THE AFTERMATH OF *CARPENTER*: AN EMPIRICAL STUDY OF FOURTH AMENDMENT LAW, 2018–2021

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CONTENTS

THE AFTERMATH OF *CARPENTER*: AN EMPIRICAL STUDY OF FOURTH AMENDMENT LAW, 2018–2021[†]

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Fourth Amendment law is in flux. The Supreme Court recently established, in the landmark case Carpenter v. United States*, that individuals can retain Fourth Amendment rights in information they disclose to a third party. In the internet era, this ruling has the potential to extend privacy protections to a huge variety of sensitive digital information. But* Carpenter *is also notoriously vague. Scholars and lower courts have tried to guess at what the law of Fourth Amendment searches will be going forward — and have reached different, contradictory conclusions.*

This Article reports the results of a large-scale empirical study of the impact of a transformative Supreme Court decision in federal and state courts. It analyzes all 857 federal and state judgments applying Carpenter *from its publication in June 2018 through March 2021. Relying on this unique, hand-coded database, this Article illuminates both the present and future of Fourth Amendment law.*

In doing so, it identifies the factors that drive modern Fourth Amendment search decisions — and those that fail to drive them. It examines disagreements among lower courts about the scope and breadth of Carpenter*, as some courts apply its concepts expansively while others attempt to narrow* Carpenter *from below. It assesses how state courts apply federal constitutional law, blending federal and state interests in unique ways. And it analyzes the enormous practical impact of the "good faith exception" to the exclusionary rule, which permits the government to use unconstitutionally obtained evidence to convict defendants if such evidence was collected in reliance on prior law. Based on these findings, this Article explores alternative directions that courts may take as they continue to refine Fourth Amendment law and address novel surveillance technologies. In addition to its many contributions to the Fourth Amendment literature, this Article is the most comprehensive empirical study to date of the jurisprudential impact of a Supreme Court case in the years following its publication.*

INTRODUCTION

For much of the twenty-first century, Fourth Amendment law was on a collision course with modern technology. Existing law dictated that information shared with a third party like a bank or telephone company was not protected by the Fourth Amendment.[1] But the amount of data exposed

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[†] The *Harvard Law Review* has not independently reviewed the data and analyses described herein.

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[1] *See* Smith v. Maryland, 442 U.S. 735, 745–46 (1979) (dialed phone numbers); United States v. Miller, 425 U.S. 435, 442–43 (1976) (bank records).

to third parties exploded in the internet age, encompassing virtually every kind of digital data generated by internet and cell phone users.[2] There was widespread concern among scholars that the Fourth Amendment would offer little protection for modern forms of personal information.[3]

Then, in 2018, the Supreme Court issued an opinion that "revolutionize[d]" Fourth Amendment law.[4] In *Carpenter v. United States*,[5] the Court held that individuals can retain Fourth Amendment rights in information they disclose to third parties.[6] Specifically, it held that government agents had to obtain a warrant before collecting cell phone location data that showed virtually everywhere a suspect had travelled over a seven-day period.[7] The Court also discussed several factors that may have influenced its decision, including the revealing nature of location data, the amount of data collected, the number of people affected, the inescapable and automatic nature of the data disclosure, and the low cost of tracking people via their cell phones.[8]

Scholars hailed *Carpenter* as an enormously important, paradigm-shifting Fourth Amendment decision.[9] It was a "landmark,"[10]

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[2] Forms of information routinely exposed to service providers as they are transmitted or processed include email and text metadata, web-surfing data, app data, search terms, video and audio recordings, location data, subscriber information, credit card information, medical and fitness data, DNA and biometric data, and smart home data, among others. *See, e.g.*, Paul Ohm, *The Many Revolutions of* Carpenter, 32 HARV. J.L. & TECH. 357, 378–85 (2019). These are broad categories of data that may obscure the enormous scale and variety of digital data that users create. For instance, app data encompasses a massive variety of apps and data-collection practices, and many apps collect especially detailed or sensitive information about their users. *See, e.g.*, Matthew Tokson, *Inescapable Surveillance*, 106 CORNELL L. REV. 409, 434–36 (2021).

[3] *See, e.g.*, Steven M. Bellovin et al., *It's Too Complicated: How the Internet Upends* Katz*,* Smith*, and Electronic Surveillance Law*, 30 HARV. J.L. & TECH. 1, 22–31 (2016); Mary Graw Leary, Katz *on a Hot Tin Roof — Saving the Fourth Amendment from Commercial Conditioning by Reviving Voluntariness in Disclosures to Third Parties*, 50 AM. CRIM. L. REV. 341, 379, 385–86 (2013); Jed Rubenfeld, *The End of Privacy*, 61 STAN. L. REV. 101, 113 (2008); Sherry F. Colb, *What Is a Search? Two Conceptual Flaws in Fourth Amendment Doctrine and Some Hints of a Remedy*, 55 STAN. L. REV. 119, 155–59 (2002); Tracey Maclin, Katz*,* Kyllo*, and Technology: Virtual Fourth Amendment Protection in the Twenty-First Century*, 72 MISS. L.J. 51, 136, 139 (2002).

[4] Ohm, *supra* note 2, at 359.

[5] 138 S. Ct. 2206 (2018).

[6] *Id.* at 2223.

[7] *Id.* at 2217 & n.3 (noting that the government had sought location data from one cellular provider for seven days, although it ultimately obtained data for only two days).

[8] *See id.* at 2217–20.

[9] *See, e.g.*, Matthew B. Kugler & Meredith Hurley, *Protecting Energy Privacy Across the Public/Private Divide*, 72 FLA. L. REV. 451, 479–80, 496 (2020); Ohm, *supra* note 2, at 358–61; *see also* Adam Liptak, *Warrant Required for Cellphone Tracking Data*, N.Y. TIMES, June 22, 2018, at A1; Ren LaForme, *The Supreme Court Just Struck a Major Victory for Digital Privacy*, POYNTER (June 25, 2018), https://www.poynter.org/tech-tools/2018/the-supreme-court-just-struck-a-major-victory-for-digital-privacy [https://perma.cc/ZYZ4-VF5N].

[10] Rachel Levinson-Waldman & Alexia Ramirez, *Supreme Court Strengthens Digital Privacy*, BRENNAN CTR. FOR JUST. (June 22, 2018), https://www.brennancenter.org/our-work/analysis-opinion/supreme-court-strengthens-digital-privacy [https://perma.cc/N4EU-V72F].

a "blockbuster,"[11] a "milestone . . . likely to guide the evolution of constitutional privacy in this country for a generation or more."[12] Going forward, scholars would "talk[] about what the Fourth Amendment means in pre-*Carpenter* and post-*Carpenter* terms."[13]

But what is Fourth Amendment law, post-*Carpenter*? The Court did not overtly establish a test that courts should apply in future Fourth Amendment search cases. Scholars disagree sharply about whether *Carpenter* implicitly created such a test, and if so, what that test requires.[14] And they dispute whether *Carpenter* is limited to digital technology or if its reach is more universal.[15] Others contend that it will take years before *Carpenter*'s impact on Fourth Amendment law becomes clear, and note that its ultimate meaning will be shaped by its application in the lower courts.[16] Indeed, the meaning and effect of a new Supreme Court ruling often take several years to manifest.[17] Yet

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[11] Lior Strahilevitz & Matthew Tokson, *Ten Thoughts on Today's Blockbuster Fourth Amendment Decision* — Carpenter v. United States, CONCURRING OPS. (June 22, 2018), https://perma.cc/Y94X-PTXR.

[12] Ohm, *supra* note 2, at 358.

[13] *Id.* at 360; *see also* Strahilevitz & Tokson, *supra* note 11 (calling *Carpenter* a "show-stopper" that "upsets the apple cart of Fourth Amendment jurisprudence in a fundamental way").

[14] *See* Ohm, *supra* note 2, at 369–70, 385 (contending that *Carpenter* created a test, which largely supplants the reasonable expectation of privacy test, involving each of the considerations mentioned in the opinion); Orin S. Kerr, *Implementing* Carpenter, *in* THE DIGITAL FOURTH AMENDMENT (forthcoming) (manuscript at 16–26), https://ssrn.com/abstract=3301257 [https://perma.cc/6E3J-874H] (arguing that *Carpenter* reformulated the *Katz* test but should only apply to digital data that users involuntarily disclose to third parties); Matthew Tokson, *The Next Wave of Fourth Amendment Challenges After* Carpenter, 59 WASHBURN L.J. 1, 7–12 (2020) (contending that *Carpenter* was relatively continuous with prior Fourth Amendment law and that the opinion indicates that the intimacy, amount, and cost of surveillance are the primary factors that courts will consider going forward).

[15] *Compare* Kerr, *supra* note 14 (manuscript at 16) (positing that *Carpenter* is limited to digital data only), *with* Ohm, *supra* note 2, at 385 (arguing that *Carpenter* is a wide-ranging decision that essentially replaces the *Katz* test in all Fourth Amendment cases).

[16] Evan Caminker, *Location Tracking and Digital Data: Can* Carpenter *Build A Stable Privacy Doctrine?*, 2018 SUP. CT. REV. 411, 452; Kugler & Hurley, *supra* note 9, at 496. *See generally* Richard M. Re, *Narrowing Supreme Court Precedent from Below*, 104 GEO. L.J. 921, 925–26 (2016).

[17] For example, most observers expected that *United States v. Booker*, 543 U.S. 220 (2005), would have a massive immediate impact, when in reality it had very little initial effect, although departures from the federal sentencing guidelines did grow over time. *See, e.g.*, William H. Sloane & Kenneth S. Levine, *"*Booker*" After a Year: New Highs for Sentences, Guidelines Followed*, N.Y. L.J. (Mar 6, 2006, 12:00 AM), https://www.law.com/newyorklawjournal/almID/900005448438 [https://perma.cc/US3A-DS6J] (noting the "surprisingly limited" impact of *Booker*); U.S. SENT'G COMM'N, THE INFLUENCE OF THE GUIDELINES ON FEDERAL SENTENCING: FEDERAL SENTENCING OUTCOMES, 2005–2017, at 22, https://www.ussc.gov/sites/default/files/pdf/research-and-publications/research-publications/2020/20201214_Guidelines-Influence-Report.pdf [https://perma.cc/42TP-YC7V] (reporting a gradual increase in the number of departures from sentencing guidelines). Likewise, *eBay Inc. v. MercExchange, L.L.C.*, 547 U.S. 388 (2006), was initially expected to substantially change the law of patent remedies, but lower court behavior remained largely unchanged. *See, e.g.*, Stacy Streur, *The* eBay *Effect: Tougher Standards but Courts Return to the Prior Practice of Granting Injunctions for Patent Infringement*, 8 NW. J. TECH. & INTELL. PROP. 67, 67–69 (2009).

lower courts have now applied *Carpenter* in hundreds of cases over the past several years, and we no longer have to guess at how it will shape Fourth Amendment law.

This Article examines all 857 federal and state judgments that cited *Carpenter* from its publication in June 2018 through the end of March 2021. These judgments were gathered from a variety of publicly available and paywalled sources, and then hand-coded and analyzed in detail.[18] While this analysis captures only the first few years of post-*Carpenter* law, it reveals clear jurisprudential trends that are likely to shape Fourth Amendment doctrine for years to come. By analyzing these cases and the myriad constitutional and theoretical issues they raise, this Article aims to reveal both the present and likely future of Fourth Amendment law. It identifies an emerging *Carpenter* test for Fourth Amendment searches, one that augments the existing *Katz*[19] test without yet fully displacing it.[20]

This Article first describes the cases in the dataset, including their jurisdictions, outcomes, temporal distribution, win rates, and other parameters. It then compares outcomes across federal and state cases, finding, unexpectedly, that state courts were far more likely to regulate surveillance than their federal counterparts.[21] It examines in detail the political affiliations of the judges who decided the cases, ultimately concluding that political affiliation cannot explain the disparity in federal and state outcomes. It addresses other potential explanations, including disparities in judicial competence, varying relationships with the Supreme Court, and differing familiarity with pre-*Carpenter* law. The study then addresses the possibility of lower court noncompliance with *Carpenter*. It finds that lower courts have overwhelmingly refrained from criticizing *Carpenter* and have largely embraced its conceptual framework.[22]

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[18] *See infra* section II.A, pp. 1807–08.

[19] Katz v. United States, 389 U.S. 347 (1967).

[20] *See infra* pp. 1827–28. The *Katz* test establishes that a search has occurred under the Fourth Amendment when a government action violates a person's "reasonable expectation of privacy." *Katz*, 389 U.S. at 360–62 (Harlan, J., concurring).

[21] *See infra* section II.B.1, pp. 1811–14.

[22] *See infra* section IV.B, pp. 1836–39. This Article also examines additional cases beyond its primary dataset that address Fourth Amendment issues but decline to cite *Carpenter*, and it finds no direct noncompliance in these cases either. *See infra* notes 280–281 and accompanying text. There remains the possibility of "indirect noncompliance," where courts misinterpret a controlling case in order to reach a preferred outcome. Matthew Tokson, *Judicial Resistance and Legal Change*, 82 U. CHI. L. REV. 901, 907 (2015). This Article finds that 13.8% of determinative cases applied a narrow interpretation of *Carpenter* that was technically consistent with the Supreme Court's opinion but likely in tension with its spirit. *See infra* p. 1837. These cases may be the result of judicial preferences for a prior, familiar status quo, and the increased decision costs associated with the new *Carpenter* standard. *See* Tokson, *supra*, at 903–04. Consistent with this account, the proportion of cases employing narrow interpretations of *Carpenter* has decreased over time, as familiarity with the *Carpenter* standard has likely increased. *See infra* Figure 2, p. 1839.

This Article analyzes the potential factors identified in the *Carpenter* opinion, with the goal of identifying which factors impact case outcomes and which do not.[23] Correlation analysis, logistic regression, and simple descriptive statistics all point to a similar conclusion and an emerging doctrinal test: the revealing nature of the data collected; the amount of data collected; and the automatic nature of disclosure to third parties clearly and powerfully influence case outcomes in post-*Carpenter* law.[24] The number of persons affected has little or no influence on case outcomes, and indeed has been overtly rejected by some courts.[25] The remaining factors of inescapability and cost are influential when they appear but are rarely discussed by courts in the dataset; their importance going forward is ambiguous.[26] The *Carpenter* test emerging from lower-court decisions was not predicted by any scholar, but it is quite clear from the analysis, and the factors of revealing nature, amount, and automatic disclosure are likely to powerfully influence Fourth Amendment decisions going forward.[27]

The implications of these findings for the future of Fourth Amendment law are varied, interesting, and potentially of enormous importance. For a start, this Article identifies a *Carpenter* test with the potential to transform or even displace the *Katz* test over time.[28] Moreover, the widespread lower court adoption of *Carpenter* and the apparent administrability of its standards may bolster arguments for preserving and extending it, even as its future has become uncertain given recent changes in Supreme Court personnel.[29]

In addition, this Article's findings should cause courts to reexamine the good faith exception, which allows courts to admit evidence collected in good faith reliance on a warrant or other authority that turns out to be invalid.[30] For example, if the police collect location data under a statute that is later ruled unconstitutional, courts can still admit the data

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[23] It also examines which factors are most likely to correlate with each other, finding notable correlations between revealing nature and amount, amount and cost, and inescapability and automatic disclosure, among others. *See infra* section III.A.2, pp. 1824–26.

[24] *See infra* section III.A, pp. 1821–27.

[25] *See infra* section III.A, pp. 1821–27.

[26] *See infra* section III.A, pp. 1821–27.

[27] This Article also examines the cases that reached substantive outcomes without engaging with the *Carpenter* factors, or having engaged with only one or two such factors. *See infra* Part III, pp. 1820–30.

[28] *See infra* p. 1828; section IV.A.1, pp. 1831–33.

[29] *See infra* section IV.A.2, pp. 1833–36. Unworkability in the lower courts is an important indication that a case should be overturned despite the interests of stare decisis. *See, e.g.*, Janus v. AFSCME, Council 31, 138 S. Ct. 2448, 2478 (2018); Garcia v. San Antonio Metro. Transit Auth., 469 U.S. 528, 531 (1985).

[30] *See, e.g.*, Davis v. United States, 564 U.S. 229, 238–39 (2011); Arizona v. Evans, 514 U.S. 1, 14 (1995).

at trial.[31] This Article demonstrates that good faith exception cases make up a remarkably high proportion of all post-*Carpenter* cases, albeit one that is diminishing over time.[32] This raises serious concerns about the incentives this exception creates for law enforcement officials.[33] Indeed, the exception may encourage the police to engage in unconstitutional searches in ways that courts have not yet recognized. When the police can rely on old, general laws to obtain new forms of digital information, they are incentivized to aggressively interpret existing law and collect as much data as possible before courts impose a warrant requirement. The good faith exception ensures that any convictions they secure with this evidence will be upheld. Whether intentional or not, this appears to be what has occurred in post-*Carpenter* law — questionable government searches of revealing personal data, eventually ruled unconstitutional, but upheld in numerous cases nevertheless under the good faith exception.[34]

Over 120 decisions examined in this study involved state courts applying the Fourth Amendment. This dataset can inform ongoing debates about the capacities of state judges to apply federal constitutional law.[35] An analysis of these cases indicates, counterintuitively, that state judges may have several advantages over federal judges in applying new constitutional doctrines. State judges have some institutional disadvantages as well, but the possibilities for experimentation and the unique perspectives of state judges in frontier cases reinforce the advantages of the dual-track regime of constitutional adjudication that largely prevails in the United States.[36]

Finally, based on its analyses of post-*Carpenter* law, this Article offers several prescriptive suggestions for courts and legislators. It advises that courts overtly adopt a clear *Carpenter* test and consistently apply that test in each case, rather than addressing only the factors most influential to their decisions. It defends lower courts' general refusal to consider the number of persons affected when assessing government surveillance under the Fourth Amendment. And it advocates for greater

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[31] *See infra* notes 298–299 and accompanying text.

[32] *See infra* Figure 3, p. 1841.

[33] *See infra* section IV.C, pp. 1839–44. 36.1% of all substantive decisions in the dataset were resolved via the good faith exception. *See infra* note 301 and accompanying text.

[34] *See infra* section IV.C, pp. 1839–44.

[35] *See, e.g.*, Patrick J. Fackrell, *Closing the Courthouse Doors to First Amendment Claims Seeking Access to State Court Records: Is Abstention Warranted?*, 68 DRAKE L. REV. 445, 481–82 (2020); Justin Weinstein-Tull, *The Structures of Local Courts*, 106 VA. L. REV. 1031, 1037 n.16 (2020); Michael E. Solimine, *The Future of Parity*, 46 WM. & MARY L. REV. 1457, 1458–59 (2005).

[36] There were also a handful of state cases that overtly incorporated *Carpenter* into state constitutional law, even as that state law continued to evolve independently thereafter. *E.g.*, Commonwealth v. McCarthy, 142 N.E.3d 1090, 1098 (Mass. 2020); Holder v. State, 595 S.W.3d 691, 703 (Tex. Crim. App. 2020). These cases provide interesting examples of state constitutional law development in a federal system. *See infra* section IV.D, pp. 1844–48.

consideration of the cost of surveillance, which can help courts address technologies with the potential for large-scale, unregulated government monitoring.[37] By contrast, this Article advises courts to be cautious in using the automatic or inescapable nature of data disclosure as factors in their decisions. These factors speak to the voluntariness of a person's data disclosure to third parties. But basing Fourth Amendment protection on whether consumers voluntarily disclose their data may sharply limit constitutional protections for personal data in the digital age.[38]

This Article proceeds in four Parts. Part I provides an overview of Fourth Amendment law. It surveys current understandings of *Carpenter* and discusses several ambiguities regarding its meaning and how it should be applied in the future. Part II provides an overview of how *Carpenter* has been applied in the lower courts since it was decided in June 2018. It describes the primary dataset used in this Article's analyses and examines case outcomes across several spatial and temporal categories. Part III studies courts' use of the *Carpenter* factors, examining their impacts on case outcomes using correlation analysis, logistic regression, and simple descriptive statistics. It also considers cases that do not discuss any factors and evaluates whether courts treat digital information differently. Part IV discusses the future of Fourth Amendment law in light of this Article's findings. It addresses the emerging *Carpenter* test, the Supreme Court's changing composition, judicial inertia in the face of legal change, and the substantial impact of the good faith exception. It also discusses state courts' applications of federal constitutional law and the federalized system of constitutional adjudication. It concludes with a discussion of new directions and paradigms that courts might adopt to more effectively address Fourth Amendment issues in the future.

I. THE LAW OF FOURTH AMENDMENT SEARCHES

Until recently, courts have struggled to apply the Fourth Amendment to digital-age surveillance practices.[39] This Part gives an overview of Fourth Amendment law and describes how *Carpenter* has transformed it by extending constitutional protections to some forms of data shared with third parties. It identifies the potential factors discussed in

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[37] Low-cost surveillance is particularly concerning because it opens up new forms of data to government surveillance, is more prone to overuse, and is less subject to political scrutiny. *See infra* notes 101–103 and accompanying text.

[38] The disclosure of data to apps, ride-sharing services, and other modern service providers "is in theory voluntary and avoidable, but in practice a beneficial and important part of modern life." *See* Matthew Tokson, *Government Purchases of Sensitive Private Data*, DORF ON L. (Mar. 29, 2021, 8:00 AM), http://www.dorfonlaw.org/2021/03/government-purchases-of-sensitive.html [https://perma.cc/5CP9-DSGQ].

[39] *See* sources cited *supra* note 3 and accompanying text.

Carpenter that may determine whether a government action is a search in future cases. It then examines scholars' competing theories of *Carpenter* and the many ambiguities that remain regarding its meaning and the future of Fourth Amendment law.

A. Fourth Amendment Law and Digital Data

The Fourth Amendment generally requires that the government obtain a warrant (or qualify for a warrant exception) prior to conducting a "search."[40] A search occurs when a government official physically intrudes on certain types of property[41] or violates a person's "reasonable expectation of privacy."[42] This latter test is often referred to as the *Katz* test, after the case where it was first proposed.[43]

The Supreme Court has adopted various theories of what makes an expectation of privacy reasonable. In some cases the Court looks to the probability of detection by the police, while in others it looks to policy considerations or positive law.[44] Over time, consistent patterns have emerged in the Court's case law, although the precise nature of the reasonable expectation of privacy test remains ambiguous.[45]

One particularly important area of Fourth Amendment search law involves data that individuals disclose to other parties. Under the "third-party doctrine," a person waives their Fourth Amendment rights in information they voluntarily exposed to a third party.[46] For example,

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[40] *E.g.*, Weeks v. United States, 232 U.S. 383, 393 (1914). There are several exceptions to the warrant requirement. *See* Chimel v. California, 395 U.S. 752, 762–63 (1969) (searches incident to arrest); Warden v. Hayden, 387 U.S. 294, 298–99 (1967) (exigent circumstances); Carroll v. United States, 267 U.S. 132, 153 (1925) (searches of automobiles).

[41] *See* Florida v. Jardines, 569 U.S. 1, 7–10 (2013); United States v. Jones, 565 U.S. 400, 404–06 (2012). The physical intrusion test has so far added little to the reasonable expectation of privacy test, and the Supreme Court cases where it has been used may have come out similarly under *Katz*. *See Jardines*, 569 U.S. at 12–16 (Kagan, J., concurring); *Jones*, 565 U.S. at 422–23 (Alito, J., concurring in the judgment).

[42] The Court has not fully defined the concept of a reasonable expectation of privacy, and scholars have interpreted the standard in different ways. *See* Matthew Tokson, *The Emerging Principles of Fourth Amendment Privacy*, 88 GEO. WASH. L. REV. 1, 3–4 (2020) (contending that the Court applies an intuitive model of Fourth Amendment searches that looks to the intimacy, amount, and cost of the surveillance practice at issue); Orin S. Kerr, *Four Models of Fourth Amendment Protection*, 60 STAN. L. REV. 503, 508 (2007) (positing that the Court applies multiple, conflicting models of the Fourth Amendment in different cases).

[43] Katz v. United States, 389 U.S. 347, 360–62 (1967) (Harlan, J., concurring).

[44] Kerr, *supra* note 42, at 507–22.

[45] Tokson, *supra* note 42, at 3–5.

[46] *See* Smith v. Maryland, 442 U.S. 735, 743–44 (1979) (concluding that a list of dialed phone numbers was not protected by the Fourth Amendment); United States v. Miller, 425 U.S. 435, 444–45 (1976) (holding that a bank customer had no reasonable expectation of privacy in his records because they were disclosed to third-party employees); Hoffa v. United States, 385 U.S. 293, 294–95, 302 (1966) (ruling that testimony regarding statements to a secret government informant was

the Fourth Amendment does not apply to the phone numbers that a person dials, because that person has disclosed those numbers to the phone company.[47] The police can accordingly obtain a list of anyone's dialed numbers without a warrant or probable cause.[48]

Historically, the disclosure of one's personal information beyond a close circle of trusted persons was relatively rare. But in the internet era, data disclosed to internet service providers or other third parties encompasses virtually every type of digital information, including emails and texts, videos and photos, web-surfing data, subscriber information, biometric data, search terms, cloud-stored documents, and more.[49] As a growing proportion of sensitive personal data is generated or stored digitally, the third-party doctrine threatens to erode Fourth Amendment privacy.[50] Recently, however, the Supreme Court limited the third-party doctrine in important ways and substantially transformed the law of Fourth Amendment searches.[51]

B. A Fourth Amendment Sea Change

The Supreme Court decided *Carpenter* in June 2018.[52] FBI agents suspected Timothy Carpenter of robbing a series of electronics stores, so they requested cell phone signal records from Carpenter's wireless providers.[53] By examining which cell towers picked up his signal over time, the agents could roughly determine everywhere that Carpenter had traveled over a total of 129 days.[54] The Supreme Court ruled, in a 5–4 decision, that the government must typically obtain a search warrant before tracking a user's location via their cell phone records, at least for periods of seven days or longer.[55]

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allowable under the Fourth Amendment); Lopez v. United States, 373 U.S. 427, 437–40 (1963) (holding that the use of an electronic recording device that was not unlawfully planted by physical invasion did not violate defendant's Fourth Amendment rights).

47 *Smith*, 442 U.S. at 743–44.

48 *Id.* at 744–46.

49 *See supra* note 2 and accompanying text; Matthew Tokson, *Automation and the Fourth Amendment*, 96 IOWA L. REV. 581, 585 (2011).

50 Such data is regularly stored in databases and made available to the government upon request or subpoena. *See* Tokson, *supra* note 49, at 585.

51 Carpenter v. United States, 138 S. Ct. 2206, 2217 (2018).

52 *Id.* at 2206.

53 *Id.* at 2212. Carpenter's wireless providers were MetroPCS and Sprint. *Id.*

54 *Id.* The agents were able to determine Carpenter's location 12,898 times over a total of 129 days, an average of 101 data points per day. *Id.* With this information, they could place Carpenter within a sector ranging from one-eighth to four square miles, depending on cell-tower density. *Id.* at 2218. The Court assessed two separate requests for cell phone records, one for 152 days and another for 7 days, which in total yielded 129 days of records. *See id.* at 2212.

55 *See id.* at 2211, 2217 n.3, 2223.

The *Carpenter* decision has been widely hailed as a "revolution" in Fourth Amendment law,[56] a "landmark privacy case,"[57] a "show-stopper [that] upsets the apple cart of Fourth Amendment jurisprudence in a fundamental way,"[58] and a "major victory for digital privacy."[59] Even its critics consider it to be a substantial break from previous conceptions of the Fourth Amendment, reshaping both the third-party doctrine and the law of Fourth Amendment searches more broadly.[60] For the first time, a person's digital information could be protected by the Constitution even though that information was possessed by another party.[61] And *Carpenter* opens the door to protecting all kinds of digital information against pervasive government surveillance.[62] It is, in short, "an inflection point in the history of the Fourth Amendment."[63]

At the same time, the *Carpenter* opinion is notably vague about how courts should address future digital technologies,[64] leaving numerous important issues "unresolved and uncertain."[65] As the Court often does when faced with a broad new area of legal development, it has largely left future issues to be resolved by the lower courts.[66]

C. The Carpenter *Factors*

Although *Carpenter* does not set out a specific test for when third-party data is protected by the Fourth Amendment, the opinion does list several factors that were relevant to the decision.[67] These factors can provide substantial guidance to lower courts addressing novel Fourth

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[56] Ohm, *supra* note 2, at 358 ("*Carpenter* works a series of revolutions in Fourth Amendment law, which are likely to guide the evolution of constitutional privacy in this country for a generation or more.").

[57] Levinson-Waldman & Ramirez, *supra* note 10; *see also* Kugler & Hurley, *supra* note 9, at 480 (referring to *Carpenter* as a "sharp break from prior third-party doctrine jurisprudence").

[58] Strahilevitz & Tokson, *supra* note 11.

[59] LaForme, *supra* note 9.

[60] *See* Kerr, *supra* note 14 (manuscript at i).

[61] *See id.* (manuscript at 8).

[62] Caminker, *supra* note 16, at 414–15.

[63] Ohm, *supra* note 2, at 360.

[64] Caminker, *supra* note 16, at 450–52; Aaron L. Dalton, Carpenter v. United States*: A New Era for Protecting Data Generated on Personal Technology, or a Mere Caveat?*, 20 N.C. J.L. & TECH. ONLINE 1, 23 (2018); Laura K. Donohue, *Functional Equivalence and Residual Rights Post-*Carpenter*: Framing a Test Consistent with Precedent and Original Meaning*, 2018 SUP. CT. REV. 347, 371; *see* Orin S. Kerr, *First Thoughts on* Carpenter v. United States, REASON: VOLOKH CONSPIRACY (June 22, 2018, 12:20 PM), https://reason.com/volokh/2018/06/22/first-thoughts-on-carpenter-v-united-sta [https://perma.cc/G2DW-VFH8] (discussing the many important questions left open by the *Carpenter* opinion).

[65] Daniel Solove, Carpenter v. United States*, Cell Phone Location Records, and the Third Party Doctrine*, TEACH PRIV. (July 1, 2018), https://teachprivacy.com/carpenter-v-united-states-cell-phone-location-records-and-the-third-party-doctrine [https://perma.cc/PFQ9-VBBP]; *see* Kugler & Hurley, *supra* note 9, at 496.

[66] *See infra* Part IV, pp. 1830–51.

[67] Carpenter v. United States, 138 S. Ct. 2206, 2223 (2018).

Amendment surveillance questions. This section gives an overview of the principles that may drive Fourth Amendment law going forward.

The key doctrinal language from *Carpenter*, according to most scholars, is this: "In light of the deeply revealing nature of [cell phone location data], its depth, breadth, and comprehensive reach, and the inescapable and automatic nature of its collection, the fact that such information is gathered by a third party does not make it any less deserving of Fourth Amendment protection."[68] Scholars analyzing *Carpenter* have drawn out several potential factors from this sentence and the lengthy opinion that precedes it.[69] The following subsections describe these potential factors.

1. Revealing Nature. — The revealing nature of the information collected refers to its tendency to disclose sensitive or intimate details about an individual's life.[70] Under this factor, the more that a type of information reveals about its subject, the more likely its collection is a Fourth Amendment search.[71] The Supreme Court considered cell phone location data to be deeply revealing because it could "provide[] an intimate window into a person's life, revealing not only his particular movements, but through them his 'familial, political, professional, religious, and sexual associations.'"[72] This echoed language in previous cases expressing concern that the government could learn sensitive details about a person's medical, social, and sexual practices via internet browsing histories or other forms of digital data.[73] Such sensitive or intimate details are arguably at the very core of the concept of Fourth Amendment privacy.[74]

2. Amount. — The amount of data at issue refers to the quantity of the information sought by the government.[75] Under this factor, the more data that the government seeks, the more likely that a Fourth Amendment search has occurred. The Supreme Court determined that cell phone location records generally capture a large amount of personal data, even over the relatively short seven-day period at issue in

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[68] *Id.*

[69] Kerr, *supra* note 14 (manuscript at 3); Ohm, *supra* note 2, at 370; Tokson, *supra* note 42, at 13–27.

[70] Ohm, *supra* note 2, at 371.

[71] *See id.*

[72] *Carpenter*, 138 S. Ct. at 2217 (quoting United States v. Jones, 565 U.S. 400, 415 (2012) (Sotomayor, J., concurring)).

[73] Kerr, *supra* note 14 (manuscript at 23–24).

[74] Tokson, *supra* note 42, at 16; *see Carpenter*, 138 S. Ct. at 2217 (noting that these types of information, as potentially exposed by location tracking, "hold for many Americans the 'privacies of life'" (quoting Riley v. California, 573 U.S. 373, 403 (2014))).

[75] *Carpenter*, 138 S. Ct. at 2217–18. In practice, the amount of information sought will generally "be measured by the extent and duration of a surveillance practice, or how much information about a suspect is ultimately obtained." Tokson, *supra* note 42, at 18. Note, however, that the *Carpenter* Court assessed the duration of surveillance in *Carpenter* based on the seven days of location information the government requested, rather than the two days of information it was ultimately able to obtain. *Carpenter*, 138 S. Ct. at 2217 n.3.

Carpenter.[76] In other words, cell phone surveillance was both deep and broad — it collected detailed information, frequently, for a substantial period of time.[77] The Court emphasized that people carry cell phones with them virtually everywhere, creating detailed records of their locations.[78] In addition, cell phone location records are generally stored for five years after collection, permitting the government to essentially travel back in time to retrace a person's whereabouts over this entire period.[79] This is concerning because such massive quantities of data substantially increase the potential for intrusion on an individual's privacy.[80]

3. Number of People Affected. — This factor refers to the number of people affected by a given surveillance program or practice.[81] Under this factor, surveillance programs that target a large number of people are more likely to be searches than are those that target fewer people. Professor Paul Ohm has convincingly argued that this is what the Supreme Court meant when it referred to "the comprehensive reach" of surveillance.[82] The Court stated: "Critically, because location information is continually logged for all of the 400 million [cellular] devices in the United States . . . this newfound tracking capacity runs against everyone."[83] The widespread nature of a surveillance program increases its potential for harm and the likelihood that it will be used against innocent persons.[84] Broad surveillance goes beyond individuals reasonably suspected of committing crimes to encompass people for whom the government lacks any particularized suspicion.[85] It may allow the

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[76] *Carpenter*, 138 S. Ct. at 2212, 2217 n.3. The Court noted that the government had obtained an average of 101 data points per day about Carpenter's movements. *Id.* at 2212.

[77] *Id.* at 2218–20; Ohm, *supra* note 2, at 372 (noting that the Supreme Court's concepts of "depth" and "breadth" relate to the quantity of information stored). The depth and breadth of a surveillance practice are subconcepts that relate to the total amount of data captured — the more detailed the surveillance and the more extensive the data collection, the greater the amount of data that will ultimately be captured. This study will refer to total amount because courts virtually never separate out these closely related concepts in applying *Carpenter*.

[78] *Carpenter*, 138 S. Ct. at 2218.

[79] *Id.* (noting that an individual subject to such surveillance "has effectively been tailed every moment of every day for five years").

[80] *See id.* at 2220 (noting the dangers to privacy of "a detailed chronicle of a person's physical presence compiled every day, every moment, over several years [because s]uch a chronicle implicates privacy concerns far beyond those considered in [previous third-party doctrine cases]"); Tokson, *supra* note 42, at 18.

[81] Ohm, *supra* note 2, at 373.

[82] *Id.*

[83] *Carpenter*, 138 S. Ct. at 2218 (noting that the government's ability to surveil any cell phone user was not limited to "persons who might happen to come under investigation" as "[u]nlike with the GPS device . . . police need not even know in advance whether they want to follow a particular individual, or when").

[84] *Cf.* Tokson, *supra* note 42, at 22–24 (discussing the potential for abuse associated with broad surveillance programs).

[85] *Id.*

government to monitor the behaviors of a growing proportion of the population, for reasons unconnected to legitimate law enforcement purposes.[86]

4. Inescapability. — The inescapable nature of surveillance refers to the inability of an individual to avoid the collection of their personal data.[87] A person might escape collection of their data by not using a certain technology, at least where that technology is not essential to modern life.[88] Under this factor, data collection associated with unavoidable technologies is more likely to be a Fourth Amendment search.[89] The Supreme Court distinguished cell phone location tracking from earlier third-party doctrine scenarios partly on the ground that "cell phones and the services they provide are 'such a pervasive and insistent part of daily life' that carrying one is indispensable to participation in modern society."[90] In other words, most people have little choice but to carry cell phones with them, given the current role of cell phones in society.[91] Conversely, where an individual voluntarily chooses to use a less essential information-gathering technology, courts may be less likely to find that they retain a Fourth Amendment right in their personal data.[92]

5. *Automatic Disclosure.* — The automatic disclosure of data occurs when an individual's data is transmitted to a third party by an automated process, rather than a voluntary act of the individual.[93] Under this factor, government collection of data that has been automatically disclosed to a third party is more likely to be a search.[94] For instance, because the user of a cell phone transmits data to third parties "without any affirmative act on the part of the user beyond powering up," the user cannot be said to have voluntarily disclosed their data to a third party.[95] Further, studies indicate that most cell phone users are unaware that they are transmitting detailed location data via their cell phone signals.[96] By contrast, when the user of a technology does take voluntary

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[86] *Id.*

[87] Tokson, *supra* note 2, at 419–20.

[88] *Id.* at 422.

[89] *See id.*

[90] Carpenter v. United States, 138 S. Ct. 2206, 2220 (2018) (quoting Riley v. California, 573 U.S. 373, 385 (2014)).

[91] *Id.* at 2218.

[92] *See* Tokson, *supra* note 2, at 423–24 (citing lower court cases examining the inescapability of the technology at issue).

[93] *Id.* at 420.

[94] *See id.* at 419–20.

[95] *Carpenter*, 138 S. Ct. at 2220. The Court went on to note: "Apart from disconnecting the phone from the network, there is no way to avoid leaving behind a trail of location data. As a result, in no meaningful sense does the user voluntarily 'assume[] the risk' of turning over a comprehensive dossier of his physical movements." *Id.* (alteration in original) (quoting Smith v. Maryland, 442 U.S. 735, 745 (1979)).

[96] Matthew Tokson, *Knowledge and Fourth Amendment Privacy*, 111 NW. U. L. REV. 139, 175–79 (2016).

action to transmit their data to a third party, courts may be less likely to hold that their data is protected by the Fourth Amendment.[97]

6. Cost. — The cost of surveillance refers to the expense or difficulty incurred by government officials in conducting an act of surveillance.[98] Courts assessing cost may consider the time and effort required for police officers to surveil a suspect, the expense of operating or renting a vehicle or device for surveillance, or the unpleasantness or risk to officers of a surveillance procedure.[99] Under this factor, the lower the cost of a type of surveillance, the more likely it is to be a search. In a series of cases involving location privacy, the Supreme Court recognized that the decreasing cost of surveillance raises substantial concerns about privacy.[100] Prior to the digital age, pervasive location tracking "for any extended period of time was difficult and costly and therefore rarely undertaken."[101] But new surveillance technologies change this calculus, making pervasive and detailed monitoring of citizens more feasible.[102] When surveillance is "remarkably easy, cheap, and efficient compared to traditional investigative tools," it is more prone to abuse and overuse, and less subject to administrative or political scrutiny.[103] By contrast, high-cost surveillance is likely to be narrowly applied, is more visible, and is less subject to abuse.[104]

D. The Mystery of Carpenter

While we can identify factors that may influence Fourth Amendment decisions going forward, what we know about surveillance law post-

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[97] *See Smith*, 442 U.S. at 745; Tokson, *supra* note 2, at 423–24 (citing lower court cases applying this principle).

[98] Tokson, *supra* note 42, at 22.

[99] *Id.* at 22–23 ("Forms of surveillance that are scalable and easily applied to large groups of citizens are of particular concern." *Id.* at 23.).

[100] *See Carpenter*, 138 S. Ct. at 2216–18; United States v. Jones, 565 U.S. 400, 416 (2012) (Sotomayor, J., concurring); *id.* at 429 (Alito, J., concurring in the judgment); U.S. Dep't of Just. v. Reps. Comm. for Freedom of the Press, 489 U.S. 749, 764 (1989).

[101] *Carpenter*, 138 S. Ct. at 2217 (quoting *Jones*, 565 U.S. at 429 (Alito, J., concurring in the judgment)). Accordingly, "society's expectation has been that law enforcement agents and others would not — and indeed, in the main, simply could not — secretly monitor and catalogue every single movement of an individual's car for a very long period." *Id.* (quoting *Jones*, 565 U.S. at 430 (Alito, J., concurring in the judgment)).

[102] *See id.* at 2217–18; *see also id.* at 2216 (noting that cell phone location information is "effortlessly compiled").

[103] *Id.* at 2218; Tokson, *supra* note 42, at 24; *see also Jones*, 565 U.S. at 415–16 (Sotomayor, J., concurring) (expressing concern that GPS tracking was so "cheap in comparison to conventional surveillance techniques" that it would evade "the ordinary checks that constrain abusive law enforcement practices: 'limited police resources and community hostility,'" *id.* at 416 (quoting Illinois v. Lidster, 540 U.S. 419, 426 (2004))).

[104] Tokson, *supra* note 42, at 24. Note that low-cost surveillance can have benefits as well, allowing the police to prevent crimes efficiently, without necessarily increasing privacy harms to individuals. *See* RIC SIMMONS, SMART SURVEILLANCE: HOW TO INTERPRET THE FOURTH AMENDMENT IN THE TWENTY-FIRST CENTURY 18–20 (2019).

Carpenter is dwarfed by what we do not know. The Supreme Court gave no concrete test to guide future decisions; it simply discussed several principles that appeared important in the context of cell phone location tracking.[105] There is also significant uncertainty because the composition of the Court has changed since *Carpenter*, raising the possibility that the doctrine might be substantially altered in the next major Supreme Court Fourth Amendment case.[106] What does *Carpenter* mean, and what will it mean in the future?

Several scholars have conjectured about the meaning of *Carpenter* going forward, but they have reached sharply different conclusions. Some have argued that *Carpenter* sets out a concrete test involving five of the factors discussed above: deeply revealing nature, amount, number of people affected, inescapability, and automatic disclosure.[107] They further argue that this test is meant to essentially replace the *Katz* test in most cases.[108] Others agree that *Carpenter* is a major "reformulation of the *Katz* test" but contend that its scope is relatively narrow.[109] They view *Carpenter* as protecting only digital information that is deeply revealing and involuntarily disclosed.[110] Other scholars have argued that *Carpenter* is enormously important and far-reaching, even though it is relatively continuous with Fourth Amendment law from prior decades.[111] They posit that the three most important factors in *Carpenter* and other Fourth Amendment search cases are the deeply revealing nature of the information (that is, its "intimacy"), the amount of data sought, and the cost of the surveillance.[112]

Finally, some scholars have argued that the meaning of *Carpenter* may be impossible to discern at first, as it represents the Supreme Court's first step onto an "undertheorized new doctrinal path."[113] They point out that, in such situations, the future direction of the law will

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[105] *Carpenter*, 138 S. Ct. at 2212–23.

[106] *See* Tokson, *supra* note 38.

[107] *See* Ohm, *supra* note 2, at 369–78.

[108] *Id.* at 386 ("[*Carpenter*'s] changes do more than apply or extend *Katz*. They reinvent and supplant that venerable opinion. The [reasonable expectation of privacy] test has been replaced by *Carpenter*'s multi-factor test and the rule of technological equivalence. Time will reveal that the *Katz* era has ended.").

[109] Kerr, *supra* note 14 (manuscript at 8); *see id.* (manuscript at 8–10) (contending that *Carpenter* applies only to involuntarily disclosed, digital-age, sensitive data).

[110] *Id.* (manuscript at 20, 22); *see also* Kugler & Hurley, *supra* note 9, at 486–87 (adopting Professor Orin Kerr's framework with respect to revealing data and involuntary disclosure, but not digital data).

[111] Tokson, *supra* note 14, at 6.

[112] Tokson, *supra* note 42, at 15–27. These analyses of *Carpenter* mix descriptive and prescriptive accounts of the case, but all are intended to be descriptive and based largely in the opinion itself.

[113] Caminker, *supra* note 16, at 452; *see also* Kugler & Hurley, *supra* note 9, at 496 ("*Carpenter* . . . raised questions about dozens of issues and it may be years before courts give clear answers to any of them.").

largely be shaped by the lower courts.[114] Indeed, important Supreme Court precedents often require further interpretation and elaboration by lower courts.[115] In many contexts, the Supreme Court then incorporates lower court rationales into its own subsequent decisions.[116] This "precedential dialogue" allows the Supreme Court to assess the various interpretations of its rulings and observe their practical consequences.[117] Broad Supreme Court opinions can be viewed as a kind of delegation to lower courts, providing them with "space for interpretive flexibility."[118]

Carpenter is the quintessential major Supreme Court case that calls for further development and interpretation.[119] *Carpenter*'s amorphous opinion "gives judges license, if not permission, to deviate, to innovate, and even to anticipate technological change."[120] And the Court itself will likely pay close attention to how the lower courts address novel Fourth Amendment questions, as they face a "blizzard" of post-*Carpenter* litigation.[121] This is especially true given the uncertainty created by the changing composition of the Court, as lower court reliance may loom large in a stare decisis analysis.[122] The Supreme Court has noted that it may be appropriate to overturn a prior decision if it has proved unworkable in the lower courts.[123]

It is to the many hundreds of lower court cases applying *Carpenter* that this Article now turns. While the meaning of *Carpenter* may have been uncertain or even unknowable in 2018,[124] we no longer have to wonder how it will affect Fourth Amendment law. The next sections use empirical analysis to develop new insights about the meaning and scope of Fourth Amendment law after *Carpenter*.

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114 *See* Caminker, *supra* note 16, at 460; *see also* Re, *supra* note 16, at 947 ("[T]he existence of ambiguity in a higher court precedent can itself be regarded as a meaningful message to lower courts . . . . [D]isuniformity can sometimes be helpful in fostering 'percolation' — that is, experimentation and reflection on what might otherwise be stale legal rules.").

115 Re, *supra* note 16, at 925–26. Supreme Court opinions frequently interpret and apply past opinions while providing material for future courts to interpret, in an ongoing process of precedential interpretation. Tokson, *supra* note 2, at 443.

116 *See, e.g.*, Pearson v. Callahan, 555 U.S. 223, 234–35 (2009) (overturning Saucier v. Katz, 533 U.S. 194 (2001)).

117 Re, *supra* note 16, at 927.

118 *Id.* at 926.

119 *See* Caminker, *supra* note 16, at 460; Michael Gentithes, *Rulifying Reasonable Expectations: Why Judicial Tests, Not Originalism, Create a More Determinate Fourth Amendment*, 59 HOUS. L. REV. 1, 5 (2021) (discussing the transformation of broad Fourth Amendment standards into determinative rules by lower courts).

120 Caminker, *supra* note 16, at 460.

121 *Id.* at 415–16 (quoting Carpenter v. United States, 138 S. Ct. 2206, 2247 (2018) (Alito, J., dissenting)).

122 *See* Aaron-Andrew P. Bruhl, *Following Lower-Court Precedent*, 81 U. CHI. L. REV. 851, 879 (2014).

123 *See, e.g.*, Janus v. AFSCME, Council 31, 138 S. Ct. 2448, 2478 (2018); Montejo v. Louisiana, 556 U.S. 778, 792 (2009).

124 Caminker, *supra* note 16, at 460.

II. *CARPENTER* IN THE FEDERAL AND STATE COURTS

This Part presents the results of a detailed empirical study of all federal and state judgments citing *Carpenter* from its publication in June 2018 through March 2021. It gives an overview of the dataset and the case outcomes and then compares outcomes in federal and state courts. It examines the political affiliations of federal and state judges in the dataset. It assesses how case outcomes have changed over time, and surveys the distribution of cases across jurisdictions, identifying jurisdictions that are outliers in terms of cases resolved or litigant win rates.

A. Data Overview

Between June 22, 2018, when *Carpenter* was decided, and March 31, 2021, federal and state courts issued 857 opinions or other judgments citing the case.[125] This dataset was compiled from published and unpublished opinions available on Westlaw and Lexis, as well as nonpublic judgments available only on PACER or other docket services.[126] The cases were coded by the author with the assistance of a team of research assistants who coded case names, dates, citations, jurisdictions, and other nondoctrinal case characteristics.[127] In total, there were 567 federal and 290 state opinions or other judgments in this period. This averages out to roughly 26 cases per month and 312 cases per year.[128]

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[125] This count excludes *Burns v. Martuscello*, 890 F.3d 77 (2d Cir. 2018), which cited *Carpenter*'s oral argument before the *Carpenter* decision was issued. *See id.* at 90.

[126] *See generally* Merritt E. McAlister, *Missing Decisions*, 169 U. PA. L. REV. 1101, 1105–06 (2021) (noting the presence of numerous federal merits decisions labeled "judgments," which, unlike decisions labeled "opinions of the court," are not publicly available and are generally accessible only on PACER or a derivative service thereof). "Judgments" are often not substantive, but occasionally do go into as much detail as opinions of the court do. *Id.* Relevant judgments were located using Bloomberg Law's docket access service, searching all federal and state court dockets from June 22, 2018, to March 31, 2021, for references to *Carpenter v. United States*, *Carpenter v. US*, *Carpenter*, and similar permutations. Opinions were gathered by searching Westlaw and Lexis for opinions citing or referring to *Carpenter v. United States* (or other permutations of the *Carpenter* name) from June 22, 2018, to March 31, 2021. There were 789 opinions citing *Carpenter* available on Westlaw. An additional 23 opinions not found on Westlaw were available on Lexis. An additional 45 opinions or judgments were found via a Bloomberg docket and opinion search. To Westlaw's credit, some judgments obtained via Lexis and Bloomberg were later added by Westlaw to the Westlaw database. There were no state judgments in Bloomberg's docket database that referenced *Carpenter*, although there were several litigant briefs that did so. This dataset necessarily excludes judgments that do not mention *Carpenter*. There may be judgments handed down with no written explanation in an opinion or on the docket that were nonetheless influenced by *Carpenter*.

[127] Additional methodological details are discussed *infra* alongside the relevant results. *See infra* notes 130, 134, 136, 157, 163, 201 and accompanying text.

[128] There were 54 opinions citing *Carpenter* in the first quarter of 2021, 293 opinions in 2020, 313 opinions in 2019, and 197 opinions in the portion of 2018 that followed *Carpenter*'s publication. The COVID-19 pandemic may have reduced the total number of opinions issued in 2020 and 2021, but the prevalence of citations to *Carpenter* has largely remained steady.

The high number of citations per year reflects the enormous impact of *Carpenter* on Fourth Amendment law. But only a subset of these cases apply *Carpenter* substantively in the course of determining whether a government action is a Fourth Amendment search. Others merely cite *Carpenter* for general propositions or quote its discussions of broad Fourth Amendment principles.[129] Of the 857 opinions or judgments in the dataset, there were 399 rulings in which a court applied *Carpenter* to resolve a Fourth Amendment search issue.[130] This includes 277 federal rulings[131] and 122 state rulings.[132]

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[129] *See, e.g.*, United States v. Mills, 372 F. Supp. 3d 517, 539 (E.D. Mich. 2019); State v. Smith, 475 P.3d 558, 569–70 (Ariz. 2020).

[130] This number includes all cases that reached a determinative, yes-or-no result, those resolved under the good faith exception, and those involving Fourth Amendment claims resolved on other grounds. *See infra* notes 150, 152.

[131] There were 576 total federal rulings citing *Carpenter* in any capacity. In one case, *United States v. Yang*, 958 F.3d 851 (9th Cir. 2020), the majority found a lack of standing, *id.* at 861–62, and the *Carpenter* analysis was confined to the concurring opinion by Judge Bea, *id.* at 862–64 (Bea, J., concurring in the judgment). This was included in the database as a *Carpenter*-applying decision because the concurrence's analysis was detailed and thorough and may have influenced the majority's related decision to find that the defendant lacked a reasonable expectation of privacy in a rental truck. This is especially likely because the majority referred to *Carpenter* without directly citing it. *See id.* at 161 (majority opinion) (discussing the "expectation of privacy on the whole of one's movements that is at issue in this case," a concept that appears to come directly from *Carpenter v. United States*, 138 S. Ct. 2206, 2217 (2018) ("[I]ndividuals have a reasonable expectation of privacy in the whole of their physical movements." (citing United States v. Jones, 565 U.S. 400, 430 (2012) (Alito, J., concurring in the judgment); *id.* at 415 (Sotomayor, J., concurring)))).

In eight other cases, courts decided two separate Fourth Amendment issues under the *Carpenter* standard. United States v. Morel, 922 F.3d 1, 8–9 (1st Cir. 2019); Cooper v. United States, No. 19-cv-01007, 2021 WL 354084, at *1, *3 (M.D. Tenn. Feb. 2, 2021); United States v. Armstrong, No. 19-cr-031, 2020 WL 1921125, at *1–2 (D.N.D. Apr. 20, 2020); United States v. Robinson, No. 18-CR-00103, 2020 US Dist. LEXIS 59385, at *1, *13 (E.D.N.C. Mar. 5, 2020); United States v. Tolbert, No. 14-03761, 2019 WL 2006464, at *1, *3, *5 (D.N.M. May 7, 2019); United States v. McCutchin, No. CR-17-01517, 2019 WL 1075544, at *1–3 (D. Ariz. Mar. 7, 2019); United States v. Loera, 333 F. Supp. 3d 172, 180–81, 186 (E.D.N.Y. 2018); United States v. Lightfoot, No. 17-00274, 2018 WL 4376509, at *4–6 (W.D. La. Aug. 30, 2018).

Five cases included in this total number of federal rulings citing *Carpenter* involved private actors and applied *Carpenter* to determine whether an action would have violated the Fourth Amendment if performed by the government — in other words, whether an action violated a person's reasonable expectation of privacy. Patel v. Facebook, Inc., 932 F.3d 1264, 1271–74 (9th Cir. 2019) (holding that plaintiffs had standing to sue Facebook for violating their reasonable expectations of privacy); *In re* Google Location Hist. Litig., 514 F. Supp. 3d 1147, 1157 (N.D. Cal. 2021) (finding that plaintiffs plausibly alleged a violation of their reasonable expectations of privacy in their location data); Heeger v. Facebook, Inc., 509 F. Supp. 3d 1182, 1189–90 (N.D. Cal. 2020) (finding no constitutional or privacy tort violations related to Facebook's collection of IP addresses); *In re* Google Location Hist. Litig., 428 F. Supp. 3d 185, 198–99 (N.D. Cal. 2019) (dismissing the original complaint for failure to allege facts that would constitute a violation of a reasonable expectation of privacy); Demo v. Kirksey, No. 18-cv-00716, 2018 WL 5994995, at *1, *6 (D. Md. Nov. 15, 2018) (finding a reasonable expectation of privacy in a case involving the GPS tracking of the plaintiff's vehicle and diaper bag).

[132] There were 296 total state rulings citing *Carpenter* in any capacity. In six cases, the court decided two separate Fourth Amendment issues under the *Carpenter* standard. State v. Martin, 287 So. 3d 645, 647–49 (Fla. Dist. Ct. App. 2019); State v. Sylvestre, 254 So. 3d 986, 989, 991–92

B. Case Outcomes and Win Rates

Overall, of the 399 decisions that applied *Carpenter* substantively, 74 found a Fourth Amendment search, 143 found no search, 144 were resolved based on the good faith exception without directly resolving the search issue, and 38 were resolved on other grounds such as harmless error.[133] Excluding the good faith exception[134] and other grounds cases, courts applying *Carpenter* to Fourth Amendment questions found a search in 34.1% of rulings and no search in 65.9% of rulings.[135]

Caution should be used in drawing conclusions from this win rate for defendants,[136] as numerous variables may affect the selection of cases brought and the quality of representation for defendants seeking to suppress evidence in Fourth Amendment cases.[137] The set of suppression motions and other Fourth Amendment litigation that we observe is itself affected by changes in law, as attorneys respond to new laws by bringing or declining to bring certain legal challenges.[138]

The Priest-Klein selection hypothesis predicts that defendants would win roughly 50% of all litigated decisions, because they will likely "settle" especially weak or strong cases.[139] However, that hypothesis

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(Fla. Dist. Ct. App. 2018); Commonwealth v. Mora, 150 N.E.3d 297, 307–09 (Mass. 2020); Commonwealth v. Johnson, 119 N.E.3d 669, 679, 686 (Mass. 2019); People v. Root, No. 346164, 2020 WL 1816009, at *6 (Mich. Ct. App. Apr. 9, 2020) (per curiam); Olivas v. State, No. 02-14-00412-CR, 2020 WL 827144, at *1, *4 (Tex. Crim. App. Feb. 20, 2020).

[133] *See infra* notes 150, 152.

[134] Good faith exception cases might be counted as defendant wins on the search issue for purposes of this analysis because such cases implicitly assume that a surveillance practice is a search before declining to provide a remedy in the instant case. These cases were excluded from the win-rate analysis for two reasons. First, the vast majority of the good faith cases involved searches that were virtually identical to those conducted in *Carpenter*, and thus the search question was largely a foregone conclusion. Second, none of the cases coded as good faith included any express ruling that the government action at issue was a search. The rare cases in which the court expressly found a search and then engaged in a separate good faith analysis were coded as finding a search in the dataset. *E.g.*, State v. Snowden, 140 N.E.3d 1112, 1126–28 (Ohio Ct. App. 2019) (holding that real-time tracking of cell site location information for two days was a search, and then opining that the good faith exception would apply even if exigent circumstances were not present).

[135] This difference in win rates was statistically significant at the .001 level compared to chance, in a one-proportion z-test.

[136] "Win rate" refers only to a litigant winning on the issue of whether something is a Fourth Amendment search. Defendants may still ultimately lose their challenge on a variety of grounds, including that the search was constitutionally reasonable or supported by probable cause and exigency, or on other grounds, although such outcomes were rare in the dataset. *E.g.*, United States v. Banks, No. 13-40060-01, 2019 WL 3412305, at *1 (D. Kan. July 29, 2019) (finding a Fourth Amendment violation in admitting location-data evidence but ruling that any error was harmless beyond a reasonable doubt); State v. Muhammad, 451 P.3d 1060, 1074–75 (Wash. 2019) (finding a warrantless search but deeming the search lawful due to exigent circumstances).

[137] Daniel Kessler et al., *Explaining Deviations from the Fifty-Percent Rule: A Multimodal Approach to the Selection of Cases for Litigation*, 25 J. LEGAL STUD. 233, 237, 242–48 (1996).

[138] *See* George L. Priest & Benjamin Klein, *The Selection of Disputes for Litigation*, 13 J. LEGAL STUD. 1, 24–29 (1984).

[139] *See id.* at 4–5, 16.

depends on premises that may not apply in the Fourth Amendment context. Defendants with weak arguments for suppressing evidence may have little incentive to plead guilty prior to filing a suppression motion. They may wish to take their chances on suppression before deciding to plead, on the assumption that busy prosecutors will be motivated to accept pleas even after they defeat a suppression motion.[140] The quality of representation, resources, and time devoted to suppression motions may also favor the government in these cases.[141]

Indeed, while defendants lose most litigated cases involving *Carpenter*, win rates for defendants on suppression motions tend to be low in general.[142] This Article makes no empirical claim regarding the effect of *Carpenter* on overall suppression motion–success rates.[143]

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[140] *See* Stephanos Bibas, *Plea Bargaining Outside the Shadow of Trial*, 117 HARV. L. REV. 2464, 2469–72 (2004) (describing the incentives prosecutors face to plead out uncertain cases). Defendants with publicly funded defense attorneys or appearing pro se may also perceive fewer direct (as opposed to strategic) costs of litigation. *See* Kessler et al., *supra* note 137, at 247. Put in theoretical terms, the cost of pleading guilty might be especially high relative to the cost of litigating a suppression motion, leading defendants to litigate more often than expected, and driving down win rates. *Id.* at 245. Defendants may also be motivated to appeal denied suppression motions, even if their appeal has little chance of succeeding. *See* Cassandra Burke Robertson, *The Right to Appeal*, 91 N.C. L. REV. 1219, 1226–27 (2013). Likewise, defendants already convicted and in prison cannot plead guilty, and are strongly motivated to petition for postconviction relief even with very weak claims to relief under *Carpenter*. *See* Margo Schlanger, *Inmate Litigation*, 116 HARV. L. REV. 1555, 1558, 1633–34 (2003) (discussing the volume of weak inmate cases filed in federal court that led to the passage of the Prison Litigation Reform Act of 1995). These cases make up a very small portion of the relevant dataset, however, and petitioners' claims are often resolved on procedural rather than substantive grounds.

[141] Fred C. Zacharias, *Structuring the Ethics of Prosecutorial Trial Practice: Can Prosecutors Do Justice?*, 44 VAND. L. REV. 45, 66–85 (1991). Even given potential selection effects, a low rate of winning litigated Fourth Amendment issues may indicate that the governing legal standard favors one side over the other. Kessler et al., *supra* note 137, at 244–45. This conclusion is also consistent with Professor Alan Rozenshtein's observations after reviewing roughly 200 cases citing *Carpenter* in 2019. Alan Z. Rozenshtein, *Fourth Amendment Reasonableness After* Carpenter, 128 YALE L.J.F. 943, 950–52, 950 n.33 (2019) (proposing a reasonableness-balancing approach to Fourth Amendment protections for data exposed to third parties). Rozenshtein emphasized and expressed concern about several cases where courts declined to extend Fourth Amendment protection to new categories of data. *Id.* at 950–51.

[142] *See* Peter F. Nardulli, *The Societal Cost of the Exclusionary Rule: An Empirical Assessment*, 1983 AM. BAR FOUND. RSCH. J. 585, 606 (reporting the results of a large examination of case files revealing that roughly 17% of motions to suppress physical evidence and roughly 5% of both motions to suppress identifications and confessions were successful); *see also* Stephen G. Valdes, Comment, *Frequency and Success: An Empirical Study of Criminal Law Defenses, Federal Constitutional Evidentiary Claims, and Plea Negotiations*, 153 U. PA. L. REV. 1709, 1728 (2005) (finding a roughly 12% success rate in a study based on a survey with dubious question wording). Acquittals at criminal trials are likewise rare, occurring in roughly 22% of state court and 16% of federal court cases involving defendants represented by attorneys, according to one study. Erica J. Hashimoto, *Defending the Right of Self-Representation: An Empirical Look at the Pro Se Felony Defendant*, 85 N.C. L. REV. 423, 449, 452 (2007).

[143] Such a comparison could be confounded by selection effects. Moreover, win rates in cases with judgments mentioning a new Supreme Court case cannot squarely be compared to overall win

However, *any* case in which a court extends Fourth Amendment protections to third-party data represents a substantial change from the prior paradigm, under which virtually all such data was unprotected.[144] That courts are finding searches in numerous cases involving third-party data likely reflects the transformative doctrinal effects of *Carpenter*. To date, lower courts have applied the Fourth Amendment's protections to novel surveillance practices in cases involving pole cameras, real-time location tracking, drones, smart utility meters, medical data, social media surveillance, cell site simulators, and more.[145] Finally, it is notable that defendant win rates appear to be increasing slightly over time.[146] Cases finding no search were especially common in the first year after *Carpenter*, and win rates have increased somewhat since then.[147] As courts and litigants gain familiarity with the *Carpenter* standard, win rates may increase further.[148]

1. Federal and State Decisions and Judicial Partisanship. — Interestingly, win rates differed significantly between federal and state cases.[149] In the set of 277 substantive federal decisions, 31 found a Fourth Amendment search, 115 found no search, 117 were resolved based on the good faith exception, and 14 were resolved on other grounds.[150] Excluding good faith and other grounds cases, federal

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rates in all cases involving suppression motion judgments, especially win rates reported in studies conducted decades prior to 2018. *See* sources cited *supra* note 142.

144 *See, e.g.*, *In re* Application of the U.S. for Hist. Cell Site Data, 724 F.3d 600, 611–12 (5th Cir. 2013) (finding cell phone location data to be a business record that the government can access without a warrant); United States v. Forrester, 512 F.3d 500, 510 (9th Cir. 2008) (finding no Fourth Amendment protection for email or IP addresses). *But see* Ferguson v. City of Charleston, 532 U.S. 67, 84–85 (2001) (declining to allow the government to obtain data disclosed to state hospital employees, albeit in a case where the third-party doctrine issue was not expressly before the Court).

145 *E.g.*, Naperville Smart Meter Awareness v. City of Naperville, 900 F.3d 521, 527 (7th Cir. 2018) (smart meter surveillance); United States v. Chavez, 423 F. Supp. 3d 194, 205 (W.D.N.C. 2019) (social media surveillance); People v. Tafoya, 490 P.3d 532, 540–42 (Colo. App. 2019) (pole camera surveillance); Long Lake Township v. Maxon, No. 349230, 2021 WL 1047366, at *7 (Mich. Ct. App. Mar. 18, 2021) (drone surveillance); State v. Eads, 154 N.E.3d 538, 548 (Ohio Ct. App. 2020) (medical data); Commonwealth v. Pacheco, 227 A.3d 358, 370 (Pa. Super. Ct. 2020) (real-time cell site location information).

146 *See infra* section II.B.2, pp. 1814–15, and Figure 1, p. 1815.

147 *See infra* Figure 1, p. 1815.

148 This might in part reflect selection effects driven by defense attorneys' increasing familiarity with the emerging *Carpenter* standard. In other words, litigants with claims that are especially meritless may decline to bring those claims, as it becomes clearer that courts are not interpreting *Carpenter* expansively.

149 The difference in win rates between federal and state courts was statistically significant at the .001 level, in a two-proportion z-test.

150 Of the cases decided on other grounds, three found that an attorney was not ineffective for failing to challenge the admission of cell site location information, Pollard-El v. Payne, No. 18-CV-590, 2021 WL 735731, at *11 (E.D. Mo. Feb. 25, 2021); Sharpe v. Shinn, No. CV-19-04847-PHX, 2020 WL 4059895, at *1, *6 (D. Ariz. June 22, 2020); Vega v. United States, No. CV-17-9022, 2018 WL 10128077, at *3 (C.D. Cal. July 17, 2018), one made a similar ruling but added that any error was harmless, Michel v. Kirkpatrick, No. 18-CV-2469, 2020 WL 5802314, at *1, *11 (E.D.N.Y.

courts applying *Carpenter* to Fourth Amendment questions found a search in only 21.2% of rulings.[151]

State court applications of *Carpenter* tell a different story. Of the 122 state rulings that applied *Carpenter* substantively, 43 found a Fourth Amendment search, 28 found no search, 27 were resolved based on the good faith exception, and 24 were resolved on other grounds.[152] Excluding good faith and other grounds cases, state courts applying *Carpenter* to Fourth Amendment questions found a search in 60.6% of rulings.[153] This is a far higher win rate than was observed in federal cases.

There are several possible explanations for the higher defendant win rates observed in state courts. The political alignment of state judges may differ on average from that of federal judges. If federal judges are more conservative or pro–law enforcement than state judges, that may be reflected in the difference in federal and state win rates.[154] Yet there is little in the data to support this explanation. A plurality of the federal judges in the relevant dataset were appointed by Democratic Presidents,[155] while a majority of the state judges were appointed by

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Sept. 29, 2020), one held that the law was not clearly established for the purposes of a habeas petition under 28 U.S.C. § 2254, Mackey v. Hanson, No. 19-cv-01062, 2019 WL 5894306, at *1, *6 (D. Colo. Nov. 12, 2019), five ruled that *Carpenter* was not retroactive and thus could not provide a basis for vacating a conviction, *In re* Symonette, No. 19-12232-F, 2019 BL 253500, at *2–3 (11th Cir. July 9, 2019); *In re* Baker, No. 18-15095-C, 2019 WL 3822305, at *1 (11th Cir. Jan. 9, 2019); United States v. Stamat, No. 13-306(7), 2021 WL 252424, at *1–2 (D. Minn. Jan. 26, 2021); United States v. Sandoval, 435 F. Supp. 3d 393, 397–98 (D.R.I. 2020); United States v. Davis, No. 13-cr-28, 2019 WL 1584634, at *1–2 (M.D. Pa. Apr. 12, 2019), and one ruled that *Carpenter* was not retroactive and also held that the petitioner's attorney had not given ineffective assistance, Cutts v. Miller, No. 19-cv-10721, 2021 WL 242891, at *1, *6, *8 (S.D.N.Y. Jan. 25, 2021). Additionally, one opinion remanded its case for more factfinding after discussing *Carpenter* and its meaning, United States v. Hasbajrami, 945 F.3d 641, 671–73 (2d Cir. 2019), one assumed a Fourth Amendment search without deciding the issue, *In re* Search of Info. Stored at Premises Controlled by Google, 481 F. Supp. 3d 730, 740 (N.D. Ill. 2020), and one found harmless error and declined to rule, while implicitly endorsing, the petitioner's claims of a Fourth Amendment violation, United States v. Moalin, 973 F.3d 977, 992–93 (9th Cir. 2020).

151 Federal courts found a search in 31 out of 146 determinative, yes-or-no decisions.

152 State cases resolved on other grounds reach outcomes similar to those of the federal cases decided on other grounds, *see supra* note 150, although two outcomes predominate in the state cases. These predominant outcomes were findings of no ineffective assistance of counsel, *e.g.*, People v. Ruiz, No. 1-17-1439, 2020 WL 3271370, at *1 (Ill. App. Ct. June 17, 2020), and findings of harmless error, *e.g.*, Dixon v. State, 595 S.W.3d 216, 216 (Tex. Crim. App. 2020).

153 State courts found a search in 43 out of 71 determinative, yes-or-no decisions.

154 At least anecdotally, liberal and conservative judges differ on some aspects of Fourth Amendment law. *See, e.g.*, Guido Calabresi, *The Exclusionary Rule*, 26 HARV. J.L. & PUB. POL'Y 111, 111–12 (2003).

155 There were 146 determinative federal rulings on whether a government action was a Fourth Amendment search. Of these, 67 (45.9%) were decided by judges or panels appointed by Democratic Presidents, 49 (33.6%) were decided by Republican-appointed judges or panels, and 30 (20.5%) were decided by magistrate judges. For the purposes of this analysis, panels of multiple

Republican officials or elected on a Republican ticket.[156] Contrary to the political-alignment theory, Republican-aligned judges (or panels) were slightly *more* likely to rule in favor of finding a Fourth Amendment search than Democratic-aligned judges (or panels).[157] Ultimately, there was no statistically significant correlation between the party alignment of a judge (or panel) and the outcome of the *Carpenter* question.[158] This suggests both that *Carpenter* issues are not especially partisan and that the win-rate disparities between federal and state courts cannot be explained by reference to partisanship.

Another potential explanation is that the cases brought in state courts in the wake of *Carpenter* might differ in some material way from those brought in federal courts. Such variation is not apparent from an examination of the facts in substantive state and federal post-*Carpenter* cases, but the merits or the contexts of the cases might vary in ways that are difficult to detect. It is also possible that state judges are applying *Carpenter* more (or less) faithfully than federal judges. State judges might feel less confident about "narrowing from below" or otherwise diverging from *Carpenter* relative to federal judges.[159] They might also be more inclined to vindicate the rights of criminal defendants, with whom they likely interact more frequently than federal judges.[160] Alternatively, state judges may be less capable than their federal counterparts and might be misinterpreting *Carpenter* in some substantial way.[161]

Finally, state judges likely have had less experience than federal judges with applying the robust third-party doctrine that prevailed in

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judges were treated as Democratic-appointed panels if they were majority Democratic-appointed and as Republican-appointed panels if they were majority Republican-appointed.

156 Of the 71 state judgments where judges issued a determinative ruling on whether a government action was a Fourth Amendment search, 17 (23.9%) were decided by Democratic-appointed judges or panels, 41 (57.7%) were decided by Republican-appointed judges or panels, 10 (14.1%) were unaligned, and 3 (4.2%) involved balanced two-judge panels.

157 Twenty-five of 84 (29.8%) cases decided by Democratic-appointed judges or panels found a search, compared to 37 of 90 (41.1%) cases decided by Republican-appointed judges or panels.

158 There were 174 total determinative cases involving a judge or panel with a discernable political alignment. The correlation coefficient for Democratic alignment and case outcome was -.118, which was not statistically significant at any level.

159 Re, *supra* note 16, at 925.

160 *Cf.* William B. Rubenstein, *The Myth of Superiority*, 16 CONST. COMMENT. 599, 612, 617 (1999) (arguing that state court judges are better suited to vindicate the rights of gay litigants because of their greater familiarity with such litigants in family court). *See generally* Alexandra Natapoff, *Criminal Municipal Courts*, 134 HARV. L. REV. 964 (2021) (discussing the massive scale of the state-level misdemeanor justice system).

161 *Cf.* Burt Neuborne, *The Myth of Parity*, 90 HARV. L. REV. 1105, 1121–23 (1977) (discussing potential differences in technical competence between federal and state judges, largely based on the selectivity and smaller size of the federal bench). Professor William Rubenstein challenged some of Professor Burt Neuborne's premises, contending that in some contexts state judges are more likely to vindicate the constitutional rights of minority groups. Rubenstein, *supra* note 160, at 612–14.

the lower federal courts prior to *Carpenter*. Accordingly, state judges may be less biased in favor of the pre-*Carpenter* status quo. Studies indicate that judges can be resistant to doctrinal changes, in part due to habituation and status quo bias.[162] It is plausible that federal judges might be more inclined to apply *Carpenter* narrowly and to preserve the familiar third-party doctrine. There is substantial evidence for this theory in the data. In federal cases reaching a determinative decision regarding a Fourth Amendment search, 25 of 146 (17.1%) endorsed a strong version of the third-party doctrine, one that would likely limit the reach of *Carpenter* to its specific facts.[163] For example, in *United States v. Barnes*,[164] the district court stated that "[i]t is well-settled that 'a person has no legitimate expectation of privacy in information he voluntarily turns over to third parties'" and characterized *Carpenter* as leaving the third-party doctrine in place.[165] In the set of determinative state cases, only 5 of 71 (7.0%) cases endorsed an especially strong third-party doctrine. On average, state judges may be more open than federal judges to the idea that *Carpenter* transformed and substantially limited the third-party doctrine.[166]

2. Case Outcomes over Time. — Figure 1 depicts the substantive outcomes of cases in the dataset applying *Carpenter* over time. It includes the three main outcomes: cases finding a search, cases finding no search, and cases resolved on the basis of the good faith exception.[167] As mentioned above, many of the cases finding no Fourth Amendment search were decided in the first year after *Carpenter*. Cases finding no search have become less common over time, while the number of cases finding a search has held relatively steady.

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[162] Tokson, *supra* note 22, at 911–12.

[163] Cases were coded as employing a strong version of the third-party doctrine if they described that doctrine without addressing *Carpenter*'s potential limitations of it, or if they otherwise applied an exceptionally narrow version of *Carpenter* while citing it cursorily. *See* cases cited *infra* note 165. Cases adopting a narrow but plausible interpretation of *Carpenter* after a discussion of its reasoning were not considered to have applied an unusually strong version of the third-party doctrine. *See, e.g.*, State v. Adame, 476 P.3d 872, 880 (N.M. 2020).

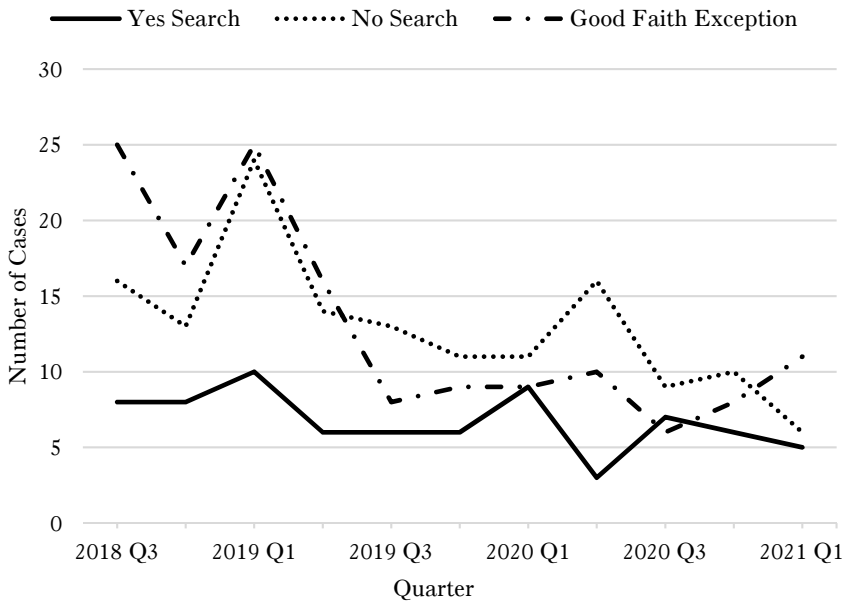
[164] No. CR18-5141, 2019 WL 2515317 (W.D. Wash. June 18, 2019).

[165] *Id.* at *4 (quoting Smith v. Maryland, 442 U.S. 735, 743–44 (1979)); *id.* at *5; *see also, e.g.*, United States v. Brooks, 841 F. App'x 346, 350 (3d Cir. 2020) ("The Fourth Amendment does not prohibit the obtaining of information revealed to a third party and conveyed by him to Government authorities . . . ." (internal quotation marks omitted) (quoting United States v. Miller, 425 U.S. 435, 443 (1976))); Standing Akimbo, LLC v. United States, 955 F.3d 1146, 1164–65 (10th Cir. 2020) ("[A] person has no legitimate expectation of privacy in information he voluntarily turns over to third parties." *Id.* at 1164 (quoting *Smith*, 442 U.S. at 743–44)).

[166] *See* discussion *infra* section IV.D.1, pp. 1844–46.

[167] Figure 1 omits cases decided on other miscellaneous grounds. *See supra* notes 150, 152.

Figure 1: Substantive Outcomes of Cases Applying *Carpenter*, By Quarter



As expected, cases applying the good faith exception were numerous immediately after *Carpenter*. In this period, courts resolved many cases involving the warrantless collection of cell phone location data under pre-*Carpenter* law.[168] The incidence of good faith exception rulings has diminished somewhat over time, as cell phone location data cases become less common.[169]

3. Case Outcomes by Jurisdiction. — This section examines the distribution of cases across various jurisdictions. It begins with the federal courts of appeals. Most of the sixty-seven circuit court cases involved appeals from pre-*Carpenter* decisions or decisions that did not mention *Carpenter*, and only seven involved appeals from another case in the dataset.[170] Of these seven, two cases reversed a lower court decision,

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[168] *See, e.g.*, United States v. Woods, 336 F. Supp. 3d 817, 820–21 (E.D. Mich. 2018); United States v. Walton, 403 F. Supp. 3d 839, 851–52 (C.D. Cal. 2018).

[169] The implications of the large, albeit decreasing, number of good faith cases in the dataset are discussed further *infra* section IV.C, pp. 1839–44.

[170] Five of these seven cases affirmed the lower court decision. Davis v. United States, No. 20-11149-E, 2021 BL 26088, at *1, *11 (11th Cir. Jan. 26, 2021); United States v. Thompson, 976 F.3d 815, 824 (8th Cir. 2020); United States v. Reed, 978 F.3d 538, 545 (8th Cir. 2020); Leaders of a Beautiful Struggle v. Balt. Police Dep't, 979 F.3d 219, 234 (4th Cir. 2020), *rev'd en banc and remanded*, 2 F.4th 330 (4th Cir. 2021); Stamps v. Capalupo, 780 F. App'x 45, 46 (4th Cir. 2019), *cert. denied*, 141 S. Ct. 276 (2020) (mem.). The other two are discussed *infra* note 171 and accompanying text.

and one of those two cases was itself vacated pending en banc review.[171]

Table 1 reports the outcomes of all federal courts of appeals opinions applying *Carpenter*, as well as the number and defendant win rate of cases that reached a determinative, yes-or-no ruling on whether a government action was a Fourth Amendment search. The First Circuit was notable for issuing a relatively high number of determinative rulings, none of which found a Fourth Amendment search. Overall, only 10.7% of circuit court cases reaching a determinative decision found a search.

Table 1: Circuit Court Decisions and Defendant Win Rates, By Circuit

CIRCUIT	TOTAL SUBSTANTIVE DECISIONS	DETERMINATIVE RULINGS	WIN RATES	GOOD FAITH EXCEPTION RULINGS[172]
1st	5	5	0%	0
2nd	7	0	–	6
3rd	7	3	0%	4
4th	6	2	0%	4
5th	4	3	0%	1
6th	9	3	0%	6
7th	4	1	100%	3
8th	3	1	0%	2
9th	10	4	50%	5
10th	2	2	0%	0
11th	9	3	0%	4
DC	1	1	0%	0
TOTAL	67	28	10.7%	35

Table 2 reports the outcomes of all federal district court opinions applying *Carpenter* and the number and defendant win rate of cases that reached a determinative, yes-or-no ruling on whether a government

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[171] United States v. Moore-Bush, 963 F.3d 29, 47 (1st Cir. 2020), *reh'g en banc granted*, *vacated*, 982 F.3d 50 (1st Cir. 2020); United States v. Beverly, 943 F.3d 225, 239 (5th Cir. 2019), *cert. denied*, 140 S. Ct. 2550 (2020) (mem.).

[172] These refer to rulings where no determinative ruling was reached and the case was resolved on good faith exception grounds. There were four total rulings that were neither determinative nor good faith exception rulings, which were resolved on other procedural grounds. *See supra* note 150.

action was a Fourth Amendment search. District courts in the Eleventh Circuit, and specifically in the Northern District of Georgia, were notable for hearing a disproportionate number of cases involving *Carpenter* and disposing of most of them based on the good faith exception. (This might reflect especially aggressive use of cell site location tracking by Atlanta-area law enforcement prior to the *Carpenter* ruling, as these good faith cases typically involved such tracking.[173]) District courts in the Eighth Circuit stood out for issuing a relatively large number of determinative rulings and finding a Fourth Amendment search in more than half of such rulings.

Table 2: District Court Decisions and Defendant Win Rates, By Circuit of District Court

CIRCUIT	TOTAL SUBSTANTIVE DECISIONS	DETERMINATIVE RULINGS	WIN RATES	GOOD FAITH EXCEPTION RULINGS[174]
1st	13	10	20%	2
2nd	26	13	31%	11
3rd	8	2	0%	5
4th	18	11	27%	7
5th	7	3	33%	3
6th	17	5	0%	12
7th	21	14	29%	6
8th	26	17	53%	7
9th	31	22	14%	7
10th	8	6	17%	1
11th	33	13	0%	21
DC	1	1	100%	0

[173] *Cf.* Brendan Keefe, *The Investigators: Police Could Be Secretly Tracking Your Phone*, 11 ALIVE (Nov. 5, 2014, 10:02 AM), https://www.11alive.com/article/news/local/investigations/the-investigators-police-could-be-secretly-tracking-your-phone/253276136 [https://perma.cc/X7XX-KSR4] (reporting on an Atlanta-area police department's aggressive use of Stingray cell phone tracking devices prior to 2018).

[174] These refer to rulings where no determinative ruling was reached and the case was resolved on good faith exception grounds. There were ten total rulings by district courts that were neither determinative nor good faith exception rulings, which were resolved on other procedural grounds. *See supra* note 150.

CIRCUIT	TOTAL SUBSTANTIVE DECISIONS	DETERMINATIVE RULINGS	WIN RATES	GOOD FAITH EXCEPTION RULINGS[174]
FISC[175]	1	1	0%	0
TOTAL	210	118	23.7%	82

Overall, 23.7% of district court cases reaching a determinative decision found a search. This is a low win rate, but it is notably higher than the 10.7% rate observed in circuit court cases. However, the number of determinative appellate cases is relatively small, and the observed differences in win rates may represent statistical noise or variations in case fact patterns.[176] Another explanation might be that criminal defendants and habeas petitioners are incentivized to appeal on frivolous grounds because the cost of doing so is low and the reward for success (overturning a conviction) is substantial.[177] Moreover, the low costs of appealing decisions and the high burden for reversing a lower court often lead to low win rates for appellants in a variety of contexts.[178]

Table 3 reports the outcomes of all state cases applying *Carpenter* and the number and defendant win rate of cases that reached a determinative, yes-or-no ruling on whether a government action was a Fourth Amendment search.[179] Notably, Massachusetts courts resolved a somewhat disproportionate number of *Carpenter* cases, and

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[175] The Foreign Intelligence Surveillance Court rules on government applications for approval of electronic surveillance, physical search, and other investigative actions for foreign intelligence purposes. *United States Foreign Intelligence Surveillance Court*, FOREIGN INTEL. SURVEILLANCE CT., https://www.fisc.uscourts.gov [https://perma.cc/D8HL-2EHQ].

[176] *See, e.g.*, United States v. Graham, 824 F.3d 421, 425 (4th Cir. 2016) (en banc); United States v. Davis, 785 F.3d 498, 511 (11th Cir. 2015) (en banc); *In re* Application of U.S. for Hist. Cell Site Data, 724 F.3d 600, 602–03, 612 (5th Cir. 2013); *In re* Application of U.S. for an Ord. Directing a Provider of Elec. Commc'n Serv. to Disclose Recs. to the Gov't, 620 F.3d 304, 317 (3d Cir. 2010).

[177] *See* Kessler et al., *supra* note 137, at 245–46.

[178] *Id.* An alternative explanation for the rate disparity is that, prior to *Carpenter*, circuits ruled uniformly that cell phone location tracking was not a Fourth Amendment search, *see, e.g.*, *Graham*, 824 F.3d at 424; *Davis*, 785 F.3d at 513, while district courts had been split on the issue, *compare In re* Application of U.S. for an Ord. Pursuant to 18 U.S.C. §§ 2703(c)–(d), 42 F. Supp. 3d 511, 519 (S.D.N.Y. 2014), *with In re* Application of U.S. for Hist. Cell Site Data, 747 F. Supp. 2d 827, 846 (S.D. Tex. 2010). The circuit courts might be relatively hostile toward *Carpenter* and especially likely to interpret it narrowly.

[179] Overall, state cases demonstrated a far higher defendant win rate than did federal cases. *See supra* notes 149–153 and accompanying text. In addition, a substantially smaller proportion of state cases (22.1%) than federal cases (42.2%) were resolved based on the good faith exception. *See supra* note 150 and accompanying text (discussing federal case outcomes) and note 152 and accompanying text (discussing state case outcomes). This latter disparity is likely the result of there being more pending cases in the federal system involving the collection of cell phone location data at the time *Carpenter* was decided. For additional discussion of the issues raised by the large number of good faith exception cases in the dataset, see *infra* section IV.C, pp. 1839–44.

Massachusetts could be fairly characterized as a leader in state court applications of *Carpenter*. Its cases often addressed important new surveillance technologies, and its opinions typically reflect a balanced and nuanced approach to these issues.[180] Pennsylvania and Texas state courts have likewise played important roles in applying and interpreting *Carpenter*.[181]

Table 3: State Court Decisions and Defendant Win Rates, By State

STATE[182]	TOTAL SUBSTANTIVE DECISIONS	DETERMINATIVE RULINGS	WIN RATES	GOOD FAITH EXCEPTION RULINGS[183]
Alabama	1	0	–	1
Arizona	8	3	33%	4
California	6	4	25%	1
Colorado	1	1	100%	0
Connecticut	2	1	100%	0
Delaware	2	1	100%	0
Florida	7	6	67%	1
Georgia	5	1	0%	3
Illinois	10	3	67%	1
Indiana	2	1	0%	1
Kansas	1	1	100%	0
Kentucky	1	1	100%	0
Louisiana	1	0	–	1
Maryland	1	0	–	1

[180] *See, e.g.*, Commonwealth v. McCarthy, 142 N.E.3d 1090, 1106 (Mass. 2020) (applying *Carpenter* in case addressing automatic license plate cameras); Commonwealth v. Norman, 142 N.E.3d 1, 3, 6 (Mass. 2020) (applying *Carpenter* to evaluate GPS device imposed as a pretrial condition of release).

[181] *See, e.g.*, Commonwealth v. Pacheco, 227 A.3d 358, 369–70 (Pa. Super. Ct. 2020) (applying *Carpenter* in case involving real-time location data); State v. Martinez, 570 S.W.3d 278, 288 (Tex. Crim. App. 2019) (applying *Carpenter* to address the analysis of defendant's blood sample originally taken for medical purposes).

[182] States without relevant decisions are omitted from the table.

[183] These refer to rulings where no determinative ruling was reached and the case was resolved on good faith exception grounds. There were twenty-four total rulings that were neither determinative nor good faith exception rulings, which were resolved on other procedural grounds. *See supra* note 152 and accompanying text.

STATE[182]	TOTAL SUBSTANTIVE DECISIONS	DETERMINATIVE RULINGS	WIN RATES	GOOD FAITH EXCEPTION RULINGS[183]
Massachusetts	11	11	55%	0
Michigan	5	2	50%	3
Minnesota	2	2	50%	0
Nebraska	2	0	–	2
Nevada	2	1	100%	0
New Mexico	1	1	0%	0
New York	9	6	50%	0
North Carolina	1	0	–	1
Ohio	8	4	75%	3
Oklahoma	1	0	–	1
Pennsylvania	10	8	75%	0
Puerto Rico	1	1	100%	0
South Carolina	2	1	100%	1
Tennessee	3	0	–	0
Texas	12	9	56%	0
Virginia	2	0	–	2
Washington	2	2	100%	0
TOTAL	122	71	60.6%	27

III. THE ROLE OF THE *CARPENTER* FACTORS

This Part addresses the potential *Carpenter* factors discussed above. It examines how courts use the factors in reaching Fourth Amendment decisions and attempts to discern which factors drive decisions and which do not. There were 399 rulings substantively applying *Carpenter* in the dataset. In 182 of these decisions, courts resolved the case based on the good faith exception or on other grounds such as harmless error.[184] Only a handful of these cases mention any of the *Carpenter* factors, and they generally do not address them in depth.[185] Let us set those good faith and other grounds cases aside for now.

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184 *See supra* notes 150, 152 and accompanying text.

185 *See, e.g.*, United States v. James, No. 18-cr-216, 2018 WL 6566000, at *4 (D. Minn. Nov. 26, 2018).

There were 217 decisions that reached a determinative, yes-or-no ruling on a Fourth Amendment search under *Carpenter*. Of these, 129 decisions mentioned at least one of the *Carpenter* factors in reaching a judgment.[186] In 112 of these decisions, the court made clear that one or more factors favored or disfavored the party seeking to establish a Fourth Amendment violation.[187] For example, in *United States v. Trice*,[188] the Sixth Circuit found that the amount factor disfavored the defendant.[189] In *Trice*, police officers installed a hidden camera near a suspect's apartment door and recorded four short clips of footage over a six-hour period.[190] The court noted that this brief use of a camera captured far less data than the detailed, prolonged cell phone tracking at issue in *Carpenter*.[191] The court also considered the revealing nature of the data gathered, concluding that the hallway video revealed little or nothing about Trice's personal life.[192] Ultimately, the court ruled that the use of the camera was not a Fourth Amendment search.[193]

Cases like *Trice* are particularly important, as they involve courts using their interpretations of *Carpenter* to determine whether a novel technology or surveillance practice violated the Fourth Amendment. By examining these decisions, we can assess how each factor influences Fourth Amendment case outcomes.

A. Factor Analysis

This section examines in more detail the cases where courts applied one or more *Carpenter* factors in a way that favored or disfavored

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186 The remaining 88 cases are addressed *infra* section III.B, pp. 1827–28.

187 The 17 cases in which a factor was discussed but was not said to expressly favor or disfavor a certain outcome tended to involve shorter opinions and sometimes focused on issues involving Fourth Amendment standing. *See, e.g.*, United States v. Oakes, 320 F. Supp. 3d 956, 961 (M.D. Tenn. 2018) (finding a defendant had no Fourth Amendment standing to challenge the monitoring of someone else's cell phone). Of the 112 cases where a factor did favor or disfavor a search, 29 (25.9%) ultimately found a Fourth Amendment search, and 83 (74.1%) found no search. The lower win rate in this subset of cases, in comparison with the overall win rate of 34.1% for all determinative cases, is likely attributable to the fact that courts were more likely to engage with the *Carpenter* factors in frontier cases involving new legal issues. Several of the cases that did not engage with any factor involved historical cell phone location information or other forms of data closely analogous to those addressed in *Carpenter*, and therefore win rates in that subset were higher. *See, e.g.*, Commonwealth v. Jones, No. 3284 EDA 2019, 2020 WL 6538814, at *1, *7–8 (Pa. Super. Ct. Nov. 6, 2020) (holding that the collection of historical cell site data was a Fourth Amendment search without considering any of the factors).

188 966 F.3d 506 (6th Cir. 2020), *cert. denied*, 141 S. Ct. 1395 (2021) (mem.).

189 *Id.* at 519.

190 *Id.* at 511. The camera activated whenever the apartment door was opened, and it recorded several minutes of footage in total. *Id.* at 519.

191 *Id.* at 518–19.

192 *Id.* at 519 & n.7. The court also briefly considered the cost or scalability of the surveillance, concluding that the video monitoring did not differ significantly from in-person surveillance or reveal anything that was "otherwise unknowable" via traditional surveillance practices. *Id.* at 519.

193 *Id.* at 520.

finding a search. Courts cited a variety of factors in cases resolving *Carpenter* questions but rarely discussed all or most of the factors together.[194] Instead, courts often discussed the factors that influenced their reasoning and ignored the other factors, even when those factors might have pointed in the same direction. For example, in *State v. Sylvestre*,[195] the Florida District Court of Appeal held that the government violated the Fourth Amendment when it warrantlessly pinged a suspect's cell phone with a cell site simulator to discover his location.[196] The court's opinion discussed the revealing nature of the data captured but did not address the inescapable or automatic nature of the collection, even though those factors would have further supported the court's ruling.[197] This reflects the absence of a clear doctrinal command regarding the specific standard that courts should apply.[198] The ambiguity of *Carpenter* gives courts license to consider all, some, or none of the factors as they see fit.[199]

Courts' intermittent discussion of the factors makes the process of calculating the relative impact of each factor more complex.[200] But similar patterns emerge from a variety of analyses of the data, which range from a simple count of the factors and their outcomes to a correlation analysis relating each factor to case outcomes, to a more complex statistical examination of the interaction of the factors. In each analysis, the revealing nature of the data, amount of data collected, and automatic nature of data disclosure emerge as the most prevalent and influential factors in the *Carpenter* analysis. The number of persons affected has little to no influence on case outcomes. The remaining factors of inescapability and cost exert influence when they appear, but are only occasionally discussed by courts in the dataset.

1. Factor Prevalence. — Due to courts' noncomprehensive discussion of the factors, it is important to consider how frequently each factor

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194 It was also surprisingly rare for courts to cite the sentence summarizing the Supreme Court's reasoning and mentioning most of the *Carpenter* factors: "In light of the deeply revealing nature of [cell site location information], its depth, breadth, and comprehensive reach, and the inescapable and automatic nature of its collection, the fact that such information is gathered by a third party does not make it any less deserving of Fourth Amendment protection." Carpenter v. United States, 138 S. Ct. 2206, 2223 (2018). Only a handful of cases actually quoted this passage. *See, e.g.*, State v. Sylvestre, 254 So. 3d 986, 991 (Fla. Dist. Ct. App. 2018) (quoting the passage in part).

195 254 So. 3d 986.

196 *Id.* at 987.

197 *Id.* at 990–91.

198 Contrary to some expectations, courts have not yet interpreted *Carpenter* to establish a clear test. *See* Ohm, *supra* note 2, at 369 (predicting that "judges will . . . [use] a new, multi-factor test" promulgated in *Carpenter*); Tokson, *supra* note 14, at 6 (positing that the *Carpenter* opinion provided a coherent legal standard that would likely govern future Fourth Amendment cases). However, a test is beginning to emerge from the accumulation of lower court interpretations, as discussed in this Part and *infra* section IV.A.1, pp. 1831–33.

199 *See supra* section I.D, pp. 1804–06.

200 *See infra* p. 1827.

is addressed in the dataset. The factors that are most influential are likely to be the most frequently discussed, and the least influential factors the least frequently discussed. Of course, it is also important to assess how persuasive a factor is when it is discussed. This section describes the overall frequency and apparent impact of the various factors in the dataset. Subsequent sections analyze the influence of the factors using statistical techniques. The factors are italicized below for clarity.

The *revealing nature of the data collected* was mentioned in 93 total decisions. In cases reaching a determinative decision, revealing nature was found to favor a search ruling in 23 cases and disfavor a search ruling in 47 cases.[201] In 69 of these 70 cases, the court reached the decision indicated by the revealing nature factor, a rate of 98.6%.[202] Courts almost always found a search after determining that surveilled data was revealing, and they never found a search after determining that surveilled data was unrevealing.

The *amount of data collected* was even more prevalent and was mentioned in 116 total decisions. In cases reaching a determinative decision, amount was found to favor a search ruling in 18 cases and disfavor a search ruling in 59 cases. In 71 of these 77 cases, the court reached the decision indicated by the amount factor, a rate of 92.2%.[203]

The *automatic nature of data disclosure* was mentioned in 61 total decisions. In cases reaching a determinative decision, automatic disclosure was found to favor a search ruling in 8 cases and disfavor a search ruling in 38 cases. In 44 of these 46 cases, the court reached the decision indicated by the automatic factor, a rate of 95.7%.[204] Of the three most prominent factors, the automatic factor had the greatest tendency to disfavor a search ruling. When courts assessed the automaticity of data disclosures, they usually concluded that the disclosure at issue was not automatic, and therefore the data was unlikely to be protected by the Fourth Amendment.

The *inescapable nature of the technology or surveillance at issue* was mentioned in 36 total decisions. In cases reaching a determinative decision, inescapability was found to favor a search ruling in 2 cases and disfavor a search ruling in 14 cases. In 15 of these 16 cases, the court

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[201] Factors were coded as favoring or disfavoring a search when courts applying the factor overtly concluded that the factor supported or cut against the defendant in the instant case. *See, e.g.*, *supra* notes 187–193 and accompanying text.

[202] *See, e.g.*, United States v. Gratkowski, 964 F.3d 307, 311–13 (5th Cir. 2020); State v. Eads, 154 N.E.3d 538, 547–49 (Ohio Ct. App. 2020). The one case where the revealing nature factor favored a search but the court ultimately found no search was *United States v. Howard*, No. 19cr54, 2019 WL 7561543, at *6 (M.D. Ala. Aug. 26, 2019).

[203] *See, e.g.*, United States v. Trice, 966 F.3d 506, 519–20 (6th Cir. 2020); United States v. Diggs, 385 F. Supp. 3d 648, 652, 655 (N.D. Ill. 2019).

[204] *See, e.g.*, United States v. Popa, No. 19-3807, 2020 BL 202050, at *5 (6th Cir. May 29, 2020); United States v. Schaefer, No. 17-CR-00400, 2019 WL 267711, at *1, *5 (D. Or. Jan. 17, 2019).

reached the decision indicated by the inescapability factor, a rate of 93.8%.[205] The inescapability factor was the factor most likely to favor the government when addressed by courts, with an even higher rate of indicating no search than the automatic factor.[206]

The *cost of surveillance* was mentioned in 34 total decisions. In cases reaching a determinative decision, cost was found to favor a search ruling in 9 cases and disfavor a search ruling in 6 cases. In 13 of these 15 cases, the court reached the decision indicated by the cost factor, a rate of 86.7%.[207]

Finally, the *number of persons surveilled* was mentioned in only 15 total decisions. In cases reaching a determinative decision, the number factor was found to favor a search ruling in 5 cases and disfavor a search ruling in 1 case. In 3 of these 6 cases, the court reached the decision indicated by the number factor, a rate of 50.0%. Further, 3 of the 6 cases discussing the number factor *expressly rejected* the idea that the number of persons affected should matter for determining a Fourth Amendment search. For example, in *United States v. Patterson*,[208] a federal district court found that a court order for "tower dump" data revealing every cell phone near a cell tower at a certain time was not a Fourth Amendment search under *Carpenter*.[209] The court overtly rejected the claim that the number of people affected by the tower dump was of constitutional concern, stating that the defendants cannot invoke "the rights of non-parties [who] are also impacted by tower dumps" and "cannot suppress evidence based on alleged violations of someone else's privacy interest."[210] Given the lower courts' almost complete eschewal of the number factor, this is likely an accurate description of post-*Carpenter* law.

2. Correlation Analysis. — Correlation analysis can shed light on the influence that the *Carpenter* factors have on case outcomes as well as interactions among the factors themselves. This section examines the entire dataset of 217 determinative decisions, 88 of which do not address any of the factors. Even including these 88 cases, many of the factors have statistically significant correlations with case outcomes.

Table 4 reports the correlation coefficients for each factor and the overall case outcome, and the correlation coefficients for each factor

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[205] *See, e.g.*, United States v. Trader, 981 F.3d 961, 967, 969 (11th Cir. 2020); State v. Mixton, 478 P.3d 1227, 1233–34 (Ariz. 2021).

[206] Automatic nature favored the government in 82.6% of cases, while inescapability favored the government in 87.5% of cases.

[207] *See, e.g.*, Sanchez v. L.A. Dep't of Transp., No. CV 20-5044, 2021 WL 1220690, at *3 & n.6 (C.D. Cal. Feb. 23, 2021); State v. Muhammad, 451 P.3d 1060, 1071–72 (Wash. 2019).

[208] No. 19CR3011, 2020 WL 6334399 (D. Neb. Aug. 5, 2020).

[209] *Id.* at *1, *3 (holding also, in the alternative, that the good faith exception would apply even if defendants were correct, *id.* at *3).

[210] *Id.* at *3.

with every other factor.[211] These results indicate that the revealing nature and amount factors were most strongly correlated with case outcomes, followed by automatic disclosure, cost, and inescapability. The number of persons affected was not meaningfully correlated with case outcomes. These results are generally consistent with the counts reported above — both suggest major roles for the revealing nature and amount factors, a substantial role for automatic disclosure, and notable but lesser roles for cost and inescapability.

Table 4: Correlations Between the *Carpenter* Factors and Outcome, and Between the Factors Themselves

	Case Outcome	Revealing	Amount	Number	Inescapability	Automatic	Cost
Case Outcome	-						
Revealing	.527***	-					
Amount	.449***	.563***	-				
Number	.036	.122	.087	-			
Inescapability	.188**	.270***	.207**	.023	-		
Automatic	.361***	.314***	.248***	.035	.408***	-	
Cost	.220**	.294***	.328***	.100	.011	.097	-

*significant at the .05 level **significant at the .01 level ***significant at the .001 level

There were significant correlations among most of the factors, though there were no correlations between number and any other factor. Cost was not correlated with the inescapability or automatic factors. There were particularly strong correlations between revealing nature and amount, and between those factors and cost. Likewise, there was a strong correlation between the inescapability and automatic factors.

[211] The factors were specified as trinary explanatory variables, coded as favors a search (1), disfavors a search (-1), or is neutral (0). The case outcome is a binary response variable coded as search (1) or no search (0). *See* Barton Beebe, *An Empirical Study of U.S. Copyright Fair Use Opinions, 1978–2005*, 156 U. PA. L. REV. 549, 584–85 (2008) (performing a similar correlation analysis).

These factors are conceptually related, as they both concern the voluntary nature of a person's disclosure of data to a third party.[212]

3. Logistic Regression Analysis. — Table 5 reports the results of a logistic regression analysis of case outcomes as a function of the various factors discussed above.[213] Controlling for the effects of the other factors, revealing nature has the most powerful influence on case outcomes, followed by automatic nature, and then amount. The remaining factors have no statistically significant effect on case outcomes when controlling for the other factors.

Table 5: Logistic Regression of Case Outcomes as a Function of the *Carpenter* Factors

	Odds Ratio	Coefficient	Standard Error	*p*	95% C.I. Lower	95% C.I. Upper
Revealing	38.041***	3.639***	1.089	<.001	1.505	5.773
Amount	7.338**	1.993**	.671	.003	.678	3.308
Number	.560	-.581	3.056	.849	-6.571	5.409
Inescap.	5.059	1.621	4.712	.731	-7.615	10.857
Automatic	22.102**	3.096**	1.069	.004	1.001	5.191
Cost	7.201	1.974	5.145	.701	-8.110	12.058

*significant at the .05 level **significant at the .01 level ***significant at the .001 level

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[212] Tokson, *supra* note 2, at 421–22.

[213] The cases used for this regression were the 217 determinative, yes-or-no cases in the dataset. As with the correlation analysis, the factors were specified as trinary explanatory variables, coded as favors a search (1), disfavors a search (-1), or is neutral (0). The case outcome is a binary response variable coded as search (1) or no search (0). *See* Beebe, *supra* note 211, at 585–86 (performing a similar analysis).

Similar regression results were obtained when using the smaller set of 112 cases that evaluate a factor or factors as favoring or disfavoring an outcome. Likewise, similar results on both sets were obtained using a Firth's bias-reduced logistic regression, which is sometimes used on datasets involving variables that are very strongly associated with observed outcomes. *See, e.g.*, *Separation and Convergence Issues in Logistic Regression*, STATNEWS (Cornell Stat. Consulting Unit, Ithaca, N.Y.), Sept. 2020, https://cscu.cornell.edu/wp-content/uploads/82_lgsbias.pdf [https://perma.cc/VDR9-E636].

These regression results should be interpreted with some caution, as judicial discussion of the factors is intermittent and the factors only occasionally conflict with each other in the dataset.[214] There is also some risk of collinearity between the factors, especially revealing nature and amount.[215] Still, the model fits the observed data well, particularly with respect to the subset of cases that applied at least one factor.[216] Further, the outcome of the regression analysis is consistent with those of the other analyses — revealing nature, amount, and automatic disclosure are the most influential factors, with the rest trailing behind.[217]

B. Cases Applying No Factors

There were eighty-eight cases where courts issued a determinative ruling on a Fourth Amendment search but did not mention any of the *Carpenter* factors. There are several reasons why courts might resolve a case under *Carpenter* without analyzing these factors. Many of these eighty-eight cases involved fairly obvious decisions, addressing digital location data closely analogous to the cell phone data in *Carpenter* or issues resolved in previous Fourth Amendment cases that were expressly affirmed in *Carpenter*.[218] In some other cases, courts interpreted *Carpenter* narrowly or minimized its impact on Fourth Amendment law, generally in the course of finding no search.[219]

Finally, some cases in the dataset were largely resolved under the classic *Katz* approach rather than the newer *Carpenter* paradigm.[220] More broadly, even in cases that considered the *Carpenter* factors in depth, courts typically referenced the *Katz* framework and discussed

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[214] *Cf. supra* note 213 (discussing alternative methods of regression that ultimately reach similar results as the above regression).

[215] Collinearity refers to variables that move in tandem, providing the same or similar information. Revealing nature and amount are highly correlated although not perfectly collinear. Due to collinearity, it may be difficult to precisely disaggregate their respective influences on case outcomes in a regression analysis. Dropping revealing nature from the model would increase the coefficient of the amount variable to 2.385, but reduce the effectiveness of the model. Variance inflation factors for the full model were all under 2, indicating that collinearity was not a major problem with the model. Nonetheless, correlations between several of the independent factors were substantial. *See supra* section III.A.2, pp. 1824–26.

[216] The Pseudo-R^2 of the model was .809 for the set of all cases that applied at least one factor, and was .400 for all determinative cases, including the eighty-eight cases that did not mention any factor.

[217] *See supra* section III.A.1, pp. 1822–24.

[218] *See, e.g.*, United States v. Fisher, No. 19-cr-320, 2020 WL 4727429, at *1, *6–7 (D. Minn. Aug. 14, 2020) (noting that the collection of historical cell site data was a Fourth Amendment search); United States v. Moiseev, 364 F. Supp. 3d 23, 25 (D. Mass. 2019) (relying on a prior Supreme Court case to hold that there is no reasonable expectation of privacy in financial records held by banks).

[219] *See, e.g.*, United States v. Holt, No. 15-CR-0245, 2018 WL 7238196, at *1, *8 (D. Colo. July 9, 2018).

[220] *See, e.g.*, United States v. Fanning, No. 18-CR-362, 2019 WL 6462830, at *1, *4 (N.D. Ga. May 28, 2019).

whether the target of surveillance had a reasonable expectation of privacy.[221] There is no indication that *Carpenter* has usurped *Katz* as the primary framework of Fourth Amendment search law, as some commentators predicted.[222] Rather, *Carpenter* has augmented or modified the *Katz* inquiry while leaving its general framework in place.[223] However, the emerging *Carpenter* test has the potential to largely displace the *Katz* test in the future. It is a more specific test, embodying concrete factors instead of *Katz*'s vague reasonableness concept.[224] And courts have applied it to a wide variety of Fourth Amendment questions, including those that have nothing to do with digital data or third-party disclosure.[225] Over time, the more concrete *Carpenter* test may come to determine whether a given surveillance practice is a search under the Fourth Amendment.

C. Digital-Age Technology as a Factor

Professor Orin Kerr has argued that *Carpenter* is best interpreted as applying only to types of data that are unique to the digital age.[226] Under this approach, surveillance involving predigital records or their digital equivalents would not be a search under *Carpenter*.[227] Kerr notes that the Supreme Court considered cell phone location information "an entirely different species" of data, emblematic of the "new concerns wrought by digital technology" and therefore not covered by existing precedents.[228] The Court also made clear that it did not intend to over-

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[221] *See, e.g.*, United States v. Gayden, 977 F.3d 1146, 1151–52 (11th Cir. 2020); United States v. Gbenedio, No. 17-CR-430, 2019 WL 2177943, at *1–3 (N.D. Ga. Mar. 29, 2019). *See generally* Katz v. United States, 389 U.S. 347, 360–61 (1967) (Harlan, J., concurring).

[222] *See, e.g.*, Ohm, *supra* note 2, at 386 (contending that the *Katz* test "has been replaced by *Carpenter*'s multi-factor test").

[223] The cases where courts reach determinative conclusions about Fourth Amendment searches but do not mention any of the *Carpenter* factors are in part a reflection of the continuing viability of the general *Katz* framework.

[224] Several of these factors can themselves be found in *Katz*-test cases, although the Court had not previously discussed them as potential factors in a Fourth Amendment test. *See* Tokson, *supra* note 42, at 4.

[225] *E.g.*, Leaders of a Beautiful Struggle v. Balt. Police Dep't, 979 F.3d 219, 228–29 (4th Cir. 2020), *reh'g en banc granted*, 831 F. App'x 662 (4th Cir. 2020), *on reh'g en banc*, 2 F.4th 330 (4th Cir. 2021) (applying *Carpenter* to aerial monitoring by surveillance airplanes); United States v. Tirado, No. 16-CR-168, 2018 WL 3995901, at *2 (E.D. Wis. Aug. 21, 2018) (applying *Carpenter* in a case involving pole-camera surveillance of a home); State v. Bunce, No. 119,048, 2020 WL 122642, at *4 (Kan. Ct. App. Jan. 10, 2020) (applying *Carpenter* to the warrantless search of a purse); Commonwealth v. Johnson, 119 N.E.3d 669, 683 (Mass. 2019) (applying *Carpenter* to the use of an ankle bracelet tracking device).

[226] Kerr, *supra* note 14 (manuscript at 16).

[227] *See id.*

[228] *Id.* (quoting Carpenter v. United States, 138 S. Ct. 2206, 2222 (2018)).

turn its predigital precedents or "call into question conventional surveillance techniques and tools, such as security cameras."[229] Although the principles that shaped *Carpenter* would seem to apply to any form of surveillance, the Court's caution at least suggests the possibility that it intended to limit the reach of its new approach to digital-age forms of technology.[230]

However, there is little evidence in the dataset that courts consider digital-age technology a requirement for Fourth Amendment protection under *Carpenter*. Courts extended protection to nondigital data in several cases.[231] For instance, in *People v. Tafoya*,[232] the Colorado Court of Appeals held that warrantlessly using a telephone pole camera to observe the outside of a defendant's home for three months violated the Fourth Amendment.[233] Only one case in the entire dataset mentioned the digital nature of data as a consideration.[234] There is, however, evidence for a more subtle relationship between digital technology and case outcomes.

Of the 217 cases that reached a determinative ruling on a Fourth Amendment search, 159 involved digital-age data such as IP addresses, cell site location data, or web-surfing data.[235] Courts found a search in 57 of these cases, a rate of 35.8%. There were 58 cases that involved predigital data or its digital equivalents, such as video recordings or financial information. Courts found a search in 9 of these cases, a rate of 15.5%. The difference in win rates suggests that courts are more inclined to find a search in cases involving digital technologies than in cases involving nondigital technologies. However, these results also suggest that courts do apply *Carpenter* to nondigital data, and sometimes find that government collection of this data is a search under *Carpenter*.[236] In addition, the lower defendant win rate in non-digital-technology cases may reflect the fact that these cases frequently involve types of surveillance that have already been clearly established as nonsearches, such as government subpoenas for financial records.[237]

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[229] *Carpenter*, 138 S. Ct. at 2220.

[230] Kerr, *supra* note 14 (manuscript at 16).

[231] *E.g.*, State v. Eads, 154 N.E.3d 538, 541 (Ohio Ct. App. 2020) (extending Fourth Amendment protection to blood and urine samples taken for medical purposes); State v. Bunce, No. 119,048, 2020 WL 122642, at *4 (Kan. Ct. App. Jan. 10, 2020) (extending Fourth Amendment protection to the warrantless search of a purse).

[232] 490 P.3d 532 (Colo. App. 2019), *aff'd*, 494 P.3d 613 (Colo. 2021).

[233] *Id.* at 542.

[234] United States v. Tuggle, No. 16-cr-20070, 2019 WL 3915998, at *1–2 (C.D. Ill. Aug. 19, 2019).

[235] *See, e.g.*, People v. Sime, 88 N.Y.S.3d 823, 827 (N.Y. Crim. Ct. 2018) (holding that defendant lacked a privacy interest in "the IP data and photograph metadata" she uploaded to a photo and video social-networking service).

[236] *See* cases cited *supra* note 231.

[237] *See, e.g.*, Darcy v. United States, No. 17-cr-00036-WCM, 2021 WL 92968, at *5 (W.D.N.C. Jan. 11, 2021).

Statistical analysis of the relationship between digital technologies and findings of a search indicates a significant relationship between the digital nature of the data at issue and courts' rulings on Fourth Amendment protection. The correlation coefficient for digital technology and case outcomes is .242, which is statistically significant at the .001 level.[238] Running a logistic regression analysis with the digital variable indicates a statistically significant relationship with case outcomes, even when controlling for the other *Carpenter* factors.[239] Lower courts have not adopted an interpretation of *Carpenter* that would limit its protection exclusively to digital data.[240] But digital data is more likely to be protected than nondigital data in cases applying *Carpenter*.[241]

IV. THE FUTURE OF FOURTH AMENDMENT LAW

The analysis above examines the present state of Fourth Amendment law. This Part traces current trends into the future, examining the myriad implications of the analysis for the next generation of Fourth Amendment issues. A multifactor *Carpenter* test has begun to emerge from the lower court cases, and this Part identifies it and discusses the ambiguities that still remain. It also examines how the changing Supreme Court is likely to address *Carpenter* in the future and in light of various Justices' prior Fourth Amendment rulings. It then examines evidence of indirect noncompliance with *Carpenter* and describes the cognitive and practical influences that may cause judicial inertia in the face of legal change.

Further, the good faith exception accounts for a remarkably high proportion of cases applying *Carpenter*, and this study's findings should cause courts to rethink the exception, especially in situations involving new technologies. There were also over 120 state court rulings applying federal constitutional law in the dataset, and this Part examines the institutional advantages, disadvantages, and unique approaches of the state courts in adjudicating federal rights. Finally, this Part offers a variety of prescriptive suggestions for courts and lawmakers to more effectively apply the Fourth Amendment to new surveillance practices.

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[238] Like the correlation coefficients reported *supra* Table 4, p. 1825, this is the correlation between digital technology and a holding of search or no search in the dataset.

[239] The coefficient for digital technology was 2.502 (lower confidence bound 1.096, upper confidence bound 3.908) and the *p*-value was <.001. Coefficients and *p*-values for the other factors in this regression model are similar to those reported *supra* Table 5, p. 1826, with revealing nature, amount, and automaticity all exerting a statistically significant effect on case outcomes.

[240] *See supra* note 2361 and accompanying text.

[241] The odds ratio for digital data was 12.203, indicating that the presence of digital data makes it roughly 12 times as likely that a court will find a search. These regression results should be interpreted cautiously, however, and not taken as exact estimates. *See supra* notes 214–215 and accompanying text.

A. The Emerging Carpenter *Test and the Changing Court*

1. The Carpenter *Test.* — To the extent that the *Carpenter* opinion set out a test for Fourth Amendment searches involving third parties, it was ambiguous and vague.[242] Yet a relatively clear *Carpenter* test has begun to emerge, as lower courts have applied the case hundreds of times to resolve new Fourth Amendment issues. The test involves at least three factors: the revealing nature of the data captured, the amount of data captured, and whether the data was disclosed to a third party automatically.[243] In cases where the government obtains a substantial amount of revealing data that was collected automatically from a user, courts will very likely find a search.[244] For example, in *State v. Eads*,[245] the Ohio Court of Appeals held that the Fourth Amendment applied to the results of an individual's blood and urine tests for alcohol and drugs performed at a hospital.[246] The court reasoned that the medical record data revealed a substantial quantity of data regarding his personal life, such data was deeply revealing, and the data was not voluntarily disclosed because Eads was unconscious when the tests were performed.[247] By contrast, when the government obtains relatively little data, with little capability of revealing the intimate details of a person's life, and does so from a third party to whom a user has voluntarily turned over their data, courts will very likely find no search.[248]

What about when the factors point in different directions? That remains uncertain, and will be left to future courts to determine in individual cases. This Article's analysis would predict, however, that the revealing nature factor would likely prevail over the amount or automatic factors in cases where they conflict, because revealing nature was more influential in analyses of the dataset.[249] It would tentatively predict that the amount factor would prevail over the automatic nature of disclosure, because amount was more prevalent in the dataset and more directly correlated with case outcomes, although automaticity was more influential in a regression analysis.[250] There is some support for these

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[242] *See supra* section I.D, pp. 1804–06.

[243] *See supra* section I.C, pp. 1800–04.

[244] *See, e.g.*, United States v. Diggs, 385 F. Supp. 3d 648, 652 (N.D. Ill. 2019); State v. Martinez, 570 S.W.3d 278, 288–89 (Tex. Crim. App. 2019).

[245] 154 N.E.3d 538 (Ohio Ct. App. 2020).

[246] *Id.* at 548.

[247] *Id.* at 541, 547–49.

[248] *See, e.g.*, United States v. Tolbert, 326 F. Supp. 3d 1211, 1225 (D.N.M. 2018); People v. Alexander, No. 2-18-0193, 2021 WL 912701, at *7 (Ill. App. Ct. Mar. 10, 2021).

[249] The revealing nature was the most influential factor by any measure. *See supra* section III.A.1, pp. 1822–24, and section III.A.3, pp. 1826–27.

[250] The amount of data collected factor was far more prevalent in the dataset than the automatic factor and had a similarly high rate of influencing case outcomes when applied. *See supra* section III.A, pp. 1821–27. It was also more strongly correlated with case outcomes than was automaticity

predictions in the cases observed, but given the small number of cases expressly addressing conflicts between the factors, any conclusion about the relative weights of the factors is necessarily preliminary.[251] In any event, all three factors appear to matter substantially to case outcomes.

It is similarly clear that the number of persons affected by a surveillance act does not matter to case outcomes. Few courts mention this factor, case outcomes frequently go against it, and some courts overtly reject it.[252] This apparent repudiation of the number factor is likely due to its unconventional nature as a litigation consideration. Courts habitually apply standing and other doctrines to ensure that parties are asserting only their own interests, or the interests of a well-defined class, in litigation.[253] The concept of a single litigant raising the prospect of harms to numerous nonlitigants is too outlandish for most courts. As one judge stated: "[T]his is not the appropriate venue" for such an argument.[254] The number of people affected by a surveillance practice may also be difficult to discern in some cases, and courts may be reluctant to engage in that inquiry.

Whether the cost and inescapability factors will ultimately be part of the *Carpenter* test remains to be determined. Lower courts have not yet adopted these factors in substantial numbers, but they have also not

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in a statistical correlation analysis. *See supra* Table 4, p. 1825. Its regression coefficient was smaller, but the statistical significance of its influence as a factor was slightly greater than that of automaticity, *see supra* Table 5, p. 1826, and in any event the regression analysis should be interpreted cautiously, *see supra* notes 214–217 and accompanying text. Regression might also understate the influence of amount due to its collinearity with the revealing nature factor; the two factors were strongly correlated in the dataset, and as a result it may be difficult to disaggregate their respective influence on case outcomes in a regression analysis.

[251] *See, e.g.*, *In re* Google Location Hist. Litig., 514 F. Supp. 3d 1147, 1151, 1157 (N.D. Cal. 2021) (noting credible allegations of mostly user-directed disclosures of data, albeit allegedly without informed user consent, but relying on the collection of a large amount of revealing data in finding a reasonable expectation of privacy under *Carpenter*); People v. Bui, No. H044430, 2019 WL 1325260, at *21 (Cal. Ct. App. Mar. 25, 2019) (finding that real-time data was obtained automatically from a suspect but holding that it was not protected by the Fourth Amendment in light of the small amount of data obtained). *But see* People v. Simpson, 88 N.Y.S.3d 763, 770–71 (N.Y. Sup. Ct. 2018) (finding a search where the government obtained only three days of cell phone location data and noting the automatic nature of the data disclosure).

[252] *E.g.*, United States v. Patterson, No. 19-CR-3011, 2020 WL 6334399, at *1, *3 (D. Neb. Aug. 5, 2020) (rejecting an argument that the Fourth Amendment interests of nonlitigant parties affected by surveillance should matter in the analysis); Commonwealth v. Dunkins, 229 A.3d 622, 629 (Pa. Super. Ct. 2020), *appeal granted*, 237 A.3d 415 (Pa. 2020) (concluding that the widespread nature of the surveillance made it less likely to be a Fourth Amendment search); United States v. Shipton, No. 18-CR-202, 2019 WL 5330928, at *1, *15 (D. Minn. Sept. 11, 2019) (rejecting the idea that a litigant could invoke the Fourth Amendment interests of nonlitigant parties affected by surveillance).

[253] *See* Lujan v. Defs. of Wildlife, 504 U.S. 555, 560–61 (1992) (setting out several requirements for constitutional standing); Amchem Prods., Inc. v. Windsor, 521 U.S. 591, 621 (1997) (holding that a class in a class action lawsuit must be sufficiently well defined to ensure all class-member interests are aligned).

[254] *Shipton*, 2019 WL 5330928, at *15.

overtly rejected them.[255] They may ultimately be incorporated into the *Carpenter* test in some form, in part because they are conceptually related to some of the stronger factors. The inescapability of a technology or type of surveillance is related to the automatic nature of disclosure — both speak to whether the disclosure of personal data to a third party is voluntary.[256] And cost is conceptually related to amount because it is generally the low-cost gathering of data at scale that raises the most serious concerns about new surveillance technologies, as the Supreme Court has noted several times.[257] Courts might eventually combine these factors with the factors of automaticity and amount, or may separately evaluate them as part of a comprehensive assessment of a surveillance practice. Alternatively, they may continue to largely ignore them.

2. The Future of the Supreme Court. — The future of *Carpenter* as a transformative precedent is uncertain in part because the composition of the Supreme Court has changed since June 2018. *Carpenter* was a 5–4 decision, with Chief Justice Roberts and Justices Ginsburg, Breyer, Sotomayor, and Kagan in the majority and Justices Kennedy, Thomas, Alito, and Gorsuch dissenting.[258] Justice Kennedy's seat is now occupied by Justice Kavanaugh, and Justice Ginsburg's seat is now occupied by Justice Barrett. What does this all mean for the future of *Carpenter* and the new test emerging in the lower courts?

It is likely that *Carpenter* will remain a valid precedent and that its reasoning will be used to expand the scope of the Fourth Amendment to a variety of new technologies and surveillance practices. But the future is uncertain, and support for robust Fourth Amendment protection has likely decreased somewhat since 2018.

First, *Carpenter* is unlikely to be overruled in whole or in part. Overruling a recent decision is generally difficult to justify.[259] Moreover,

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[255] *See supra* pp. 1823–24.

[256] *See* Tokson, *supra* note 2, at 422.

[257] United States v. Jones, 565 U.S. 400, 429–30 (2012) (Alito, J., concurring in the judgment) (discussing the "difficult and costly," *id.* at 429, structural barriers to government surveillance that have been removed by new, low-cost technologies); Carpenter v. United States, 138 S. Ct. 2206, 2217–18 (2018) (noting the threats to privacy that arise because "cell phone tracking is remarkably easy, cheap, and efficient compared to traditional investigative tools"); *see also* Tokson, *supra* note 42, at 22–25.

[258] Each of the dissenting Justices wrote their own opinions, suggesting a strong albeit diverse set of views opposing *Carpenter*. Justices Thomas and Alito joined Justice Kennedy's dissent, while Justice Thomas also joined Justice Alito's dissent. *Carpenter*, 138 S. Ct. at 2223–35 (Kennedy, J., dissenting); *id.* at 2235–46 (Thomas, J., dissenting); *id.* at 2246–61 (Alito, J., dissenting); *id.* at 2261–72 (Gorsuch, J., dissenting).

[259] *See, e.g.*, Janus v. AFSCME, Council 31, 138 S. Ct. 2448, 2478–79, 2482–83 (2018) (noting that substantial changes in law and facts occurring over time are important factors in determining whether to overturn a case); S. Cent. Bell Tel. Co. v. Alabama, 526 U.S. 160, 166 (1999) (declining to consider a party's challenge to a recent precedent and citing several factors in the stare decisis analysis that require the passage of time to evaluate); Fla. Dep't of Health & Rehab. Servs. v. Fla.

as this Article has demonstrated, *Carpenter* has not proven unworkable in the lower courts.[260] To the contrary, lower courts have applied it in hundreds of cases, offering little overt criticism of its unique approach[261] and frequently using the *Carpenter* factors to explain and support their decisions.[262] To be sure, courts have not yet adopted a stable *Carpenter* test requiring a discussion of each factor in every case.[263] Establishing a mandatory test is likely a job for the Supreme Court itself. And some courts have tended to favor an older, more pro-government approach in dealing with data disclosed to third parties.[264] But judges often move slowly when confronted by legal change, especially in the absence of a clear command from a higher court.[265] Despite the ambiguity of the *Carpenter* opinion, lower courts have had little difficulty examining considerations like the revealing nature of data, the amount of data captured, the automatic and inescapable nature of data disclosure, and the cost of surveillance.[266] Courts regularly address these factors in cases involving novel technologies, fruitfully comparing those technologies with the cell phone tracking addressed in *Carpenter*.[267] Whether the *Carpenter* standard is normatively desirable remains subject to debate, but there is little evidence that it lacks workability.

Second, the Court is likely to use and expand on the *Carpenter* approach in future cases. Chief Justice Roberts and Justices Sotomayor and Kagan will likely continue to apply *Carpenter* and pay close atten-

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Nursing Home Ass'n, 450 U.S. 147, 153–54 (1981) (Stevens, J., concurring) ("[W]e have a profound obligation to give recently decided cases the strongest presumption of validity." *Id.* at 153).

260 Unworkability in the lower courts is a hallmark of a case that should be overturned despite the interests of stare decisis. *E.g.*, *Janus*, 138 S. Ct. at 2478; Garcia v. San Antonio Metro. Transit Auth., 469 U.S. 528, 531 (1985).

261 There were only two opinions in the dataset that appeared critical of *Carpenter*. *See* United States v. Robinson, No. 18-CR-00103, 2020 BL 126361, at *8 (E.D.N.C. Mar. 5, 2020) (suggesting implicitly that *Carpenter* was contrary to an originalist understanding of the Fourth Amendment); United States v. Howard, 426 F. Supp. 3d 1247, 1253 (M.D. Ala. 2019) (criticizing *Carpenter* as vague and failing to give courts clear guidance going forward). Even separate opinions directly criticizing *Carpenter* were rare. *Cf.* Holder v. State, 595 S.W.3d 691, 708 (Tex. Crim. App. 2020) (Yeary, J., concurring and dissenting) (arguing that the court should not have incorporated *Carpenter* into Texas constitutional law given a prior Texas ruling endorsing the third-party doctrine). There were also a few concurrences, found in cases that did not substantively apply *Carpenter*, that criticized *Katz* and all of modern Fourth Amendment jurisprudence on originalist grounds. *See* Mobley v. State, 816 S.E.2d 769, 776 n.7 (Ga. Ct. App. 2018) (Dillard, C.J., concurring specially), *rev'd*, 834 S.E.2d 785 (Ga. 2019), *vacated*, 839 S.E.2d 199 (Ga. Ct. App. 2020); Morgan v. Fairfield County, 903 F.3d 553, 570 (6th Cir. 2018) (Thapar, J., concurring in part and dissenting in part).

262 *See supra* section III.A, pp. 1821–27.

263 *See supra* section III.A, pp. 1821–27.

264 *See infra* section IV.B, pp. 1836–39.

265 *See infra* pp. 1837–38.

266 *See supra* section III.A.1, pp. 1822–24.

267 *See, e.g.*, Naperville Smart Meter Awareness v. City of Naperville, 900 F.3d 521, 527 (7th Cir. 2018); People v. Tafoya, 490 P.3d 532, 534, 540 (Colo. App. 2019).

tion to the doctrinal developments in the lower courts over the past several years.[268] They will probably support regulating surveillance practices that involve collecting large amounts of revealing data, especially if the data was automatically gathered by third parties. Justice Gorsuch would prefer to discard the *Katz* test altogether and resolve Fourth Amendment cases on more overtly originalist grounds.[269] But Justice Gorsuch nonetheless tended to support strong Fourth Amendment protections in a variety of contexts as a lower court judge.[270] And his dissent — which often read more like a concurrence — in *Carpenter* expressed interest in a capacious conception of Fourth Amendment property that would encompass, for instance, any business records that a cell phone service provider generates about an individual's cell phone use.[271] He critiqued the pro-government nature of the third-party doctrine and suggested that bailment law principles and statutory law imposing limits on disclosures of telecommunications information might give rise to a cognizable property right in personal data held by third parties.[272] His dissent concluded by imploring future litigants to raise such arguments, unlike Mr. Carpenter, whom Justice Gorsuch "reluctantly" concluded had forfeited them.[273]

One potential future course for Fourth Amendment law is a series of fractured opinions, where four Justices apply *Carpenter* directly while Justice Gorsuch concurs separately, applying a different approach to reach a similar outcome: the protection of sensitive personal data held by third parties.[274] It is also possible that Justices Barrett or Kavanaugh will join either the *Carpenter*-applying majority or a pro-privacy Justice Gorsuch concurrence. Justice Barrett has generally ruled in favor of Fourth Amendment protection in her few rulings on the subject as a lower court judge.[275] She also spoke favorably of *Carpenter* and its application of the Fourth Amendment to cell phones at her confirmation

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[268] *See* Matthew Tokson, *Predicting the Supreme Court's Next Moves: Fourth Amendment Edition*, DORF ON L. (Jan. 29, 2021, 7:30 AM), http://www.dorfonlaw.org/2021/01/predicting-supreme-courts-next-moves.html [https://perma.cc/EQ6F-UAN4].

[269] *See id.*; Orin S. Kerr, Katz *as Originalism*, 71 DUKE L.J. 1047, 1089 (2022).

[270] Amy Howe, *Gorsuch and the Fourth Amendment*, SCOTUSBLOG (Mar. 17, 2017, 1:35 PM), https://www.scotusblog.com/2017/03/gorsuch-fourth-amendment [https://perma.cc/FJG7-2PE5].

[271] Carpenter v. United States, 138 S. Ct. 2206, 2268–72 (2018) (Gorsuch, J., dissenting).

[272] *Id.* at 2268–69, 2272.

[273] *Id.* at 2272.

[274] Tokson, *supra* note 268.

[275] Jacob Sullum, *SCOTUS Contender Amy Coney Barrett's Mixed Record in Criminal Cases*, REASON (Sept. 21, 2020, 4:45 PM), https://reason.com/2020/09/21/scotus-contender-amy-coney-barretts-mixed-record-in-criminal-cases [https://perma.cc/DP46-6QE6]. She might also adopt the approach of her mentor and former boss Justice Scalia, who generally favored a broad Fourth Amendment scope. *See id.*

hearing.[276] Justice Kavanaugh might have a narrower conception of the Fourth Amendment's scope, but his recent majority vote in *Torres v. Madrid*[277] suggests that he may be open to broader interpretations of the Fourth Amendment when they are supported by precedent and compelling policy or equitable considerations.[278]

The future of the Court is always uncertain, and its composition is inherently subject to change. What is clear is that *Carpenter* will likely remain a valid precedent, and a substantial number of current Justices will apply *Carpenter* in resolving new cases. The principles discussed in *Carpenter*, and the test that has begun to emerge from the lower courts, will continue to shape Fourth Amendment law for the foreseeable future.

B. Judicial Noncompliance and Legal Change

Lower courts citing *Carpenter* have generally refrained from criticizing it or overtly declining to apply it.[279] Nor are there many cases substantively addressing the third-party doctrine that fail to cite *Carpenter*.[280] There were five such cases between June 2018 and March 2021, only one of which was arguably in tension with the *Carpenter* opinion.[281] In

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[276] *Amy Coney Barrett Senate Confirmation Hearing Day 2 Transcript*, REV (Oct. 13, 2020), https://www.rev.com/blog/transcripts/amy-coney-barrett-senate-confirmation-hearing-day-2-transcript [https://perma.cc/N2J7-E8CU] ("[T]he Fourth Amendment . . . [is] written at a level of generality that's specific enough to protect rights, but general enough to be lasting so that when you're talking about the constable banging at your door in 1791 as a search or seizure, now we can apply it, as the court did in Carpenter versus the United States, to cell phones.").

[277] 141 S. Ct. 989 (2021).

[278] *Id.* at 1003 (holding that the shooting of a fleeing suspect that did not impede the movement of the suspect was nonetheless a seizure under the Fourth Amendment). Then–Judge Kavanaugh authored an influential dissent from a denial of rehearing en banc in a GPS tracking case where he suggested that the use of a GPS device might be a Fourth Amendment search on property and trespass grounds. United States v. Jones, 625 F.3d 766, 769–70 (D.C. Cir. 2010) (Kavanaugh, J., dissenting from the denial of rehearing en banc). This might indicate an openness to Justice Gorsuch's property-based approach, or a reluctance to adopt amount-based analyses of Fourth Amendment searches. *See id.* at 770 ("I also share Chief Judge Sentelle's concern about the panel opinion's novel aggregation approach to Fourth Amendment analysis."). Or it may just reflect his assessment that pre-*Carpenter* Supreme Court precedent did not justify the D.C. Circuit's innovative approach.

[279] *But see* United States v. Robinson, No. 18-CR-00103, 2020 BL 126361, at *8 (E.D.N.C. Mar. 5, 2020) (suggesting implicitly that *Carpenter* was contrary to the original public meaning of the Fourth Amendment's text); United States v. Howard, 426 F. Supp. 3d 1247, 1253 (M.D. Ala. 2019) (criticizing *Carpenter* as vague and unclear).

[280] Applying the same methods used for compiling the dataset, twenty-four total cases decided since June 2018 were located that mention a third-party doctrine but do not cite *Carpenter*. Typically, these cases either mention the third-party doctrine only in passing or mention unrelated insurance law or standing law third-party doctrines. *See, e.g.*, Durasevic v. Grange Ins. Co. of Mich., 780 F. App'x 271, 274 (6th Cir. 2019) (mentioning the "innocent third-party doctrine" of insurance law); Berry v. FBI, No. 17-CV-143, 2018 WL 3468703, at *5 (D.N.H. July 17, 2018) (mentioning the Fourth Amendment third-party doctrine in passing).

[281] *See* State v. Pauli, No. A19-1886, 2020 WL 7019328, at *1–3 (Minn. Ct. App. Nov. 30, 2020) (adopting a strong form of the third-party doctrine and holding that child pornography images

short, overt lower court resistance to the groundbreaking *Carpenter* decision has been negligible.

There was, however, circumstantial evidence of some courts engaging in indirect noncompliance with *Carpenter*.[282] Indirect noncompliance refers to courts intentionally misinterpreting controlling precedent in order to reach a preferred outcome.[283] In the dataset of 217 determinative search decisions, 30 decisions (13.8%) applied a strong version of the third-party doctrine that was arguably in tension with the *Carpenter* opinion, which imposed a meaningful limit on that doctrine.[284] These opinions might represent a small pocket of resistance towards *Carpenter*, albeit a subtle, indirect resistance.[285]

But judicial inertia towards a prior status quo is a common phenomenon following a major legal change, and its occurrence here should not be too surprising.[286] *Carpenter* changed Fourth Amendment law substantially, replacing a bright-line rule (where all data disclosed to a third party is unprotected) with an amorphous, flexible standard (where some data disclosed to a third party is protected, in light of these several factors).[287] This is precisely the situation where judges are most likely to prefer the prior status quo.[288] Judges confronting an unfamiliar new standard that raises decision costs and increases uncertainty are likely to favor the prior doctrine — at least until they grow more comfortable

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stored on Dropbox in violation of Dropbox's terms of service were not protected by the Fourth Amendment). The other four cases were *United States v. Taylor*, 935 F.3d 1279, 1284 n.4 (11th Cir. 2019), *as corrected* (Sept. 4, 2019); *United States v. McCabe*, No. 20-CR-00106, 2021 WL 1086106, at *1, *3 (D. Minn. Mar. 22, 2021); *United States v. Bohannon*, 506 F. Supp. 3d 907, 916 n.5 (N.D. Cal. 2020); and *United States v. Wilbert*, 343 F. Supp. 3d 117, 121 (W.D.N.Y. 2018), *aff'd*, 818 F. App'x 113 (2d Cir. 2020).

[282] *See* Tokson, *supra* note 22, at 907.

[283] *Id.*

[284] For a description of the coding methodology used here, see *supra* note 163. For a discussion of the limits that *Carpenter* imposed on the third-party doctrine, see, for example, Kerr, *supra* note 14 (manuscript at 6–7).

[285] Tokson, *supra* note 22, at 907.

[286] *Id.* at 924–25. Note that while some instances of judicial inertia may partially be the result of litigants ignoring a new law and courts remaining unaware of it, that is not at issue in this instance. *Cf.* Diego A. Zambrano, *Judicial Mistakes in Discovery*, 112 NW. U. L. REV. ONLINE 217, 222–23 (2018) (noting the role that litigant mistakes play in judicial noncompliance with new discovery procedures in Federal Rule of Civil Procedure 26). Each of the cases considered here that may exhibit indirect noncompliance with *Carpenter* cites that case and thus demonstrates judicial awareness of the relevant case.

[287] *See* Caminker, *supra* note 16, at 439–40 (discussing the numerous, substantial ambiguities of the *Carpenter* standard).

[288] Tokson, *supra* note 22, at 924–25. This is especially true where, as here, judges can favor the prior doctrine without overtly defying the new one. *Carpenter* leaves enough ambiguity about the continued role of the third-party doctrine that courts endorsing a strong third-party doctrine are not overtly resisting *Carpenter*. At worst they are contradicting its spirit, not its letter. *See* Carpenter v. United States, 138 S. Ct. 2206, 2220 (2018) (emphasizing the factually narrow nature of the decision and declining to overrule previous third-party doctrine cases).

with the new one.[289] This effect has been observed in areas including criminal sentencing,[290] patent remedies,[291] copyright fair use,[292] qualified immunity law,[293] and many more.[294]

Moreover, as the theory would predict, indirect noncompliance with *Carpenter* appears to be decreasing over time.[295] The proportion of determinative cases that invoke a strong third-party doctrine has gone down in recent years, as judges become more familiar with *Carpenter*.[296] Figure 2 reports the proportion of determinative cases citing *Carpenter* that apply a strong version of the third-party doctrine, over time.[297]

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[289] Tokson, *supra* note 22, at 926–27.

[290] In the first several years after the Supreme Court deemed the federal sentencing guidelines nonmandatory, most judges did not depart from the familiar guidelines, and the guidelines continued to exert a powerful influence on sentences. *See supra* note 17. This effect diminished over time, and judges eventually began to depart from the sentencing guidelines at higher rates. Paul J. Hofer, *Federal Sentencing After* Booker, 48 CRIME & JUST. 137, 139–40 (2019).

[291] *See, e.g.*, Andrew Beckerman-Rodau, *The Aftermath of* eBay v. MercExchange*, 126 S. Ct. 1837 (2006): A Review of Subsequent Judicial Decisions*, 89 J. PAT. & TRADEMARK OFF. SOC'Y 631, 656 (2007) (finding that a majority of courts continued to apply an old, bright-line rule approach in most patent cases rather than the new standard adopted by the Supreme Court in a then-recent patent case).

[292] *See* Beebe, *supra* note 211, at 602 (reporting that 7.4% of all federal fair use opinions continued to apply a presumption that a Supreme Court case had explicitly struck down).

[293] *See, e.g.*, Nancy Leong, *The* Saucier *Qualified Immunity Experiment: An Empirical Analysis*, 36 PEPP. L. REV. 667, 711 (2009) (finding that 5.1% of federal district court qualified immunity cases decided in 2006 and 2007 overtly violated a Supreme Court case addressing qualified immunity law); Tokson, *supra* note 22, at 957–59 (reporting that courts favored the prior status quo following another major change in the standard governing qualified immunity cases in 2009).

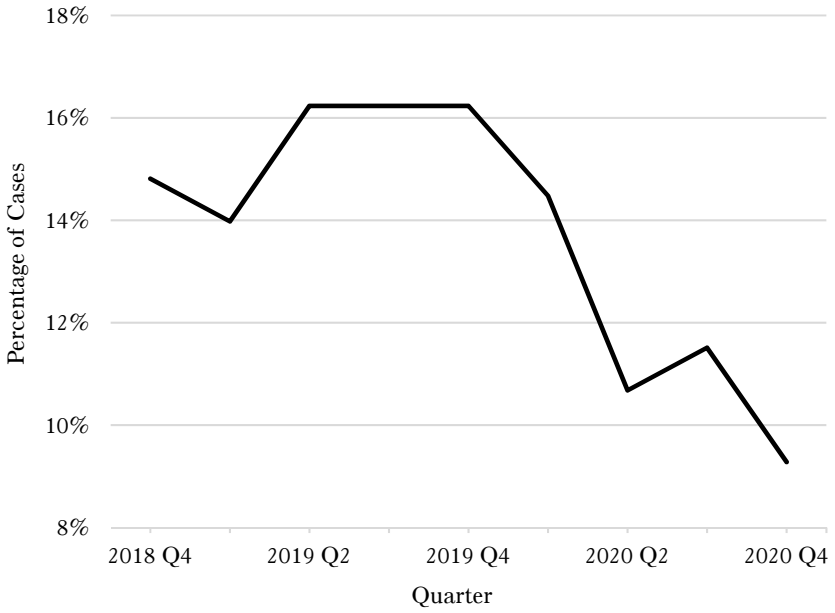
[294] *See, e.g.*, Edward K. Cheng & Albert H. Yoon, *Does* Frye *or* Daubert *Matter? A Study of Scientific Admissibility Standards*, 91 VA. L. REV. 471, 478 (2005) (reporting that many courts continue to apply a simpler, prior–status quo doctrine in indirect noncompliance with a major Supreme Court case); Zambrano, *supra* note 286, at 222 (reporting that roughly 7% of decisions overtly failed to comply with a change in the Federal Rules of Civil Procedure).

[295] *See* Tokson, *supra* note 22, at 950 (discussing how status quo–preference effects decrease over time).

[296] The absolute number of these cases has diminished even more clearly, but because the total number of *Carpenter* cases has decreased as well, possibly because of the COVID-19 pandemic, proportionality is a more accurate representation of the incidence of these cases. *See supra* Figure 1, p. 1815 (displaying the number of cases finding outcomes of search, no search, and good faith exception over time).

[297] A three-quarter rolling average is used to smooth out the lines and increase visual comprehensibility.

Figure 2: Proportion of Determinative Cases Applying Strong, Pre-*Carpenter* Version of the Third-Party Doctrine, Three-Quarter Rolling Average



This proportion hovered around 15% to 16% initially but has lately dropped to around 10% to 11%. It remains to be seen whether these cases continue to diminish as courts gain familiarity with the *Carpenter* standard. In any event, the vast majority of cases show no explicit or even implicit resistance towards *Carpenter*'s reformation of the third-party doctrine. Nonetheless, some indirect noncompliance with *Carpenter* appears to be present in lower court cases.

C. Rethinking the Good Faith Exception

The good faith exception provides that evidence obtained in good faith reliance on a statute, warrant, or other authority will not be excluded, even if the authority was incorrect and the search for evidence was unconstitutional.[298] For example, evidence obtained by the police in reliance on an unconstitutional statute permitting the inspection of automobile wrecking yards was not excluded under the Fourth Amendment due to the good faith exception.[299] The idea is that police

[298] *See, e.g.*, Davis v. United States, 564 U.S. 229, 238–39 (2011).
[299] Illinois v. Krull, 480 U.S. 340, 343, 360 (1987).

officers relying on existing legal authority are acting in good faith and therefore cannot be effectively deterred by the exclusion of evidence.[300] This doctrine has had a remarkably powerful impact on case outcomes in post-*Carpenter* law.

Of the 399 decisions in the dataset that applied *Carpenter* substantively, 144 were resolved based on the good faith exception without addressing the search issue, a rate of 36.1%.[301] The vast majority of these good faith cases involved government officials obtaining historical cell phone location data without warrants, the practice declared unconstitutional in *Carpenter*.[302] Thus a surprisingly large percentage of post-*Carpenter* cases involve unconstitutional government searches for which the persons affected have no meaningful remedy.[303]

To be sure, the proportion of cases resolved via the good faith exception will decrease over time, as fewer cases are tried involving pre-*Carpenter* searches of cell phone data. Figure 3 reports the proportion of good faith cases decided over time and shows this expected decrease. But roughly 30% of cases applying *Carpenter* were still being resolved on good faith grounds in 2020 and 2021, years after *Carpenter* was decided.[304] Ultimately, it is likely that hundreds of criminal defendants will be convicted on the basis of searches that *Carpenter* deemed unconstitutional.

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[300] *Id.* at 346, 349; Arizona v. Evans, 514 U.S. 1, 14 (1995). The Court has stated that the sole purpose of the Fourth Amendment's exclusionary rule is to deter Fourth Amendment violations. *Davis*, 564 U.S. at 236–37; Herring v. United States, 555 U.S. 135, 141 & n.2 (2009). Many observers have criticized this narrow, incentive-based concept of exclusion, noting that values of retributivism, judicial integrity, and due process, among others, may also compel the exclusion of illegally obtained evidence. *See, e.g.*, Richard M. Re, *The Due Process Exclusionary Rule*, 127 HARV. L. REV. 1885, 1890–92 (2014) (arguing that the Due Process Clauses compel exclusion of unlawfully seized evidence); David Gray, *A Spectacular Non Sequitur: The Supreme Court's Contemporary Fourth Amendment Exclusionary Rule Jurisprudence*, 50 AM. CRIM. L. REV. 1, 3 (2013) (discussing retributivism as an important foundation for the exclusionary rule); Robert M. Bloom & David H. Fentin, *"A More Majestic Conception": The Importance of Judicial Integrity in Preserving the Exclusionary Rule*, 13 U. PA. J. CONST. L. 47, 71–80 (2010) (arguing that judicial integrity provides the strongest foundation for the exclusionary rule).

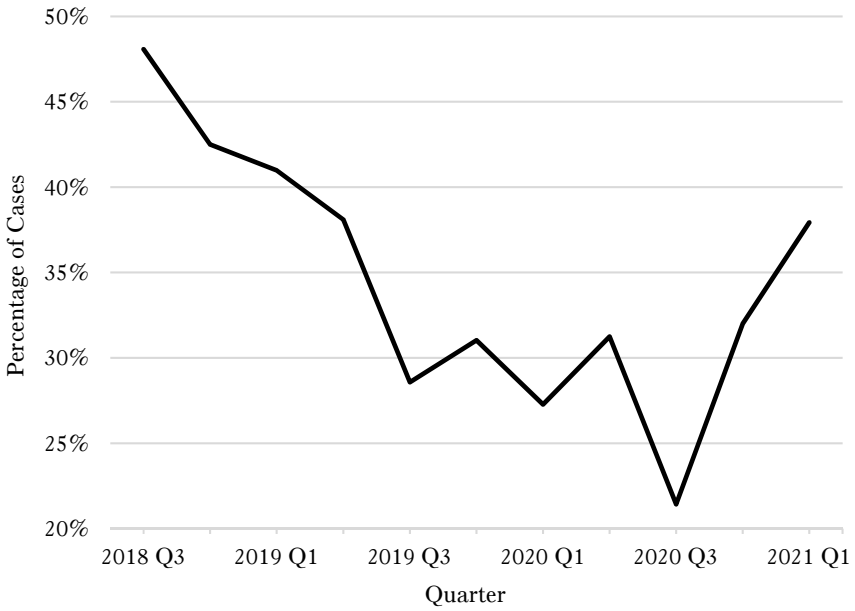
[301] *See supra* pp. 1811–12. An additional 11 cases applied the good faith exception after resolving the search issue, for a total of 155 good faith exception cases, or 38.8% of the total.

[302] Carpenter v. United States, 138 S. Ct. 2206, 2223 (2018).

[303] Suspects tracked via their cell phone signals might attempt to sue on the basis of the constitutional violation, but the damages for such lawsuits would be uncertain and would likely be barred by qualified immunity, which is likely even more difficult for litigants to overcome than the good faith exception. *See, e.g.*, Joanna C. Schwartz, *After Qualified Immunity*, 120 COLUM. L. REV. 309, 338–51 (2020) (describing the various doctrinal and practical hurdles plaintiffs must overcome to defeat a defendant's qualified immunity claim).

[304] *See infra* Figure 3, p. 1841.

Figure 3: Proportion of Cases Applying *Carpenter* Resolved Based on the Good Faith Exception, By Quarter



The remarkably high proportion of cases resolved via the good faith exception following a major Supreme Court decision should spur a reexamination of the exception. Current law may incentivize the police to aggressively apply new surveillance practices in order to secure convictions, even when those practices are likely unconstitutional.

Consider the incentives the good faith exception gives law enforcement with respect to new surveillance technologies. The police can often rely on old statutes as a basis to obtain court orders for new forms of information.[305] This is exactly what happened prior to *Carpenter*, when

[305] *See, e.g.*, Electronic Communications Privacy Act of 1986, Pub. L. No. 99-508, 100 Stat. 1848 (codified as amended in scattered sections of 18 U.S.C.); 18 U.S.C. § 2703(a), (b)(B)(i) (authorizing the government to access emails stored for more than 180 days with an administrative or grand jury subpoena); *id.* § 3122(a)(1) (allowing the government to apply for a pen register or a trap and trace device by submitting an application to a court of competent jurisdiction); *id.* § 3486(a) (sanctioning the use of administrative subpoenas in investigations involving federal health care offenses); 19 U.S.C. § 1509(a) (authorizing the U.S. Customs Service to issue a summons during "any investigation or inquiry"); 26 U.S.C. § 7602(a) (permitting the IRS to issue a summons to "any person" to produce for examination by the IRS "any books, papers, records, or other data" listed on the summons); ARIZ. REV. STAT. ANN. § 13-3016(B), (D) (2021) (allowing law enforcement to delay notice to a party of a subpoena issued to a "communication service provider" for up to ninety days); OHIO

the Stored Communications Act of 1986[306] (SCA) allowed police to obtain court orders for cell phone location data with less than probable cause, because such data was a "record or other information pertaining to a . . . customer" under the Act.[307] Officers relied on this general purpose provision to obtain cell phone data in numerous cases, and the data was not excluded from trial even after its collection was deemed unconstitutional in *Carpenter*.[308]

Police reliance on the SCA is reflected in the dataset analyzed above. Although many of the good faith cases in the dataset were decided on the basis of controlling circuit court precedent, the majority of the cases were decided in jurisdictions without appeals court opinions, solely on the basis of police reliance on the SCA.[309] The SCA, and the broader Electronic Communications Privacy Act[310] that encompasses it, are rife with provisions that offer sub–Fourth Amendment protections to wide varieties of data.[311] When officers use these statutes to obtain new forms of digital information, the data will virtually always be admissible at trial under the good faith exception, even if courts later declare it off limits without a warrant.[312]

This creates incentives that the Supreme Court has failed to recognize. When the police encounter a new surveillance technology or practice that is arguably permitted by an old statute, they have an incentive to aggressively use that surveillance to secure as many convictions as possible before courts prohibit it. Law enforcement agencies can maximize convictions and case clearance rates by (a) pushing the envelope with intrusive surveillance technologies and practices and (b) accelerating the use of such surveillance as quickly as possible, before courts

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REV. CODE ANN. § 2317.02(B)(2)(a) (West 2020) (directing a "health care provider" to supply patient drug-test results to law enforcement when the requesting officer indicates that the individual is the subject of an "official criminal investigation . . . or proceeding").

306 18 U.S.C. §§ 2701–2712.

307 *In re* Application of U.S. for an Ord. Directing a Provider of Elec. Commc'n Serv. to Disclose Recs. to the Gov't, 620 F.3d 304, 308 (3d Cir. 2010) (quoting 18 U.S.C. § 2703(c)(1)); *see also In re* Applications of U.S. for Ords. Pursuant to Title 18, U.S. Code Section 2703(d), 509 F. Supp. 2d 76, 80 (D. Mass. 2007) ("[H]istorical cell site information clearly satisfies each of the three definitional requirements of section 2703(c).").

308 *See, e.g.*, United States v. Herron, 762 F. App'x 25, 31 (2d Cir. 2019) (upholding a search of historical cell site location data on good faith grounds because 18 U.S.C. § 2703 had not been declared unconstitutional at the time of the search); United States v. Korte, 918 F.3d 750, 759 (9th Cir. 2019) (finding good faith reliance on the "then-lawful statute" of § 2703).

309 *See* 18 U.S.C. § 2703.

310 Electronic Communication Privacy Act of 1986, Pub. L. No. 99-508, 100 Stat. 1848 (codified as amended in scattered sections of 18 U.S.C.).

311 *See generally* Tokson, *supra* note 49, at 592–95 (providing an overview of the Electronic Communications Privacy Act's application to digital communications data). Even email content stored for more than 180 days can be obtained with less than probable cause under the email provisions of the 1986 Act. *See* 18 U.S.C. § 2703(a), (b)(B)(i).

312 *See* cases cited *supra* note 308.

impose warrant requirements.[313] By failing to exclude evidence in cases involving reliance on broad statutes, courts have incentivized constitutional violations and undermined the privacy that the Fourth Amendment is meant to protect.

The Supreme Court could more effectively deter Fourth Amendment violations by rethinking, and narrowing, the good faith exception. For example, *Illinois v. Krull*[314] held that an officer who relied on a statute specifically authorizing the inspection of automobile wrecking yards was entitled to the good faith exception when he inspected a wrecking yard.[315] But *Krull* has been quietly extended by lower courts to officers who rely on statutes that do not specifically address the surveillance practice at issue.[316] The Supreme Court could make clear that the good faith exception for statutes is limited to laws that address the particular practice used. Alternatively, or in addition, the Court could limit the reach of *Davis v. United States*,[317] which extended the good faith exception to police reliance on controlling appeals court precedent.[318] The Court might consider limiting the *Davis* rule to Supreme Court precedent only, or to issues on which there is no split among the circuits. The current *Davis* rule risks incentivizing police officers in jurisdictions with favorable circuit precedent to quickly and aggressively apply new surveillance practices before the Supreme Court has a chance to weigh in.[319]

The extraordinary prevalence of the good faith exception in the years following a major, pro-privacy Fourth Amendment case suggests that the Supreme Court has failed to strike the proper balance of deterrence

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[313] Police departments and officers generally have strong incentives to maximize clearance rates and arrests, while prosecutors are highly motivated to obtain convictions. *See, e.g.*, Richard H. McAdams, *The Political Economy of Entrapment*, 96 J. CRIM. L. & CRIMINOLOGY 107, 132 (2005); Daniel S. Medwed, *The Zeal Deal: Prosecutorial Resistance to Post-conviction Claims of Innocence*, 84 B.U. L. REV. 125, 134–36 (2004).

[314] 480 U.S. 340 (1987).

[315] *Id.* at 343, 360.

[316] *See* cases cited *supra* note 308.

[317] 564 U.S. 229 (2011).

[318] *Id.* at 249–50.

[319] It is possible that these incentives contributed to the large numbers of good faith cases in the Northern District of Georgia following the Eleventh Circuit's decision in *United States v. Davis*, 785 F.3d 498 (11th Cir. 2015) (en banc). *See supra* section II.B.3, pp. 1815–20, and Table 2, pp. 1817–18. To be sure, curtailing the *Davis* rule might slightly disincentivize the vigorous use of legitimate surveillance practices in certain situations. Officers may be less incentivized to use a new surveillance practice if the evidence collected might be excluded should the Supreme Court ultimately find the practice unconstitutional. But police are not made substantially worse off in most such situations — if the practice is ultimately found constitutional, the evidence will be admitted, and if it is ultimately found unconstitutional, the police can often still make their case with other evidence collected via constitutional means. *See, e.g.*, People v. Taylor, 98 N.Y.S.3d 456, 457 (App. Div. 2019) (holding that other evidence of defendant's guilt was overwhelming, even in the absence of the cell phone location evidence).

in its good faith jurisprudence.[320] By examining the incentives that the good faith exception creates for police officers to aggressively employ new surveillance technologies, the Court could eventually develop a more effective standard for deterring constitutional violations.

D. U.S. Constitutional Law in the State Courts

This section examines two important phenomena illustrated by the set of state court cases applying *Carpenter*. The first involves state courts applying federal constitutional rights and implicates the familiar question whether state courts can effectively do so. The second involves state courts expressly incorporating *Carpenter* into their state constitutional law, even as that law continues to evolve independently of Fourth Amendment law going forward.

1. State Courts Applying Federal Constitutional Rights. — This Article's analysis has comprehensively surveyed both federal and state court cases applying *Carpenter*. As such, it offers a window into the phenomenon of state courts applying the United States Constitution. Debates over the capacity of state judges to effectively apply federal constitutional rights have persisted for decades.[321] Some commentators have raised valid concerns that state judges, who typically lack salary and tenure protections like those guaranteed to federal judges by Article III, may be more subject to political pressure and therefore less likely to strike down state action as unconstitutional.[322] State judges may also be less experienced than their federal counterparts at applying federal constitutional rights, as such issues necessarily make up smaller portions of their dockets.[323] Yet recent studies have suggested that state courts often protect individual constitutional rights as vigorously as federal courts — or even more so in some areas.[324]

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[320] *See supra* pp. 1839–40; Re, *supra* note 300, at 1894–98 (discussing the difficulty of striking the proper balance on deterrence in exclusionary rule cases); Kit Kinports, *Culpability, Deterrence, and the Exclusionary Rule*, 21 WM. & MARY BILL RTS. J. 821, 835–43 (2013) (discussing inconsistencies in the logic of deterrence in the Supreme Court's good faith exception cases).

[321] *E.g.*, Solimine, *supra* note 35, at 1458–59; Neuborne, *supra* note 161, at 1120–21; Erwin Chemerinsky, *Parity Reconsidered: Defining a Role for the Federal Judiciary*, 36 UCLA L. REV. 233, 233–34 (1988).

[322] *E.g.*, Martin H. Redish, *Judicial Parity, Litigant Choice, and Democratic Theory: A Comment on Federal Jurisdiction and Constitutional Rights*, 36 UCLA L. REV. 329, 333 (1988); Neuborne, *supra* note 161, at 1120–21.

[323] Redish, *supra* note 322, at 333.

[324] Goodwin Liu, *State Constitutions and the Protection of Individual Rights: A Reappraisal*, 92 N.Y.U. L. REV. 1307, 1330 & n.123 (2017); Solimine, *supra* note 35, at 1465–68. *But cf.* Michael S. Kang & Joanna M. Shepherd, *Judging Judicial Elections*, 114 MICH. L. REV. 929, 942, 945 (2016) (book review) (finding a significant relationship between electoral attack advertising and judicial hostility to appeals by criminal defendants). To be sure, win rates alone speak only indirectly to the competence of state judges in applying federal constitutional law, and there may be other differences between federal and state cases that also contribute to win rates. *See* Chemerinsky, *supra* note 321,

In post-*Carpenter* law, state courts reaching determinative decisions found Fourth Amendment searches at far higher rates (60.6%) than federal courts (21.2%).[325] While exact comparisons between state and federal cases are difficult,[326] state judges appear to be substantially more amenable to claims of Fourth Amendment violations by government officials. As discussed above, this counterintuitive result cannot be explained by political disparities between state and federal judges.[327] It is more likely that the disparity results from state courts having less experience with the strong third-party doctrine that prevailed prior to *Carpenter*. State courts may apply new constitutional doctrines more vigorously than federal courts because they are less attached to prior doctrines and more likely to approach novel legal questions with fresh eyes.[328] This comports with a previous study demonstrating that state courts were more likely than federal courts to favorably resolve gay rights claims in the early decades of LGBTQ+ rights litigation.[329] This "fresh eyes" effect may be another benefit of a dual-track, federalized regime of constitutional adjudication.[330] State judges approach federal constitutional cases from a unique institutional perspective, and the "creative ferment of experimentation which federalism encourages" can be as beneficial in the realm of constitutional interpretation as in any other legal area.[331]

It is also notable that politically accountable state judges rule in favor of Fourth Amendment rights at such high rates. They may perceive that a robust Fourth Amendment search doctrine, which can limit government surveillance and monitoring, is politically popular in ways that

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at 275–77. But these results can at least suggest that state courts are not substantially more reluctant than federal courts to uphold federal constitutional rights.

325 *See supra* section II.B.1, pp. 1811–14.

326 *See* Chemerinsky, *supra* note 321, at 275–80 (discussing the difficulties of precisely comparing state and federal adjudication of federal constitutional rights).

327 State judges were more Republican-affiliated than federal judges yet still ruled in favor of criminal defendants at higher rates, and in any event there was no statistically significant correlation between the partisan alignment of judges and the case outcomes at the .05 level. *See supra* section II.B.1, pp. 1811–14.

328 *See supra* section IV.B, pp. 1836–39.

329 *See* DANIEL R. PINELLO, GAY RIGHTS AND AMERICAN LAW 105–17 (2003).

330 This dual-track system is supported by numerous Supreme Court decisions, federal statutes, and other sources of law compelling respect for state adjudications of federal constitutional questions. *See, e.g.*, Antiterrorism and Effective Death Penalty Act of 1996, Pub. L. No. 104-132, 110 Stat. 1214 (codified as amended in scattered sections of the U.S.C.) (limiting the ability of petitioners to challenge state court decisions via habeas corpus); Allen v. McCurry, 449 U.S. 90, 104–05 (1980) (holding that collateral estoppel prohibits challenging state court Fourth Amendment decisions under section 1983); Paul M. Bator, *The State Courts and Federal Constitutional Litigation*, 22 WM. & MARY L. REV. 605, 626–35 (1981) (discussing the benefits of federalism in the adjudication of federal constitutional law and the doctrinal choices made by the Supreme Court that support this dual-track system).

331 Bator, *supra* note 330, at 634.

other pro-defendant constitutional rights are not.[332] Consistent with this theory, elected and appointed judges found Fourth Amendment searches at similar rates in state cases.[333]

2. Express Incorporation of a Supreme Court Ruling into State Law. — A handful of cases in Massachusetts and Texas displayed another interesting phenomenon in state court adjudication, that of state courts overtly incorporating a federal Supreme Court decision into their state constitutional law.[334] For example, in *Holder v. State*,[335] the Texas Court of Criminal Appeals expressly incorporated the reasoning of *Carpenter* into the law of article I, section 9 of the Texas Constitution.[336] The court noted that it did so on a case-by-case basis, with adoption dependent on its own assessment of "whether the Supreme Court's reasoning makes more sense than the alternatives."[337] After a detailed analysis, the court determined that it "share[d] the [Supreme] Court's grave concerns about . . . continuous, surreptitious, precise, and permeating" surveillance.[338] Accordingly, it "adopt[ed] the Supreme Court's reasoning in *Carpenter*" into article I, section 9,[339] even as it made clear that it would continue to interpret Texas law by its "own lights."[340]

In *Commonwealth v. McCarthy*,[341] the Massachusetts Supreme Judicial Court assessed an automated license plate reader camera system under the Fourth Amendment and article 14 of the Massachusetts Constitution simultaneously, ultimately incorporating the reasoning of *Carpenter* into Massachusetts law.[342] *McCarthy* discussed *Carpenter* factors including the revealing nature, amount, and cost of surveillance in great detail, while deftly interweaving analyses of Supreme Court

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[332] *See* William J. Stuntz, *The Political Constitution of Criminal Justice*, 119 HARV. L. REV. 780, 795 (2006); *cf.* Kang & Shepherd, *supra* note 324, at 942, 945 (examining elected state judges' hostility toward criminal appeals); Paul R. Brace & Melinda Gann Hall, *The Interplay of Preferences, Case Facts, Context, and Rules in the Politics of Judicial Choice*, 59 J. POL. 1206, 1219–22 (1997) (examining state court adjudications of death penalty cases).

[333] In state cases where the judicial-selection method could be ascertained, 24 of 39 (61.5%) determinative decisions by elected judges found a search, and 17 of 28 (60.7%) determinative decisions by appointed judges found a search.

[334] *See generally* Robert F. Williams, *State Courts Adopting Federal Constitutional Doctrine: Case-by-Case Adoptionism or Prospective Lockstepping?*, 46 WM. & MARY L. REV. 1499, 1506–09 (2005) (discussing various ways state courts adopt federal constitutional doctrine as state constitutional law).

[335] 595 S.W.3d 691 (Tex. Crim. App. 2020).

[336] *Id.* at 703.

[337] *Id.* at 698.

[338] *Id.* at 703.

[339] *Id.* at 701.

[340] *Id.* at 697.

[341] 142 N.E.3d 1090 (Mass. 2020).

[342] *Id.* at 1095, 1098. For further analysis of the *McCarthy* case, see Recent Case, Commonwealth v. McCarthy, *142 N.E.3d 1090 (Mass. 2020)*, 134 HARV. L. REV. 2887 (2021).

cases with those of prior Massachusetts cases.[343] In cases following *McCarthy*, the Supreme Judicial Court has embedded *Carpenter* into article 14 jurisprudence, even as that law continues to evolve independently of Fourth Amendment law.[344]

These cases involve what Professor Robert F. Williams has called "reflective adoption," where a state court addressing state constitutional law adopts the reasoning of a federal case on a one-off basis.[345] This contrasts with other state constitutional approaches that mirror federal constitutional law entirely, simply applying the Supreme Court's constitutional decisions in every case involving a parallel state constitutional provision.[346] Likewise, it differs from state constitutional approaches that largely ignore federal law.[347]

Reflective adoption, with its case-by-case analysis of federal decisions, may reflect the optimal approach for state courts in interpreting state constitutional provisions that parallel federal constitutional provisions.[348] It allows state courts to benefit from the expertise of the Supreme Court, while retaining the independence of state law. States can also experiment with creative approaches to constitutional questions and different balances of law enforcement interests and personal rights.[349] State innovations may ultimately feed back into Supreme Court or federal statutory decisionmaking.[350]

Reflective adoption also reinforces state sovereignty, at least in the domain of state constitutional law. In these cases, a state high court essentially reviews the Supreme Court. It determines "whether the Supreme Court's analysis . . . is persuasive" and either adopts it or not

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[343] *See, e.g.*, *McCarthy*, 142 N.E.3d at 1099–100 (discussing *Carpenter* and other Supreme Court cases and using them as a basis for holding that when the "duration of digital surveillance drastically exceeds what would have been possible with traditional law enforcement methods, that surveillance constitutes a search under art. 14," *id.* at 1099).

[344] *See, e.g.*, Commonwealth v. Mora, 150 N.E.3d 297, 307, 312–13 (Mass. 2020) (using *McCarthy* and *Carpenter* to make a ruling in an article 14 case); Commonwealth v. Gosselin, 158 N.E.3d 8, 15 (Mass. 2020) (addressing an ineffective assistance of counsel claim based in part on article 14 by reference to *McCarthy* and *Carpenter*).

[345] Williams, *supra* note 334, at 1506.

[346] *Id.* at 1499 (quoting Shirley S. Abrahamson, *Criminal Law and State Constitutions: The Emergence of State Constitutional Law*, 63 TEX. L. REV. 1141, 1166 (1985)).

[347] *See* Barry Latzer, *The New Judicial Federalism and Criminal Justice: Two Problems and a Response*, 22 RUTGERS L.J. 863, 863 (1991).

[348] *E.g.*, FLA. CONST. art. I, § 3 ("There shall be no law respecting the establishment of religion or prohibiting or penalizing the free exercise thereof."); UTAH CONST. art. I, § 12 (promising that the "accused shall not be compelled to give evidence against himself or herself").

[349] *E.g.*, Stephen E. Henderson, *Beyond the (Current) Fourth Amendment: Protecting Third-Party Information, Third Parties, and the Rest of Us Too*, 34 PEPP. L. REV. 975, 993–95 (2007) (discussing state law innovations in protecting data disclosed to third parties).

[350] For example, *Commonwealth v. Augustine*, 4 N.E.3d 846 (Mass. 2014), found warrantless cell phone location tracking to be unconstitutional on state constitutional grounds, *id.* at 849, 865–66, in a pre-*Carpenter* case that was cited in Carpenter's Supreme Court merits brief. Brief for Petitioner at 17, Carpenter v. United States, 138 S. Ct. 2206 (2018) (No. 16-402).

according to its merits.[351] This is a unique inversion of the more typical review process, where the Supreme Court reviews state high court decisions applying federal law.[352] Reflective adoption cases warrant further study by federalism and constitutional law scholars, and state cases applying *Carpenter* offer some of the clearest examples of the phenomenon to date.[353]

E. Alternative Directions and Paradigms

This section supplements the largely descriptive analysis of this Article by offering some prescriptive suggestions for courts and legislators. Many of these suggestions stem directly from the analysis above.

For a start, whichever test courts eventually adopt, they should unambiguously select a set of factors and then consider each of those factors in every case they decide under *Carpenter*. Currently, judges typically analyze the factors that weighed most heavily in their decision and ignore the ones they find less important.[354] The time has come for courts to abandon this practice. Courts could greatly enhance clarity and predictability for litigants by considering the same set of factors in every case. Even if the test varied from jurisdiction to jurisdiction, litigants would at least know which factors to address in their arguments. Enough time has passed that the courts of appeals, and eventually the Supreme Court, can draw on numerous lower court decisions in deciding which factors to adopt.

In addition, lower courts' virtual refusal to consider the number of people affected by surveillance suggests that number should not be a factor in *Carpenter* analyses going forward.[355] Concerns about widespread surveillance programs are certainly valid, because such programs make it more likely that the government will collect and process information about people for reasons unconnected to legitimate law enforcement purposes.[356] But determining the number of persons potentially affected by a surveillance practice may be too administratively or conceptually difficult for courts.[357] Courts may find it hard to ascertain the scope of a surveillance practice and may be reluctant to credit defen-

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[351] Holder v. State, 595 S.W.3d 691, 701 (Tex. Crim. App. 2020).

[352] *E.g.*, Michigan v. Long, 463 U.S. 1032, 1044 (1983) (holding that Supreme Court had jurisdiction to hear case because the state high court's decision appeared to rest primarily on federal law).

[353] *See* Williams, *supra* note 334, at 1506–09 (developing the concept of reflective adoption but offering few real-world examples); *see also* Simmons-Harris v. Goff, 711 N.E.2d 203, 211–12 (Ohio 1999) (adopting the federal establishment of religion test but reserving the right to diverge from federal law in future cases).

[354] *See supra* section III.A, pp. 1821–27.

[355] *See supra* section III.A, pp. 1821–27.

[356] *See supra* section I.C.3, pp. 1802–03.

[357] *See supra* pp. 1824, 1832.

dants with the potential privacy harms of nonlitigants.[358] Finally, in general, reducing the quantity of factors in the *Carpenter* test would likely enhance its clarity and administrability. The number factor appears to be the easiest cut to make.

As to the other factors, I have argued elsewhere that the inescapable nature of surveillance and the automatic nature of data collection should ideally not be used to determine the scope of the Fourth Amendment.[359] These factors speak to the voluntary nature of data disclosure to third parties, a concept grounded in widely criticized pre-*Carpenter* case law.[360] To be sure, examining the voluntary nature of disclosure can help courts ascertain how much individuals value the secrecy of their data, or how likely their data is to be exposed to the public.[361] But basing the Fourth Amendment on whether consumers voluntarily disclosed their data may sharply limit constitutional protections for personal information.[362] The disclosure of data to "services like Uber and Google Maps, dating apps, smart home devices, websites, and countless other providers is in theory voluntary and avoidable, but in practice is a beneficial and important" part of Americans' lives.[363] Punishing users for disclosing their data to service providers creates perverse incentives and is incompatible with effective Fourth Amendment protection of digital data.[364] Voluntariness-based tests would also frequently expose the most sensitive forms of personal information to government surveillance.[365] Optional technologies such as dating apps, smart home devices, and DNA-analysis services often capture especially intimate personal information.[366] Moreover, voluntariness approaches can create substantial inequalities in Fourth Amendment law.[367] Technologies that are avoidable for most people are often unavoidable for others, including the disabled, the poor, and other disadvantaged populations.[368] For all of these reasons, courts should be cautious in definitively adopting inescapable or automatic disclosure of data as factors in a mandatory *Carpenter* test.

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[358] *See supra* pp. 1824, 1832.

[359] Tokson, *supra* note 2, at 454–55.

[360] *See* Smith v. Maryland, 442 U.S. 735, 743–44 (1979); United States v. Miller, 425 U.S. 435, 444–45 (1976). These cases have been criticized for decades on numerous grounds. *See, e.g.*, Jed Rubenfeld, *The End of Privacy*, 61 STAN. L. REV. 101, 113–14 (2008); Susan W. Brenner & Leo L. Clarke, *Fourth Amendment Protection for Shared Privacy Rights in Stored Transactional Data*, 14 J.L. & POL'Y 211, 242–44 (2006).

[361] *See, e.g.*, Kerr, *supra* note 14 (manuscript at 44).

[362] Tokson, *supra* note 2, at 436–37.

[363] Tokson, *supra* note 38.

[364] *Id.*; Tokson, *supra* note 2, at 413–14.

[365] Tokson, *supra* note 2, at 414.

[366] *Id.* Meanwhile, many inescapable technologies capture far less sensitive data. *Id.* at 438–39.

[367] Tokson, *supra* note 38.

[368] Tokson, *supra* note 2, at 431–33.

On the other hand, the cost of surveillance is a potentially useful factor that more courts should consider adopting. Conceptually, cost dovetails nicely with amount.[369] When the government is able to capture large amounts of data at a low cost, the potential for large-scale surveillance raises serious concerns about individual liberty and government power.[370] By assessing the general cost of a surveillance practice, courts may be able to address the concerns about large-scale surveillance programs embodied in the number factor, without the conceptual or doctrinal awkwardness of assessing the number of nonlitigants affected. Those courts that do assess cost in the dataset seem to have found it administrable and typically decide cases in the direction that it indicates.[371]

Finally, legislatures and regulators have roles to play in addressing future government surveillance practices. For example, government purchases of sensitive data from commercial entities might be regulated by the Fourth Amendment, but the issue is complex and protection is far from certain.[372] Statutory limits on such purchases can provide more thorough and certain safeguards.[373] Likewise, beneficial technologies such as smart utility meters may require permissive Fourth Amendment standards regarding data collection coupled with strong restrictions on unauthorized uses of the data.[374] Statutes will often be the optimal means to impose use restrictions, as they can offer more detailed guidance and cover nongovernmental or quasi-governmental entities.[375] In general, widespread and programmatic surveillance is particularly well suited to statutory regulation.[376]

In each of these areas, however, Fourth Amendment law remains likely to play a substantial role in regulating government surveillance. The slow pace of federal privacy legislation and the weak or absent nature of most state privacy statutes means that courts will continue to address complex new Fourth Amendment questions — or else fail to

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[369] *See* Carpenter v. United States, 138 S. Ct. 2206, 2216–18 (2018) (noting that "cell phone location information is detailed, encyclopedic, and effortlessly compiled," *id.* at 2216, and expressing concern regarding the government's ability to "access each carrier's deep repository of historical location information at practically no expense," *id.* at 2218); Tokson, *supra* note 42, at 22–23.

[370] Tokson, *supra* note 42, at 23–24.

[371] *See, e.g.*, United States v. Kidd, 394 F. Supp. 3d 357, 365 (S.D.N.Y. 2019); State v. Muhammad, 451 P.3d 1060, 1071–72 (Wash. 2019).

[372] For an overview of this issue in the Fourth Amendment context, see Tokson, *supra* note 38.

[373] *See, e.g.*, Katie Canales, *Sen. Ron Wyden Is Introducing a Privacy Bill that Would Ban Government Agencies from Buying Personal Information from Data Brokers*, INSIDER (Aug. 4, 2020, 4:15 PM), https://www.businessinsider.com/ron-wyden-fourth-amendment-is-not-for-sale-privacy-2020-8 [https://perma.cc/K39M-66YV].

[374] *See* Matthew Tokson, *Smart Meters as a Catalyst for Privacy Law*, 72 FLA. L. REV. F. 104, 106–07 (2022).

[375] *See* Kugler & Hurley, *supra* note 9, at 503–05 (proposing statutory use restrictions for smart utility meter data).

[376] *See* Daphna Renan, *The Fourth Amendment as Administrative Governance*, 68 STAN. L. REV. 1039, 1102–03 (2016).

restrain government surveillance at all.[377] Yet the choice between regulation by courts or by legislative and executive bodies is not a binary one. Courts' Fourth Amendment decisions can set a floor for privacy protection, and legislatures (or agencies) can then create additional protections against certain forms of surveillance. For example, shortly after the Supreme Court extended Fourth Amendment protection to telephone conversations,[378] Congress passed the Wiretap Act,[379] which imposed additional restrictions on wiretapping.[380] Or legislatures could move first, passing laws regulating surveillance that courts could then evaluate for compliance with the Fourth Amendment.[381] Either way, legislative and administrative regulation of surveillance would bring to bear the managerial advantages of the political branches and would certainly be a welcome addition.[382]

CONCLUSION

The future of Fourth Amendment law remains uncertain, especially given recent changes at the Supreme Court and the continued development of new surveillance technologies. But it is possible to better understand the present state of the law and the paths along which it will likely continue to develop. This Article's detailed empirical analysis has resolved some of the mysteries posed by the landmark *Carpenter* case and has shed light on many others. For example, the factors that drive lower court decisions clearly include the revealing nature of the data at issue, the amount of data collected, and the automatic nature of data disclosure, and clearly do not include the number of persons affected. *Carpenter* has been broadly adopted by lower courts with very little overt resistance, although some traces of indirect noncompliance remain. Courts find Fourth Amendment searches in relatively few rulings, and federal courts find searches at substantially lower rates than state courts. Further, the good faith exception accounts for a remarkably high proportion of all resolved cases citing *Carpenter*, and hundreds of defendants will likely be convicted on the basis of unconstitutionally obtained evidence in these cases.

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[377] *See* Kugler & Hurley, *supra* note 9, at 505 (discussing the weak protections offered by the few state privacy statutes that regulate smart meter collection); Tokson, *supra* note 96, at 193–94; Matthew Tokson, *The Normative Fourth Amendment*, 104 MINN. L. REV. 741, 797 (2019).

[378] Katz v. United States, 389 U.S. 347, 353 (1967); Berger v. New York, 388 U.S. 41, 58–60 (1967).

[379] Omnibus Crime Control and Safe Streets Act of 1968, Pub. L. No. 90-351, tit. III, 82 Stat. 197, 211–25 (codified as amended at 18 U.S.C. §§ 2510–2522).

[380] *See id.*

[381] *See, e.g.*, *Berger*, 388 U.S. at 58–60 (evaluating a New York state statute permitting courts to issue orders permitting wiretapping); John Rappaport, *Second-Order Regulation of Law Enforcement*, 103 CALIF. L. REV. 205, 210–11 (2015).

[382] *See* Orin S. Kerr, *The Fourth Amendment and New Technologies: Constitutional Myths and the Case for Caution*, 102 MICH. L. REV. 801, 868–70, 881–82 (2004).

More broadly, this Article represents a years-long, comprehensive survey of the impact of a transformative Supreme Court opinion in the years following its publication. Across many hundreds of cases, the study has examined the variety of lower court reactions to a dramatic change in doctrine. It has also offered several proposals for courts and lawmakers to improve the regulation of new surveillance practices. But just as importantly, it opens the door to a variety of new proposals about the future course of Fourth Amendment law, grounded in a deeper knowledge of courts' current practices. Understanding how Fourth Amendment law is being applied in the present provides an essential foundation for future progress.