* at 892.

109. *Id.*

110. Our findings are not unique. A provocative study published in 1998 demonstrated a 47.35% decrease in courts’ use of legal scholarship over a twenty-year period. Michael D. McClintock, *The Declining Use of Legal Scholarship by Courts: An Empirical Study*, 51 OKLA. L. REV. 659, 660 (1998). More recently, a study of 5,784 citations in U.S. Supreme Court decisions from the 2015 term and 7,509 appellate decisions in Virginia and Wisconsin from the 2017 term looked at the frequency in which the courts cited primary and secondary sources; for the state appellate decisions, the study found only eleven citations to *any* law reviews, regardless of whether they were empirical or doctrinal. Mark Cooney, *What Judges Cite: A Study of Three Appellate Courts*, 50 STETSON L. REV. 1, 27-30 (2020).

B. *The Purported Shortcomings of Select Empirical Legal Scholarship*

In 2002, social scientists and law professors alike published articles criticizing much of the empirical work published in law reviews as representing “armchair empiricism” authored by law students and professors who lacked “formal training in social science methodology.”¹¹¹ These concerns remain well-founded because even today, most law reviews do not engage in the type of peer review common to social science journals.¹¹² By no means is the latter necessarily superior; criticisms of the peer-review process are both legion and long-standing.¹¹³ Nonetheless, peer review by those trained in empirical techniques is far more likely to identify problems with research methodologies and statistical interpretations than the in-house reviews student editors of

111. Deborah L. Rhode, *Legal Scholarship*, 115 HARV. L. REV. 1327, 1343 (2002); see also, e.g., Lee Epstein & Gary King, *Exchange: Empirical Research and the Goals of Legal Scholarship: The Rules of Inference*, 69 U. CHI. L. REV. 1, 9 (2002).

112. A search of the Washington and Lee rankings of law journals on March 7, 2024, for all law journals published in English in the United States yields a total of 928 journals, including both general/flagship and specialty subjects. Enabling the option to limit search results to “referred” journals reduces that number to 131. Notably, that particular database includes some social science journals relevant to law and legal studies, such as select journals from psychology (e.g., *Deviant Behavior*; *Psychological Injury and Law*; *Psychology, Public Policy, and Law*); economics (e.g., *American Law and Economics Review*; *Industrial Relations: A Journal of Economy & Society*; *Journal of Forensic Economics*); political science and public administration (e.g., *American Political Science Review*; *Public Policy Quarterly*); criminology and sociology (e.g., *American Journal of Criminal Justice*; *Criminal Justice Ethics*; *Criminal Justice Review*; *Criminology, Criminology & Public Policy*; *Criminology, Criminal Justice, Law & Society*; *Feminist Criminology*; *Homicide Studies*; *Justice Quarterly*; *Law & Society Review*; *Police Quarterly*; *Youth Violence and Juvenile Justice*); and social work (e.g., *Child Welfare*). And these are just examples; there are others in the list. If all of them were excluded, the count falls below 100 journals.

As a result of how few law journals utilize peer review, many of the empirical articles published in them suffer from some methodological shortcomings.

A 2002 study by two political scientists and methods specialists, Lee Epstein and Gary King, examined ten years' worth of law-review articles with the word “empirical” in their title, as well as more targeted samples designed to identify the highest quality research, and found “serious problems of inference and methodology . . . everywhere.” According to Epstein and King, “every single one” of the many articles they read “violates at least one of the rules [of inference in the social sciences].”

Elizabeth Chambliss, *When Do Facts Persuade? Some Thoughts on the Market for “Empirical Legal Studies”*, LAW & CONTEMP. PROBS., Spring 2008, at 17, 27-28.

113. See, e.g., Richard Smith, *Peer Review: A Flawed Process at the Heart of Science and Journals*, 99 J. ROYAL SOC'Y MED. 178, 178 (2006), <https://doi.org/10.1177/014107680609900414> [<https://perma.cc/3ESN-5J5L>] (noting peer review is slow, expensive, inconsistent, and can promote biases); Jonathan P. Tennant & Tony Ross-Hellauer, *The Limitations to Our Understanding of Peer Review*, 5 RSCH. INTEGRITY & PEER REV. 1, 1 (2020), <https://doi.org/10.1186/s41073-020-00092-1> [<https://perma.cc/XMR6-FD2Z>] (“[P]eer review is routinely and widely criticized.”); Kelly-Ann Allen et al., *The Peer Review System Is Broken. We Asked Academics How to Fix It*, THE CONVERSATION (July 24, 2022), <https://theconversation.com/the-peer-review-system-is-broken-we-asked-academics-how-to-fix-it-187034> [<https://perma.cc/767P-FHY7>] (noting that peer review suffers from numerous shortcomings, including its slowness, its exploitativeness, and its lack of transparency that can suppress discussion, protect biases, and decrease the quality of reviews).

law reviews conduct.¹¹⁴ The same is likely true for most of the brief faculty reviews now conducted by some top-ranked law reviews, such as the *Harvard Law Review*.

Such criticism of empirical legal research published in most law reviews is arguably inapplicable to most of the articles of relevance to the present study. As Table 4 reveals, eleven of the thirteen articles (84.6%) were researched and written by one or more scholars who had earned a Ph.D. in a natural or social scientific discipline. They are, therefore, not “armchair” empiricists.

114. See generally Stefan H. Krieger & Richard K. Neumann, Jr., *Empirical Inquiry Twenty-Five Years After The Lawyering Process*, 10 CLINICAL L. REV. 349 (2003).

Students have no training in empirical scholarship because the standard law school curriculum does not give it to them. And even if the curriculum were otherwise, a student-edited empirical journal would present quality control problems of the kind that caused the Supreme Court to list “[t]he fact of publication (or lack thereof) in a *peer reviewed* journal” as one of the factors to be considered in separating admissible scientific evidence from junk science in a federal trial.

Id. at 385-86; see also Kathryn Zeiler, *The Future of Empirical Legal Scholarship: Where Might We Go from Here?*, 66 J. LEGAL EDUC. 78, 78-79 (2016).

[T]he average quality of empirical studies published in student-edited law reviews is undoubtedly lower than those published in peer-reviewed journals. This is partly because law review editorial boards, usually comprising solely law students, do not systematically require expert review of submitted work. Student editors are eager to publish empirical work, but too often lack the expertise to ensure that they publish only high-quality, replicable studies. . . . As a result, empirical studies published in law reviews are often plagued by basic problems such as incorrect definitions of technical terms, application of incorrect tests, and misinterpretations of results.

Id.

Table 4: Credentials of Empirical Fourth Amendment Scholars Authoring the Articles Analyzed in this Study

Article	Number of Authors	Number Holding a Law Degree	Number Holding a PhD in a Natural or Social Science
Blumenthal et al., 2009	3	2	3
Chao et al., 2018	4	3	2
Fradella et al., 2011 ¹¹⁵	4	2	3
Hazel & Slobogin, 2021	2	2	1
Kugler & Rouse, 2019 ¹¹⁶	2	1	1
Kugler & Strahilevitz, 2015	2	2	1
Kugler, 2014 ¹¹⁷	1	0	1
Marshall et al., 2020 ¹¹⁸	5	3	3
McAllister, 2012	1	1	0
McAllister, 2013	1	1	0
Scott-Hayward et al., 2015-2016	3	2	3
Slobogin & Schumacher, 1993	2	1	1
Smith et al., 2016	3	1	1

In our assessment, all thirteen of the studies examined in the present study used appropriate research methods and statistical analyses. And all explain their key limitations. That is not to say, however, that they are all methodologically rigorous. For instance, several use convenience or snowball samples, which limits the generalizability of

115. At the time of the publication of this article, Weston Morrow was a Ph.D. student. Because he had not been awarded that degree at the time the article was published, he is not included in the count of co-authors holding a doctorate.

116. Thomas Rouse was a J.D./Ph.D. student at the time this article was published and, therefore, is not counted as holding either degree.

117. Matthew Kugler, who had already earned a Ph.D. in 2010, was a law student at the time that he published this article. Because he had not yet completed his law degree at that time, he is not counted in Table 4 as having earned a law degree for his 2014 sole-authored comment. Both his law degree and Ph.D. are counted in his two other articles that are of relevance to this study.

118. At the time of the publication of this article, Emma Watson was a student in the joint J.D./Ph.D. program in law and psychology. Because she had not been awarded either degree at the time the article was published, we do not include her in the count of co-authors holding either degree. Similarly, Analay Perez had earned a master's degree in educational psychology at the time the article was published and is, therefore, not included in the count of co-authors hold a Ph.D. even though she has since completed her doctorate.

those studies.¹¹⁹ Others use more diverse participants recruited using Amazon Mechanical Turk (MTurk), Qualtrics, or Survey Monkey—all of which are superior to convenience or snowball samples, but none of which are necessarily as representative as a true probability sample, such as those that major polling companies recruit using random digit dialing.¹²⁰ At least two of the studies are quite methodologically sophisticated.¹²¹ Notably, the fact that all of these studies report similar findings about people having higher privacy expectations than case law affords (regardless of the specific method used) suggests that courts employing purely normative methods of Fourth Amendment analysis are missing the mark.

We also note that some empirical studies produced by researchers who possess only a social science background that is not complemented by any legal training “often produce scholarship that cannot be understood outside their social science or that suffers from naiveté about law and its institutions.”¹²² But that cannot be said about any of the articles of interest in this study; as Table 4 illustrates, researchers holding law degrees authored twelve of the studies, and the thirteenth was written by a law student who had already earned a Ph.D.

C. *Judicial Concerns about Specific Methods and Analyses*

Courts might not be relying on empirical Fourth Amendment scholarship because they find fault with their research methodologies or statistical procedures—a sentiment embodied in Chief Justice Roberts’ statement referring to social science research as “sociological gobble-dygoon.”¹²³ But our research does not support that. We found no criticism of the methods used in any of the empirical research. By contrast, when judges have methodological concerns about research methods and analysis, they are not shy about saying so. For instance, when

119. *E.g.*, Blumenthal et al., *supra* note 42, at 344 (using a convenience sample of 159 undergraduate students in an introductory psychology course); Slobogin & Schumacher, *supra* note 42, at 737 (using a convenience sample of 217 undergraduate and law students from four universities); Fradella et al., *supra* note 42, at 346 (using 589 participants recruited from both a convenience of students and faculty at eleven colleges and universities, and a snowball sample from Facebook).

120. *E.g.*, Chao et al., *supra* note 42, at 296 (using 1,200 participants recruited using Qualtrics); Hazel & Slobogin, *supra* note 53, at 741-42 (using 1,597 people recruited using MTurk); Marshall et al., *supra* note 42, at 758 (using 260 people recruited using MTurk); Scott-Hayward et al., *supra* note 40, at 51-52 (using 1,198 participants recruited using MTurk); Smith et al., *supra* note 42, at 127-29 (using 1,008 participants recruited using Survey Monkey).

121. *E.g.*, Kugler & Rousse, *supra* note 51, at 1250 (using a professional survey firm to recruit 1,019 participants that align with key U.S. population demographics); Kugler & Strahilevitz, *supra* note 42, at 245-46 (using a professional survey firm to recruit 1,461 participants that align with key U.S. population demographics).

122. Krieger & Neumann, *supra* note 114, at 390.

123. *Gill* Oral Arg. Transcript, *supra* note 12, at 40 (Roberts, C.J., commenting). *See generally* Fradella, *supra* note 3 (analyzing judicial hostility to social scientific evidence).

criticizing market survey research in a trademark dispute, a panel of the U.S. Court of Appeals for the Seventh Circuit pointed out what it considered to be flaws in the survey questions and then stated, “and no doubt there are other tricks of the survey researcher’s black arts that we have missed.”¹²⁴

D. Judicial Distrust of Social Science Evidence More Broadly

Perhaps judicial reluctance to utilize empirical Fourth Amendment findings stems from a distrust of social science, generally. There is no way to know, however, if that is the case because judges overwhelmingly did not engage with any of the research analyzed in the present study. Still, this explanation cannot be ruled out.

As previously mentioned Fradella wrote an empirical article in which he reported significant levels of judicial hostility to social scientific evidence.¹²⁵ On occasion, judges have been forthright about their hesitancy to rely on social science evidence, generally.¹²⁶ Justice O’Connor even once commented on “the unnecessary and misleading assistance of the social sciences.”¹²⁷

Arguably, such hostility is best exemplified in *McCleskey v. Kemp*’s rejection of some of “the best empirical studies on criminal sentencing ever conducted” in litigation challenging the constitutionality of the death penalty.¹²⁸ Despite the methodological sophistication of the key study in the case, the U.S. Supreme Court disregarded its findings, although without the open contempt a district court judge used when he ignorantly criticized “arbitrarily structured little rinky-dink regressions that accounted for only a few variables” and “prove[d] nothing other than . . . the adage that anything may be proved by statistics.”¹²⁹

Of course, it may be that judges do not understand the results of studies that report statistical findings, so they avoid them. After all, interpreting beta weights in regression tables—never mind trying to make sense of hierarchical linear or structural equation models—is challenging for some people who earned research doctorates in one of

124. *Indianapolis Colts, Inc. v. Metropolitan Balt. Football Club Ltd.*, 34 F.3d 410, 416 (7th Cir. 1994).

125. Fradella, *supra* note 3, *passim*.

126. *United States v. Smithers*, 212 F.3d 306, 327 (6th Cir. 2000) (Batchelder, J., dissenting) (“The trepidation with which nearly all appellate courts have treated this subject is representative of a broader reluctance, which I share, to admit the expert testimony of social scientists with the same deference given to the testimony of those in the physical sciences.”).

127. *Missouri v. Jenkins*, 515 U.S. 70, 121 (1995) (Thomas, J., concurring).

128. Randall L. Kennedy, *McCleskey v. Kemp: Race, Capital Punishment, and the Supreme Court*, 101 HARV. L. REV. 1388, 1400 (1988) (quoting Brief Amici Curiae for Dr. Franklin M. Fisher, Dr. Richard O. Lempert, Dr. Peter W. Sperlich, Dr. Marvin E. Wolfgang, Professor Hans Zeisel & Professor Franklin E. Zimring in Support of Petitioner Warren McCleskey at 3, *McCleskey v. Kemp*, 481 U.S. 279 (1987) (No. 84-6811)).

129. *Id.* at n.45 (quoting *McCleskey v. Kemp*, No. C87-1517A, at 12 (N.D. Ga. Dec. 23, 1987)).

the social sciences. Judges and their law clerks are not trained in such methods, so they may be hesitant to embrace them when engaging in constitutional fact-finding. That said, such understandable discomfort cannot be the culprit for the lack of judicial engagement with the studies that form the sampling frame for this Article. Most of those empirical studies were published in law reviews using rather basic social science methods. Additionally, these studies explained their methods and findings in ways that should be understandable to legal audiences without empirical training.

Moreover, because judges routinely engage with statistical evidence in other contexts,¹³⁰ then it seems unlikely that a lack of willingness to try understanding empirical findings—especially the relatively simple ones in most of the thirteen articles of interest in this study—accounts for judges failing to even cite research that would help them make better-informed decisions.

E. Habit

Other than unspoken distrust of social science research generally, the only other likely explanation for this study's findings concerns judicial habit. In short, judges are used to making search and seizure rulings by relying on case law and the legal concepts in it.

Justice Gorsuch's brief discussion in *Carpenter* lends credence to this explanation for why courts appear to be so resistant to examining actual measurements of societal expectations of privacy in the Fourth Amendment context.¹³¹ To extrapolate from his opinion, it seems that the simple fact is that courts still consider the *Katz* test to pose a normative rather than an empirical question.

CONCLUSION

There is no doubt that social scientists will continue to engage in research that can inform both law and policy. Indeed, such research has been widely embraced in disciplines like medicine and business,¹³² providing them with insights into evidence-based best practices. Even our own discipline of criminology has integrated such an approach to steer practitioners to “what works” (and away from what doesn't).¹³³ Although empirical legal scholarship has been proliferating for some

130. For examples, see generally Fradella, *supra* note 3 (comparing and contrasting judicial treatment of social science evidence across a range of specific types of cases).

131. See *supra* notes 88-89 and accompanying text.

132. See Jeffrey J. Rachlinski, *Evidence-Based Law*, 96 CORNELL L. REV. 901, 901-03 (2011).

133. See, e.g., *CrimeSolutions—The Evidence-Based Guide for Justice Agencies in Search of Practices and Programs that Really Work*, NAT'L INST. OF JUST. (Nov. 29, 2021), <https://nij.ojp.gov/topics/articles/crimesolutions-evidence-based-guide-justice-agencies-search-practices-and-programs> [<https://perma.cc/SVQ4-C453>].

time, as law professor Jeffrey Rachlinski explained, that body of research had not yet been embraced as the foundation of a body of “evidence-based law”:

Empirical legal scholarship . . . is not the same as evidence-based law. Empirical legal scholarship resides primarily in the academy. The point of evidence-based law is not to produce a set of empirical term papers that we academics can present to each other at conferences. The point is to create better law—law informed by reality.¹³⁴

Professor Rachlinski wrote those words in an article published in 2011. The findings from the present study illustrate that little has changed since then, at least in the context of privacy determination relevant to searches and seizures. A small, but growing number of studies can and should help inform a body of evidence-based Fourth Amendment law. We urge fellow scholars to produce increasingly rigorous studies that contribute to this body of scholarly literature, echoing law professor Michael Heise’s call when examining empirical Fourth Amendment scholarship concerning the impact of the exclusionary rule on police behavior.¹³⁵

Moreover, we call on judges to then incorporate such findings into their decisions.¹³⁶ For one thing, “data warrant at least as much respect as that accorded opinion and words.”¹³⁷ Indeed, incorporating empirical data into Fourth Amendment privacy decisions could reduce, if not eliminate, criticism about judges making assumptions that “diverg[e] from reality” about what reasonable people expect to be private.¹³⁸

Finally, judicial decisions that depart “too far from the public’s sense of justice . . . lack substantive sociological legitimacy.”¹³⁹ By aligning Fourth Amendment jurisprudence with societal expectations of privacy, judges could not only increase the legitimacy of their rulings but also of the courts themselves as institutions.¹⁴⁰ The need for judicial legitimacy is particularly salient these days when large swaths of

134. Rachlinski, *supra* note 132, at 910.

135. See Michael Heise, *The Importance of Being Empirical*, 26 PEPP. L. REV. 807, 834 (1999) (explaining how empirical work can “enhance and supplement the legal literature as well as our understanding of crucial legal questions”); see also Theodore Eisenberg, *Why Do Empirical Legal Scholarship?*, 41 SAN DIEGO L. REV. 1741 (2004) (explain the need for legally sophisticated empirical analyses and those who can do them).

136. For an excellent discussion of why criminal law and procedure can benefit from empirical research, see Tracey L. Meares, *Three Objections to the Use of Empiricism in Criminal Law and Procedure—and Three Answers*, 2002 U. ILL. L. REV. 851.

137. Heise, *supra* note 135, at 833.

138. Crawford v. U.S. Dep’t of the Treasury, No. 3:15-CV-250, 2015 WL 5697552, at *11 n.3 (S.D. Ohio Sept. 29, 2015).

139. See Richard H. Fallon, Jr., *Legitimacy and the Constitution*, 118 HARV. L. REV. 1787, 1849 (2005).

140. Judicial outcomes impact the perceived legitimacy of courts. See generally TOM R. TYLER, *WHY PEOPLE OBEY THE LAW* 72 (Princeton Univ. Press 2006) (1990). When the public

the public express a lack of confidence in the courts, especially the U.S. Supreme Court.¹⁴¹ Increasing public opinion about the ways in which courts make key constitutional decisions is vital to our democracy.

opinion departs significantly from court rulings on important issues, they might elect different judges at the state and support political candidates for federal office to pledge to reshape the ideological balance of the federal courts—especially the U.S. Supreme Court. *See* Fallon, *supra* note 139, at 1833.

141. *See, e.g.*, Douglas Keith, *A Legitimacy Crisis of the Supreme Court's Own Making*, BRENNAN CTR. FOR JUST. (Sept. 15, 2022), <https://www.brennancenter.org/our-work/analysis-opinion/legitimacy-crisis-supreme-courts-own-making> [<https://perma.cc/YV84-FQH6>]; Katy Lin & Carroll Doherty, *Favorable Views of Supreme Court Fall to Historic Low*, PEW RSCH. CTR. (July 21, 2023), <https://www.pewresearch.org/short-reads/2023/07/21/favorable-views-of-supreme-court-fall-to-historic-low/> [<https://perma.cc/4PXE-PAAD>]. For a discussion of the need to take judicial legitimacy seriously, see Luis Fuentes-Rohwer, *Taking Judicial Legitimacy Seriously*, 93 CHI.-KENT L. REV. 505 (2018).