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UNWARRANTED WARRANTS? AN EMPIRICAL ANALYSIS OF JUDICIAL REVIEW IN SEARCH AND SEIZURE

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UNWARRANTED WARRANTS? AN EMPIRICAL ANALYSIS OF JUDICIAL REVIEW IN SEARCH AND SEIZURE

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Every year, police perform searches governed by the Fourth Amendment on hundreds of thousands of individuals and their property throughout the United States. Many of the academy's most decorated scholars have focused on the genesis and jurisprudential nature of the Fourth Amendment's warrant requirement. Surprisingly, we know almost nothing about how the Fourth Amendment regulates searches and how searches actually work in practice.

In this Article, we pull back the curtain on the search and seizure process by presenting the largest quantitative study of warrants of any kind. We analyze over 33,000 warrant applications filed through Utah's "e-Warrants" system over a three-year period. By utilizing the full texts of the warrant affidavits, along with digital timestamp metadata, we categorize warrants by type, length, and complexity and establish when and for how long judges review warrants. Our key findings demonstrate that the warrant review process is fast and nearly always results in approval. Ninety-eight percent of warrant reviews eventually result in an approval, and over 93% are approved on first submission. Further, we find that the median time for review is only three minutes, and that one out of every ten warrants is opened, reviewed, and approved in sixty seconds or less. Our analyses that account for warrant complexity and length also suggest that many approved warrants are either not read carefully or not read in full (or both). We also perform a qualitative

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analysis of a randomly selected subsample of warrants and find cases where the review process has clearly failed.

Taken together, our results have critical implications regarding the warrant review process that force us to reconsider the constitutional nature of probable cause and the role that judicial review plays as a "check" on police searches. In light of these implications, we explore the political, economic, and logistical constraints that judges face when reviewing warrants and consider pathways to reform that are mindful of these factors.

> *The point of the Fourth Amendment, which often is not grasped by zealous officers, is not that it denies law enforcement the support of the usual inferences which reasonable men draw from evidence.* Its protection consists in requiring that those inferences be drawn by a neutral and detached magistrate *instead of being judged by the officer engaged in the often competitive enterprise of ferreting out crime.*
>
> — Justice Robert H. Jackson[1] (1948)

INTRODUCTION

On March 13, 2020, after breaking her door down with a battering ram, seven officers flooded Breonna Taylor's Louisville home and shot her five times.[2] Two years later, on February 2, 2022, SWAT officers from the Minneapolis Police Department entered an apartment where Amir Locke was staying, and when he emerged from under a blanket with a gun, an officer shot him three times, killing the 22-year-old less than ten seconds after law enforcement set foot in the home.[3] Locke was not named in the search warrant authorizing the raid of the location where he was killed, nor were either Locke or Taylor suspects in the police investigations motivating the searches that led to their deaths.[4]

Although stories of police shootings seem so common as to almost become unremarkable,[5] the Taylor and Locke killings provoked a particularly strong outcry from the public due in large part to the fact that neither death was merely the result of spur-of-the-moment decisions by

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[1] Johnson v. United States, 333 U.S. 10, 13–14 (1948) (emphasis added) (citing United States v. Lefkowitz, 285 U.S. 452, 464 (1932)).

[2] *See* Richard A. Oppel Jr. et al., *What to Know About Breonna Taylor's Death*, N.Y. TIMES (Aug. 23, 2024), https://www.nytimes.com/article/breonna-taylor-police.html [https://perma.cc/N3VL-UHEB]; Juliana Kim, *Louisville Officer Who Killed Breonna Taylor Hired by Police Force in Nearby County*, NPR (Apr. 24, 2023, 11:36 AM), https://www.npr.org/2023/04/24/1171597304/breonna-taylor-officer-myles-cosgrove-police-hired [https://perma.cc/3YV5-WMQ7].

[3] *See* Holly Bailey, *What to Know About the Police Shooting of Amir Locke During a "No-Knock" Raid*, WASH. POST (Apr. 6, 2022), https://www.washingtonpost.com/nation/2022/02/15/amir-locke-police-shooting-explainer [https://perma.cc/EE3U-NJHW].

[4] *See* Oppel et al., *supra* note 2; Bailey, *supra* note 3.

[5] Indeed, some data indicate that as the frequency of police shootings increases, the rates at which those incidents are reported decrease. *See* Andrew Ba Tran et al., *As Fatal Police Shootings Increase, More Go Unreported*, WASH. POST (Dec. 6, 2022, 6:30 AM), https://www.washingtonpost.com/investigations/interactive/2022/fatal-police-shootings-unreported [https://perma.cc/58SJ-XPHM].

law enforcement.[6] On the contrary, the factual background and legal basis for each of these fatal entries were preceded by a formal, judicial review that could have — and arguably should have — identified the various errors that served as the basis for the initial warrants. Indeed, subsequent investigations into both incidents showed that the submitting officers perjured themselves and the reviewing judges (or magistrates) approved the no-knock warrants when they were questionable at best[7] — the precise kinds of behavior that constitutionally prescribed judicial review of warrants is designed to curb.[8]

The stories of Breonna Taylor and Amir Locke uncover, in the direst way, the repercussions of inaccurate or unconstitutional search warrants. These stories also urge review and reconsideration of search warrants more broadly. Between 2010 and 2016, at least eighty-one civilians and thirteen officers died in "dynamic entry" raids including no-knock raids.[9] More commonly, serious injuries and property damage result from searches, requiring millions of dollars of litigation costs and

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[6] *See* Kim, *supra* note 2; Bailey, *supra* note 3.

[7] According to reports, the presiding judge who reviewed the warrant affidavit seeking to enter Taylor's home with immediate force (a "no-knock" warrant) signed five such warrants in the span of twelve minutes. *See* Tessa Duvall & Ben Tobin, *Louisville Detective Who Obtained No-Knock Warrant for Breonna Taylor's Apartment Reassigned*, USA TODAY (June 16, 2020, 2:48 PM), https://www.usatoday.com/story/news/nation/2020/06/16/breonna-taylor-louisville-detective-joshua-jaynes-no-knock-warrant-reassigned/3200277001 [https://perma.cc/RH9T-PUDZ]. In addition, in the Taylor case, there was little or no evidence presented in the affidavit that suggested that Taylor or her boyfriend, Kenneth Walker, met the threshold dangerousness or inclination to destroy evidence as is required for a no-knock warrant. *See, e.g.*, David A. Sklansky & Sharon Driscoll, *Stanford's David Sklansky on the Breonna Taylor Case, No-Knock Warrants, and Reform*, STAN. L. SCH.: SLS BLOGS (Sept. 28, 2020), https://law.stanford.edu/2020/09/28/stanfords-david-sklansky-on-the-breonna-taylor-case-no-knock-warrants-and-reform [https://perma.cc/KC6H-BMZX]; Radley Balko, Opinion, *The No-Knock Warrant for Breonna Taylor Was Illegal*, WASH. POST (June 3, 2020) https://www.washingtonpost.com/opinions/2020/06/03/no-knock-warrant-breonna-taylor-was-illegal [https://perma.cc/JT68-MKUR]; Blanche Bong Cook, *Something Rots in Law Enforcement and It's the Search Warrant: The Breonna Taylor Case*, 102 B.U. L. REV. 1, 50–51 (2022). It is worth noting that U.S. District Judge Simpson ruled that the actions of Walker, rather than the warrant, resulted in Taylor's death, and officers were not charged in Locke's death. *See* Dennis Romero, *Kentucky Judge Dismisses Core Charges Against Two Former Officers Connected to Breonna Taylor's Death*, NBC NEWS (Aug. 24, 2024, 5:27 PM), https://www.nbcnews.com/news/us-news/kentucky-judge-dismisses-charges-two-former-officers-connected-breonna-rcna168052 [https://perma.cc/UU5Z-DYVQ]; Bailey, *supra* note 3. Nevertheless, city officials and the State of Kentucky implemented restrictive no-knock warrant bans in the wake of Taylor's death. *See* Oppel et al., *supra* note 2.

[8] The killing of Taylor prompted the Department of Justice and U.S. Attorney's Office in Western Kentucky to perform an investigation where they found systematic problems with search warrants that lacked probable cause. C.R. DIV., U.S. DOJ & CIV. DIV., W. DIST. OF KY., U.S. ATT'Y'S OFF., INVESTIGATION OF THE LOUISVILLE METRO POLICE DEPARTMENT AND LOUISVILLE METRO GOVERNMENT 22–27 (2023) [hereinafter INVESTIGATION OF LOUISVILLE POLICE AND GOVERNMENT], https://www.justice.gov/opa/press-release/file/1573011/dl [https://perma.cc/KX3L-VGQ6].

[9] *See* Kevin Sack, *Door-Busting Drug Raids Leave a Trail of Blood*, N.Y. TIMES (Mar. 18, 2017), https://www.nytimes.com/interactive/2017/03/18/us/forced-entry-warrant-drug-raid.html [https://perma.cc/MCK8-EUJ2].

payouts from police departments.[10] Even if no death, injury, or property damage results from a warrant, nearly all warrant-based searches impose substantial privacy costs, as officers enter homes, search and detain individuals, and examine digital items like cell phones and computers that contain troves of particularly personal information. And ignoring the individualized costs, the invasiveness of searches inevitably undermines trust in law enforcement, especially in overpoliced, marginalized communities.[11]

Recognizing the immense scale of police searches and seizures in the United States — with hundreds of thousands, and possibly millions, of searches being performed on individuals and their property[12] — the conventional wisdom in Fourth Amendment jurisprudence and much of the academic literature is that the warrant requirement serves as a necessary and legitimate check on police power.[13] But a warrant functions as a check in large part (if not exclusively) because the law enforcement officer must submit an affidavit under oath to be vetted by a "neutral and detached magistrate" who can narrow the scope or deny it.[14]

The doctrine surrounding search and seizure has been subject to significant examination by judges and scholars,[15] but the aspects of how warrant review actually works on the ground have received remarkably little attention, leaving critical questions unanswered. Consistent with the constitutional requirements in the Fourth Amendment, we know that neutral judges are required in warrant review, but what role do these judges *actually* play in such a determination — that is, how are such decisions made in practice, and to what extent do judges actually

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[10] *See* Keith L. Alexander et al., *The Hidden Billion-Dollar Cost of Repeated Police Misconduct*, WASH. POST (Mar. 9, 2022), https://www.washingtonpost.com/investigations/interactive/2022/police-misconduct-repeated-settlements [https://perma.cc/G7E9-R9SZ] (documenting the high costs of litigation for police misconduct, including during police searches).

[11] *See, e.g.*, MAGNUS LOFSTROM ET AL., PUB. POL'Y INST. OF CAL., RACIAL DISPARITIES IN LAW ENFORCEMENT STOPS 12 (2021), https://www.ppic.org/?show-pdf=true&docraptor=true&url=https%3A%2F%2Fwww.ppic.org%2Fpublication%2Fracial-disparities-in-law-enforcement-stops%2F [https://perma.cc/8W3J-659X] (finding that Black individuals in California are more than twice as likely to be searched during a stop as white individuals — in 20.5% of all stops compared to 8.2%, respectively).

[12] *Cf., e.g.*, *Findings*, STAN. OPEN POLICING PROJECT, https://openpolicing.stanford.edu/findings [https://perma.cc/DF94-DAN4] (noting police stop more than twenty million motorists each year).

[13] *See, e.g.*, Richard M. Re, *Fourth Amendment Fairness*, 116 MICH. L. REV. 1409, 1430 (2018). A rich debate, which is beyond the scope of this Article, exists about the extent to which the warrant requirement stems from the original meaning of the Fourth Amendment. *Compare, e.g.*, David A. Sklansky, *The Fourth Amendment and Common Law*, 100 COLUM. L. REV. 1739, 1740 (2000) ("[T]he warrant and probable cause requirements are today defended on grounds of pragmatism rather than fidelity to tradition."), *with* Laura K. Donohue, *The Original Fourth Amendment*, 83 U. CHI. L. REV. 1181, 1321 (2016) ("[T]he Founders did not allow the government to intrude upon the sanctity of the home without sufficient cause.").

[14] Johnson v. United States, 333 U.S. 10, 14 (1948).

[15] *See generally, e.g.*, Orin S. Kerr, *An Equilibrium-Adjustment Theory of the Fourth Amendment*, 125 HARV. L. REV. 476 (2011); David Gray, *Fourth Amendment Remedies as Rights: The Warrant Requirement*, 96 B.U. L. REV. 425 (2016); Re, *supra* note 13.

function as a "neutral and detached" check against "officer[s] engaged in the often competitive enterprise of ferreting out crime?"[16] Are the failures demonstrated in the Breonna Taylor and Amir Locke events tragic but unavoidably random anecdotes, or are they the product of systematic institutional failures? And how do the answers to these questions color our understanding of the extent to which a warrant requirement truly matters at all? Finally, do these searches actually work in practice?

The public's underlying concern with the warrant process has borne an influx of critical reforms designed to increase accountability, particularly in the wake of the deaths of Breonna Taylor and Amir Locke.[17] Six states — Connecticut, Florida, Oregon, Tennessee, Washington, and Virginia — banned no-knock warrants in their entirety,[18] and as of April 2023, thirty states and twenty-five cities have enacted some form of restrictions on no-knock raids.[19] Utah (the venue of this Article's empirical study) requires police officers to identify themselves audibly when using no-knock warrants and bans their use entirely for misdemeanor crimes as of 2022.[20] Some three years earlier, in March 2019,[21] Utah also enacted the Electronic Information or Data Privacy Act[22] (H.B. 57), which required law enforcement to obtain a warrant when requesting information from electronic mail providers, wireless phone companies, search engine firms, and social media companies.[23]

But while the national appetite for warrant reform has arguably never been higher, actual data on warrants is incredibly scarce. To the best of our knowledge, there have been only four empirical studies on

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[16] *Johnson*, 333 U.S. at 14.

[17] *See, e.g.*, *#End All No Knocks*, CAMPAIGN ZERO, https://endallnoknocks.org [https://perma.cc/483D-HQ3E].

[18] Christopher Wright Durocher, *Banning No-Knock and Quick Knock Warrants Is the Only Way to Prevent More Tragic Killings*, AM. CONST. SOC'Y (Mar. 11, 2022), https://www.acslaw.org/expertforum/banning-no-knock-and-quick-knock-warrants-is-the-only-way-to-prevent-more-tragic-killings [https://perma.cc/U4KZ-ZVM7]; Peter Nickeas, *There's a Growing Consensus in Law Enforcement over No-Knock Warrants: The Risks Outweigh the Rewards*, CNN (Feb. 12, 2022, 11:03 AM), https://www.cnn.com/2022/02/12/us/no-knock-warrants-policy-bans-states/index.html [https://perma.cc/MSB3-P8EM]; Nicholas Bogel-Burroughs, *Washington State Enacts Police Reform a Year After George Floyd's Death*, N.Y. TIMES (May 19, 2021), https://www.nytimes.com/2021/05/19/us/washington-inslee-police-reform.html [https://perma.cc/DZ5M-ZRQD].

[19] *See, e.g.*, *#End All No-Knocks*, *supra* note 17.

[20] Ashley Imlay, *Utah Legislature Passes Bill Outlining When Police Can Use "No-Knock" Warrants*, KSL.COM (Feb. 14, 2022, 1:49 PM), https://www.ksl.com/article/50348507/utah-legislature-passes-bill-outlining-when-police-can-use-no-knock-warrants [https://perma.cc/ZVD4-F3YM].

[21] *Utah Governor Signs Electronic Data Privacy Bill Requiring Warrants to Access Certain Types of Data*, HUNTON (April 1, 2019), https://www.hunton.com/privacy-and-information-security-law/utah-governor-signs-electronic-data-privacy-bill-requiring-warrants-to-access-certain-types-of-data [https://perma.cc/KB7S-3XZD].

[22] H.R. 57, 2019 Leg., Gen. Sess. (Utah 2019) (codified at UTAH CODE ANN. § 77-23c-101 to -105 (West 2024)).

[23] *See id.* § 3. The state legislature passed the law in the wake of *Carpenter v. United States*, 138 S. Ct. 2206 (2018), which held that the government needs a warrant to access cell-site location information, *id.* at 2223.

the warrant application and review process conducted in the last forty-five years.[24] Three of these were done prior to the arrival of smartphones and the broad proliferation of electronic warrants, and all of them relied on relatively limited datasets. In his 2012 study, Professor Thomas Miles investigated the propensity for "judge shopping"[25] in all wiretap warrant submissions to federal judges from 1997–2007, looking specifically to see whether judges with certain ideological leanings, professional backgrounds, or racial/ethnic identities were more likely to receive warrant applications.[26] The seminal 1985 study by Richard Van Duizend and others observed eighty-four warrant proceedings and found that 65% of the warrant applications were decided in around two-and-a-half minutes or less, with a median time of two minutes and twelve seconds.[27] The reports stemming from the San Diego Search Warrant Study were similarly discouraging, finding probable cause violations and racial disparities among nearly 250 drug-related search

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[24] This is not to say that there were not some empirical studies on warrant review before that point or more recent empirical studies that speak to warrants more broadly. Around the middle of the twentieth century, there were a bundle of empirical projects that used warrant data from an American Bar Foundation survey. *See, e.g.*, LAWRENCE P. TIFFANY ET AL., DETECTION OF CRIME 99–120 (Frank J. Remington ed., 1967). Professor Sheldon Krantz and coauthors also conducted a 1979 study using data collected by the Boston Police Department. SHELDON KRANTZ ET AL., POLICE POLICYMAKING: THE BOSTON EXPERIENCE 99–147 (1979).

More recently, there have also been some limited, small-scale efforts by governments to mandate data reports that provide a peek into the empirical reality behind certain types of search warrants. *See infra* note 289 and accompanying text.

We also note that there have been a handful of empirical (or quasi-empirical) studies exploring the use of the exclusionary rule. While these studies do not directly address the process of warrant submission and review, they are nonetheless noteworthy exceptions to the general absence of any empirical work on Fourth Amendment jurisprudence more broadly. *See generally, e.g.*, Dallin H. Oaks, *Studying the Exclusionary Rule in Search and Seizure*, 37 U. CHI. L. REV. 665 (1970) (calculating arrest rates in Cincinnati before and after the imposition of the exclusionary rule, *id.* at 690–91, and comparing the frequency of motions to suppress in Chicago and Washington D.C., *id.* at 681–82); James E. Spiotto, *Search and Seizure: An Empirical Study of the Exclusionary Rule and Its Alternatives*, 2 J. LEGAL STUD. 243 (1973) (comparing the frequency of motions to suppress in Chicago during a twenty-year period before and after the imposition of the exclusionary rule, *id.* at 246–47); Craig D. Uchida & Timothy S. Bynum, *Search Warrants, Motions to Suppress and "Lost Cases": The Effects of the Exclusionary Rule in Seven Jurisdictions*, 81 J. CRIM. L. & CRIMINOLOGY 1034 (1991) (providing a much broader and more recent study that follows the case history of over 2,000 search warrants to track the prevalence of search and seizure problems challenged through motions to suppress, *id.* at 1035–36).

[25] Thomas J. Miles, *Racial Disparities in Wiretap Applications Before Federal Judges*, 41 J. LEGAL STUD. 419, 450 (2012).

[26] *See id.* at 422.

[27] RICHARD VAN DUIZEND ET AL., THE SEARCH WARRANT PROCESS: PRECONCEPTIONS, PERCEPTIONS, AND PRACTICES 19, 26 (1985). The broader project analyzed data beyond just the in-person-hearing observations, including a sample of archival warrant files and field interviews in seven pseudonymous U.S. cities during a six-month period in 1980. *Id.* at 7–10.

warrants issued in 1998.[28] More recently, the *Salt Lake Tribune* evaluated a smaller and more limited version of the dataset we utilized in this Article (their exposé was the inspiration for our study), analyzing 844 warrants approved in Utah over the course of one month in 2017.[29] The report accused the judiciary of being "too hasty" with warrant review and sometimes even "rubber stamping" approvals when the content of the affidavit did not meet probable cause standards.[30]

Most of these studies raised concerns about the speed at which warrants were reviewed and the high rates at which they were approved, questioning whether "the suppositions regarding the Fourth Amendment warrant requirement may not be borne out in practice."[31] However, relying on the conclusions drawn from such small samples (and old data) may paint a picture that is incomplete and potentially misleading. Context is important, and some may argue that the inherently hurried environment in which warrants are sought, combined with the low standard of review, creates a system in which swift reviews and approvals are expected, necessary, and, ultimately, adequate. Similarly, warrant affidavits are short and only require the officer to establish a reasonable basis for believing that evidence for a crime exists,[32] so the necessary time for review might be less than critics believe. Furthermore, judges, especially state trial-level judges, often are underresourced, face a growing backlog of potentially more critical matters, and may be incentivized to maintain a positive relationship with law enforcement.[33]

This Article seeks to fill this empirical gap (at least in part) by analyzing previously untapped statewide data from Utah's "e-Warrants"

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[28] Laurence A. Benner & Charles T. Samarkos, *Searching for Narcotics in San Diego: Preliminary Findings from the San Diego Search Warrant Project*, 36 CAL. W. L. REV. 221, 223–24, 230, 239 (2000) (finding that probable cause descriptions conformed to boilerplate, rather than fact-specific and concrete, narratives; only a few judges approved the vast majority of warrants; and the body of drug warrants reflected high frequencies of racial disparities); Laurence A. Benner, *Racial Disparity in Narcotics Search Warrants*, 6 J. GENDER, RACE & JUST. 183, 187 (2002) ("Black and Hispanic communities in San Diego County were significantly over-represented as targets of narcotics search warrants.").

[29] Jessica Miller Schreifels & Aubrey Wieber, *Warrants Approved in Just Minutes: Are Utah Judges Really Reading Them Before Signing Off?*, SALT LAKE TRIB. (Jan. 16, 2018, 10:13 AM), https://www.sltrib.com/news/2018/01/14/warrants-approved-in-just-minutes-are-utah-judges-really-reading-them-before-signing-off [https://perma.cc/ANP9-4E9G].

[30] *Id.*

[31] VAN DUIZEND ET AL., *supra* note 27, at 2; *see also* Wayne R. LaFave & Frank J. Remington, *Controlling the Police: The Judge's Role in Making and Reviewing Law Enforcement Decisions*, 63 MICH. L. REV. 987, 988 (1965) (observing, even in the middle of the twentieth century, that problems with judicial participation in law enforcement "often ha[ve] a destructive rather than a constructive impact upon law enforcement practice").

[32] *See* Stacey v. Emery, 97 U.S. 642, 644 (1878); Brinegar v. United States, 338 U.S. 160, 175–76 (1949).

[33] *See, e.g.*, William Raftery, *State Courts Brace for Budget Hit*, 105 JUDICATURE 2, 2 (2021).

system,[34] constituting the largest and most comprehensive quantitative study of warrants of any kind. The dataset includes the affidavits of every electronic warrant submission during a nearly three-year period (March 2017 through January 2020),[35] totaling 33,465 warrant applications filed by more than 3,200 law enforcement officers and reviewed by nearly 120 judges and magistrates. Even more, the dataset includes metadata captured by the e-Warrants system that chronicles the timing of every important stage of the warrant review process, including when the officer submits the warrant affidavit; when the reviewing judge first opens the submission; the amount of time the judge spends reading the warrant affidavit; the moment the judge makes their legal determination; and if and when the warrant is served. By combining the warrant affidavit texts with digital timestamps and situating that data in the legal and extralegal context of judicial warrant review, we provide the most expansive and comprehensive view into the search and seizure process.

Our findings suggest that the on-the-ground reality of warrant review is often not meeting the robust assumptions that are baked into Fourth Amendment jurisprudence and scholarship. At the same time, the results are also not fully consistent with the skeptical position that judges are not actually reviewing the warrants at all. On the one hand, some (albeit very few) warrants go through multiple revisions before being approved, and we identify moderate correlations between a judge's professional background and review outcomes — observations that run counter to the proposition that all warrants are simply "rubber stamp[ed]."[36] On the other hand, our key findings demonstrate that over 93% are approved on the first attempt; over 98% of all warrants are eventually approved; and the median time for a warrant affidavit to be opened, read, analyzed, and (in the case of approval) sent back to the officer in the form of a judicial warrant is only three minutes. Furthermore, one out of every ten warrants is read, analyzed, and responded to in a minute or less.

Accounting for warrant complexity and length, we determine that at least half of all approved warrants are either not read in full or are skimmed by the reviewing judges. These results are consistent even

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[34] As we discuss *infra* section II.B, pp. 1985–91, Utah is one of forty-four states that currently utilize some form of e-Warrants system. *See* ELAINE BORAKOVE & REY BANKS, JUST. MGMT. INST., IMPROVING DUI SYSTEM EFFICIENCY: A GUIDE TO IMPLEMENTING ELECTRONIC WARRANTS 9 (2018), https://www.responsibility.org/wp-content/uploads/2018/04/FAAR_3715-eWarrants-Interactive-PDF_V-4.pdf [https://perma.cc/YE93-XBD5].

[35] One caveat that merits early mention is that though our universe of timestamps is complete, we lack a small percentage of sealed warrants. We have a longer time series of affidavit, warrant, and return PDFs that date back to December 2012, but because we could only merge PDFs with the timestamp data starting in March 2017, we did not make use of PDFs before this time period. The timestamp dataset ends in January 2020, in part because of logistical constraints with updating the dataset after that period.

[36] Schreifels & Wieber, *supra* note 29.

when accounting for the most common explanations provided to us during interviews with judges who review warrants (including Utah judges), including legal domains that arguably require less stringent analysis (for example, DUI warrants), identical intra-warrant content, the existence of "unnecessary" language, and warrant resubmissions.

Looking at judge-level characteristics, we also provide some preliminary explorations into the possible factors affecting review time and approval rates. We identify substantial variations across individual judges, even when controlling for district-level factors. In some cases, judges within the same district are fifteen or twenty percentage points more likely to approve warrants and take seven times longer to review them than their colleagues. Regression analyses that control for warrant-, judge-, and time-level factors demonstrate strong (and in some cases surprising) correlations between review time and approval likelihood with a judge's tenure and previous professional background.

Finally, we also performed a qualitative analysis of a randomly selected subsample of the affidavits and found several troubling examples of questionable judicial review. These include cases where approved warrants were unconstitutionally vague, lacked corroboration of evidence used as the basis for probable cause, or failed to catch important errors in the affidavit.

Taken together, this empirical and qualitative evidence has novel, critical implications for both the theory and praxis of warrant review and execution.

This Article proceeds as follows: Part I provides a brief background on the current state of warrant jurisprudence and practice, laying out an informal behavioral mapping of the extralegal factors that likely influence judicial warrant review. Part II discusses the institutional setting for our empirical study and the nature of the datasets we employ. Parts III and IV present our central empirical analyses, focusing on the time it takes Utah judges to review warrants, the resulting approval rates, and the warrant- and judge-level characteristics that best predict those outcomes. Part V describes a small but in-depth review of individual warrants that provides qualitative evidence of inadequate judicial review. Part VI concludes by discussing the implications of our findings and exploring potential legal, policy, and institutional reforms that address the problems identified in our empirical analyses.

I. THE FOURTH AMENDMENT, WARRANTS, AND JUDICIAL REVIEW

This Article is not focused on the debates regarding when, if, and to what extent the warrant requirements of the Fourth Amendment take

effect.[37] Instead, we address the current role and nature of judicial warrant review via an empirical exploration of the on-the-ground practice of warrant-seeking officers and reviewing judges.[38] Thus, a comprehensive review of search and seizure jurisprudence is not necessary here. Nonetheless, a basic background on the Fourth Amendment, the warrant requirement, and the probable cause standard is critical to understanding and contextualizing the legal constraints judges face when evaluating a warrant request.

That said, we do argue that the warrant review process is influenced by more than just legal factors. Judicial review satisfies the constitutional dictates of the Fourth Amendment only insomuch as the judge can serve as a legitimate and neutral check on police and prosecutorial intervention.[39] Whether, in practice, reviewing judges can — or should even be expected to — be that neutral check is not clear. Consequently, identifying and acknowledging the extralegal factors at play in the decisionmaking process is also essential.

To these ends, section I.A briefly discusses the history of the Fourth Amendment, focusing on its protections against search and seizure and the recent developments regarding the warrant requirement; section I.B outlines the basics of probable cause in warrant review, emphasizing its nature as a nebulous, discretionary standard; section I.C highlights the "stickiness" of warrant approvals and why mistakes in initial review are rarely remediated through the existing legal framework; and section I.D outlines the extralegal, pragmatic factors that likely influence the warrant review process.

A. Search and Seizure Protections in the Fourth Amendment

Our modern Fourth Amendment was based on similar provisions in several states' constitutions,[40] but its philosophical roots at least go back to underpinnings that began in the English common law tradition. Seminal in this doctrinal evolution was *Semayne's Case*,[41] where Sir Edward Coke articulated the now-venerated castle doctrine: "[T]he house of

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[37] *See, e.g.*, Akhil Reed Amar, *Fourth Amendment First Principles*, 107 HARV. L. REV. 757, 757, 761 (1994) (arguing that the jurisprudence is clearly broken and suggesting that the text of the Fourth Amendment does not actually require warrants, even presumptively); Gray, *supra* note 15, at 425.

[38] We also briefly discuss the role that prosecutors play in some cases, most often when their review is requested by officers.

[39] *See, e.g.*, Shadwick v. City of Tampa, 407 U.S. 345, 350 (1972) ("[A judge] must be neutral and detached, and he must be capable of determining whether probable cause exists for the requested arrest or search.").

[40] *See, e.g.*, Leonard W. Levy, *Origins of the Fourth Amendment*, 114 POL. SCI. Q. 79, 92 (1999) ("[State constitutional] provisions on search and seizure [we]re significant because they distilled the best American thinking on the subject, constituted benchmarks to show the standard by which practice should be measured, and provided models for the Fourth Amendment.").

[41] (1604) 77 Eng. Rep. 194; 5 Co. Rep. 91 a.

every one [sic] is to him as his . . . castle and fortress."[42] This historical impetus led to the eventual adoption of the Fourth Amendment, enshrining the constitutional sanctity of one's home and possessions.[43] The jurisprudential expedition to refine and delineate the contours of this right has been a protracted one, marked by sporadic expansion and enhancement.

In landmark, early twentieth-century cases such as *Weeks v. United States*,[44] the U.S. Supreme Court introduced the exclusionary rule, barring unlawfully seized evidence from federal court proceedings.[45] This principle was subsequently applied to the states in *Mapp v. Ohio*,[46] thereby fortifying the foundational precept that lawful searches and seizures — including lawfully obtained warrants — were an important part of investigatory criminal procedure. Subsequently, with *Katz v. United States*,[47] later modified by *United States v. Jones*,[48] the Court decidedly shifted the paradigm to "protect[] people, not places,"[49] emphasizing a "reasonable expectation of privacy" that individuals have in their activities and property.[50] These privacy protections are further enhanced by the exclusionary rule, which requires that "fruits" of invalid searches and seizures (including invalid warrants) are excluded from court proceedings.[51] The more modern evolution of Fourth Amendment jurisprudence, particularly in the context of the search and seizure process, has seen the introduction and solidification of various exceptions to the warrant requirement.[52] These exceptions, derived from Supreme Court rulings over the last forty years, point toward an erosion of the warrant paradigm that historically served as a bulwark against unreasonable intrusions by the state.

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[42] *Id.* at 195; 91 b.

[43] *See* William John Cuddihy, The Fourth Amendment: Origins and Original Meaning, 602–1791, at 1360 (1990) (Ph.D. dissertation, Claremont Graduate School) (on file with the Harvard Law School Library); U.S. CONST. amend. IV. Note, however, that the negative sentiments regarding the government's ability to search and/or seize *at all* were so strong that some advocated for a ban on most warrants during the ratification debates at the constitutional convention. *See* Cuddihy, *supra*, at 1378–79.

[44] 232 U.S. 383 (1914).

[45] *Id.* at 398.

[46] 367 U.S. 643, 655 (1961).

[47] 389 U.S. 347 (1967).

[48] 565 U.S. 400 (2012).

[49] *Katz*, 389 U.S. at 351.

[50] *Jones*, 565 U.S. at 406 (quoting *Katz*, 389 U.S. at 360 (Harlan, J., concurring)).

[51] *Mapp*, 367 U.S. at 658.

[52] *See, e.g.*, Terry v. Ohio, 392 U.S. 1, 27 (1968); Smith v. Maryland, 442 U.S. 735, 743–44 (1979); Texas v. Brown, 460 U.S. 730, 738–39 (1983) (plurality opinion); United States v. Leon, 468 U.S. 897, 913 (1984). The Fourth Amendment's warrant clause states that "no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized." U.S. CONST. amend. IV. While we recognize there is a vigorous debate about whether there should be a warrant requirement, we feel these discussions are beyond the scope of this Article.

An early harbinger of this change can be seen in *Terry v. Ohio*,[53] which marked the boundaries of reasonable searches by finding that "stop and frisk" procedures were constitutionally viable.[54] *Smith v. Maryland*[55] then formalized the move toward a weaker Fourth Amendment when the Court carved a substantial exception with its third-party doctrine, mitigating the warrant requirement in cases where individuals willingly ceded information to third parties.[56] Third parties are even more relevant today than when *Smith* was decided almost a half-century ago, as individuals have become more dependent upon providers in their use of email, cell phone, social media, and cloud services.[57] Quickly following *Smith*, the plain view doctrine, adopted by a plurality of the U.S. Supreme Court in *Texas v. Brown*,[58] allowed officers to seize (and later use in adjudication) evidence that was "in plain view," even in the absence of a warrant-authorized search.[59] Similarly, the good-faith exception allows evidence obtained by law enforcement officers with a search warrant that is later found to be invalid to be used in court if the officers acted in good faith and relied on the warrant in good faith.[60]

Legal scholars have extensively critiqued this trend, deploying a range of academic perspectives that question both the legality and effectiveness of warrant exceptions.[61] Less frequently discussed, however, is the converse relationship between diminishing legal protections against intrusive warrants and the importance of the initial (often brief) process that determines whether the warrants sought by law enforcement are constitutionally viable. As exceptions to the warrant requirement expand, the need for a legitimate warrant-approval process increases as a safeguard of the privacy of individuals and groups. One example where this relationship is particularly noteworthy is the good-

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[53] 392 U.S. 1 (1968).

[54] *Id.* at 12, 27.

[55] 442 U.S. 735 (1979).

[56] *Id.* at 743–44.

[57] *See, e.g.*, Mary D. Fan, *Big Data Searches and the Future of Criminal Procedure*, 102 TEX. L. REV. 877, 879–80 (2024) (stating that law enforcement is increasingly relying on big data from large technology companies); Andrew Guthrie Ferguson, *Big Data and Predictive Reasonable Suspicion*, 163 U. PA. L. REV. 327, 329–30 (2015) (discussing the numerous ways in which law enforcement relies on various forms of big data).

[58] 460 U.S. 730 (1983).

[59] *Id.* at 738–39 (plurality opinion).

[60] *See* United States v. Leon, 468 U.S. 897, 913 (1984).

[61] *See generally, e.g.*, Amar, *supra* note 37, at 757 (describing the understanding that the Fourth Amendment necessarily calls for warrants and probable cause as "misguided," and even describing modern Fourth Amendment jurisprudence as "an embarrassment"); Gray, *supra* note 15, at 425 (arguing that Fourth Amendment jurisprudence "fails on both conceptual and practical grounds" because of the Supreme Court's responses to disagreements regarding the constitutional status of the warrant requirement).

faith exception.[62] Because officers are given greater leeway under this exception,[63] there is a heightened need for approved warrants to be legally valid through the judicial warrant review process. The heightened need for quality warrant review is also underscored by the uptick in no-knock warrants in recent decades and in the wake of the police killings of those like Breonna Taylor and Amir Locke, where the validity of warrants was called into question.[64]

B. Warrant Review and the Probable Cause Standard

As a legal process, warrant review is defined almost exclusively by the judge's probable cause determination vis-à-vis the warrant affidavit.[65] Despite this centrality in effectuating the warrant requirement, the probable cause standard is challenging to precisely define, much less operationalize. In the late nineteenth century, in *Stacey v. Emery*,[66] the Court defined probable cause as the extent to which "the facts and circumstances before the officer are such as to warrant a man of prudence and caution in believing that the offence has been committed."[67] For the purposes of searches, this standard extends to the probability that evidence of a suspected crime will be found in the location where the search is executed.[68]

While probable cause mirrors the reasonable person standard that exists in other domains, courts and legal scholars acknowledge the amorphous and discretionary nature of the standard.[69] For example, in *Illinois v. Gates*,[70] the majority described probable cause as "a fluid concept — turning on the assessment of probabilities in particular factual contexts — not readily, or even usefully, reduced to a neat set of legal rules."[71] However, there is near-universal agreement that the certainty requirement of probable cause — the required confidence level that the search or seizure is successful — involves more than reasonable

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[62] *Leon*, 468 U.S. at 913. We thank the editors of the *Harvard Law Review* for bringing this particular point to our attention.

[63] *See id.* at 919 n.20.

[64] *See* Courtney Kan et al., *What to Know About No-Knock Warrants*, WASH. POST (May 27, 2022), https://www.washingtonpost.com/investigations/2022/04/06/no-knock-warrants [https://perma.cc/92X6-FRT3].

[65] *See* Chris Devender, *Understanding Search Warrant Affidavits: Key Role in Law Enforcement and Individual Rights*, BLUENOTARY (Jan. 8, 2025), https://bluenotary.us/search-warrant-affidavit [https://perma.cc/6AM7-TYL3].

[66] 97 U.S. 642 (1878).

[67] *Id.* at 645.

[68] Brinegar v. United States, 338 U.S. 160, 175–77 (1949) (quoting Carroll v. United States, 267 U.S. 132, 162 (1925)).

[69] *See, e.g.*, Christopher Slobogin, *The World Without a Fourth Amendment*, 39 UCLA L. REV. 1, 3 (1991); VAN DUIZEND ET AL., *supra* note 27, at 53–54.

[70] 462 U.S. 213 (1983).

[71] *Id.* at 232.

suspicion. It consists of a totality-of-the-circumstances approach that goes beyond a mere hunch or pure conjecture.[72]

That courts are resistant to precisely defining probable cause[73] might be explained by approaches varying greatly from judge to judge. The sparse empirical work attempting to obtain judges' perspectives on the certainty needed for probable cause determinations demonstrates this variation. In a 1982 survey, 166 judges were asked to assign a percentage of certainty to various burdens of proof, including the concept of probable cause.[74] Respondents assessing had a mean certainty of 44.52%, with a modal answer of 50%.[75] There was a large range of total responses (from 10% to 90%), and even the bulk of the views were from as low as 30% to as high as 60%.[76] A similar, more recent (2016) survey of 124 judges led by Professor Richard Seltzer found a mean of 49.7% certainty with a high standard deviation of 16.6%.[77]

Warrants are also subject to a particularity requirement where the scope of the search must be commensurate with the probable cause, guarding against the risk of warrants being too general.[78] In practical terms, this means that the place, person, or thing that is to be searched or seized must be described and supported by factual allegations with specificity.[79] For example, if the warrant application establishes that there is probable cause for only a large stolen television in the house, a warrant granting law enforcement officers the authority to search smaller drawers or compartments within the home would be unconstitutional. Nevertheless, despite these constraints on the standard, the application of probable cause has always been fact-specific, and much of its application involves a totality of the circumstances approach, affording judges substantial discretion.[80] In addition, the resistance of courts to apply brightline rules to the reasonable person standard amounts to a relatively low bar to meet the standard.

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[72] *See, e.g.*, Slobogin, *supra* note 69, at 38–43; Terry v. Ohio, 392 U.S. 1, 21–22, 27 (1968); Ybarra v. Illinois, 444 U.S. 85, 91 (1979).

[73] *See, e.g.*, Maryland v. Pringle, 540 U.S. 366, 371 (2003).

[74] C.M.A. McCauliff, *Burdens of Proof: Degrees of Belief, Quanta of Evidence, or Constitutional Guarantees?*, 35 VAND. L. REV. 1293, 1327 (1982).

[75] *Id.* at 1327, 1332. It is worth noting that our calculation of the mean is 45.78%, approximately one percentage point higher than the authors' based on their cross-tabulation of the probable cause responses for the survey.

[76] *See id.* at 1327.

[77] Richard Seltzer et al., *Legal Standards by the Numbers: Quantifying Burdens of Proof or a Search for Fool's Gold?*, 100 JUDICATURE 56, 62 (2016).

[78] *See* Andresen v. Maryland, 427 U.S. 463, 480 (1976) (quoting Coolidge v. New Hampshire, 403 U.S. 443, 467 (1971); Stanford v. Texas, 379 U.S. 476, 485 (1965)).

[79] *See id.*

[80] Illinois v. Gates, 462 U.S. 213, 230–32 (1983).

C. The Stickiness of Warrant Review Decisions

A warrant approval, like all decisions made by a judge of first appearance, is subject to review. Indeed, because the warrant decision is made before formal adjudication begins, the outcome of a warrant determination can be reviewed by the trial judge — usually a different judge than the one who reviewed the warrant — and preserved as an issue reviewable on appeal. In theory, these procedural "second chances" provide a backstop for front-end mistakes and, as a consequence, arguably lower the stakes of the initial review process. Taken to an extreme, this process may even influence the approach the judge takes to that initial warrant determination: "The police have the best knowledge of the facts in the case. If brought to trial, the judge will try the case on its merits. Therefore, the magistrate should generally issue the warrant."[81]

But the practical realities of criminal adjudication and the relevant standard of review make the outcome of the initial warrant review process much stickier than these positions reflect. Exclusionary rule challenges to warrants present an ex-post check on the warrant approval process, but the empirical reality is that they are rarely used with success. A nine-county study, where data was collected from three states (Illinois, Michigan, and Pennsylvania) across 7,500 cases, showed that motions to suppress physical evidence were made in fewer than 5% of cases, with those cases overwhelmingly involving drugs and weapons.[82] These motions to suppress physical evidence were successful in only 0.69% of the overall cases.[83] With such a low rate for initial challenges, subsequent appeals for suppression hearings are inevitably even less common.

While considering the efficacy of challenging an initial warrant review, it is also important to acknowledge that institutional feedback mechanisms are particularly weak in this area. Judges are likely unaware of warrant "hit rates"[84] — whether the items listed in a warrant they approved are actually found — and thus are not able to update

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[81] NAT'L CTR. FOR STATE CTS., FINAL REPORT: VIRGINIA COURT ORGANIZATION STUDY 101 (1979) (quoting OFF. OF THE EXEC. SEC'Y OF THE SUP. CT. OF VA., MAGISTRATE UTILIZATION STUDY, at B-3 (1977)), https://cdm16501.contentdm.oclc.org/digital/collection/ctadmin/id/382/rec/1 [https://perma.cc/EU7P-7CFQ]. These were observations made by judges about warrant review reproduced in a 1979 survey regarding a number of judicial responsibilities. *Id.* at v, 101.

[82] Peter F. Nardulli, *The Societal Cost of the Exclusionary Rule: An Empirical Assessment*, 8 AM. BAR FOUND. RSCH. J. 585, 590, 592, 594–95, 597 (1983).

[83] *Id.* at 598.

[84] This observation is based on various discussions we have had with judges, none of whom have suggested that there are institutional mechanisms that encourage judges to review the returns of warrants that they previously approved (except if the sufficiency of the warrant is questioned as part of a criminal adjudication). Furthermore, if judges are only spending a few minutes reviewing the affidavits, *see infra* section III.A, pp. 1997–2000, we find it unlikely that they spend any meaningful time reviewing the returns.

their priors on the probability of any given search or seizure being successful. Similarly, judges are likely less aware of successful exclusionary rule challenges to their initial warrant decisions than they are to one of their determinations made during adjudication being overturned on appeal. Without that feedback loop, their conception of probable cause lacks a nexus to real-world, downstream outcomes and more fully relies on the framing provided by the submitting officer.[85]

D. The Role of "Extralegal" Factors in Warrant Review

Although it often plays second fiddle to the law itself in the extensive literature exploring (albeit briefly) the origins, nature, and purpose of the warrant requirement, the existence of a neutral, detached judge is a linchpin in both the jurisprudential underpinnings and practical process of warrant review.[86] It is important, then, to reflect on the role of the judge and whether an assumption of *true* neutrality is reasonable, or even expected, in the warrant review context.[87]

To this end, we emphasize the legal realist arguments that have been made by many judicial scholars, including ourselves: The decisions a judge makes and the manner in which they make them are not simply determined by the facts and relevant law, but are instead best understood when considering the personal, professional, economic, and cognitive factors at play in a given judicial environment.[88] "Most judges . . . derive considerable intrinsic satisfaction from their work and want to be able to regard themselves and be regarded by others as good judges."[89] But nearly all judges also face time constraints and deadline pressures resulting from large dockets[90] and may be under increased

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[85] Presumably, this feedback loop issue is attenuated with warrants seeking information from third parties (for example, a cell phone or internet service provider) because the targets of such searches rarely, if ever, know their information is being searched.

[86] The judge must be more than just an extra step in the approval process: The protections of the Fourth Amendment "requir[e] that those inferences" necessary to approve a warrant "be drawn by a neutral and detached magistrate." Johnson v. United States, 333 U.S. 10, 14 (1948).

[87] In one early example of scholars recognizing that judicial review is not necessarily neutral, Professors Wayne R. LaFave and Frank J. Remington remarked in 1965 that "as revealed by observation of current practice, judicial participation [in law enforcement] is often perfunctory." LaFave & Remington, *supra* note 31, at 988.

[88] *See* Dane Thorley, *The Failure of Judicial Recusal and Disclosure Rules: Evidence from a Field Experiment*, 117 NW. U. L. REV. 1277, 1281, 1301–09 (2023) (noting that there are "social, institutional, and behavioral incentives at play in judges' recusal decisions," *id.* at 1281). *See generally* RICHARD A. POSNER, HOW JUDGES THINK (2008) (outlining the various theories of judicial behavior, including legal realism).

[89] POSNER, *supra* note 88, at 62 (footnote omitted). Judges also want to avoid having their decisions overturned. *See* LEE EPSTEIN ET AL., THE BEHAVIOR OF FEDERAL JUDGES 223 (2013) (speculating that "district judges adapt . . . to minimize the likelihood of being reversed").

[90] *See, e.g.*, Marin K. Levy, *Judicial Attention as a Scarce Resource: A Preliminary Defense of How Judges Allocate Time Across Cases in the Federal Courts of Appeals*, 81 GEO. WASH. L. REV. 401, 407–09 (2013).

stress due to external forces such as reputational pressures and politics.[91] As judicial behaviorist (and federal circuit court Judge) Richard Posner aptly put it: "Because behavior is motivated by desire, we must consider what judges want."[92]

In considering the potential influence of these extralegal factors, we caution against the temptation to always see anything short of a perfect and anodyne application of the law to the facts as judicial malfeasance or subpar performance. "[T]he fact that judicial decisions are sometimes influenced by the race, religion, gender, or other personal characteristics of the judge need not be a consequence of disloyalty."[93] We posit that a similar sentiment is appropriate when discussing the influence of the institutional and professional context in which the decisions are made. While it is important to be able to attribute judicial outcomes and their consequences to the judges themselves (something we do not avoid in this Article), recognizing the mechanisms behind *why* these outcomes happen and maybe why they are largely unavoidable will paint a clearer picture of reality and uncover better avenues for reform.

In the case of warrant review, we argue that five extralegal considerations are especially relevant: (1) the motivations of law enforcement; (2) the nature of *ex parte* review and likelihood of repeat play; (3) the resource constraints of judges and the primacy of expediency in warrant determinations; (4) the cognitive difficulties of reading complex but repetitive documents; and (5) the need for elected judges to signal to the voting public and other constituencies.

1. The Motivations of Law Enforcement. — While judges are expected to be neutral arbiters when it comes to warrants, submitting law enforcement officers (and cooperating prosecutors) are under no such obligation.[94] The jurisprudence surrounding the warrant requirement transparently recognizes that "the officer [is] engaged in the often competitive enterprise of ferreting out crime."[95] While law enforcement's objectives and incentives are ostensibly independent of the judge's probable cause determination, judges are aware of those motivations, and that likely influences how they approach review.[96] Presumably, this

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[91] Terry A. Maroney et al., *The State of Judges' Well-Being: A Report on the 2019 National Judicial Stress and Resiliency Survey*, 107 JUDICATURE 22, 24 (2023).

[92] POSNER, *supra* note 88, at 11.

[93] *Id.* at 126.

[94] *See* Wong Sun v. United States, 371 U.S. 471, 482 (1963) (balking at the concept of "hold[ing] that an officer may act in his own, unchecked discretion upon information too vague and from too untested a source to permit a judicial officer to accept it as probable cause for an arrest warrant").

[95] Johnson v. United States, 333 U.S. 10, 14 (1948); *see also* Arizona v. Gant, 556 U.S. 332, 345 (2009) (observing that the central purpose of the Fourth Amendment is to address "the concern about giving police officers unbridled discretion to rummage at will among a person's private effects").

[96] *See, e.g.*, William J. Stuntz, *Warrants and Fourth Amendment Remedies*, 77 VA. L. REV. 881, 888–89 (1991) ("[T]he absence of any representative of the defendant surely biases warrant review

recognition usually serves to reinforce the importance of the judge's position as the neutral arbiter. However, it may move judges into a position protective of the rights of the subject of the search,[97] or — for reasons we discuss later in this section — law enforcement's motivations may bleed into the judge's decision.

But an officer's zealous nature does not necessarily mean they will not be incentivized to submit high-quality warrant affidavits or ignore the key legal standards.[98] Indeed, law enforcement is pragmatically not in the business of requesting warrants that are not going to be granted or will later be overturned.[99] Consequently, if they believe the reviewing judge is going to genuinely scrutinize their submission, officers will tend to request warrants only when they believe a potential argument for probable cause exists. Similarly, if the officer is interested in a quick approval (which they almost certainly are), they will be motivated to write up their warrants in a manner that minimizes the time required to review them.

2. Ex Parte *and Repeat Play.* — It is also critical to recognize that the makeup and balance of the actors at play in the warrant review process differ from those involved in most adjudicative contexts.

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in the government's favor."); Abraham S. Goldstein, *The Search Warrant, the Magistrate, and Judicial Review*, 62 N.Y.U. L. REV. 1173, 1199–201 (1987); Oren Bar-Gill & Barry Friedman, *Taking Warrants Seriously*, 106 NW. U. L. REV. 1609, 1639 (2012) (discussing pro-police bias in judges making warrant decisions).

97 It may be tempting to believe that the jurisprudence actually requires that judges abandon neutrality and lean into preemptively defending the subject of the warrant, but "the Fourth Amendment has interposed a magistrate between the citizen and the police . . . not . . . shield[ed] criminals nor . . . ma[de] the home a safe haven for illegal activities." McDonald v. United States, 335 U.S. 451, 455 (1948).

98 *See* David E. Steinberg, *Zealous Officers and Neutral Magistrates: The Rhetoric of the Fourth Amendment*, 43 CREIGHTON L. REV. 1019, 1020 (2010) (arguing that the Fourth Amendment's rhetoric describing law enforcement officers as zealous "does not account for the training and accountability of law enforcement").

99 *Id.* at 1042 (noting that repeated suppression of evidence may cause police officers to face penalties such as transfer or demotion). This is especially true for those warrants in which the officers received assistance or approval from local prosecutors — these attorneys are most likely to bear the brunt of a warrant that is later overturned, so they are particularly motivated to draft a request that ostensibly meets the probable cause standard. *See* Fred C. Zacharias & Bruce A. Green, *The Duty to Avoid Wrongful Convictions: A Thought Experiment in the Regulation of Prosecutors*, 89 B.U. L. REV. 1, 9 (2009) ("[P]rofessional codes typically forbid prosecutors to bring charges in the absence of probable cause."); Bennett L. Gershman, *The Prosecutor's Duty to Truth*, 14 GEO. J. LEGAL ETHICS 309, 337 (2001) (also citing professional codes that prohibit prosecutors from charging a defendant or continuing a case in the absence of probable cause); MODEL RULES OF PRO. CONDUCT r. 3.8(a) (AM. BAR ASS'N 2025) ("The prosecutor in a criminal case shall . . . refrain from prosecuting a charge that the prosecutor knows is not supported by probable cause."); MODEL CODE OF PRO. RESP. DR 7-103(A) (AM. BAR ASS'N 1980) ("A public prosecutor or other government lawyer shall not institute or cause to be instituted criminal charges when he knows or it is obvious that the charges are not supported by probable cause."); STANDING COMM. OF THE SECTION OF CRIM. JUST., AM. BAR ASS'N, STANDARDS FOR CRIMINAL JUSTICE, THE PROSECUTION FUNCTION, Standard 3-4.3(a) (4th ed. 2017) ("A prosecutor should seek or file criminal charges only if the prosecutor reasonably believes that the charges are supported by probable cause.").

Normally, judges are asked to referee criminal disputes between two informed and legally represented parties, both of whom can provide input and arguments to bolster their interests. Due to the nature of a search warrant, however, warrant review is necessarily conducted *ex parte*, with the subject of the search warrant almost always unaware of the pending police action and thus given no legal avenues for disputing the warrant before it is served.[100] This lack of adversarial feedback might create an environment where the "judiciary . . . does not always take seriously its commitment to make a 'neutral and detached' decision as to whether there exists grounds for a search."[101] A 1979 survey of judges and magistrates who reviewed warrants illustrates the danger of only being exposed to one perspective during the review process: Some judges felt that "[t]he police have the best knowledge of the facts of the case . . . . Therefore, the magistrate should generally issue the warrant."[102]

Furthermore, the inevitability of "repeat play" — where the actors in a given event are likely to be the same for similar events in the future — may influence the manner in which officers write their warrant requests and the approach judges take regarding those requests. Game theorists have consistently found that when actors are familiar with each other and know they will be participating in future events together, they begin to create reputations based on past behavior *and* consider the effect that their current actions will have on the nature and outcome of future interactions.[103] In other words, relationships matter.

We can reasonably posit that this is very likely true in the context of warrant review, where judges are presented with multiple submissions from the same officer, sometimes over the course of a single week or day.[104] Judges may develop expectations regarding the reliability and sufficiency of the factual claims in the warrant based on who submitted it. Certain officers who have a history of quality submissions may garner a sense of trust with a judge, whereas officers who have a pattern of attempting searches or seizures when not warranted may find that judges are reading their submissions with greater scrutiny. Judges might also be inclined to consider the effect that a denial will have on their

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100 *See* Stuntz, *supra* note 96, at 881. We acknowledge that individuals can seek civil damages for improperly approved searches, but this process is exceedingly rare and is unlikely to affect judicial officials, since they have immunity, Bradley v. Fisher, 80 U.S. (13 Wall.) 335, 351 (1872), and claims are mainly made against the police or cities. Stuntz, *supra* note 96, at 900–03 (discussing the numerous difficulties with recovering damages in the search and seizure context).

101 TIFFANY ET AL., *supra* note 24, at 120.

102 NAT'L CTR. FOR STATE CTS., *supra* note 81, at 101 (quoting OFF. OF THE EXEC. SEC'Y OF THE SUP. CT. OF VA., *supra* note 81, at B-3).

103 Paul Milgrom & John Roberts, *Predation, Reputation, and Entry Deterrence*, 27 J. ECON. THEORY 280, 304 (1982) (stating, in one of the foundational texts on repeated games and reputation building in economics, "that the value of a reputation and the extent of reputation building [will] increase with the frequency of the opportunities for its use").

104 *See* Steinberg, *supra* note 98, at 1032–33; Schreifels & Wieber, *supra* note 29.

relationship with the officer and the broader law enforcement community going forward.

3. Judicial Resource Constraints and Expediency. — Judges are busy,[105] and empirical work has shown that the weight of their dockets influences how they approach decisionmaking.[106] The effects of resource limitations are almost certainly amplified when the judicial decision has built-in time constraints. A recent empirical study has demonstrated that when judges face impending deadlines, they make decisions more quickly and appear to make more mistakes.[107]

Warrant review is, by its nature, one context in which expediency is of prime concern and the luxury of contemplative examination is rare. In the case of warrants for suspected DUI offenses, for example, the relevant evidence is literally disappearing as a consequence of biological metabolism.[108] And with the lower administrative barriers that come with the increasing prevalence of electronic warrant systems,[109] the expectation that a judge reviews the warrant anywhere at any time only serves to increase the sense of urgency.[110] Within this high-pressure

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[105] This is true at the federal and state level. Although average caseloads have trended down over the last decade (most drastically as a result of the COVID-19 pandemic), courts are still recovering from extreme budget cuts in 2010. *See Welcome to CSP STAT*, CT. STAT. PROJECT (Oct. 2024), https://www.ncsctableauserver.org/t/Research/views/TrialDashboards/Overview [https://perma.cc/466U-ELYT] (showing twelve-year caseload trends for U.S. state courts); Richard Y. Schauffler & Matthew Kleiman, *State Courts and the Budget Crisis: Rethinking Court Services*, *in* 42 THE BOOK OF THE STATES 289, 289 (2010) (noting that forty states made significant budget reductions in 2010 and that "[t]he scale of the problem is enormous").

[106] *See, e.g.*, Brian Sheppard, *Judging Under Pressure: A Behavioral Examination of the Relationship Between Legal Decisionmaking and Time*, 39 FLA. ST. U. L. REV. 931, 932–40 (2012) (reviewing the state of judicial resource constraints and employing an experimental simulation to test the effect of those constraints on decisionmaking (law students making judicial decisions) and noting that "it is obvious that shortages in either judge free time or salary could impact judging," *id.* at 940); Bert I. Huang, *Lightened Scrutiny*, 124 HARV. L. REV. 1109, 1127–37 (2011) (analyzing the unexpected and significant rise in immigration cases that resulted from post-9/11 deportation policies, and suggesting "that the studied appeals courts began to call out fewer problems in trial court rulings, in civil cases, when they became overburdened by a wholly separate set of cases"); William M. Landes & Richard A. Posner, *Rational Judicial Behavior: A Statistical Study*, 1 J. LEGAL ANALYSIS 775, 821 (2009) ("[T]he heavier workload in the [federal] courts of appeals [as opposed to the Supreme Court] makes the cost of a dissent greater . . . [and] increases the benefits of decision according to precedent, which greatly reduces the time and effort involved in a decision . . . .").

[107] *See* Miguel F.P. de Figueiredo et al., *The Six-Month List and the Unintended Consequences of Judicial Accountability*, 105 CORNELL L. REV. 363, 435 (2020). *But see* Jonathan B. Petkun, Nudges for Judges: An Empirical Analysis of the "Six-Month List" 45–57 (Nov. 21, 2023) (unpublished manuscript), https://ssrn.com/abstract=3205398 [https://perma.cc/EX6G-DW98] (finding that deadlines do increase judicial speed but only finding mixed results regarding whether those deadlines increase the rate of judicial mistake).

[108] Blood alcohol levels peak about an hour after consumption and subsequently decrease at about ten to fifteen percentage points per hour. Alex Paxton, *Alcohol in the Body*, 330 BMJ 85, 86 (2005).

[109] *See, e.g.*, Schreifels & Wieber, *supra* note 29.

[110] Some states, including Utah, have addressed the problem of late-night warrant calls by creating a day-time default rule. *See, e.g.*, UTAH R. CRIM. P. 40(e)(1) ("The magistrate shall insert a direction in the warrant that it be served in the daytime, unless the affidavit or recorded testimony states sufficient grounds to believe a search is necessary in the night . . . .").

context, judges are potentially more susceptible to the extralegal factors we have outlined in this section, such as internalizing the motivations of the submitting officers or using relationships with those officers as heuristics for warrant quality.[111]

4. The Cognitive Difficulty of Reviewing Warrants. — Despite the fact that reading can feel somewhat effortless, it is an incredibly complex cognitive process that consists of several interacting stages, including eye movement control, word identification, syntactic parsing, semantic processing, discourse representations, and situational contextualization.[112] Reading is also affected by a number of factors ranging from the layout and presentation of the text,[113] size and type of font,[114] age and eyesight ability of the reader,[115] and the nature of the complexity of the language of the text itself.[116]

The reading speed of judges has not been rigorously established, but it has been shown that law students read case opinions significantly faster than lay readers,[117] who generally read nonfiction at about 238 words-per-minute (WPM).[118] Lawyers and judges employ different reading strategies than law students or other more novice readers, using more of their background knowledge, reading with more intentional purpose, skimming irrelevant language, and rereading complex

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111 Studies in the context of medical decisionmaking show that greater reliance on "fast thinking" results in greater vulnerability to biases and heuristics. *See* Anne Preisz, *Fast and Slow Thinking; And the Problem of Conflating Clinical Reasoning and Ethical Deliberation in Acute Decision-making*, 55 J. PAEDIATRICS & CHILD HEALTH 621, 621–22 (2019). *See generally* DANIEL KAHNEMAN, THINKING, FAST AND SLOW (2011) (identifying "System 1" and "System 2" cognitive processes and their respective advantages and disadvantages).

112 Keith Rayner & Erik D. Reichle, *Models of the Reading Process*, 1 WIREs COGNITIVE SCI. 787, 787–94 (2010).

113 *See, e.g.*, Mary C. Dyson, *How Physical Text Layout Affects Reading from Screen*, 23 BEHAV. & INFO. TECH. 377, 377–78 (2004); Mary C. Dyson & Gary J. Kipping, *Exploring the Effect of Layout on Reading from Screen*, *in* ELECTRONIC PUBLISHING, ARTISTIC IMAGING AND DIGITAL TYPOGRAPHY 294, 296 (Roger D. Hersch et al. eds., 1998).

114 *See, e.g.*, Gregor Franken et al., *Eye-Tracking Study of Reading Speed from LCD Displays: Influence of Type Style and Type Size*, 8 J. EYE MOVEMENT RSCH., no. 3, 2014, at 1, 4–5; Shaun Wallace et al., *Towards Individuated Reading Experiences: Different Fonts Increase Reading Speed for Different Individuals*, 29 ACM TRANSACTIONS ON COMPUT.-HUM. INTERACTION, no. 4, 2022, at 1, 3.

115 *See, e.g.*, Sofie Beier & Chiron A.T. Oderkerk, *The Effect of Age and Font on Reading Ability*, VISIBLE LANGUAGE, Dec. 2019, at 50, 53; MiYoung Kwon et al., *Slow Reading in Glaucoma: Is It Due to the Shrinking Visual Span in Central Vision?*, 58 INVESTIGATIVE OPHTHALMOLOGY & VISUAL SCI. 5810, 5810 (2017).

116 *See, e.g.*, Scott A. Crossley et al., *Moving Beyond Classical Readability Formulas: New Methods and New Models*, 42 J. RSCH. READING 541, 541 (2019) [hereinafter Crossley et al., *Moving Beyond*]; Scott Crossley et al., *A Large-Scaled Corpus for Assessing Text Readability*, 55 BEHAV. RSCH. METHODS 491, 504 (2023) [hereinafter Crossley et al., *A Large-Scaled Corpus*].

117 Catherine J. Cameron, *In the Eyes of the Law Student: Determining Reading Patterns with Eye-Tracking Technology*, 45 RUTGERS L. REC. 39, 58 (2017).

118 Marc Brysbaert, *How Many Words Do We Read Per Minute? A Review and Meta-Analysis of Reading Rate*, J. MEMORY & LANG., Dec. 2019, art. 104047, at 1, 6–8 (combining 190 studies with a total of 18,573 participants).

material.[119] Studies of this type are typically only able to incorporate relatively small sample sizes ($n < 40$),[120] but together they indicate that lawyers and judges likely read legal texts differently and probably more quickly than the average adult reader.

However, the judges who are reviewing warrants are doing something even more specific than in a typical legal-reading task. They are reviewing materials that are highly formulaic, which results in information that is the same or at least highly similar from document to document. They are also likely not attending to every word of the text equally because certain aspects are centrally important, and some are less critical in helping them make a decision on whether a warrant affidavit meets the threshold for approval. Thus, we might expect judges to "skim" the warrant affidavit, scanning it for specific information rather than reading it line-by-line, word-by-word. Research has consistently shown that reading types of documents with which one has a high degree of familiarity can greatly increase reading speed.[121]

Other studies have shown, though, that an increase in reading speed correlates negatively with reading comprehension, even in skimming/scanning tasks.[122] This research suggests that "speed reading" does not lead to any meaningful degree of comprehension, even of main ideas.[123] Additionally, the extant research supports the idea that how fast a judge feels they can or must move through a warrant is likely influenced by many of the extralegal factors we have already discussed. For example, a judge may feel comfortable reading a warrant submission from a familiar and previously reliable officer more quickly than they would other warrants.[124]

5. Elections and Politics. — If context is important, then it is also worth highlighting that most judges who are in charge of warrant

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[119] Leah M. Christensen, *The Paradox of Legal Expertise: A Study of Experts and Novices Reading the Law*, 2008 BYU EDUC. & L.J. 53, 53; *see also* Mary A. Lundeberg, *Metacognitive Aspects of Reading Comprehension: Studying Understanding in Legal Case Analysis*, 22 READING RSCH. Q. 407, 416–17 (1987); Laurel Currie Oates, *Beating the Odds: Reading Strategies of Law Students Admitted Through Alternative Admissions Programs*, 83 IOWA L. REV. 139, 158–60 (1997).

[120] Cameron, *supra* note 117, at 50; Christensen, *supra* note 119, at 61; Lundeberg, *supra* note 119, at 410, 418; Oates, *supra* note 119, at 145.

[121] Todd A. Shimoda, *The Effects of Interesting Examples and Topic Familiarity on Text Comprehension, Attention, and Reading Speed*, 61 J. EXPERIMENTAL EDUC. 93, 101 (1993); *cf.* KEITH RAYNER ET AL., PSYCHOLOGY OF READING 384 (2d ed. 2012) (suggesting that "speed readers" are likely able to read at a faster pace in part because "they know a great deal about the topic they are reading"). For a meta-analytical summary of this research, see generally William J. Therrien, *Fluency and Comprehension Gains as a Result of Repeated Reading: A Meta-Analysis*, 25 REMEDIAL & SPECIAL EDUC. 252 (2004).

[122] *See* Keith Rayner et al., *So Much to Read, So Little Time: How Do We Read, And Can Speed Reading Help?*, 17 PSYCH. SCI. PUB. INT. 4, 29 (2016); Ronald P. Carver, *Reading Rate: Theory, Research, and Practical Implications*, 36 J. READING 84, 86 (1992).

[123] Rayner et al., *supra* note 122, at 29.

[124] *See* Crossley et al., *Moving Beyond*, *supra* note 116, at 544 (stating that people can "process and understand words more easily based on background knowledge and text familiarity"); Crossley et al., *A Large-Scaled Corpus*, *supra* note 116, at 492 (same).

review at the state level are subject to the ever-looming presence of elections.[125] The potential "anticipatory" effect of elections on judicial behavior is particularly well studied in the context of criminal justice, where studies most often show that elected judges (even those with more liberal constituencies) feel compelled to be tougher on crime, especially at the end of their terms.[126]

Inasmuch as that influence pushes a judge to be more trusting of police or provide them more latitude in the context of search and seizure, this is a problem. Nonetheless, in the context of warrant review, we suspect that the election influence is fairly limited. While the tendency to be tough on crime is almost certainly correlated with an inclination to be supportive of law enforcement and the prosecutor's office, the decision to grant or deny a search warrant is unlikely to be salient enough to garner any attention, let alone to a degree that it would be something an elected judge would intentionally (or even unintentionally) use to garner broader support. This is particularly true in the context of this Article's empirical study. In Utah, judges retain their seat on the bench through nonpartisan, unopposed retention elections,[127] which virtually always result in reappointment.[128]

II. THE DATASET AND INSTITUTIONAL SETTING

Given the weight of the empirical claims made in this Article, it is critical to understand both the nature of the data that was collected and the institutional setting in which the study occurred. To those ends,

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125 As of 2023, thirty-nine states used elections to select at least some of their judges. *Significant Figures in Judicial Selection*, BRENNAN CTR. FOR JUST. (Apr. 14, 2023), https://www.brennancenter.org/our-work/research-reports/significant-figures-judicial-selection [https://perma.cc/8V5X-VUMS]. A 2002 report calculated that 87% of all state-level trial judges will face an election either as the initial selection method (77%) or through a retention election (10%). Roy A. Schotland, *Should Judges Be More Like Politicians?*, CT. REV., Spring 2002, at 8, 10.

126 *See, e.g.*, David Abrams et al., *Electoral Sentencing Cycles*, 39 J.L. ECON. & ORG. 350, 368 (2023) (finding that judges show cyclical effects in their sentencing behavior, with judges approaching reelection more likely to give higher sentences in felony cases); Carlos Berdejó & Noam Yuchtman, *Crime, Punishment, and Politics: An Analysis of Political Cycles in Criminal Sentencing*, 95 REV. ECON. & STAT. 741, 742 (2013) (finding that criminal sentences in Washington state courts are roughly ten percent longer at the end of election cycles); Sanford C. Gordon & Gregory A. Huber, *The Effect of Electoral Competitiveness on Incumbent Behavior*, 2 Q.J. POL. SCI. 107, 108 (2007) (finding that "judges in partisan competitive systems sentence significantly more punitively than those in retention systems").

127 UTAH CODE ANN. § 20A-12-201 (West 2025).

128 Jessica Schreifels, *In Utah, the Governor Appoints Judges to the Bench. So Why Are They on Your Ballot?*, SALT LAKE TRIB. (Oct. 18, 2024, 8:00 AM), https://www.sltrib.com/news/politics/2024/10/18/why-utah-judges-are-your-ballot [https://perma.cc/7ZGD-WLC2]. At the same time, a recent report by Utah's Judicial Performance Evaluation Commission (JPEC) indicates that judges who receive lower JPEC evaluation scores (looking at measures such as legal ability, temperament, fairness, and so forth) were 15–30% more likely to step down, which may be a pre-election selection mechanism that functions in the same way as losing a retention vote. UTAH JUD. PERFORMANCE EVALUATION COMM., REPORT TO THE COMMUNITY (2024), https://judges.utah.gov/s/article/2024-Community-Report [https://perma.cc/W2NQ-F9YX].

section II.A describes the characteristics of the various datasets we utilized in this study, how we sourced and cleaned them, and why the resulting dataset is so novel; section II.B attempts to justify Utah's warrant review regime as sufficiently representative of broader national processes, while acknowledging its idiosyncrasies; section II.C outlines the key limitations inherent in our study (and empirical studies of warrant review more broadly); and section II.D sets the stage for our empirical analyses by discussing trends in warrant submissions in Utah over the time period for which we have data.

A. The Warrant Review Dataset

To carry out our study, we primarily relied on two data sources: Portable Document Format (PDF) images of approved warrants from the Utah Administrative Office of the Courts (AOC) and the administrative metadata of electronic warrants from the Utah Department of Public Safety (DPS). We supplemented these core sources with machine-learning algorithms, imputed judge shifts, and hand-coded data on judicial demographic information. We briefly describe the sourcing and cleaning process here and provide a more detailed account in the Appendix.[129]

Using Utah AOC's Xchange database,[130] we individually downloaded PDF images of every unsealed digital affidavit, warrant, and return that was submitted and approved from December 1, 2013, to January 29, 2020.[131] Critically, the PDFs of denied and retracted warrants are not available, so while we have access to review-time and metadata for such warrants, we only have access to the text of an affidavit if the affidavit was approved.[132] In addition to the PDFs, Xchange also provided us with bulk metadata that included some basic information on each approved warrant (for example, submitting officer name, law enforcement agency, court location, and dates of the affidavit, warrant, and return). For all other PDF-derived data, including judge name, warrant length, crime type, and substantive content, we utilized a series of PDF scraping, natural language processing methods, and machine learning algorithms to extract the data.

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[129] *See* Appendix, HARV. L. REV. 15–19, https://harvardlawreview.org/print/vol-138/appendix-for-unwarranted-warrants-an-empirical-analysis-of-judicial-review-in-search-and-seizure [https://perma.cc/R7SW-PLRN].

[130] *See Xchange: Public Case Search*, UTAH STATE CTS., https://www.utcourts.gov/en/court-records-publications/records/xchange.html [https://perma.cc/5V2Z-MCNK]. In addition to all approved unsealed affidavits, warrants, and returns, the Xchange database also includes court docket information and documents for Utah's state courts. *Id.*

[131] Though we collected PDF images starting in December 1, 2013, in the analysis in this Article, we rely only on affidavits, warrants, and returns collected after March 28, 2017, since that is the beginning of the timestamp metadata.

[132] We discuss the limitations this imposes on our analysis in section II.C, *infra* pp. 1991–94.

We also procured timestamp metadata from the DPS for nearly all warrants that were submitted (whether eventually approved or not) from March 28, 2017, to January 29, 2020.[133] Critically, for our study (and the element that makes our dataset so novel), Utah's e-Warrants system records timestamps down to the second for when (1) the officer submitted the affidavit, (2) the judge first viewed the affidavit, (3) the judge made a decision on the warrant application — either approval or denial — or the warrant was withdrawn, and (4) the officer served the warrant. Universal warrant identification numbers then allowed us to merge the timestamp data with the approved warrant PDFs, resulting in a dataset of roughly 33,500 observations.

We supplemented this core dataset with two sources of hand-coded information that were critical to our analyses. First, because our dataset only includes PDF images for approved affidavits, it was necessary to impute the reviewing judge for the denied and retracted affidavits by reconstructing the district-specific shifts. We did this by backing out shifts[134] from the reviewing-judge patterns that existed in the scraped PDF image data. This process provided us with clear shift data in all but two of Utah's judicial districts (Second and Fifth Judicial Districts).[135] Second, we used some basic information from Utah's Judicial Performance Evaluation Commission[136] (JPEC) as a starting point to collect a rich set of biographical variables on each judge in our dataset, including their gender, race/ethnicity, legal education, professional experience (whether they were formerly a prosecutor, a criminal defense attorney, or neither), and the time and manner of their appointment.

We conclude our discussion of the dataset by emphasizing how valuable and unique it is. According to our research efforts, no state systematically records the substantive matter of warrants, so the length, complexity, facts, and legal content of the warrants can be derived only through the text of the warrants themselves. As a result, access to digital versions of the affidavits and warrants is essential. To know how long judges spent reviewing warrant requests, we also needed precise timestamps for the relevant events in the review process — information that is even less common than PDF images of the affidavits and warrants. While some states may record either the time at which a warrant affidavit is submitted (generally in the form of a digital signature or court record) or the time at which a review determination is made by the judge, knowing only these two data points would not allow for an accurate (or even serviceable) analysis of the amount of time the actual

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133 For a discussion of the few warrants from this time period that likely aren't included in our data, see *infra* note 179.

134 For an explanation of this process, see Appendix, *supra* note 129, at 17–18.

135 As a consequence, these districts are excluded from much of our analysis on judge-level approval rates in sections IV.B and IV.C, *infra* pp. 2029–34.

136 *About Us*, UTAH JUD. PERFORMANCE EVALUATION COMM'N, https://judges.utah.gov/s/about-us [https://perma.cc/34F4-ZTFQ].

review process took. This is because we can make no reliable assumptions regarding the moment when the judge first begins reading the content of the affidavit, and so a gap between submission and first viewing must necessarily be attributed to the total review time. As far as we know, the ability to pinpoint the moment the warrant is first opened by the judge is unique to Utah's data retention system. We also needed the ability to reliably connect all of the relevant datasets, something that should not be taken for granted.

B. Utah's Warrant Regime as a Representative Venue

In the near absence of any systematic empirical studies on the warrant review process, any information is better than nothing. It is nonetheless important to outline whether our venue state, Utah, produces results that can be generalized to other parts of the United States. We argue that while Utah certainly differs from many states in terms of its population and politics, its laws and judicial infrastructures — particularly those relevant to warrant submission and review — are quite similar to the vast majority of venues in the United States.

Utah's 2020 population of approximately 3.27 million ranks thirtieth among the states, placing it close to the median in terms of overall size.[137] While it is the state with the youngest population in the United States with a median age of 31.3 years, this is primarily driven by its outsized population of children (around 29% of the state's population is under 18 years old).[138] Utah's lower median age[139] is more proximate to the median age of those who, on average, are more likely to be subject to police-initiated contact.[140]

Racially, Utah is 75.7% white (not Hispanic or Latino), 16% Hispanic or Latino, 3% two or more races, 2.9% Asian, 1.6% Black, 1.6% American Indian or Native Alaskan, and 1.2% Native Hawaiian or Pacific Islander.[141]

Utah stands as an outlier in terms of the religious affiliation of its population. The Church of Jesus Christ of Latter-day Saints (LDS or

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[137] *See* U.S. CENSUS BUREAU, CHANGE IN RESIDENT POPULATION OF THE 50 STATES, THE DISTRICT OF COLUMBIA, AND PUERTO RICO: 1910 TO 2020, at 1 (2020), https://www2.census.gov/programs-surveys/decennial/2020/data/apportionment/population-change-data-table.pdf [https://perma.cc/9CAU-D294].

[138] Megan Banta, *There Are Fewer Young Children in Utah than a Decade Ago*, SALT LAKE TRIB. (Oct. 16, 2023, 3:56 PM), https://www.sltrib.com/news/2023/06/03/utah-is-youngest-state-its-getting [https://perma.cc/B944-KSCQ].

[139] *See* LAURA BLAKESLEE ET AL., U.S. CENSUS BUREAU, AGE AND SEX COMPOSITION: 2020, at 8 (2023), https://www2.census.gov/library/publications/decennial/2020/census-briefs/c2020br-06.pdf [https://perma.cc/B5JA-48PV].

[140] *See, e.g.*, *A Closer Look at Stop-and-Frisk in NYC*, NYCLU (Dec. 12, 2022), https://www.nyclu.org/data/closer-look-stop-and-frisk-nyc [https://perma.cc/U9ZV-AHK4].

[141] *QuickFacts: Utah*, U.S. CENSUS BUREAU, https://www.census.gov/quickfacts/fact/table/UT/RHI225222 [https://perma.cc/2HM7-VGQC].

Mormon Church) is headquartered in Salt Lake City,[142] and according to the Pew Research Center's 2014 Religious Landscape Study, some 55% of the adult population identifies as LDS.[143] Christians comprise 73% of the adult population, while adherents of non-Christian faiths (including Jewish, Muslim, Buddhist, and Hindu religions) only comprise 4% of the adult population.[144] Those who do not identify with any religion make up 22% of the adult population.[145] These figures compare with a national adult population that, as of 2014, was 1.6% LDS, 70.6% Christian, 5.9% non-Christian, and 22.8% unaffiliated.[146] While there is heterogeneity among LDS members, on average, LDS membership is correlated with more conservative political views.[147]

Utah's crime rate, relative to other states, is a bit lower than average. Nationwide crime data from 2023 places Utah as the twelfth lowest in violent crime rate, with about 232 incidents per 100,000 people (Maine and the District of Columbia (DC) have the lowest and highest rates, at roughly 102 and 1,150, respectively).[148] That same data places Utah as only the nineteenth lowest in nonviolent crime rate, with 1,630 nonviolent incidents per 100,000 people (Idaho and DC have the lowest and highest rates, with 809 and 4,310, respectively).[149] Combined metrics — which are weighted heavily by the higher number of nonviolent crimes — put Utah at seventeenth lowest overall crime rate.[150] The 2021 incarceration rate in Utah of 435 individuals per 100,000, which is likely a better indicator of police investigation and prosecution rates than reported crimes, is the tenth lowest in the country.[151]

The state court system in Utah is structured around county geography, with the twenty-nine counties divided into eight judicial districts (see Figure 1, below).[152] For the most part, Utah's (sub)urban-rural

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142 *World Headquarters*, CHURCH OF JESUS CHRIST OF LATTER-DAY SAINTS, https://newsroom.churchofjesuschrist.org/topic/world-headquarters [https://perma.cc/X4BA-UGK8].

143 *People in Utah*, PEW RSCH. CTR., https://www.pewresearch.org/religious-landscape-study/state/utah/?selectedYear=2014 [https://perma.cc/F55X-8K8K].

144 *Id.* The most recent data from 2023–2024 shows a downward shift in all these religious categories, with the LDS, Christian, and non-Christian populations moving to 50%, 63%, and 2%, respectively. *Id.*

145 *Id.*

146 GREGORY SMITH ET AL., PEW RSCH. CTR., AMERICA'S CHANGING RELIGIOUS LANDSCAPE 4 (2015), https://www.pewresearch.org/wp-content/uploads/sites/20/2015/05/RLS-08-26-full-report.pdf [https://perma.cc/2XM7-5RQ4].

147 *See* Jacob Robertson & Stephanie Cardon, *Political Perceptions Among a Peculiar People: Conservatism in Committed vs. Less Committed Latter-day Saints*, 21 SIGMA 71, 78 (2003).

148 *Crime Rate by State 2025*, WORLD POPULATION REV., https://worldpopulationreview.com/state-rankings/crime-rate-by-state [https://perma.cc/4BXV-PGSC].

149 *Id.*

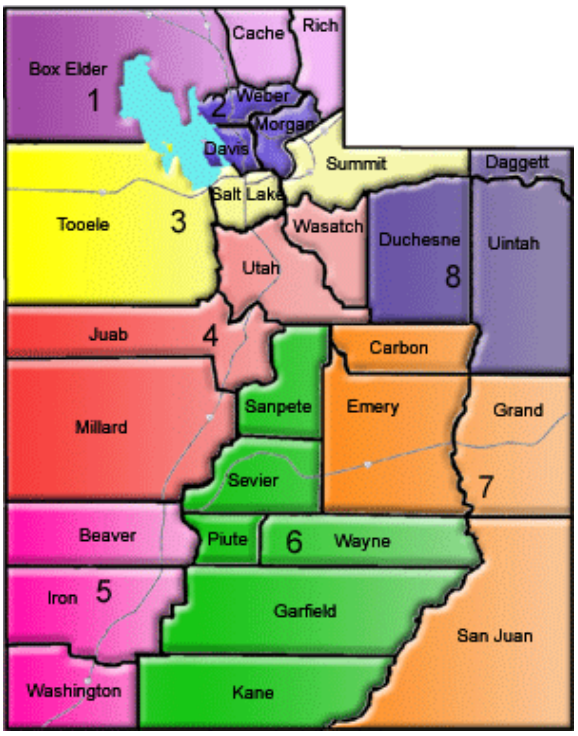
150 *Id.*

151 Emily Widra & Tiana Herring, *States of Incarceration: The Global Context 2021*, PRISON POL'Y INITIATIVE (Sept. 2021), https://www.prisonpolicy.org/global/2021.html [https://perma.cc/5R6L-MWWX].

152 *Map of Judicial Districts*, UTAH STATE CTS., https://www.utcourts.gov/en/about/miscellaneous/directory/map-of-judicial-districts.html [https://perma.cc/FV67-WFL3].

divide is reflected in the makeup of these districts, with three judicial districts containing the largest counties and more than 50% of the total population: the Second (with Davis County and Weber County), the Third (with Salt Lake County), and the Fourth (with Utah County).[153] As we demonstrate in our county- and judge-level analyses in sections III.C and IV.B, the distinctions between urban, suburban, and rural counties play into the number of warrant decisions and the manner in which those warrants are reviewed.

Figure 1: Map of Utah's Counties and Judicial Districts[154]



Criminal matters for adults, including warrant review, fall under the jurisdiction of both Utah's District and Justice Courts, which have

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[153] *Id.*; Kristen Carney, *Utah Counties by Population (2025)*, UTAH DEMOGRAPHICS (Dec. 17, 2024), www.utah-demographics.com/counties_by_population [https://perma.cc/E25X-86GY].

[154] *Map of Judicial Districts*, *supra* note 152.

roughly 150 to 175[155] warrant-reviewing judges at any given time.[156] This ratio appears to be about 40% smaller than the average trial court judge-to-population ratio in the United States.[157] While we do not have even basic data on the quantity of national-level warrant review and approval judges, given the national statistics available, we suspect that Utah has a similar warrant-population ratio relative to the broader United States but (due to its lower judge-population ratio) a moderately higher warrant-judge ratio that puts above-average economic and logistical demands on the judiciary.

Legally, the search warrant process in Utah is primarily governed by Utah Rule of Criminal Procedure 40.[158] In praxis, the search warrant process is run through Utah's electronic warrants (e-Warrants) system, which launched in 2008.[159] The change was prompted by a Utah Supreme Court decision where the court determined that a warrantless search was justified because the state could demonstrate the exigency of collecting blood alcohol evidence before dissipation — a circumstance that likely would not have existed but for the onerous nature of in-person warrant submission and review.[160] Following this decision, Utah state officials joined many other states around the nation by implementing an electronic warrants system to address the time-sensitive nature of evidence in cases involving offenses like DUIs.[161] As of 2018, Utah was one of at least forty-five states to utilize electronic warrant software at some level.[162]

For the submitting law enforcement officers and reviewing judges, this e-Warrants system is simple and streamlined. The officer logs on to the system and chooses from a list of affidavit templates, which prepopulate the affidavit draft with commonly used (but nonsubstantive)

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155 The current counts are at seventy-one district court judges, *An Overview of the Utah District Courts*, UTAH STATE CTS., https://www.utcourts.gov/en/about/courts/dist/overview.html [https://perma.cc/VH99-A4R4], and eighty-one justice court judges, *An Overview of the Utah Justice Courts*, UTAH STATE CTS., https://www.utcourts.gov/en/about/courts/just/overview.html [https://perma.cc/6Y4Q-HAN5], for a total of 152.

156 RON MALEGA & THOMAS H. COHEN, U.S. DOJ, STATE COURT ORGANIZATION, 2011, at 18 (2013), https://bjs.ojp.gov/content/pub/pdf/sco11.pdf [https://perma.cc/F98F-QVF4].

157 There are an average of 10.2 judges per 100,000 people nationwide, *see id.* at 4, compared with only about five judges per 100,000 people in Utah (based on 175 trial court judges in Utah, *see id.* at 18, for the population of about 3.5 million, *see QuickFacts: Utah*, *supra* note 141).

158 UTAH R. CRIM. P. 40.

159 *See* Associated Press, *Electronics Ease Warrant Process for Utah Police*, DESERET NEWS (May 2, 2010, 12:00 AM), https://www.deseret.com/2010/5/2/20112259/electronics-ease-warrant-process-for-utah-police [https://perma.cc/B9FS-QEMV]; BORAKOVE & BANKS, *supra* note 34, at 41.

160 BORAKOVE & BANKS, *supra* note 34, at 41; *see also* State v. Rodriguez, 156 P.3d 771, 772, 782 (Utah 2007).

161 BORAKOVE & BANKS, *supra* note 34, at 8, 41.

162 *See id.* at ii.

language.[163] The officer then completes the rest of the warrant by filling out "fields" regarding the circumstances that led to the warrant; the officer's qualifications (called the "Hero Statement"); the facts establishing the grounds for issuing the warrant; and the persons, locations, and items to be searched and/or seized.[164] Upon completion, the officer can seek prosecutorial review, which is common in some districts but only sometimes done in others.[165]

Upon submission by the officer, the on-call District or Justice Court judge is notified via email, pager, and/or text message.[166] The judge logs on to the system, views the warrants currently in their queue, and clicks on the PDF of the warrant they want to view.[167] We have included some sample warrants in Appendix I that match what the judge views except that they are also given a "Warrant Summary" bar that includes basic information on the submission.[168] At that point, the system begins recording the review time. The clock stops when the judge either denies the affidavit and provides the reason for denial or approves and then submits the mostly prepopulated warrant back into the system. Critically, the electronically signed approved warrants are stored in the court's data systems, but we have potentially conflicting information about what happens to denied and retracted affidavits. In a records request made to the Utah Department of Public Safety (DPS) by the authors for denied and retracted warrants (and other items), the agency responded in a letter dated January 13, 2020, that "All eWarrants are purged 21 days after they are submitted to the court."[169] DPS further stated that all other warrant records are retained by Utah AOC.[170] In

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[163] The list of prepopulated template types that we have been provided with covers the following circumstances: alcohol restricted driver, DUI blood draw, electronic service provider, emergency personnel blood draw, GPS electronic monitoring, unmanned aircraft system, a warrant with a 30-day seal, and a generalized form for other warrants. We have included two examples of these templates (the general form and one for a DUI blood draw) in Figures I.B and I.C. *See* Appendix, *supra* note 129, at 2–3, figs.I.B & I.C.

[164] *See eWarrants: Electronic Warrants Regional Training 2018*, UTAH DEP'T OF PUB. SAFETY 6 (2018) [hereinafter *eWarrants Training*], https://site.utah.gov/dps-tac/wp-content/uploads/sites/38/2018/04/EWARRANTS-REGIONAL-TRAINING-2018.pdf [https://perma.cc/7C6T-VK7J].

[165] *See* Schreifels & Wieber, *supra* note 29.

[166] *See* JENNIFER SYMOUN ET AL., NAT'L HIGHWAY TRAFFIC SAFETY ADMIN., PRACTICES FOR IMPLEMENTING EXPEDITED SEARCH WARRANT PROGRAMS FOR OBTAINING EVIDENCE FROM IMPAIRED DRIVERS 13 (2021), https://www.nhtsa.gov/sites/nhtsa.gov/files/documents/14735-expeditedwarrantsreport_041521_v2a_tag.pdf [https://perma.cc/2L8Z-YB5J].

[167] *Id.*

[168] *See* Appendix, *supra* note 129, at 1–10. The summary page for a given warrant includes basic data for each of the warrants listed in the Utah system, including the warrant number, the status, a status timestamp, the agency, the jurisdiction, the warrant type, whether there is a request to seal, whether an affidavit has previously been viewed, and the name and user ID of the submitting officer.

[169] Letter from Utah Dep't of Pub. Safety to authors (Jan. 13, 2020) (on file with the Harvard Law School Library).

[170] *Id.*

our communication with AOC, the agency stated that it did not keep denied or retracted affidavits. In a regional training presentation of the e-Warrants system by DPS, the agency stated that when any record is not completed or served, the record is kept in the "system for [six] months from [the] last status update."[171] We detail why that distinction is important in our discussion of limitations in section II.C.

Judge assignment to review is determined by a shift-based system that varies from county to county. Four districts have weeklong shifts, generally starting and ending at 8 AM on Mondays; one has two-week shifts; and three have monthlong shifts.[172] Judges occasionally take back-to-back shifts, especially in the more rural districts or those where the number of reviewing judges is small.[173] Each judicial district will typically have one on-call judge per shift.[174] While we have been told that all districts have backup judges, the data indicate that some use those backups much more regularly than others. It is also important to know that when most of the Utah judges featured in this Article's data are assigned to the warrant review shift, they are also assigned to a host of other "snap decision" duties as part of what is informally called "Signing Week."[175] In addition to reviewing search warrants, they review arrest warrants, protective orders, and stocking orders, attend first appearances, and sign off on initial probable cause and bail decisions. In this context, search warrant review constitutes only a portion of the late-night requests and time-sensitive decisions that face the judge.

In discussing the judges who were assigned to review warrants during the period analyzed in this study, we feel compelled to highlight that our findings — while indicative of systematic shortcomings in the warrant review process — should not be directly attributed to poor judging. As we highlight in section I.D, we believe that much of the current state of warrant review is the inevitable result of the jurisprudential nature of warrant review and extralegal factors such as institutional, political, and social influences.[176] Utah's legal system and judges are certainly not immune from those influences. Indeed, we suspect that the quality of judging (including their legal and professional training, court infrastructure, resources, and personnel) in Utah is at least comparable with most states. In some ways, Utah has taken a leading role in warrant reform, recently being the first to institute regulations on the use of

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171 *See eWarrants Training*, *supra* note 164, at 16.

172 We made these determinations by examining the patterns in the data for the approved warrants. To determine the shifts, we looked at the timestamp data, and based on the patterns of the approved warrants where we knew the judges, we examined whether there were clear shift changes at given times. We were able to determine clear patterns in shifts in most of the districts.

173 We determined these patterns using the previously described method for determining shifts. *See supra* note 172.

174 *See* Appendix, *supra* note 129, at 17–18.

175 We were told about "Signing Week" during the interviews we conducted with judges.

176 *See supra* section I.D, pp. 1975–82.

warrants to procure cell phone tracking data to "geofence" criminal suspects.[177] To the extent this is true, our empirical results represent a best- or better-case scenario, meaning the state of warrant review more broadly is even more disconcerting.

As a final note concerning the external applicability of our data and analyses, we acknowledge that while our description of the process above has remained largely unchanged over the last decade, our dataset, which runs from mid-2017 to early 2020, reflects only the judicial behavior and review outcomes during that period. It is possible that warrant practices have changed over the course of the intervening four years, especially during the COVID-induced disruptions in police investigation and criminal adjudication that lasted the better part of two years.[178]

C. Key Limitations

In addition to understanding the legal and administrative context of the review process and the nature of the data used, it is also critical to recognize the limitations inherent in our empirical study. To this end, this section highlights and explains the four limitations that we think are most important. We also reiterate them, when relevant, throughout the rest of the Article.

1. Only Approved Warrant PDFs. — The administrative timestamp metadata we procured from the DPS covers nearly every electronically submitted warrant affidavit and subsequent warrants and returns.[179] The PDF images from the AOC, however, only come from warrant affidavits that were approved — affidavits that were initially rejected or retracted are not systematically recorded by the system.[180] Consequently, while we were able to conduct much of our empirical analyses

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[177] *See* H.R. 57, 2019 Leg., Gen. Sess. (Utah 2019) (codified at UTAH CODE ANN. §§ 77-23c-101.1 to -105 (West 2024)); *see also* Leslie Corbly, Opinion, *Utah Law Would Strike a Balance Between Public Safety and Digital Privacy*, SALT LAKE TRIB. (Mar. 13, 2023, 5:00 PM), https://www.sltrib.com/opinion/commentary/2023/03/13/leslie-corbly-utah-law-would [https://perma.cc/Y72W-PANL].

[178] We are currently examining the extent to which demographic information that we hope to explore in future work is systematically available. Our understanding based on conversations with judges is that they rarely assign affidavits to clerks and that, on relatively rare occasions, they may interact with the law enforcement officer prior to making an approval or denial decision.

[179] Our dataset does not include warrants that were sealed at the time we downloaded the warrant PDFs. Given the nature of sealed documents, we have no way of knowing how many of these warrants were not available, although we suspect it is a very small percentage of the overall sample. Sealing warrants is somewhat common, but they tend to stay sealed for only thirty days or less. Under Utah Rule of Criminal Procedure 40, search warrant documents are to be sealed by default for twenty days from when the warrant is issued. Law enforcement officers may apply for a seal for a longer duration under Rule 40(m). Similarly, we have been told that an exceedingly small number of warrants are still filed in person, which would not be included in our dataset. Based on conversations with judges and prosecutors, this practice is more common in the more rural districts and tends to be for more complex, high-profile investigations.

[180] This conclusion is based on interviews with prosecutors who told us that rejected and retracted paper affidavits are not systematically recorded.

on the full set of approved, denied, and retracted warrant affidavits (including, most critically, analyses on the amount of time judges spent reviewing those submissions), any tests or descriptive statistics of denied and retracted affidavits that require PDF-text-derived information must either be inferred from the patterns in the DPS data or are simply unknowable.

Any holes in a dataset will constrain an analysis at some level, but the lack of denied and retracted affidavit PDFs created some particularly unfortunate limitations. Although these affidavits constitute less than ten percent of all warrant submissions (see our analysis in Part IV, below), they serve as the subgroup against which the data on the approval process can be compared. In some cases, we were able to impute information using the approved warrants (for example, imputing reviewing judge from shift data). But without the PDF images, we were ultimately not able to know (or even approximate) the length, complexity, and "type" of those submissions. Not knowing the characteristics of these missing affidavits prevented us from estimating the predictive effect that those characteristics have on review time and approval likelihood.

We have inquired about the possibility of accessing the images of denied and retracted warrant affidavits, but as we mentioned previously, it appears that state agencies such as DPS only retain those documents for somewhere between twenty and 180 days after they have been submitted. We were told that the submitting agencies (county sheriffs' offices and prosecutors' offices) might have kept records of these warrants, but all the offices we contacted either do not do so or were not willing to work with us on a data transfer.

2. No True Baseline Standard. — Another relevant limitation is our inability to create a true baseline standard against which the results of our analysis can be measured. We do not know how long judges *should* take to review a given warrant, so our observations on review time largely relied on contextual information and data we gathered. Likewise, without the ability to read and evaluate every warrant in our dataset (and assuming our own review process would be subject to errors regardless), we do not know what percentage of warrant affidavits *should* meet the probable cause standard. While there are aspects of probable cause that are objective, there are many parts that are discretionary. Unfortunately, creating a reliable indicator for probable cause is both legally and linguistically complex and is therefore beyond the scope of this Article. (It would also require access to the language of the denied warrants.) While we did conduct an in-depth qualitative analysis of individual approved warrants (see Part V, below), this process was time intensive and was therefore unavailable for the wider dataset.

Of course, these limitations do not prevent us from measuring the on-the-ground reality: We can know how quickly judges reviewed warrants, how often they approved them, and what factors are related to

speed and likelihood of approval. Using word counts derived from the PDF images of the approved warrant affidavits, we can also calculate whether the warrants were read in full and whether there are disparities among reviewing judges in average review time and review outcomes. At the same time, normative claims (which we make in this Article) made based on average review time and approval rate are unavoidably based, at least in part, on theory and expectation.[181]

3. Overestimating Review Time. — The most novel element of our dataset is the existence of timestamp data on the moment the reviewing judge first opens a warrant affidavit. While other states have data that would ostensibly allow us to determine the time between submission and decision, knowing only these two data points would not allow for an accurate (or even serviceable) analysis of the amount of time the actual review process took. This is because we can make no reliable assumptions regarding the moment when the judge first begins reading the content of the affidavit, so the gap between submission and first viewing must necessarily be attributed to the total review time. We need not make such an assumption in our analyses.

That being said, our dataset does not provide a *perfect* view into the review process either. Defining the review time for a given warrant as the period between when a judge first opens an affidavit and when the decision is made will sometimes provide an overestimated time measure. Consequently, the total review time for a given warrant is best understood as a top-end measure of the total possible time a judge could have spent reviewing that affidavit, since it includes the time that the judge spends opening the affidavit, reviewing and deciding on the affidavit, and possibly making any needed changes to the warrant.

4. Possible Errors in the Underlying Datasets. — We will end by raising the always-present possibility that there are errors in the underlying datasets that we used in this study.[182] In this Article, we can report only the reality that the data allow, meaning that our results must inherently reflect any flaws in that data. Certain data points might be missing or inaccurate, both of which would impact our findings, especially if those errors are common or nonrandom. These flaws could be the results of human mistakes on the front end of collection, glitches within the electronic systems that collect the data (for example, Utah's e-Warrants system), or electronic transposition errors in the data retention or provision programs.

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[181] See *supra* section I.D.1, pp. 1976–77, for our discussion regarding the motivations of law enforcement officers and how it informs our expectation of the underlying quality of submitted warrants.

[182] In discussing the potential for errors, we draw a distinction between errors in the data itself and errors or mistakes we made in cleaning and analysis. While we cannot guarantee that the latter category of errors have not occurred (we are not immune to human error), mistakes and oversights in how the data were cleaned, combined, analyzed, and presented are squarely within our control, and we feel we have been especially careful in this regard.

Even if there *are* errors in the data, we are not, of course, absolved of the responsibility to make efforts to identify them. For this project, we feel we have done our due diligence in this regard via two primary methods. First, we looked for inconsistencies and unexpected patterns in the data itself. For example, each warrant submission should have a decision outcome, and each decision outcome should have a prior submission.[183] Likewise, each warrant submission should only have one judicial review and one outcome.[184] Second, we had many dozens of discussions with Utah court administrators and judges about the data and our findings. In addition to providing essential contextual guidance and insights for the broader projects, potential problems with the data were occasionally highlighted. While we cannot be certain that those issues did not exist, we spent considerable resources exploring them and did not find any evidence of serious problems.[185]

D. Yearly Trends in Warrant Submission Rates

Before we begin the key empirical analyses of this Article, we first examine the trends in warrant submission rates in the years our data covers. The flow of warrant applications provides one important input into the context for understanding their workload pressure.

Figure 2 (below) shows the submissions by year for 2017 to 2020, the four years for which we have timestamp data. Overall, there were roughly 33,500 submissions to 119 judges during that period, resulting in an average review rate per judge of 281.28 warrant applications.[186] The dataset includes far fewer warrants in 2017 and 2020 compared with 2018 and 2019 because our timestamp dataset does not begin until March 28, 2017, and ends on January 29, 2020. Accounting for these abridged dates, the average per-day submissions for each of the four

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[183] While we did find some warrant submissions without outcomes, these were temporarily located at the very end of our dataset, which is almost certainly the result of the warrant affidavit having been submitted but not reviewed before our dataset ended.

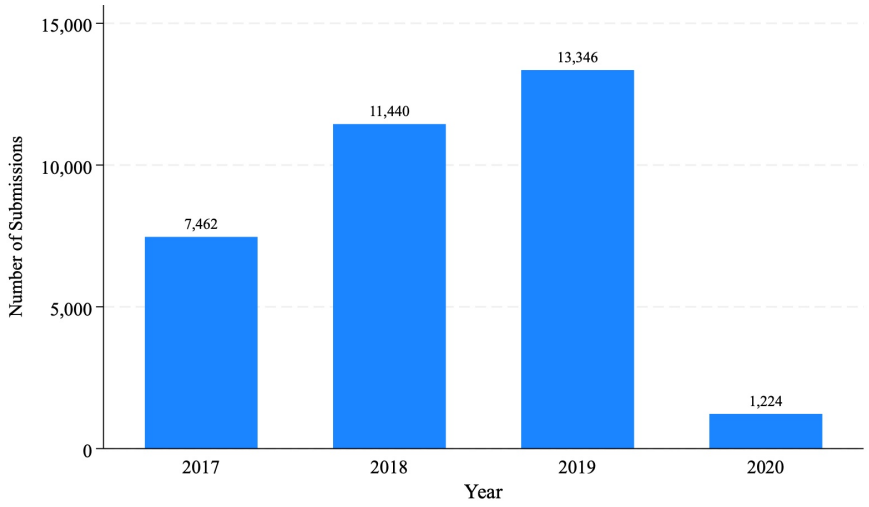
[184] We also found warrants with multiple reviews or outcomes, but there were only a dozen out of nearly 33,500 total warrants. This suggests a data error but one that would have no substantive impact on our analyses.

[185] One concern that was raised at least twice and would have substantial implications for the interpretation of the warrant review metadata was related to potential glitches in the review software, where some judges had reported that they were kicked out midreview and had to log back on to complete the process. Some were worried that these glitches would either "restart" the review clock or create a new review instance, either of which would naturally lead to review times that were artificially short. We spent a good deal of time looking for evidence of this sort of problem in the data and had a series of discussions with data administrators but found no evidence that the review clock was restarted or that any reviews were double-counted, even when the judges were kicked out of the system (although we admit that if clocks were restarting, we would likely not see evidence of that in the version of the data we received).

[186] This average does not reflect the fact that some judges, due to differences in either district-level submission rates or time as a reviewing judge, received far more (or fewer) in total. We discuss these disparities in section III.C, *infra* pp. 2014–16.

years (2017–2020) is 26.75, 31.34, 36.56, and 42.20, respectively. This is an average increase per year of sixteen to seventeen percentage points.

Figure 2: Warrant Submissions in Dataset by Year, 2017–2020



Notes: The sample includes all warrant submissions. 2017 and 2020 had only 279 and 29 days of data, respectively.

We suspect there are at least three explanations for this trend. First, with the arrival of digital devices, social media, and other online platforms, officers have had more evidence that can be sought through warrants.[187] Second, with the rise of a small number of third parties who can provide a broad swath of data — such as mobile phone providers like AT&T, Sprint, T-Mobile, and Verizon; internet service providers like AT&T, Comcast, Cox, and Frontier; email and cloud services providers like Amazon, Apple, Dropbox, Google, Microsoft, and Yahoo; and social media and messaging platforms like Facebook and WhatsApp — officers can easily request information from only a few providers without needing to confront the individual(s) being searched, for which courts and legislatures have increasingly required warrants.[188] Finally, electronic warrant systems like the one deployed in Utah have reduced the time and cost of applying for warrants.[189]

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[187] *See* Mary D. Fan, *Big Data Searches and the Future of Criminal Procedure*, 102 TEX. L. REV. 877, 879–80 (2024).

[188] *See, e.g.*, Carpenter v. United States, 138 S. Ct. 2206, 2223 (2018) (finding that the Fourth Amendment's warrant requirement extends to obtaining cell site location information records from a person's cell phone service provider); UTAH CODE ANN. § 77-23c-102 (West 2023) (extending the statutory requirement to cover evidentiary requests to third-party electronic service providers).

[189] Tracy Hresko Pearl, *On Warrants & Waiting: Electronic Warrants & the Fourth Amendment*, 99 IND. L.J. 1, 12 (2023).

III. How Long Do Judges Take to Review Warrants?

In this Part, we commence our formal empirical investigation by describing and analyzing the amount of time that judges and magistrates spent on the warrant review process. Our analysis yields four key empirical findings: First, looking at all warrants submitted during the period in which the full set of timestamps were recorded (March 28, 2017, to January 29, 2020), the median time for review is just over three minutes. In other words, half of all warrant applications were opened, read, evaluated, and then (if approved) edited, compiled, and sent back to officers as a judicial warrant in 183 seconds or less. Second, more than ten percent (3,684 total warrants) were reviewed in a minute or less. Third, without controlling for additional factors[190] there is no meaningful correlation between the length of a warrant (in words) and the amount of time a judge spends reviewing that warrant. Fourth, even when we accounted for the individual circumstances and substantive characteristics of a warrant, such as type of crime suspected, existence of nonsubstantive text, submission history, and repetitive language, the above results remained largely unchanged.

Section III.A presents descriptive findings on warrant review time for the entire sample of warrants and analyzes the general relationship between review time and warrant length. Section III.B conducts a series of alternative analyses, with section III.B.1 examining differences in warrant content and review time across crime categories; III.B.2 calculating review time after removing potentially unnecessary text and "boilerplate language" from the affidavits; III.B.3 excluding warrants that are nearly identical to previously submitted affidavits; and III.B.4 excluding affidavits that have previously been denied or retracted. Section III.C explores disparities in review time across districts and individual judges, and section III.D identifies the warrant- and judge-level characteristics that are predictive of review time.

In presenting these results and discussing their implications, we continue to emphasize that we do not have a perfect baseline measure for how long the warrant review process *should* take in the abstract.[191] However, even accounting for reasonable economies of scale and the content of the submissions, our general findings that the majority of warrant affidavits were fully reviewed in three minutes and a substantial number were reviewed in less than a minute provide strong evidence that the review process is often much more brief than the generally accepted understanding of the constitutional warrant requirement would anticipate.

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[190] *See infra* section III.D, pp. 2017–25 (describing our regression analysis).

[191] For our discussion of this limitation, see *supra* section II.C.2, pp. 1992–93.

A. Review Time and Affidavit Length

We start by examining the time that judges spend on determining whether a warrant should be approved or denied. Table 1 (below) shows descriptive statistics for the time that judges spent on the full set of warrant applications, presenting the tenth percentile, first quartile (twenty-fifth percentile), third quartile (seventy-fifth percentile), and two calculations of the mean. We have separated out the affidavits by decision or outcome type (approval, denial, or retraction) but also include descriptive statistics aggregating all outcomes.

The substantial difference between mean and median review times reflects underlying distributions that are highly right skewed, due in large part to (1) a low-end limit of review time (approaching zero) with no such limit on the top end, and (2) the existence of outlier review time data. To account for some of these issues, we have removed seventeen extreme outliers where the review time was more than 3,600 minutes (sixty hours, or 2.5 days) and use the resulting dataset for the remainder of our analysis in this paper.[192] The adjusted means in the rightmost column of Table 1 (below) demonstrate the disproportionate impact these extreme outliers play in the unadjusted average review time (Column 7), reducing it by over eighty percent in the case of denials. For these reasons, we argue that median review time is a more appropriate measure. Additionally, by focusing on percentile divisions, we have a clearer sense of how many warrants are approved in a given timeframe.

Table 1: Warrant Decision Time (Minutes)

Decision Type	Obs.	Min.	First Decile	First Quart.	Med.	Mean	Adj. Mean	Third Quart.	Max.
Approval	29,817	0:01	0:57	1:37	2:50	14:23	6:47	5:13	84,698:26
Denial	2,195	0:01	2:33	4:15	6:54	108:48	20:51	11:58	181,774:48
Retraction	1,453	0:01	0:30	1:31	6:32	64:29	38:04	19:06	8,208:38
All	33,465	0:01	0:57	1:41	3:03	22:45	9:03	5:54	181,774:48

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed.

[192] In a dataset that is bottom-end limited, we expect to see a distribution that is right-skewed and includes what can appear to be outliers but are simply the natural outcomes of a system that allows for (and may require) longer review. For example, ninety-nine percent of all reviews were conducted in ninety-one minutes or less, but we are hesitant to exclude reviews that exceeded that amount, as they may reflect circumstances that genuinely required more than an hour and a half's consideration (even though we suspect some of these reflect data errors or "forgotten" warrant applications). As a result, we approached the exclusion of outliers in a very conservative manner, only excluding the seventeen observations that exceeded 3,600 minutes.

The median approval time is under three minutes (2:50). In that time, the judge ostensibly reads the affidavit, determines the veracity of the facts, evaluates whether probable cause has been met for a stated crime, and issues the rewritten warrant itself. Approvals comprise the lion's share of the decisions — as we demonstrate later in Part IV, over 93% of warrant applications were approved on the first submission and over ninety-eight percent of warrants were eventually approved upon resubmission — so it is not surprising that the median time irrespective of the decision outcome (3:03) is close in proximity to the median approval time.

A substantial portion of warrants were approved even more quickly. Twenty-five percent of all warrant reviews were concluded in 1:41 or less, and the same proportion of approvals were made in 1:37 or less. Furthermore, roughly one out of every ten approved warrants (approximately 3,350 in total) was reviewed in fewer than fifty-seven seconds, an astounding finding given that the approval process involves a number of steps beyond simply reading the warrant affidavit (for example, populating the resulting warrant and even clicking the various buttons required to make the final decision).[193] While some of these are explained by resubmissions and group warrants, many appear to simply be very rapid reviews. We explore these "minute warrants" more fully in Part V.

Potentially surprising is the observation that the judges spent more than twice as long on denials (a median of 6:54) as approvals. While a discussion of the directional nature of judicial review in the context of constitutional rights is beyond the scope of this Article, we find the disparity between time to approve and time to deny to be expected from a pragmatic point of view but in sharp contrast to the traditional notion of how a rights review is theoretically conducted.[194] Our data is consistent with the understanding that judges go into the warrant review process *expecting* to approve the warrant, quickly completing the process if everything looks normal.

To better understand the implications that these findings have on the question of how closely judges scrutinize warrants during the review process, Figure 3 (below) maps the review time for approved warrants against the word count for those warrant affidavits that were scraped

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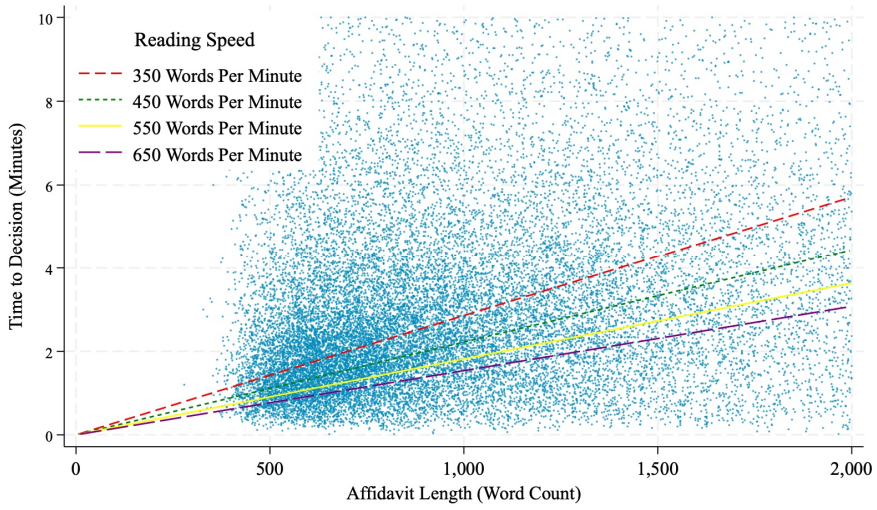
[193] None of these nonevaluative steps needs to take much time at all (although drafting the warrant might be an involved process if the judge wishes to change the language that the officer used), but in the context of a minute, even ten seconds is substantial.

[194] If the purpose of a rights review is to ensure that the necessary elements for a government intrusion exist — say, elements *A*, *B*, and *C* — then one might reasonably expect the process of denial to take less time, as the absence of any one of those elements immediately constitutes a failure to meet the standard. An approval, on the other hand, would require a judge to read through the entire warrant affidavit until all three elements are demonstrated.

from the PDF images.[195] As a reference point, a double-spaced page in Microsoft Word with one-inch margins and twelve-point font is around 250 words, and a recent meta-analysis found that the average (silent) reading speed of the English language for adults reading nonfiction is 238 words per minute (WPM).[196] As we posited in our discussion of the cognitive difficulties of reading legal documents, however, law students tend to read considerably faster than lay readers[197] and judges may read at even higher speeds.[198] If judges employ "skimming" techniques — where the intention is to understand general themes — they could reach considerably higher speeds, although likely with a heavy cost to comprehension, especially regarding technical information and small details.[199]

Figure 3: Approved Warrant Review Time
Relative to Affidavit Length



Notes: The sample includes only approved warrant affidavits with less than or equal to 2,000 words and durations of ten minutes or less in order to highlight a pattern in the bulk of warrant reviews.

To visualize the range of possible speeds, Figure 3 plots warrant approval time relative to length (word count). It also includes four colored

[195] As a reminder, we do not have the PDF images for denied and retracted warrants, so any analysis incorporating word counts will be on only approved warrants.

[196] *See* Brysbaert, *supra* note 118, at 5.

[197] *See* Cameron, *supra* note 117, at 58.

[198] *See id.*

[199] Rayner et al., *supra* note 122, at 395.

lines representing 350, 450, 550, and 650 WPM. At any given speed, all of the points that fall below the respective line represent an affidavit that a judge working at that reading speed would not have read in its entirety. The share of such reviews is substantial, even under the most generous reading speed assumption of 650 WPM.[200] We speak to possible explanations for this (that is, judges intentionally skipping over entire, less essential portions of the affidavit) in our alternative analyses below.

Finally, one would expect that word count would correlate with the time it would take to make the decision to approve or deny an individual warrant application. Yet, the distribution of points in Figure 3 does not reflect any strong central tendency toward a given time-to-length ratio. When confirming this through formal empirical tests, we also find that the correlation is incredibly weak. The correlation coefficient (r) between word count and time spent for approved warrants for the full dataset is 0.069.[201] As a baseline, a weak positive correlation is generally considered to be at least 0.3, while a stronger positive correlation would start around 0.7.[202] A correlation coefficient of 0.069 is effectively zero, meaning that there is no meaningful relationship between the length of a warrant affidavit and the time the judge spends reviewing it (at least on average). However, as we discuss in section III.D, we do find that word count is statistically significant at conventional levels in regressions that control for other factors.

B. Exploring Alternative Datasets and Explanations

As we presented preliminary versions of the key results in the previous section to judges, attorneys, and academics (both in and outside of Utah), many — correctly, in our estimation — pointed out that a generalized analysis of warrant review that includes every type of warrant submitted under all circumstances will necessarily miss the nuance and context that actual warrant review entails. Not every warrant requires the same level of scrutiny, so providing only generalized statistics is potentially misleading.

For example, DUI warrants (that is, those warrants seeking permission to run blood sobriety tests) are among the most common warrant types included in our dataset and tend to be quite similar to one another. Indeed, based on our qualitative review of affidavits in our dataset, most DUI warrants are remarkably similar, with some only varying on the name of the officer, the location of the traffic stop, the name of the

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[200] *See* Ronald P. Carver, *Reading Rate: Theory, Research, and Practical Implications*, 36 J. READING 84, 85 (1992) (noting that scanning for target words in text can be performed "at rates around 600 words per minute, or even higher").

[201] The correlation coefficients we report in this article were calculated by the authors using standard correlation tests (for example, Pearson's correlation coefficients).

[202] *See, e.g.*, DAVID FREEMAN ET AL., STATISTICS 126 (4th ed. 2007) ("Weak associations are common in social science studies, 0.3 to 0.7 being the usual range for r in many fields.").

subject, or the date. In addition, because the human body metabolizes evidence of the offense — one's blood alcohol content — there is an increased urgency to review DUI warrants quickly.[203] It stands to reason that the time required to review these warrants might be much lower than, say, a warrant to search a residential home. Consequently, excluding DUI warrants from the analysis might provide a clearer picture of the "true" review process. Similarly, many judges have posited that the time required to review warrants that have already been submitted but were initially denied is significantly less than the initial look because a secondary (or in some cases, tertiary) review need only identify the previously inadequate content and ensure that it has been resolved.

In this subsection, we address these concerns by conducting a series of "alternative" tests where we analyze subgroups of approved warrants in our dataset based on warrant affidavit type, complexity, and similarity.[204] We also attempt to identify and remove non-essential language from word count totals to see if that helps to explain our previous results. These alternative analyses do, indeed, show that the judicial attention that some warrants demand is lower or higher than others. By excluding those types from our generalized analysis, the median review time changes. Nonetheless, as we demonstrate below, these resulting differences are (with a few exceptions) not particularly significant, further bolstering our overall conclusions that warrant review is fast and that many warrants of all types are not being read in full.

1. Alternative Analysis One: Differences Across Crime Categories. — One might reasonably expect heterogeneity in time spent across different categories of warrant crime types, reflecting both varying complexity in the facts needed to make a probable cause determination and different stakes involved in the broader investigation. For example, warrants dealing with the acquisition of illicit digital images or evidence relating to violent crime likely require greater detail in the affidavit and may garner more critical evaluation from the judge. On the less complex end of the spectrum, a warrant required for a blood draw of an individual suspected of DUI almost certainly involves more formulaic language and a more straightforward review process.[205]

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[203] *See supra* note 108 and accompanying text.

[204] Again, we remind the reader that any analysis that requires knowing the content of the affidavits must necessarily be limited to approved warrants, as this information is derived from the text of the PDF data. Also note that while our PDF analysis was quite accurate when compared against hand-coded training sets (see our description of the process in Appendix, *supra* note 129, at 15–19), it was not able to identify crime types in all affidavits. As a result, the sample size of included affidavits in this subsection is lower than the total number of affidavits.

[205] We have included an example of a formulaic DUI warrant as well as the DUI "form" warrant that officers use in Appendix I. *See* Appendix, *supra* note 129, at 2–3 figs.I.B & I.C.

Table 2: Approved Warrant Review Time (Minutes)
Without and Only Including DUI Warrants

DUI Included?	Obs.	Min.	First Decile	First Quart.	Med.	Adj. Mean	Third Quart.	Max.
Only DUI	6,256	0:01	0:47	1:13	1:58	2:48	3:09	133:20
DUI Excluded	23,553	0:03	1:02	1:48	3:11	7:50	5:54	2,581:37
All Approvals	29,809	0:01	0:57	1:37	2:50	6:47	5:13	2,581:37

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed.

Given how common this latter view regarding DUI warrants was in our conversations with judges, we begin this first set of alternative analyses by dropping all approved warrant affidavits with PDF texts coded to include DUI offenses. Row 1 in Table 2 (above) presents data from a subgroup that includes only DUI affidavits and shows that such warrants are, indeed, approved at a much faster clip. The median duration for warrant approval of DUI warrants (1:58) is nearly a minute faster than the approval time for the full dataset (2:50). That said, the data does not provide strong support for the position that the fast review times we identified in the full dataset are driven by the inclusion of DUI warrants. Looking at a subset of full data that excludes such warrants (row 2 in Table 2) shows that the median review time increases by only twenty-one seconds relative to the full dataset. While this difference is not negligible, it is also not particularly notable.

Moving beyond DUI warrants, Figure 4 (below) shows the variation in the number of warrant submissions by the five most common exclusive crime categories (that is, those warrants that had only one crime category identified by our machine learning algorithm).[206] The number of warrants within each exclusive crime category provides some important context for understanding the subsequent analysis. Note, for example, that although there are more than 1,200 warrants in our dataset that include mention of drug-related crimes,[207] only thirty-one are "pure" drug warrants. Conversely, nearly all of the 6,500 warrants that involved motor vehicle crimes are exclusively motor vehicle warrants.[208]

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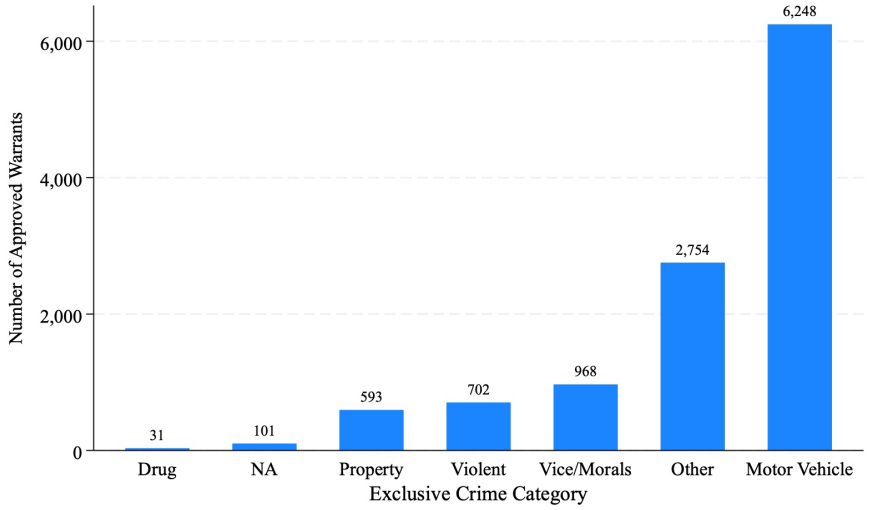
[206] We chose to present results for warrants that have only one crime category to make the comparisons across types cleaner. We include tables that mirror those in this section but present speed and word count for a categorization that "double counts" warrants by including all crime categories that apply to a warrant in Appendix II. *See* Appendix, *supra* note 129, at 11 tbls.II.A(1) & II.A(2).

[207] *See id.* at 11 tbl.II.A(1).

[208] *Id.*

Also note that our machine learning algorithm failed to identify crime types for some of the warrant affidavits.[209]

Figure 4: Approved Warrants by Exclusive Crime Category



Notes: The sample includes only approved warrants (those with PDF images). Warrants were categorized into exclusive crime categories if the affidavits were coded to reference only a single crime category. Additionally, 18,420 approved warrants had "Mixed Crime" categories.

Turning to the review-time data, if the warrant crime-type was predictive of review time, one would see differences in the time judges take across categories of offenses. Crime categories with greater factual and evidentiary complexity would likely take much more time than types that are less labor-intensive in evaluating probable cause. Table 3(a) (below) shows that while the median times for drug and motor vehicle warrants lower, the median times for the other categories are relatively similar. Specifically, while the median time for motor vehicle and drug warrants are respectively one minute and fifty-eight seconds and two minutes and eight seconds, the remaining categories ("Violent," "Property," "Vice/Morals," and "Other") remain tightly clustered within less than one minute of each other (ranging from two minutes and fifty seconds to three minutes and forty-nine seconds).

[209] In some cases (although not many) this appears to be because the warrant affidavits themselves did not actually reference the suspected crime or relevant criminal statute.

Table 3(a): Approved Warrant Review Time (Minutes) by Exclusive Crime Category

Exclusive Crime Type	Obs.	Min.	First Decile	First Quart.	Med.	Adj. Mean	Third Quart.	Max.
Violent	702	0:10	1:08	1:55	3:17	9:14	6:28	721:31
Property	593	0:19	1:16	1:56	3:22	8:39	5:46	1,058:03
Drug	31	0:19	1:00	1:41	2:08	3:01	3:13	16:02
Vice/Morals	968	0:10	1:11	2:13	3:49	10:39	7:36	1,150:30
Motor Vehicle	6,246	0:01	0:47	1:13	1:58	2:48	3:09	133:20
Other Crimes*	2,754	0:07	1:06	1:55	3:25	7:17	6:20	1,109:13
All Approvals	29,809	0:01	0:57	1:37	2:50	6:47	5:13	2,581:37

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed, including only approved warrants (those with PDF images).

* "Other Crimes" were those warrants that were coded to crime types other than the five main categories included above.

The differentiation in review time across these categories might be explained by the review times corresponding to the lengths of affidavits submitted across the crime types. Although the median affidavit lengths for motor vehicle and drug warrants are relatively small — differing only by ninety-three words — there are meaningful differences in word counts among the other categories. There is an increase in median affidavit word count by nearly 300 words from "Drug" to "Property" ("Property" is the next highest category in terms of affidavit length), followed by an increase of more than 200 words from "Violent" crimes to the two categories with the highest word counts ("Vice/Morals" and "Other"). Yet, the time differences between all of the other categories except "Motor Vehicle" and "Other" are relatively similar, not corresponding to these meaningful increases in median word counts.

Table 3(b): Approved Warrant Affidavit Length (Words) by Exclusive Crime Category

Crime Category	Min.	Obs.	First Quart.	Med.	Third Quart.	Adj. Mean	Max.
Violent	462	702	873	1,190	1,550	1,339.16	8,849
Property	370	593	834	1,149	1,502	1,259.81	4,677
Drug	480	31	716	852	1,350	1,063.29	2,503
Vice/Morals	411	968	969	1,416	2,559	2,494.62	18,000
Motor Vehicle	338	6,248	565	659	798	705.03	3,642
Other Crimes	389	2,754	956	1,403	1,943	1,514.44	6,402
All Approvals	279	25,601	698	979	1,489	1,264.74	18,511

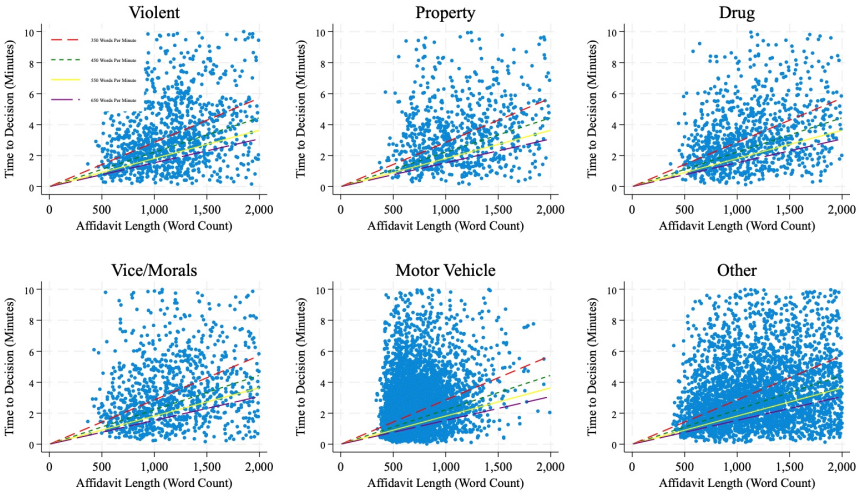
Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed

In addition to review-time and word-count medians, we also examined the visual distributions of warrants that fit into the various crime categories.[210] Much like Figure 3,[211] Figure 5 (below) maps the review time for approved warrants against the word count for those warrant affidavits, except that it breaks down the presentation by crime type. Recall that the colored lines reflect varying WPM reading speeds and that any point that falls below a given line represents a warrant affidavit that was not read in its entirety at that reading speed. While there are some differences in the spread of the observations across the various crime types — again, with motor vehicle warrants being the most obvious — the overall shape of the distributions (very little central tendency) is similar across crime type, and each type has a substantial proportion of warrants that fall below the various WPM curves.

[210] For this portion of the analysis, we coded a warrant to a given crime type if the affidavit references that type, even if there was more than one type identified (whereas the previous discussion covered only warrants with a single, exclusive type). For example, if a warrant affidavit was coded by our machine learning algorithm to include a discussion of a drug crime *and* a violent crime, it would be represented in the subfigures for both crime types. As a result, these figures "double count" warrants when appropriate.

[211] *See* p. 1999.

Figure 5: Approved Warrant Review Time Relative to Affidavit Length Across Crime Categories



Notes: The sample includes only approved warrants (those with PDF images). The striped lines correspond to reading speeds of 350 (red), 450 (green), 550 (yellow), and 650 (purple) words per minute.

Taken together, the word-count data and visualizations of the time-to-length distributions within specific warrant crime types do little to change our key observations of the broader dataset.

2. Alternative Analysis Two: Removing "Unnecessary" Language. — Our second alternative analysis accounts for the common refrain — raised by both judges and academics who have reviewed our initial empirical findings — that not all the language in a warrant affidavit is necessary to read or review to meet the probable cause standard. While this line of reasoning certainly has its limits (practical and constitutional), the idea that some of the language in a warrant does not directly address the questions of whether a crime has been committed and whether evidence of that crime will be found is likely true. If judges can identify and then skip the "unnecessary" portions of the warrant affidavit — or alternatively target only the most essential — they would almost certainly work through the warrant review process more quickly.

Each warrant affidavit in our dataset generally contains five constituent parts: (a) an introduction with the jurisdiction, law enforcement officer information, and alleged crime(s); (b) a description of the property to be seized and its location; (c) the "hero statement" (the officer's history and qualifications); (d) the facts and justification(s) for probable cause;

and (e) the prayer for relief.[212] The likelihood of repetition in some of these portions across many — if not most — affidavits likely has a cognitive effect on the reviewing judge. Additionally, although all sections are important parts of the affidavit, some are arguably less substantively critical and much less complex than the facts and the prayer for relief.

Consequently, this alternative analysis removes the parts of an affidavit that are most likely to be skipped or skimmed over by judges, as defined in two ways. First, we use warrant affidavit forms used by submitting officers to identify the language that is included in every warrant affidavit, independent of the specific facts or circumstances underlying the request (what we call boilerplate language). Second, we attempt to isolate just the facts from the warrant, thereby removing all arguably unnecessary language. We do this utilizing a large language model trained on a hand-coded sample of affidavits (explained in more detail below). We then calculate word counts only for the remaining content.

Similar to what the empirical literatures in contracts and securities regulation have shown, the existence of boilerplate language — true recitations of text — in the warrant affidavits may result in faster review times but lower reading comprehension, whether or not the judges intentionally speed up when encountering such texts.[213] In the context of a warrant affidavit, boilerplate language could be defined in several ways, but we have elected to designate it as language that is included in (nearly) every submission and carries no factually or legally substantive weight. Instead of calculating the amount of boilerplate language in each individual warrant, we used a universal word count based on the "form" warrant for general warrant submissions.[214] As a result, we simply reduced the word count of each warrant in our sample by 188 words.

Our word count data that includes only the factual information from the affidavits was more complicated to create. To detect this information, we used automatic boundary and sentence classification techniques with the help of BERT, a large language model and artificial neural network, which has been shown to be highly accurate in performing this kind of task.[215]

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[212] We have included an example of a warrant that demonstrates this basic structure in Appendix I. *See* Appendix, *supra* note 129, at 1 fig.I.A.

[213] *See, e.g.*, Jeremy McClane, *Boilerplate and the Impact of Disclosure in Securities Dealmaking*, 72 VAND. L. REV. 191, 221, 238 (2019) (linguistically analyzing nearly 3,000 IPO disclosure documents and finding that "boilerplate bears a strong relationship to the readability of disclosure," *id.* at 238).

[214] We have included this form warrant in Appendix I. *See* Appendix, *supra* note 129, at 2 fig.I.B.

[215] *See generally Classify Text with BERT*, TENSORFLOW (July 19, 2024), https://www.tensorflow.org/text/tutorials/classify_text_with_bert [https://perma.cc/Y9VQ-K5MN] (displaying a tutorial from one of the leading machine learning programs on how to use BERT to classify text).

In validating this method, we found that we were able to achieve a high degree of accuracy in the task (>99% on a training set of 1,000 randomly selected warrants and >98% on a blind test set of 1,000 randomly selected warrants). We also validated these measures using a hand-coded, random sample of 228 affidavits from our dataset. As is often the case with algorithmic approaches to cleaning complex texts, our results were not perfect. We did not calculate word counts in this alternative analysis for any of the roughly 1,617 affidavits submitted after December 12, 2019, and we were not able to calculate the fact-specific word counts for 2,599 of the remaining affidavits. For those roughly 25,000 affidavits that did produce data, our validation results indicated that the algorithm was fairly accurate but, to the extent it did make mistakes, tended to undercount the proportion of the affidavit that contained important factual information or context (identifying nonfactual language as factual was much less common). To the extent that this biases our results, it would do so by understating the amount of content a judge would need to review and, consequently, the number of warrants that were not read in full.

Table 4: Alternative Approved Warrant Affidavit Length (Words)

Definition of Warrant Length	Obs.	Min.	First Quart.	Med.	Third Quart.	Adj. Mean	Max.
Full Affidavit	25,601	279	698	979	1,489	1,264.74	18,511
No Boilerplate*	25,601	91	510	791	1,301	1,076.74	18,323
Facts Only**	24,460	16	292	465	813	699.95	16,890

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed

* "No Boilerplate" word counts were calculated by subtracting the boilerplate word count (188) from the full affidavit.

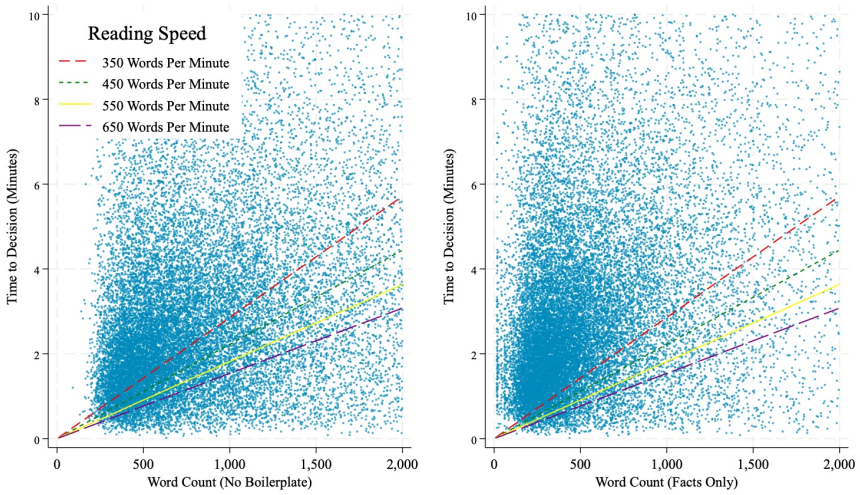
** "Facts Only" word counts were calculated using a machine learning algorithm that isolated the factual allegations and context. The algorithm failed to identify any factual language in 1,141 warrant affidavits.

Table 4 presents descriptive data on the length of the affidavit submissions under three word-count categories: the full count (which we presented in Table 3(b)), a word count without boilerplate language, and a word count that includes only the facts as identified by our algorithm. Not surprisingly, the counts for the alternative length that excluded the boilerplate language are simply 188 words fewer than the full count. The facts-only counts are also smaller than the full count on every measure, but the differences are more notable. According to our measure across the first quartile, median, and third quartile of approved warrants (see corresponding columns in Table 4), the proportion of fact-specific language in an affidavit remains about the same relative to full

affidavit word count (roughly 50%). This is consistent with our reading of affidavits.

In Figure 6 (below), we replicate Figure 3,[216] except with word counts that are adjusted to reflect our two alternative measures. As expected, we see the distribution of word counts move in density toward zero words (to the left), with many of the warrants nearly reaching zero (the shortest had sixteen words). Keeping our four WPM lines consistent, we saw that there were fewer warrants that are clearly not being read in full. However, there are still many that fall below these curves. In the case of the facts-only counts, each of these points represents an affidavit where the judge likely did not even read all of the facts (or skimmed over them).

Figure 6: Approved Warrant Review Time
Relative to Alternative Word Counts



Notes: The sample includes only approved warrants (those with PDF images) from 2017–2019. "No Boilerplate" word counts were calculated by subtracting the boilerplate word count (188) from the full affidavit. "Facts Only" word counts were calculated by using a machine learning algorithm that isolated the factual allegations and context. The algorithm failed to identify any factual language in 1,210 warrant affidavits.

Incredibly, the near-zero correlation between full affidavit length and review time that we discussed in section III.A remains largely unchanged when looking at our alternative measures. The correlation is, of course, the same with the no-boilerplate measure that simply subtracts 188 words as it is with the full word counts (0.069) (correlation coefficients are a relative measure, so changing all data by the same

[216] *See supra* p. 1999.

amount will not alter the resulting statistic). But the fact that the correlation coefficient for the relationship between facts-only word counts and review time is even lower, at 0.066, is striking. This suggests that even when we isolate the most fact-heavy portions of the warrants — those sections that, under any conception of constitutional review, require the most scrutiny — warrant review time is not affected by affidavit length.

3. Alternative Analysis Three: Removing Similar Affidavits. — Our third alternative analysis removed similar affidavits from our analysis to account for the possibility that judges are able and willing to more quickly review warrants that are very similar to ones they have previously reviewed. From our discussions with judges, this is most likely to occur under one of two circumstances. First, it is relatively common when crimes are committed by groups of individuals for officers to submit multiple search warrants for different defendants that are nonetheless practically identical for the purposes of judicial review. Indeed, some affidavits in our sample differ only in the name of the suspect listed or the location to be searched (that is, they were submitted on the same date, to the same judge, by the same officer, and include the exact same factual justifications and prayers for relief). In such cases, one can argue that a judge is fully justified in spending considerably less time on the second affidavit than on the first while still credibly meeting the requirements for a constitutionally sufficient judicial review.

Second, there are entire types of search warrants that are likely to arise from such similar facts that the substantive content will be highly similar simply as a consequence of inherently alike conditions.[217] In those cases, judges may become so familiar with an affidavit format that full judicial review will naturally not take as long as it would for a more novel circumstance. While one of the alternative analyses we employed earlier explicitly excluded entire categories of search warrants that tend to be nearly identical (DUI investigations), this principle of inherent similarity might extend beyond simple crime categories. As a result, we felt it was prudent to identify those warrant affidavits that were sufficiently similar to other affidavits and remove them from the dataset for the analysis here.

To do this with such a large dataset, we employed a natural language processing methodology called "Jaccard similarity" to identify any affidavits that share a substantial percentage of text with any other affidavit in the dataset. For all of the nearly 30,000 approved warrant affidavits, we computed Jaccard coefficients for each possible affidavit comparison. This resulted in a matrix of approximately 900 million measures, where a 0.0 indicates no similarity at all (as a practical matter, this never occurs with complex texts like affidavits) and a 1.0 indicates an identical

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[217] These "MadLibs" warrants appear to correlate with "form" warrants that officers can use as a starting point for certain types of affidavit submissions. See our discussion at *supra* pp. 1988–89.

document (this also never occurs). We then removed all affidavits that had a Jaccard coefficient of 0.9, 0.95, and 0.99 or above with *any* other affidavit from the dataset and re-ran our reading-time calculations.[218]

Table 5(a) (below) shows the descriptive statistics on review time for three samples where we dropped observations based on three Jaccard similarity thresholds. Consistent with our expectations, most of the affidavits in our sample have at least one substantially similar counterpart. Curiously, however, we see a decrease in the median time spent on warrant approval when similar warrants are dropped. The difference is substantively small — only about 0.2 minutes or twelve seconds — but at a minimum, this demonstrates that after dropping observations with high affidavit similarity, the median time does not increase. Because we found the result surprising, we examined word counts (see Table 5(b)) and found that affidavits with higher word counts are more likely to have high similarity with other affidavits, which helps explain the small drop in review time but runs against our priors that the shorter, ostensibly more form-driven, affidavits would be more likely to have high linguistic similarity.

Table 5(a): Approved Warrant Review Time (Minutes)
Accounting for Affidavit Similarity

Similarity Measure	Obs.	Min.	First Decile	First Quart.	Med.	Adj. Mean	Third Quart.	Max.
Jaccard Similarity ≤ 0.90	15,967	0:01	0:55	1:33	2:38	6:00	4:37	2,581:37
Jaccard Similarity ≤ 0.95	17,055	0:01	0:55	1:32	2:39	6:02	4:41	2,581:37
Jaccard Similarity ≤ 0.99	17,983	0:01	0:53	1:32	2:39	6:03	4:44	2,581:37
All Approvals	29,809	0:01	0:57	1:37	2:50	6:47	5:13	2,581:37

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed.

[218] For a more detailed explanation of Jaccard similarity, see Appendix, *supra* note 129, at 19–21.

Table 5(b): Approved Warrant Affidavit Length (Words) Accounting for Affidavit Similarity

Similarity Measure	Obs.	Min.	First Quart.	Med.	Adj. Mean	Third Quart.	Max.
Jaccard Similarity ≤ 0.90	15,970	279	679	930	1,162.19	1,381	18,000
Jaccard Similarity ≤ 0.95	17,058	279	690	956	1,201.39	1,436	18,511
Jaccard Similarity ≤ 0.99	17,986	279	700	983	1,243.09	1,494	18,511
All Approvals	25,601	279	698	979	1,264.74	1,489	18,511

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed.

4. Alternative Analysis Four: Removing Resubmissions. — Finally, it may be that the overall review times we observed were driven down by short re-reviews of affidavits that had already been submitted, reviewed, and found lacking. In these scenarios — especially where resubmissions happen quickly after an initial denial — judges may only need to review one or two portions of the affidavit where the deficiency was originally noted, which may only take a short amount of time.[219] While most (if not all) of these resubmissions were likely captured in our Jaccard similarity analysis above (presumably resubmissions are linguistically similar to previous submissions), we could target this analysis on just those reviews of first submission or first viewing because of the detailed timestamp metadata in our dataset.

[219] We note that this approach, while certainly economic, comes with the risk that the resubmitted affidavit varies in ways beyond the previously deficient portions, meaning that judges would potentially miss new or contradictory information that would only be apparent after a full re-review. Consequently, a constitutionally robust warrant review may technically preclude intentionally accelerated review after resubmission. Nonetheless, we expect that such scenarios are rare.

Table 6: Warrant Review Time (Minutes)
Only Including First Submissions

Decision Type	Obs.	Min.	First Decile	First Quart.	Med.	Third Quart.	Adj. Mean	Max.
First Reviews								
Approval	27,637	0:03	0:59	1:40	2:53	5:16	6:37	1,930:29
Denial	1,902	0:08	2:41	4:20	7:02	12:02	20:42	2,655:03
Retraction	1,171	0:01	0:38	1:47	7:15	19:51	37:13	3,502:42
All	30,710	0:01	1:00	1:44	3:05	5:56	8:40	3,502:42
All Reviews								
Approval	29,809	0:01	0:57	1:37	2:50	5:13	6:47	2,581:37
Denial	2,193	0:01	2:33	4:15	6:53	11:55	20:51	2,655:03
Retraction	1,446	0:01	0:29	1:31	6:28	18:40	38:05	3,502:42
All	33,448	0:01	0:57	1:41	3:03	5:54	9:03	3,502:42

Notes: Minutes are reported as Minutes:Seconds. "Adj. Mean" reflects the average warrant decision time in minutes once outliers were removed.

Table 6 presents the review times for those first-submission warrants and includes the overall review times (data from Table 1) for comparison. As we see (and discuss further in Part IV), initial approval rates were so high that a subset of data that excludes resubmissions is only slightly smaller than the full dataset. Nonetheless, we see no consistent differences in review time across these two analyses, with the median time for all reviews only increasing by two seconds, and the median time for approval increasing by three seconds. We also see that the portion of warrants that were approved in a minute or less (see the "First Decile" column for an approximation) also does not differ significantly, demonstrating that the rapid review times we see in the data are not explained by re-reviews of substantially similar affidavits. The times for denials and retractions do vary more significantly but not so much as to warrant any particular conclusions.

One other possibility is that judges might be able to make an approval decision systematically after reading a relatively short amount of text in the affidavit. While we are unable to exclude this possibility, we find it unlikely that the results would show low correlation between word count and time across a host of crime domains that vary in their complexity of determining probable cause. We also believe that facts later in the affidavit can undermine the strength of earlier facts. In addition, the DOJ's investigation of the Louisville Police Department found that judges approved overly broad warrants — that is, warrants

that failed to establish probable cause for each item searched.[220] It is very possible that the approval of overly broad warrants occurs when judges conclude too early that the facts merit a blanket approval of all of the items mentioned in the affidavit, even though probable cause may not have been established for every item requested based on the entirety of the affidavit.

C. District- and Judge-Level Review Time Disparities

One overarching question that remains even in the face of our results on review time is whether this is all the result of a system and set of decisionmakers that are simply highly efficient. Indeed, one would naturally expect judges to become more capable of identifying affidavit quality in shorter amounts of time as they become more tenured and experienced. Additionally, as we have discussed in section I.D.1, officers are likely incentivized to submit affidavits that can be reviewed quickly. While identifying a true baseline for review time remains a limitation, we can look to see if there are significant disparities among judges as a soft proxy for whether a given median or average review time represents some sort of ideal point. Over time, the warrant review process, while not random, should evenly distribute affidavits of equal expected quality, type, and complexity, thereby making intra-judge median and mean review times fairly consistent.

Figure 7 (below) shows the variation in approval time by judicial district, understanding that there are possibly systematic differences in affidavit characteristics across jurisdictions. The results, however, show a good deal of consistency at each of the four percentiles we reported above (10th, 25th, median, and 75th). Indeed, all but two districts had a median approval time of around 2:50. While we do not have any explanation for the Second Judicial District's slightly lower review times (a median of around 2:10), the results in the Sixth Judicial District are not wholly surprising. Given the Sixth Judicial District has very few judges and magistrates (six) in our dataset, judge-level disparities can more easily impact district-level trends.

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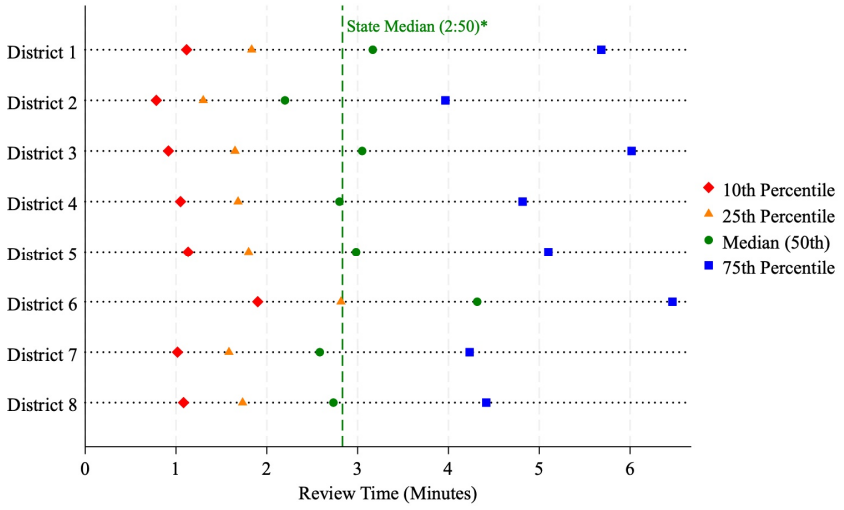
[220] INVESTIGATION OF LOUISVILLE POLICE AND GOVERNMENT, *supra* note 8, at 25.

Figure 7: District-Level Approved-Warrant Review Times



Notes: The sample only includes approvals. All statistics were calculated at the district level. "State Median" reflects the median for the entire sample.

Illustrating judge-level disparities, Figure 8 (below) highlights the extent to which the reviewing judge makes a difference in approval speed. To ensure anonymity, we assigned judge ID numbers that do not correlate with any particular attribute or characteristic. Additionally, because there are so few judges in the Sixth, Seventh, and Eighth Judicial Districts, which might allow some judge-level attributions, we combined all of those judges into one district "chunk" in Figure 8 (and Figure 12 in section IV.B). Finally, we excluded judges who reviewed fewer than thirty warrant affidavits in our dataset, as they were more likely to have disproportionately high or low review times simply due to random factors.

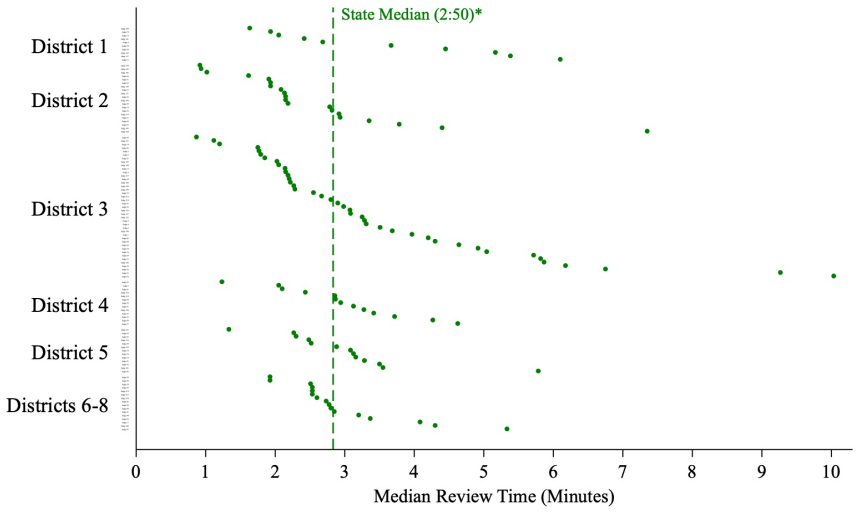
We note that interjudge disparities are common in the criminal justice sphere, even for relatively formulaic and cursory decisions like warrant review.[221] They are also not inherently indicative of a problem with the system — indeed, the existence of disparities across judges is another demonstration that the warrant review process is not pure "rubber stamping" (at least not for all judges).[222] At the same time, the scale of these disparities clearly shows that individual judges are approaching

[221] *See, e.g.*, Miguel F.P. de Figueiredo & Dane Thorley, *Pretrial Disparity and the Consequences of Money Bail*, 81 MD. L. REV. 557, 564, 600 (2022) (conducting an empirical study on pretrial bail decisions in Pima County, Arizona, and finding that some judges are nearly three times more likely to assign money bail than some of their colleagues).

[222] Schreifels & Wieber, *supra* note 29.

the same process (and on average the same submissions) in very different ways. While the majority of judges have a median review time of between two and four minutes, there are plenty of observations that fall well below or above that central tendency. In the most extreme cases, judges within the same judicial district are taking nine or ten times as long to review their warrant submissions as the swiftest of their colleagues (see the Third Judicial District). And even when ignoring the clear outliers, almost all the districts have a range of review times that span four minutes — a massive gap considering how little time is spent on average.

Figure 8: Judge-Level Approved-Warrant Review Times



Notes: The sample includes only approved warrants and excludes judges who had fewer than thirty approvals. "State Median" reflects the median for the entire sample. Individual dots represent judge medians, ordered by review time.

Looking at the judges individually, we see that about half of them have a median review time of three minutes or less (not surprising given the overall median of 3:03), twenty have a median of two minutes or less, and a few have median review times of around one minute. While the fact that around 10% of all warrants were reviewed in less than sixty seconds was disconcerting, finding that there are judges who review half of all their warrants in that span strikes us as objectively problematic. We explore the attributes potentially driving these patterns below.

D. Correlations with Warrant and Judicial Characteristics

Having demonstrated substantial disparities in the amount of time individual judges spend reviewing warrants, we now present a series of regressions that focus on the relationships among the reviewing judge's characteristics, the attributes of the warrant affidavits, and the speed with which the warrant determination is made. Our variable set includes a series of judge-level characteristics, including judicial tenure, demographic information on race and gender, professional experience such as legal training, and whether the judge previously worked as a prosecutor or criminal defense lawyer (or both).[223] We also include some basic information on the warrants, including full affidavit length (words), Jaccard similarity (>.99), and whether the affidavit indicated that it was reviewed by a city or county attorney before submission.

When running these variables against our review-time measures and controlling for time-, warrant-type-, and court/district-fixed effects, we found that the background and experience of the judge does have a strong relationship with review time, specifically a judge's tenure (at the time of review) and previous work as a criminal defense lawyer. Depending on the model we used, we also saw correlations between affidavit length and whether the affidavit was reviewed by an attorney.

In analyzing these results, we feel it prudent to encourage methodological caution in how the outcomes are interpreted. Under ideal circumstances, regressions can identify, correctly model, and therefore account for all the factors that go into the relationship between the independent variables (in our case, warrant and judicial characteristics) and the dependent variable (review time for a given warrant). In theory, this would then allow inferences regarding the causal connections among those variables.[224] However, in practice, regression analysis on its own rarely — we would argue never — allows for such causal inferences to be made.[225] The nature of our dataset does not clearly lend itself to any of the quasi-experimental methods that are used to get around these limitations, so any significant relationships we identify could be the result of omitted variable bias or reverse causality.[226] For

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[223] As a reminder, the reviewing judge for non-approved affidavits (that is, denials and retractions) is not available in our raw data and has been inferred using a mix of shift data and the identity of the judge who eventually approved the warrant. See *supra* section II.C.3, p. 1993, for an explanation of our imputation data and methodology.

[224] *See, e.g.*, R. Dennis Cook & Sanford Weisberg, *Residuals and Influence in Regression*, *in* MONOGRAPHS ON STATISTICS AND APPLIED PROBABILITY ix, ix (D.R. Cox & D.V. Hinkley eds., 1982) (one of the foundational texts in regression theory).

[225] *Cf.* Austin Nichols, *Causal Inference with Observational Data*, 7 STATA J. 507, 508–09 (2007).

[226] Instrumental variable, difference-in-differences, and regression discontinuity are the most used of these approaches. *See, e.g.*, JOSHUA D. ANGRIST & JÖRN-STEFFEN PISCHKE, MOSTLY HARMLESS ECONOMETRICS xi (2009). Our dataset has no apparent randomness (our interviews with Utah court administrators have indicated that judicial assignment is far from random), so

example, a strong negative correlation between a judge's tenure on the court and the time spent on warrant review may be due to the fact that those judges have the seniority to be able to select shifts that receive simpler, shorter warrant submissions, as opposed to increased experience actually causing a change in how judges approach review.

That being said, our dataset has a robust set of explanatory variables, including the judge-level characteristics listed above, time and location variables, and (at least for the approved warrants) all of the warrant-level categories and indicators we utilized in the previous subsections. We were also careful to create a predictive model that avoids the common pitfalls of regression analysis such as multicollinearity, over-fitting, and heteroskedasticity.[227] As a result, we believe the results provide valuable context for understanding the relationship between reviewing judge and review time, even if the causal direction and exact scale of those relationships are not reliably identified.

1. Judge-Level Descriptive Characteristics. — Before we review the results of our regression analysis, we briefly present and discuss the judge-level data that is used to inform those tests. Table 7 (below) presents the basic demographic information for all the judges in our sample. The demographic characteristics of the trial court judiciary in Utah (at least for judges who review warrant submissions) depart from the general state citizenry in a number of ways.[228] Women are severely underrepresented, making up only 19% (or twenty-two individuals) of our sample. Similarly, non-white judges make up only 5% (six individuals). Looking at professional background, we see that just over 50% of the judges (fifty-nine individuals) had some level of experience in criminal practice, with 41% (forty-five) having worked as prosecutors, 16% (nineteen) having worked as criminal defense lawyers (either public defenders or private attorneys), and 6% (seven) having done both before joining the bench. The average tenure for our judges is just under ten years, with the average judge having reviewed over 280 warrant submissions.

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instrumental variable design is not possible; the policy implementation that is of most relevance to warrant review in Utah (the advent of the e-Warrants system) occurred before our dataset begins, making difference-in-differences difficult; and while we believe there might be an avenue for utilizing shift changes in the reviewing judge as a discontinuity, we have strong empirical indications that the submitting officers engage in a sort of "judge shopping" near the margins of shifts, which would violate one of the underlying assumptions of regression discontinuity.

[227] *See* JEFFREY M. WOOLDRIDGE, INTRODUCTORY ECONOMETRICS 122, 268 (South-Western, Cengage Learning 5th ed. 2012).

[228] For an outline of Utah demographics, see *supra* section II.B, pp. 1985–91.

Table 7: Judge-Level Demographic Information

Judge Characteristic	Obs. w/ Data	Mean/%	Std. Dev.	Min.	Max.
Tenure (Years)*	118	9.76	7.92	0.40	40.53
Warrants Reviewed	119	281.45	368.89	1	4015
Gender (Female)	116	18.96%	-	-	-
Race (White)	116	94.82%	-	-	-
Full time	111	90.99%	-	-	-
Law Degree	114	92.98%	-	-	-
Prev. Prosecutor	111	40.54%	-	-	-
Prev. Defense Lawyer	116	16.38%	-	-	-
Prev. Both Pros./Def.	116	6.03%	-	-	-

Notes: The sample only includes judges and magistrates who reviewed warrants in our dataset.

* "Tenure" is defined at the individual warrant level as the number of years between the relevant warrant review and date the judge joined the bench.

Table 8: District-Level Judge Demographic Information

District	Number of Judges	Warrants Reviewed	Warrants per Judge	Tenure (Years)	Gender (Female)
First	13	2,010	154.62	10.86	8.33%
Second	20	5,231	261.55	10.64	10.00%
Third	41	15,953	389.10	7.04	35.00%
Fourth	13	5,449	419.15	9.12	15.38%
Fifth	14	2,292	163.71	14.02	7.14%
Sixth	5	1,032	206.40	9.17	0.00%
Seventh	6	671	111.83	11.81	16.67%
Eighth	6	749	124.83	13.00	16.67%

District	Race (White)	Full-time	Lawyer	Prev. Pros.	Prev. Def.	Prev. Both
First	100.00%	63.63%	90.91%	20.00%	16.67%	8.33%
Second	95.00%	95.00%	100.00%	40.00%	15.00%	5.00%
Third	90.00%	100.00%	100.00%	36.84%	20.00%	7.50%
Fourth	92.31%	100.00%	100.00%	69.23%	23.08%	15.38%
Fifth	100.00%	76.92%	69.23%	23.07%	7.14%	0.00%
Sixth	100.00%	100.00%	100.00%	80.00%	0.00%	0.00%
Seventh	100.00%	100.00%	100.00%	50.00%	16.67%	0.00%
Eighth	100.00%	66.67%	50.00%	33.33%	16.67%	0.00%

Notes: Four judges in our dataset reviewed warrants while sitting in multiple districts. For the purposes of these district-level measures, we coded these mixed-district judges to their "dominant" district (all of which were clear from their average review).

To better understand how these judges and their characteristics are distributed across the eight judicial districts in Utah, we also present district-level judge averages in Table 8. Not surprisingly, we see some variation across courts. The more urban and suburban districts (Second, Third, and Fourth Judicial Districts) have a slightly more diverse (gender and race) and professional bench (again, among those who review warrants), as well as higher warrant-per-judge workloads. Rural districts tend to have fewer but longer-tenured judges and a slightly lower workload.

2. Regressions Using the Approved Warrants Data. — We began our regression analysis by looking only at the data on approved warrants.

As a reminder, the reviewing judges for non-approved (that is, denied or retracted) affidavits are not available in our dataset and have been inferred using a mix of court calendars and the patterns in approved warrants.[229] Likewise, the warrant-level information on word count, warrant type, and warrant similarity is only available for approved warrants. Consequently, we can be most confident in models applied to the approved data.

Table 9 (below) presents a series of regression models that steadily increases the number of explanatory variables. Column 1 is a simple bivariate regression that explores the relationship between review time (in minutes) and affidavit length (in words). Columns 2–6a then add warrant-level indicators, judge-level indicators, time-fixed effects, district-fixed effects, and warrant-type-fixed effects respectively, with column 6a including nearly all of the explanatory information that is available in our dataset and representing our preferred model. Some of the models also include fixed effects that account for location, time, warrant type, and submission sequence.[230] The inclusion of these indicators results in datasets of varying sizes (see the "Observations" row in Table 9) because not all of the indicators are available for all warrants. The models that include district- and time-fixed effects have clustered standard errors on the district-year level.

Focusing on the estimates in column 6a, which is our preferred model, we see that the relationship between the length of the affidavit (in words) and the time spent approving it (in minutes) is statistically significant, meaning the relationship is unlikely to have occurred due to random chance. Contrary to what we found in our correlational analysis of time and word count in section III.B, the relationship here is moderately strong, with every additional word adding about a tenth of a second on average (or, scaling up, every ten words adds one second and every 600 words adds one minute). The other warrant-level characteristics, including whether the warrant reviewed has a near-identical counterpart, and whether it was reviewed by a lawyer before submission, have a more substantive correlation with approval time but are nonetheless not statistically significant predictors.

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[229] See *supra* section II.A, pp. 1983–85, for an explanation of our imputation data and methodology.

[230] The district-fixed effects account for the judicial district in which the warrant review occurred. The time-fixed effects use year, month, day (weekday/weekend), and hour (four six-hour blocks, starting at 12:00 AM) measures.

Table 9: Regressions on Review Time

VARIABLES	(1) Approvals	(2) Approvals	(3) Approvals	(4) Approvals	(5) Approvals	(6a) Approvals	(6b) All Outcomes
Affidavit Length (Words)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	0.002*** (0.000)	
Jaccard ≥ 99 (Binary)		1.343 (0.917)	1.584 (1.002)	2.282 (1.451)	2.354 (1.443)	0.236 (1.176)	
Lawyer Review (Binary)		0.345 (0.735)	0.313 (0.757)	-0.110 (0.755)	-0.015 (0.535)	-0.358 (0.796)	1.876** (0.766)
Tenure (Years)			-0.104** (0.040)	-0.108*** (0.035)	-0.111*** (0.029)	-0.131*** (0.041)	-0.080** (0.032)
Female (Binary)			-0.329 (0.735)	-0.309 (0.793)	0.119 (0.675)	-0.150 (0.456)	-0.423 (0.632)
White (Binary)			0.055 (1.154)	0.015 (1.229)	-0.635 (1.136)	-0.964 (1.613)	-0.540 (1.013)
Full Time (Binary)			1.756** (0.643)	1.517** (0.720)	2.663 (2.073)	2.467 (1.809)	2.297 (2.232)
Law Degree (Binary)			0.418 (0.713)	0.915 (0.753)	2.764 (2.260)	4.680 (3.571)	5.169* (3.003)
Prosecutor Experience (Binary)			0.089 (1.160)	0.071 (1.110)	0.724 (1.117)	-0.353 (0.796)	0.880 (1.175)
Defense Experience (Binary)			-2.267** (0.815)	-2.305*** (0.776)	-1.998** (0.792)	-2.270** (0.833)	-2.028** (0.938)
Both Experience (Binary)			-0.437 (1.687)	-0.410 (1.754)	-1.035 (1.653)	0.508 (1.300)	-0.793 (1.979)
Constant	3.576*** (0.451)	3.180*** (0.551)	2.434 (1.497)	-0.271 (1.562)	1.194 (3.678)	2.901 (4.479)	1.420 (3.701)
Observations	25,597	25,597	23,352	23,352	23,352	12,445	24,857
Time-Fixed Effects	No	No	No	Yes	Yes	Yes	Yes
District-Fixed Effects	No	No	No	No	Yes	Yes	Yes
Warrant-Fixed Effects	No	No	No	No	No	Yes	No
District–Year Clustered SE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dataset	Approvals	Approvals	Approvals	Approvals	Approvals	Approvals	All Outcomes

Notes: All linear models use fixed effects and have clustered standard errors on the district-year level. The time-fixed effects use year, month, day (weekday/weekend), and hour (four six-hour blocks, starting at 12:00 AM) measures. The warrant-fixed effects use judicial districts. The warrant-fixed effects use warrant type, *see* categories discussed in Part III.B.1, above, and submission sequence number measures. "Jaccard ≥ 99" represents whether there is another warrant in our dataset that has a Jaccard similarity score of at least 99. "Lawyer Review" represents whether the data indicate that the affidavit was reviewed by a city or county attorney prior to submission. "Tenure" is measured at the warrant level and represents the number of years between the judge's appointment to the bench and the day of the warrant review. "Full Time" represents whether a judge is full time or part time. "Law Degree" represents whether the judge is a lawyer with a JD. "Prosecutor Experience," "Defense Experience," and "Both Experience" represent whether a judge worked as a prosecutor, a criminal defense lawyer (either public or private defense), or both.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Some of the judge-level characteristics are predictive of approval time, and sometimes in ways that run against our priors. The negative relationship between the judge's tenure at the time of review and the

amount of time spent reading the warrant (an average reduction of about thirteen seconds for every year on the bench) makes sense, either under a theory where more tenured judges are better able to review quickly or under a theory where repeated exposure to similar warrants makes a judge more disposed to give a warrant less time and attention than is necessary.

More surprising, however, is the role that a judge's experience as a criminal defense lawyer appears to play. While we anticipated that criminal work experience might relate to review time both as a proxy for familiarity with the issues and (possibly more relevantly) as an indicator for political ideology, our prior expectation was that judges who were prosecutors would spend less time on warrant requests due to the previous professional connection they had with law enforcement and the warrant submission process. While there is a negative relationship between prosecutorial experience and approval time, that coefficient is not statistically significant at conventional levels. However, when controlling for other relevant factors in our preferred model, judges who had criminal defense experience read through their warrants more than two minutes faster, on average, than those without such experience, a result that is statistically and substantively robust.

We will refrain from drawing any strong inferences from this relationship — recall that these models do not allow us to make credible causal claims — but given our emphasis on considering the extralegal factors that might influence a judge's approach to warrant review,[231] it bears some commentary. One potential mechanism explaining quicker reviews from judges who were previously criminal defense attorneys is that such a professional background provided them with more opportunities to critically evaluate warrants and see the most common reasons for approved warrants to be later overturned. Alternatively, in a state (Utah) where judges are originally appointed by the governor and approved by the senate,[232] both of which are virtually always politically conservative,[233] judicial candidates with criminal defense backgrounds may have to overcome a presumption of being soft on crime. This may result in a selection process where such judges are actually more conservative than their criminal defense colleagues or even their eventual colleagues on the bench. In any case, this correlation warrants further investigation in future studies.

3. Regressions Using All Warrant Decisions. — We now turn to our analysis of all warrant decisions, including approvals, denials, and

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[231] *See supra* section I.D, pp. 1975–82.

[232] UTAH CONST. art. VIII, § 8.

[233] Every year since at least 1992, Republicans have made up at least eighteen of the twenty-nine seats in the Utah Senate. *Utah State Senate*, BALLOTPEDIA, https://ballotpedia.org/Utah_State_Senate [https://perma.cc/Y25J-3L6D]. Similarly, the sitting governor has been a Republican since at least 1992. *Governor of Utah*, BALLOTPEDIA, https://ballotpedia.org/Governor_of_Utah [https://perma.cc/8BEU-FL7E].

retractions. As we explain in more detail in Part IV, roughly 97% of all warrant submissions result in an approval (98% if withdrawals are ignored), so this dataset is not that distinct from what we used in the previous subsection. But, as we have seen, the review times for denials and retractions are significantly higher than those for approvals.[234] Thus, by including them in our analysis, we will have a more complete sense of the relationship between judicial characteristics and all decisions, even if these regressions necessarily exclude some of the warrant-level data that only comes from the PDFs of approved warrants. In doing this, however, we reemphasize the fact that we were not able to create shift data for two of the judicial districts (the Second and Fifth Judicial Districts), so there are no imputed judges assigned to the reviews that resulted in rejections or retractions in those districts.[235] Consequently, any models on the full data that include judge-level attributes exclude any warrants reviewed in those districts.

The results of this full-data regression are in column 6b of Table 9 (above). For the most part, they match those in the previous regressions: The reviewing judge's tenure and previous experience as a criminal defense lawyer still have strong relationships with review time. The relationship with whether a judge is a trained lawyer is also noteworthy, not only because of the direction of the relationship but also because of the scale: Lawyers take more than five minutes longer on average. While the reliability of this measure is somewhat suspect due to the small percentage of nonlawyer judges in the sample (just over 7%, see Table 7, above), this result stands even when controlling for all the relevant data we have available. Note, however, that it is statistically significant only at $p < 0.1$.

New to this full-data regression is the significant relationship between review time and whether a warrant affidavit indicated it was reviewed by a lawyer prior to submission.[236] Not only does the inclusion of denied and retracted warrants result in a sign change in the "Lawyer Review" coefficient from column 6a to column 6b, but the size of the relationship also reflects close to a two-minute increase in review time relative to nonreviewed affidavits. We suspect that if this correlation reflects a true relationship, it is because city and county attorneys are most likely to become involved in a warrant submission for complicated, high-profile cases that oblige more reading time and greater attention from the judge.[237]

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[234] *See supra* Table 1, p. 1997.

[235] See Appendix, *supra* note 129, at 18 & n.13, for an explanation of why we could not make the imputations in these districts. And see sections II.A, pp. 1983–85, and II.C.1, pp. 1991–92, *supra*, for a discussion of our judge imputations and their associated limitations.

[236] See "Lawyer Review" row in column 6b of Table 9, pp. 2022.

[237] This observation matches our understanding of the role of attorneys in the drafting process after interviewing a few of the county attorneys in Utah.

As we have demonstrated in section III.B.4, the median review time in the full sample does not appear to be driven by resubmissions. However, it is possible that controlling for judge- and warrant-level characteristics might expose differences between first submissions and resubmissions that were not apparent upon simply comparing descriptive data. When running our preferred regression model using subsets of data that include only first submissions and resubmissions, we did not see any substantial differences in outcomes.[238]

IV. What Percentage of Warrants Do Judges Approve?

As we have demonstrated in the analysis of decision speed, judges spend surprisingly little time reviewing warrant affidavits. However, understanding how long judges are spending on warrant review tells only part of the story. Some may argue that certain affidavits — either because of linguistic repetition or simplicity or because they address circumstances that do not demand a particularly careful eye — genuinely do not require more than a minute or two to analyze. Indeed, given judges' legal qualifications and tenure (for most of the judiciary), judges might reasonably be expected to quickly determine whether a given affidavit meets the probable cause standard.

In determining whether the warrant review process is a sufficient check on police power, it is critical, then, for us to also explore the rate at which judges approve warrants. If judges are spending little time reviewing warrants but are frequently identifying those that do not meet their legal burden, then the short review times may simply be indicative of efficient legal analysis. On the other hand, if we find that judges are quickly reviewing warrants and never finding any that fail to meet the standards, then we would worry that the review requirement is providing little, if any, check at all.[239] As we outline below, the data show that judges do, indeed, pull some warrants out of the pile for denial but do so quite infrequently. We found that 93.56% of warrant affidavits are approved on their initial submission, and only 6.44% are denied (ignoring those submissions that are withdrawn before a decision is made). And once we account for the ability to resubmit affidavits, the eventual approval rate reaches 98.14%.

In this Part we begin by exploring the basic data regarding approval rates in section IV.A, breaking down the likelihood of approval by submission sequence. As we did with review time, we then look for intra-judge disparities in approval rates in section IV.B and present an exploratory regression analysis to identify the judicial characteristics that best predict those disparities in section IV.C.

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[238] *See* Appendix, *supra* note 129, at 13 tbl.II.B, and accompanying text for a more detailed discussion of these alternative tests.

[239] In coming to this conclusion, we are making the assumption that at least *some* submissions do not meet the standard (a reasonable assumption, we think).

As we explore the data on approval rates, we will reemphasize the limitations in our analysis as appropriate (for example having only PDF images of approved warrants).[240] However, one limitation bears repeating at the outset: We do not have a true measure for the underlying "quality" of the warrant affidavits in our dataset. Ideally, we would have a reliable indicator for whether a given affidavit meets the probable cause standard, thereby allowing us to see whether the reviewing judge made the "correct" decision. While we do conduct a qualitative analysis of individual approved warrants in Part V, this process was extremely time intensive and is therefore unavailable for the wider dataset. As a result, determining whether approval rates are "too high" or "just right" is necessarily subjective and requires consideration of the various extralegal factors we outlined in section I.D.

A. Overall Approval Rates

The first clear observation coming from the approval data is the overall approval rates. As we show in Figure 9 (below), of the roughly 33,500 warrant affidavits submitted by enforcement and prosecutors in our dataset, 89.90% are approved on the first try. Of the 10.10% of first submissions that are either denied (6.19%) or retracted (3.91%), 7.06% are resubmitted and approved, meaning that 96.96% of all warrants are eventually approved (the sum of all the green areas — a total that is also reflected in the first bar in Figure 10, below). If we ignore the submissions that were withdrawn before the judge was able to review them,[241] those percentages go up to 93.14% on first submission and 98.14% eventually (the values we have referenced throughout this Article and will use going forward).[242] While we will speak to the potential legal implications of these rates later, they bear some emphasis now, as they are surprisingly high, even when we consider the likelihood that officers learn the legal standard — or at least the judicial interpretation of that standard — and adjust their requests to meet that bar.

We can also look in more detail at the approach that officers take when a warrant is initially denied and the approach that judges take to

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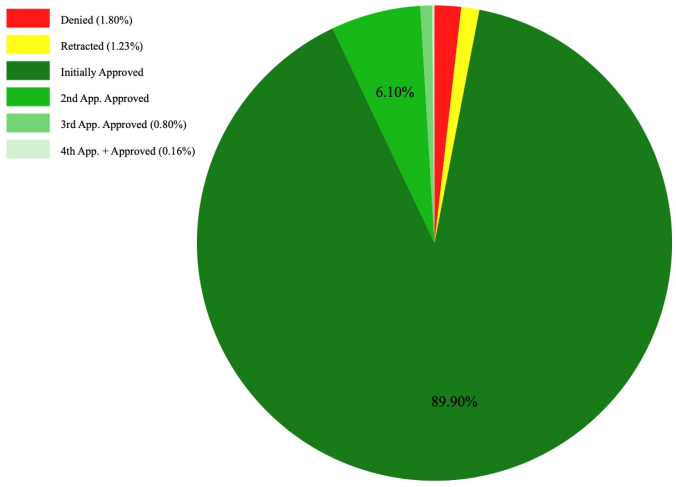
[240] For a full discussion of these limitations, see *supra* section II.C, pp. 1991–94.

[241] Of course, by excluding the 3.91% of submissions that were withdrawn, we are potentially excluding informative data. Indeed, given that these warrants were intentionally withdrawn by the officers, it would not be unreasonable to assume that most of them would have been denied had the judge viewed them and made a determination. Nonetheless, such warrants constitute a small portion of the overall submissions and, ultimately, cannot be directly attributed to any judicial decisionmaking. For the most part, we report findings that include withdrawals along with findings that exclude them (the latter of which we report in the Introduction and Conclusion of this Article). To the extent we conduct analyses that exclude only withdrawals, those analyses tend to compare approval rates across judges and/or districts, *e.g.*, *infra* section IV.B, pp. 2029–30, in which case we feel comfortable assuming that the nature of withdrawals is more or less constant across groups.

[242] These values can be found by removing the 1.23% of warrants where the final outcome is a withdrawal, *see* Figure 9, from the denominator and recalculating the percentages for approval after first submission and ultimate approval.

resubmissions. Figure 10 (below) maps the final outcome status at the warrant level, with bars representing distribution of outcomes for warrants that were submitted only once (Bar "1"), warrants that were submitted twice or three times (Bars "2" and "3"), and any warrants that were submitted for a fourth time or more ("4+").[243] In order for a warrant in Figure 10 to be included in any of the resubmission stages, it must have been denied or retracted in a previous stage. Conversely, the red and yellow areas in a given bar in Figure 10 represent warrants that were denied or retracted and never resubmitted.

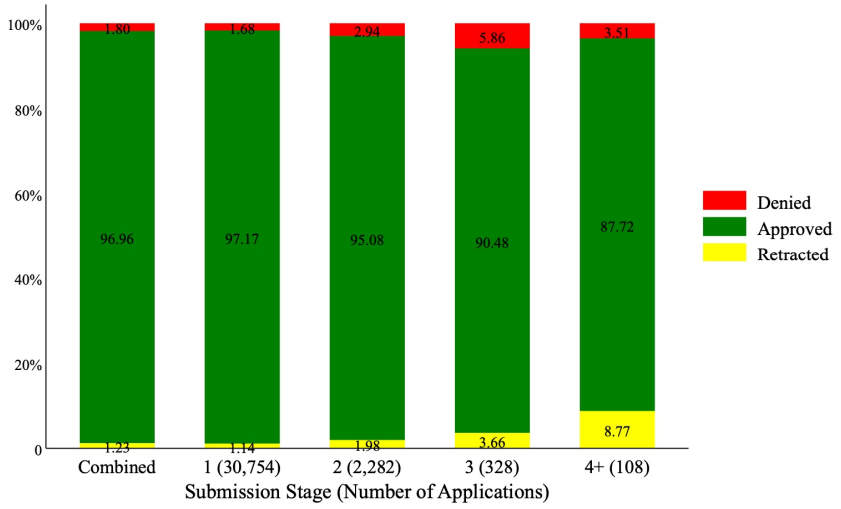
Figure 9: Final Outcome Status (over Multiple Submissions)



Notes: Final outcome status is defined as the final warrant-level outcome (approval, denial, or withdrawal), with approvals broken out into the submissions stage.

[243] One warrant was submitted seventeen times. The next highest submission count for a given warrant was ten.

Figure 10: Decisions by Submission Stage



What do these data tell us? On the one hand, an initial approval rate of 91% demonstrates that the warrant approval process inherently includes some level of judicial scrutiny and is not a pure "rubber stamp" process. Barring a review regime where judges haphazardly or randomly deny warrants as some sort of low-effort auditing mechanism to keep officers "honest" (a strategy that does not fit within any reasonable models of judicial behavior that we can envision), regular denials demonstrate that the judges are reading the warrants closely enough to identify at least some substandard submissions.

On the other hand, however, our data also show that of the roughly 10% of warrant affidavits that are not approved at first blush, 4% are retracted by the submitting officer before a decision is made, meaning only 6% actually fail to meet the legal bar according to the judges. And of those 10% of warrants that didn't pass on the first go, 8% are eventually approved (ignoring warrant application submissions that end by withdrawal), resulting in an ultimate approval rate of over 98%.[244] This finding supports two theories: (i) Law enforcement officers almost never submit warrants that do not meet the standard, and/or (ii) the speed at which these warrants are reviewed results in judges missing some of those substandard submissions. While we acknowledge that the former theory may explain much of our results, we argue that the latter also plays a role.

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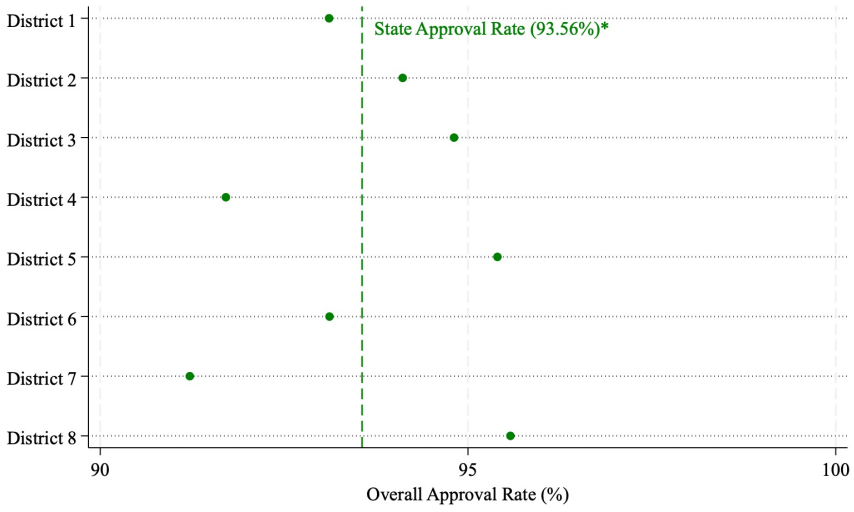
[244] As Figure 9 shows, 1.23% of all warrants end in withdrawal. Of the remaining warrants, only 1.80% end in denial (the proportion of denied warrants to all nonwithdrawn warrants). For more detail regarding how the values discussed in this section were calculated, please contact the authors.

B. District- and Judge-Level Approval Disparities

Like with our analysis of district- and judge-level review times, we find substantial disparities in the final outcomes that each judge in our sample produces that raise new questions about the process of review and, we argue, demonstrate the relevance of the extralegal influences discussed in section I.D.

As Figure 11 (below) shows, these disparities are not particularly large at a district level (although one could argue that a difference of around five percentage points is quite significant). However, the gaps between the most "lenient" and "strict" judges presented in Figure 12 (below) are striking, even when comparing only disparities within a given district — some judges approve nearly 100% of affidavits that come their way, while their colleagues approve less than 80%.

Figure 11: District-Level Overall Approval Rates (%)



Notes: Approval rates were calculated using only approvals and denials. District-level approval rates were calculated at the district level (as opposed to an average of judge-level approval rates).

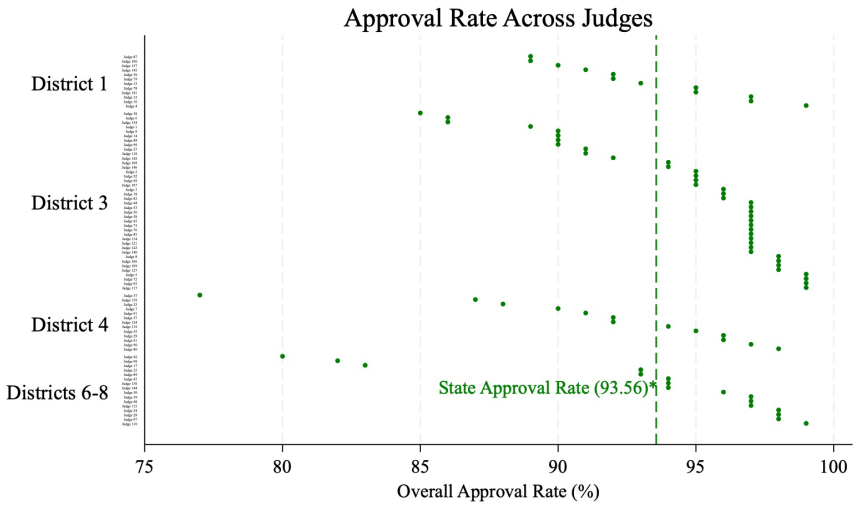
* "State Approval Rate" reflects the overall approval rate for the entire sample.

The scale of these disparities further supports our conclusion that the average judge is not simply "rubber stamping" every warrant request that comes across their desk — we would not expect any intrajudge disparities if that were the case. However, the fact that most judges find at least 4% to 5% of warrants to be substandard and worthy of denial (see Figure 12, below) does suggest that those judges who are approving *all* of the warrants that come across their desks may actually be treating

the warrant review process as a procedural formality as opposed to a true legal barrier.

These observations also support the sentiment of several of the Utah police officers we interviewed who expressed a strong sense of which judges were preferable — or rather, which judges to avoid — and recalled frequent strategic decisions to hold back a warrant submission until a more favorable judge took their shift.[245]

Figure 12: Judge-Level Overall Approval Rates (%)



Notes: The sample includes only judges who had more than 30 warrant approvals and denials and excludes judges from Districts 2 and 5 due to lack of an imputed judge for denied warrants. Approval rates were calculated using only approvals and denials and were rounded to the nearest percentage point.

* "State Approval Rate" reflects the overall approval rate for the entire sample.

C. Correlations with Judicial Characteristics

As with our regression analysis of review time in section III.D, here we explore the relationship between judge-level characteristics and likelihood of warrant approval. Our modeling varies slightly from the analysis on review time, as we use logistic fixed-effects regression to better meet the binary distribution of the outcome of interest (approval or not). However, the same methodological limitations and resulting cautions in making causal inferences apply.[246] Additionally, because we were not able to impute judges to denials and retractions in the Second and Fifth

[245] We anticipate covering this potential "judge shopping" in future work focusing on officer behavior.

[246] *See supra* note 226 and accompanying text for a discussion of these cautions.

Judicial Districts, all our models necessarily exclude all data from those districts.[247]

1. Regressions Using All Warrant Decisions. — Table 10 (below) presents a series of regression models that follows a similar progression as the models in Table 9,[248] with each model adding judge-level indicators or fixed effects.[249] We present odds ratios for each model.[250]

Under our preferred model (column 4), we see a number of relationships that deserve discussion. As with many of our regression models looking at review time, we see that a judge's professional background is predictive of outcome. Judges with law degrees are substantially less likely to approve warrants — roughly 0.4 approvals for every one approval from a judge without a law degree. More interestingly, judges who had worked as prosecutors before joining the bench are also less likely to approve warrants — nearly 0.7 approvals for every one approval from nonprosecutors. These results again run against our priors regarding the dynamics of previous criminal attorney experience — we expected that judges who have backgrounds as prosecutors would be

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[247] *See supra* note 235 and accompanying text for an explanation of why we could not make the imputations in these districts. For a discussion of our judge imputations and their associated limitations, see *supra* sections II.A, pp. 1983–85, and II.C.1, pp. 1991–92.

[248] *See supra* Table 9, p. 2022.

[249] Because we only have warrant-level indicators for approved warrants, these models (which include denied and retracted warrants) do not include word count or Jaccard similarity indicators. The district-fixed effects account for the judicial district in which the warrant review occurred. The time-fixed effects use year, month, day (weekday/weekend), and hour (four six-hour blocks, starting at 12:00 AM) measures. We are also currently working on incorporating additional judge-level data derived from Utah's Judicial Performance Evaluation Commission, which "grades" Utah judges using survey data from lawyers and court participants. *See What Does JPEC Evaluate*, UTAH JUD. PERFORMANCE EVALUATION COMM'N, https://judges.utah.gov/s/ [https://perma.cc/NLY7-8QAC].

[250] A brief note on interpreting odds ratios: Due to the binary nature of the outcome variables in this section — warrants are either approved or not — our regression analysis produced coefficients that are likely less intuitive than those presented in Part III (where the outcome is a continuous measure of time spent). The odds ratios in this Part compare the likelihood of warrant approval in a given circumstance against the likelihood of that event in an alternative circumstance (for example, the likelihood of approval if the judge is a female compared to the likelihood of approval if the judge is a male), while controlling for the other factors included in the regression. Consequently, an odds ratio of one suggests that the likelihood of warrant approval is the same in both circumstances; an odds ratio of greater than one suggests that the likelihood of approval in the named comparison group (the title of the first column in the regression table) is *higher* than in the alternative comparison group; and an odds ratio of less than one suggests that the likelihood of approval in the named comparison group is *lower* than in the alternative comparison group. The scale of the difference can be calculated by comparing the relative size of the odds ratio against a baseline of one. Accordingly, an odds ratio of 0.5 suggests that the likelihood of approval in the named comparison group is half that of the alternative group (0.5 is half the size of one), while an odds ratio of two suggests that the likelihood of approval in the named comparison group is twice as likely as in the alternative group (two is twice the size of one).

more likely to approve warrants in a shorter amount of time than those with nonprosecutor backgrounds.[251]

Combining these results with those in section III.D, our tests demonstrate that prior prosecutors take significantly more time (two additional minutes) and approve at lower rates (0.7 approvals by prosecutors for every approval by nonprosecutors) than their counterparts. In the absence of more data, we are obliged to explain the mechanisms behind this seemingly counterintuitive relationship through intuition. As before, it may be that prior work experience — specifically with warrant submissions, suppression hearings, and appellate attacks on sufficiency — changes the way judges approach and understand warrant review. Or perhaps the interplay between ideology and legal practice may not run in the traditionally understood direction.

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[251] As a reminder, these professional categories are not mutually exclusive in our data. While just 41% of the judges (forty-five individuals) had worked as prosecutors and 16% (nineteen) had worked as criminal defense lawyers (either public defenders or private attorneys), 6% (seven) did both before joining the bench.

Table 10: Regressions on Outcome (Approval or Not)

VARIABLES	(1) Odds Ratios	(2) Odds Ratios	(3) Odds Ratios	(4) Odds Ratios
Lawyer Review (Binary)	1.848 (0.708)	1.036 (0.116)	1.101 (0.104)	0.990 (0.109)
Tenure (Years)		0.984*** (0.005)	0.988** (0.005)	0.995 (0.006)
Female (Binary)		0.907 (0.087)	0.926 (0.079)	0.846** (0.063)
White (Binary)		1.414 (0.356)	1.425* (0.300)	1.504* (0.314)
Full Time (Binary)		1.107 (0.368)	1.100 (0.386)	0.894 (0.415)
Law Degree (Binary)		0.416*** (0.010)	0.416*** (0.076)	0.431** (0.146)
Prosecutor Experience (Binary)		0.661*** (0.096)	0.661*** (0.088)	0.695*** (0.096)
Defense Experience (Binary)		0.860 (0.142)	0.860 (0.161)	0.871 (0.162)
Both Experience (Binary)		1.550** (0.323)	1.362 (0.315)	1.405 (0.338)
Constant	6.282*** (2.329)	24.550*** (10.870)	27.450*** (9.102)	21.750*** (9.145)
Observations	25,459	18,468	18,468	18,468
Time-Fixed Effects	No	No	Yes	Yes
District-Fixed Effects	No	No	No	Yes
Warrant-Fixed Effects	No	No	No	No
District-Year Clustered SE	Yes	Yes	Yes	Yes
Dataset	Excludes Districts 2 & 5	Excludes Districts 2 & 5	Excludes Districts 2 & 5	Excludes Districts 2 & 5

Notes: All logit models use fixed effects and have clustered standard errors on the district-year level. The time-fixed effects use year, month, day (weekday/weekend), and hour (four six-hour blocks, starting at 12:00 AM) measures. The warrant-fixed effects use judicial districts. "Lawyer Review" represents whether the data indicate that the affidavit was reviewed by a city or county attorney prior to submission. "Tenure" is measured at the warrant level and represents the number of years between the judge's appointment to the bench and the day of the warrant review. "Full Time" represents whether a judge is full time or part time. "Law Degree" represents whether the judge is a lawyer with a JD. "Prosecutor Experience," "Defense Experience," and "Both Experience" represent whether a judge worked as a prosecutor, a criminal defense lawyer (either public or private defense), or both.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Standard errors in parentheses.

Unlike our review time results, however, our tests here show significant relationships between a judge's demographic characteristics and their propensity for approving warrant submissions. Women are slightly less likely to approve than men (0.85:1 odds), and white judges are significantly more likely to approve than their nonwhite counterparts (1.50:1 odds), although the latter relationship is significant only at $p < 0.1$. While some of these findings are potentially explained by the discrepancies in the diversity of judges across districts,[252] our model's district-fixed effects should account for this. We suspect that these results are driven by underlying (and unmeasured) political preferences and ideologies, with white and/or male judges tending to be more conservative than nonwhite and/or female judges.[253]

As with our analysis of review time, we also ran our preferred regression model using datasets broken down by first submissions and resubmissions. Our results are included in Appendix II, Table II.C, and the accompanying text.[254] Except for a small but statistically significant correlation between tenure and approval rate — something that was not present in the tests using the full dataset — we do not see any notable departures from our analysis of the full data in Table 10.

V. A Closer Analysis of Approved Warrant Content

Our analyses up to this point have demonstrated two key features of the warrant review process: (1) warrants are generally reviewed quickly, and (2) approval rates are high overall but vary by judge. On their own, we believe those outcomes raise serious questions about whether the current review process meets constitutional muster and can truly serve as a check on police searches and seizures. At a practical level, however, some may argue these issues only have bite if the resulting process results in error, with judges either failing to approve warrants that meet the standard or approving warrants that do not meet the standard. While the primary focus of our study was to provide a broad quantitative view into the warrant review process — and we reiterate that the limitations inherent in our dataset and our methodological approach prevent us from determining the true "baseline" for warrant review time and approval rate for the full sample[255] — we still feel it valuable to conduct a more detailed investigation into whether the current warrant regime is producing problematic outcomes.

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[252] *See supra* Table 7, p. 2019.

[253] *See* Pew Rsch. Ctr., Wide Gender Gap, Growing Educational Divide in Voters' Party Identification 2 (2018), https://www.pewresearch.org/politics/wp-content/uploads/sites/4/2018/03/03-20-18-Party-Identification-CORRECTED.pdf [https://perma.cc/Y246-EKAC] (describing a "gender gap" and "racial divisions in partisan identification").

[254] *See* Appendix, *supra* note 129, at 11–15, tbl.II.C.

[255] For our discussion of these limitations, see *supra* section II.C.2, p. 1992–93.

This Part takes a more qualitative approach, even if brief relative to our quantitative analyses above. Section A highlights our observations after conducting an in-depth review of 231 randomly selected warrant approvals from the full dataset. Section B then focuses on a smaller sample (n = 40) of those warrant applications that were reviewed and approved in less than one minute.

A. A Qualitative Analysis of Approved Warrants

Because we have access to PDF images only of warrants that were ultimately approved, we began our qualitative analysis by randomly selecting 231 examples from our approved-warrant dataset.[256] We then read the affidavits, warrants, and returns for each of the respective warrant numbers we selected and recorded information on a wide range of variables, including the type of entity searched; whether a seal was requested and granted; whether a no-knock entry was requested and granted; and the similarity between the items requested in the affidavit, the items granted in the warrant, and the items listed in the return.[257] We also recorded potential deficiencies in meeting probable cause standards, including whether the affidavit lacked important factual information, was overbroad, or exclusively relied on anonymous informants.

At the outset, our expectations regarding this more holistic review of warrants were not that we would find a great number of examples where a warrant was improperly approved. For reasons we detailed in our discussion of the extralegal factors that influence warrant review, we suspected that the quality of warrant submissions is generally quite good relative to the fairly low bar of probable cause and that the current review process is able to filter out the most egregious submissions. At the same time, however, our empirical findings that only six percent of warrants are initially denied and that the review process usually takes three minutes or less reflects a warrant-review regime that is almost certainly missing important but less obvious details on the margins, resulting in mistakes. In other words, we expected that most warrants were justifiably approved but that a few should not have passed the review process.

As anticipated, we did find several warrants that were lacking or, to be charitable, had very thin foundations for probable cause. These warrants had a combination of issues that mirrored some of the patterns highlighted in the DOJ's investigation of Louisville, including (1) not providing adequate "specificity and detail"; (2) being "overly broad in

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[256] Because we randomly selected these warrants, they should provide a roughly representative view into the full sample. The seemingly arbitrary number of warrants (231) reflects the fact that we worked through a randomly ordered list of 1,000 warrants with no clear quota, starting from the top and moving down until we felt we could make qualitative findings.

[257] The full list of variables collected was much longer (about seventy-five), but many are not salient to the analysis in this Article.

scope"; and (3) not establishing sufficient probable cause for all of the items or persons listed in the warrant.[258]

In some cases, officers requested and were approved for affidavits that described in broad strokes what individuals involved in a given criminal activity do but failed to allege specifics in the relevant case. Similarly, magistrates approved a couple of warrants that made factual allegations that bear little relationship to the evidence sought.[259] For example, the affidavit shown in Figure I.D seeks the collection of DNA from two suspects in the "form of buccal swabs."[260] But the facts presented in the affidavit have no clear connection to the need for DNA evidence. During a traffic stop, officers "located a stolen firearm under the seat [of the passenger]" of the vehicle occupied by the two suspects.[261] No other material facts were presented, and the stated purpose of the evidence was similarly vague — that it was being collected as "evidence of illegal conduct," namely, "the crime . . . of [p]ossession of a stolen firearm by [a] restricted person."[262] The approved warrant provides no additional context.[263]

We also found warrants that were overly broad in scope. While the affidavit may have established probable cause to search one person or place, it would request the search of multiple persons and/or locations with very loose associations with the target of the investigation. One example involved an officer conducting undercover investigations during which he obtained child pornography over a peer-to-peer network.[264] The officer received the IP address and "nickname" of the user who provided an "incomplete download" of a pornographic video that showed sexual acts involving a minor.[265] The officer obtained the name and address of the subscriber with a subpoena of the user's internet service provider.[266] He also matched the vehicle in the driveway of the home to the same user.[267] The affidavit requested not only a search of the individual to whom the IP address was registered, but also a search

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[258] INVESTIGATION OF LOUISVILLE POLICE AND GOVERNMENT, *supra* note 8, at 22, 23, 25.

[259] We include redacted images of a simple example of one such warrant in Appendix I. *See* Appendix, *supra* note 129, at 4–8 fig.I.D.

[260] *Id.* at 7 fig.I.D.

[261] *Id.* at 6 fig.I.D.

[262] *Id.* at 4–5 fig.I.D. For the sake of completeness, regarding the "DNA by form of buccal swabs," the warrant states "that said property or evidence: [w]as unlawfully acquired or is unlawfully possessed; has been used or is possessed for the purpose of being used to commit or conceal the commission of an offense; or is evidence of illegal conduct." *Id.* at 4 fig.I.D.

[263] *Id.* at 7–8 fig.I.D.

[264] We do not include the affidavit and warrant in the Appendix because they are a lengthy fifteen pages. A redacted version of the affidavit, warrant, and return is available from the authors upon request. *See generally* Affidavit for Search Warrant, No. 1238895 (Utah 1st Jud. Dist. Dec. 10, 2013) (on file with the Harvard Law School Library).

[265] *Id.* at *10.

[266] *Id.*

[267] *Id.*

of "all persons found to reside at the residence."[268] Without having any individualized evidence, the officer justified the broader search solely on his experience in such cases.[269] While we found the background investigation in the warrant to be commendably robust, it arguably did not justify such a broad and generalized search. The trend mirrors the DOJ's findings that, in Louisville, officers sought (and were granted) authority to search individuals with only remote associations with the investigation target.[270]

We more frequently encountered warrants that, while not implicating constitutional concerns, nonetheless reflected a rapid review and approval process and the costs of prioritizing expediency. We found numerous warrants that lacked address information, contained grammatical errors, or were difficult to understand, most often because the judge appeared to utilize the exact language in the warrant that the officer used in their submission. While nearly all of these more benignly problematic warrants ultimately met the probable cause standard, we worry that the manner in which they were written increases the potential for collateral consequences down the road. At a minimum, the warrant serves as a form of communication from the state to the search target, and one would hope that it would contain accessible prose and be free of grammatical errors.

B. Looking into the "Minute Warrants"

After reflecting on the results of our qualitative examination of the full sample, we expanded our review to those warrants that were reviewed and approved in sixty seconds or less. We excluded DUI warrants and resubmissions, leaving us with a final "minute warrant" dataset of 1,863 warrants. This subset of the data represents the extreme (but not a rarity) in review time, and for that reason, we suspected that the affidavits and resulting warrants would be most likely to provide us with examples of the costs of expediency.

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[268] *Id.* at *1.
[269] *See id.* at *10.
[270] INVESTIGATION OF LOUISVILLE POLICE AND GOVERNMENT, *supra* note 8, at 25.

Table 11: "Minute Warrant" Descriptive Characteristics

A. Review Time (Minutes)					
Min.	First Decile	First Quart.	Med.	Third Quart.	Max.
0:03	0:09	0:32	0:43	0:52	1:00

B. Affidavit Length (Words)					
Full Affidavit Med.	Full Affidavit Max.	No Boilerplate Med.	No Boilerplate Max.	Facts Only Med.	Facts Only Max.
1,008	10,664	820	10,476	438	8,151

C. Jaccard Similarity		
% Jaccard Similarity > 90	% Jaccard Similarity > 95	% Jaccard Similarity > 99
51.32	44.6	36.56

Notes: Minutes are reported as Minutes:Seconds.

Table 11 presents some basic descriptive information on this subsample, focusing on the same attributes and categorizations we explored in our previous analyses. Interestingly, there are no key characteristics that distinguish the subsample of minute warrants from the broader sample (other than review time, of course). As compared to the other warrants in Table 4,[271] median affidavit length is roughly the same for the three versions of word count we analyze, and, as compared to the full sample in Tables 5(a) and 5(b),[272] the percentage of warrants that have Jaccard similarity scores of more than ninety, ninety-five, and ninety-nine are all within four percentage points.

From the subsample, we randomly selected forty warrants and reviewed them in a manner similar to our qualitative process in the previous section. Despite knowing the data presented in Table 11, our first reaction was surprise at how long and detailed some of the warrant affidavits were, given that they were reviewed in such a short amount of time. In some cases, the language of the text provided a reasonable basis for the quick review, as with affidavits that were quite short or predominantly composed of the officer "hero statement" and other arguably "unnecessary" language.[273] But with others, we found no apparent justification for how a judge could have credibly reviewed such a detailed document so rapidly other than the conclusion that they did not fully (or even partially) read the relevant text. One warrant affidavit, for example, comprised nearly 2,700 words of fact-dense justification for a

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[271] *See supra* Table 4, p. 2008.

[272] *See supra* Tables 5(a) & 5(b), pp. 2011–12.

[273] For our analysis of such language, see section III.B.2, pp. 2006–10.

nighttime, no-knock warrant and was reviewed and approved in forty-six seconds.[274]

Despite reading through only forty warrants, we identified issues consistent with our findings from the larger qualitative review above. Many of these observations were arguably benign: poorly written and confusing affidavits (that would be exceedingly difficult to understand in a quick review), borderline probable cause questions, a search warrant that was clearly supposed to be an arrest warrant, and a good number of affidavits that never explicitly identified the suspected crime at all but ultimately had sufficient contextual clues to make a reasonable conclusion (again, difficult in a short timeframe). But we also found some more troubling cases, including multiple warrants where officers were seeking broad access to digital devices and digital data without providing sufficient factual support for such broad searches or without providing appropriate limitations to which data would be subject to the searches.

One warrant stood out as a particularly salient example of the issues we have highlighted in this Article,[275] not because it contained an egregious error that wreaked havoc on an individual's privacy rights, but because it demonstrated the sort of problems that we would anticipate are common when a judge spends so little time (thirty-nine seconds in this case) reviewing a warrant request. From the text of the affidavit,[276] it can be inferred that the officer was seeking information on a cell phone related to potential drug violations. However, it is clear that the officer (or the e-Warrants system) made a mistake when filling out the affidavit, because instead of identifying a place or an individual, it lists the "premises" where the evidence was located as "[a] rose gold iPhone" and the "items" that contained the evidence as "[a]ny messaging capabilities, and photos."[277] While the four sentences of factual information that came at the end of the affidavit did list a name (we inferred that this individual was the subject of the search), it appears that when the judge approved the affidavit and wrote the warrant, they opted to automatically use the same prepopulated fields that the officer had included in their submission. As a result, the final warrant itself had no identifying information in it at all. It simply said that the officer had the authority to seize "[a] rose gold iPhone with a clear case and broken screen protector."[278]

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[274] We do not include the affidavit and warrant in the Appendix because they are a lengthy ten pages. A redacted version of the affidavit, warrant, and return is available from the authors upon request. *See generally* Affidavit for Search Warrant, No. 1766911 (Utah 3d Jud. Dist. Jan. 1, 2018) (on file with the Harvard Law School Library).

[275] Appendix, *supra* note 129, at 9–10 fig.I.E.

[276] *Id.*

[277] *Id.* at 9 fig.I.E.

[278] *Id.*

Admittedly, this error was likely harmless in practice. But, on its face, the warrant was clearly unconstitutionally broad, as it could have technically been used to apprehend anyone's rose gold iPhone for as long as the warrant was executable. A judge who had spent more than a handful of seconds reviewing the affidavit and the resulting warrant would have identified this error, but, for all the reasons we have discussed in this Article, the warrant review regime often moves too fast to catch anything but the most obvious and egregious problems. As a result, the reliability of the Fourth Amendment's protections via this warrant hinged on a latent reliance on the good faith of the police officer, which is precisely what the "check" of warrant review is supposed to avoid.[279]

VI. Conclusions, Implications, and Avenues for Reform

In this Article, we have presented the results of the largest and most comprehensive empirical evaluation of search warrants to date. By utilizing novel and robust data from Utah's e-Warrants system, we evaluated nearly 33,500 warrant applications filed by more than 3,200 law enforcement officers to nearly 120 judges over a three-year period. Because the e-Warrants system maintains text PDFs of all approved warrants and detailed metadata on all the key events in the lifecycle of a warrant submission, we were able to determine precisely how long the review process takes and exactly what percentage of search warrant applications are approved. Additionally, by using judge- and warrant-level descriptive data, we were able to explore possible hypotheses that might explain our results.

In review, our empirical analysis demonstrates that the warrant review process is brief, and that it rarely results in a warrant being denied. The median time it takes a judge to review a warrant affidavit is three minutes, and approvals, which also involve producing the warrant document, are done even more quickly. Furthermore, one out of every ten warrants is approved in a minute or less. We also find that only 6% of warrants are denied on first submission and that, eventually, 98% of all warrants are approved. Our key findings are robust to alternative datasets that exclude simplistic, form-type warrants (like DUIs), warrants that have previously been reviewed, and warrants that are highly similar to other warrants. We also perform a qualitative, in-depth analysis of a subsample of the affidavits and find examples demonstrating some of the problematic outcomes of the warrant review process.

Nonetheless, the implications of these results are not perfectly obvious, and the solutions to the problems we identify are not clear. We conclude this Article by briefly discussing the implications, as we see them, being careful to recognize the limitations in our methodological

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[279] *See* Johnson v. United States, 333 U.S. 10, 14 (1948).

approach and the external applicability of our findings. We then review some potential avenues for reform that account for the extralegal factors we identified earlier in this Article that likely influence warrant review.

A. Implications from Our Findings

As we summarized above, warrant review is fast and almost always results in approval. But what does this actually say about the nature and quality of the warrant review process? Upon reading our results, many will undoubtedly see them as a clear and irrefutable indictment of the whole enterprise.[280] They will see these results as a prime example of the uncouth relationship between local trial judges and law enforcement, yet another instance in which defendants (or, in the case of warrants, suspects) are mistreated, and more evidence in favor of the conclusion that the criminal justice system is in dire need of reform. These sentiments are, of course, not new,[281] but many will conclude that our data substantiates their long-held suspicions that the process is broken.

On the other hand, many will genuinely find our results as not only expected but actually fully in line with a system working as it should.[282] Short review times and high approval rates simply reflect an investigative and adjudicative economy in which the vast majority of warrants *do* meet the probable cause standard, and the reviewing judges — after years of legal training and professional acclimation — are fully capable of honing in on and fully evaluating the relevant information in a warrant in just a few minutes.

As we have emphasized throughout this Article, we feel it is critical to interpret our findings within the full context of the legal system in which the judicial review process takes place and the extralegal factors that influence that process. Given that an officer's duty is to "ferret[] out crime,"[283] law enforcement is not compelled to prioritize Fourth Amendment rights. Nonetheless, police officers are incentivized to submit warrants that are likely to be approved and unlikely to be overturned down the road. Furthermore, we also emphasize some of the extralegal factors — like law enforcement motivations in the warrant application process, *ex parte* and repeat play, judicial resource constraints and expediency pressures, the cognitive difficulties of warrant review, and electoral and other political pressures — that likely play an important role in the warrant review process.

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[280] Indeed, we know this because we have seen this exact sentiment in early presentations of our findings (coming from attorneys, colleagues, police officers, and even judges).

[281] *See* Steinberg, *supra* note 98, at 1031–33 (questioning the assumption that judges are inherently able to serve as neutral checks against law enforcement).

[282] Here too, we can confirm this sentiment because we have heard it from attorneys, colleagues, police officers, and judges.

[283] *Johnson*, 333 U.S. at 14.

We also reiterate the importance of recognizing that while our empirical findings reflect reality — judges really do review most warrants in three minutes or less — we do not know the true, normative baseline against which to compare these results. The probable cause standard is low, but does that mean we should expect all but a few warrants to meet it, or does it incentivize boundary pushing and marginally unconstitutional searches? How quickly *should* judges review warrants, and what percentage of those warrants *actually* meet the standard? We cannot provide definitive answers to these questions with the data we have.

That does not prevent us, however, from drawing reasonable inferences using the context the data provide, and we believe the combined results of our analyses in this Article paint a compelling picture. Taken together, we argue that our empirical and qualitative evidence raise serious concerns about the ability of the current warrant-review process to meet its call as the bulwark against police error or abuse. As evidenced by intrajudge disparities and the fact that some affidavits are being denied, judges are not engaged in a pure rubber-stamping exercise when they evaluate warrant submissions. Consequently, egregious constitutional violations are likely being filtered out. However, a process in which half of all warrants are reviewed in less than three minutes and a non-negligible portion are reviewed in less than sixty seconds will inevitably fail to identify warrants that have more nuanced issues. This perfunctory review is perhaps most consequential in the case of no-knock warrants, where severe injury and death can result.[284] This has critical constitutional implications in a legal system that so centrally relies on warrant review as the robust "check" on law enforcement and inevitably encroaches on the privacy of individuals. If the system has these flaws, then we must call into question the efficacy of Supreme Court decisions that rely on the warrant process as a higher standard to preserve the privacy rights of the citizenry.[285]

B. Avenues for Reform

The combined results of this study expose a sobering reality regarding the process and outcomes of a warrant review regime that often moves too quickly and, as a result, likely approves more warrants than it should. Providing prescriptions for the problems we identify, however, is difficult, as it inherently requires us to venture beyond the confines of our careful statistical analysis and into well-intended but less empirically supported recommendations. That being said, by relying on the

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[284] *See* NINO MARCHESE, AM. LEGIS. EXCH. COUNCIL, NO-KNOCK RAIDS: EXAMINING THE RISK, CONTROVERSY AND CONSTITUTIONALITY 2, 5 (2022), https://alec.org/publication/no-knock-raids [https://perma.cc/GAC4-Y9H9].

[285] *See, e.g.*, Missouri v. McNeely, 569 U.S. 141, 148 (2013) (requiring a warrant for blood tests in impaired driving circumstances); Birchfield v. North Dakota, 579 U.S. 438, 456, 463–64 (2016) (same); Mitchell v. Wisconsin, 139 S. Ct. 2525, 2534 (2019) (carving out an exception to the warrant requirement when the driver is unconscious).

extant literature and considering the extralegal factors we have discussed thus far, we feel there are a number of credible paths forward.

1. Continued Empirical Study. — We start with the obvious and reliable call for more empirical analysis. While we are confident in our methods and have argued that our data and results can and should be informative regarding the broader warrant regime in the United States, our study is one of only a handful of empirical investigations in the last half-century into the search and seizure process.[286] More studies in more venues regarding a broader set of legal and behavioral outcomes are critical for both having a better understanding of the warrant process and instituting change that avoids the pitfalls of "one-size-fits-all" reform.[287]

But engaging in more empirical work is easier said than done. As we discuss in section II.A, data availability is disappointingly low, despite the increased use of electronic warrants systems, like Utah's e-Warrants program. Consequently, studies specifically targeted at individual steps in the warrant process or specific types of warrants are more likely to be fruitful. To this end, we are currently using Utah's data to explore police behavior at the front end of warrant submission (like cooperation with county attorneys and the prevalence of "judge shopping"), police behavior at the back end of warrant execution (including hit rates as reflected in the warrant returns), and the use of warrants to access digital information. Sound empirical analysis on no-knock warrants and potential race- and class-based disparities in searches and seizures also strike us as particularly fertile ground going forward.

States and local governments can ensure that researchers and academics (and the broader public) have access to the necessary data by implementing data transparency and reporting requirements with respect to certain warrants or the entire universe of searches. Many states have already done this, like Maryland's statutorily mandated disclosure of the number and nature of SWAT-involved no-knock warrants[288] and California's monthly reports on emergency warrants for information from third-party electronic communication service providers.[289]

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[286] For discussion of this research, see *supra* notes 24–30 and accompanying text.

[287] de Figueiredo & Thorley, *supra* note 221, at 626.

[288] *See, e.g.*, MD. GOVERNOR'S OFF. OF CRIME PREVENTION & POL'Y, 2023 REPORT ON SWAT TEAM DEPLOYMENT AND NO-KNOCK SEARCH WARRANTS 2 (2024), https://gocpp.maryland.gov/reports-and-publications/#MSAC-reports [https://perma.cc/R6VB-J4SG].

[289] *See Data Portal*, CAL. OFF. OF THE ATT'Y GEN.: OPEN JUST., https://openjustice.doj.ca.gov/data [https://perma.cc/8RKA-BMCU]. At the federal level, the Administrative Office of the U.S. Courts published descriptive data on the number of delayed-notice search warrants (also called "sneak and peek" warrants) submitted and approved in the U.S. federal courts in fiscal year 2024. *Delayed-Notice Search Warrant Report 2024*, U.S. CTS. (Sept. 30, 2024), https://www.uscourts.gov/data-news/reports/statistical-reports/delayed-notice-search-warrant-report/delayed-notice-search-warrant-report-2024 [https://perma.cc/5V5U-YTTN].

2. Doctrinal Reform. — There will be those, of course, who will argue that the most direct avenue for meaningful reform is to change the legal standards by which judges evaluate warrant submissions and the standards of review employed when challenging the sufficiency of previously approved warrants.[290] Legal scholars have consistently identified the probable cause standard as a low and discretionary bar,[291] so by elevating it, judges would necessarily be obliged to be more critical when reviewing warrant affidavits. One might imagine a standard with a higher burden of proof or with more bright-line rules. But, in reality, doctrinal reform is likely a nonstarter. Our current standards are embedded deeply within Fourth Amendment jurisprudence, and the discretionary underpinnings of probable cause doctrine are unlikely to undergo fundamental change any time soon.[292]

Doctrinal reform also has the disadvantage of being a primarily *back-end* recourse for problematic warrant practice. While a lower probable cause standard would ostensibly influence the initial stages of warrant review, our findings in this Article demonstrate that a given standard is not a sufficient bar against Fourth Amendment violations if the mechanism through which that standard is applied is even a bit unreliable. Furthermore, we suspect that changes in the standards would, especially at first, mostly influence the manner in which unconstitutional warrants are challenged during trial and at appeal. At that stage, substantial harm has already been done, even if the challenge is successful.

3. Policy Reform. — Already seeing the deleterious effects of no-knock warrants, at least six states have implemented an outright ban on no-knock or no-announce entries,[293] and over half of all states have enacted some level of restrictions regarding the reach and implementation of no-knock warrants.[294] We applaud these efforts and encourage more legislatures to consider prescribing regulations, such as increasing the mandatory waiting period before entry with knock-and-announce procedures, that curb the danger that no-knock entries pose to the public while also recognizing the dangers they pose to law enforcement and the exigent circumstances that often exist.

As an alternative to banning or augmenting the implementation of certain warrants, states could require mandatory review by police chiefs

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[290] *See, e.g.*, Amar, *supra* note 37, at 816–19; JESSICA CONSTANT ET AL., D.C. JUST. LAB, LIMIT SEARCH WARRANTS 6 (2020), https://dcjusticelab.org/wp-content/uploads/2022/04/LimitSearchWarrants.pdf [https://perma.cc/L6GL-9JE6].

[291] *See* Slobogin, *supra* note 69, at 39; VAN DUIZEND ET AL., *supra* note 27, at 36.

[292] *See, e.g.*, Kiel Brennan-Marquez, *"Plausible Cause": Explanatory Standards in the Age of Powerful Machines*, 70 VAND. L. REV. 1249, 1300 (2017) (arguing that in an "era of automation," "judgment is necessary . . . because it keeps the exercise of power intelligible and ensures that arenas like law enforcement . . . maintain some measure of balance").

[293] *See* sources cited *supra* note 18.

[294] *See #End All No Knocks*, *supra* note 17.

or prosecutors for certain types of warrants. While many states, including Utah, already rely on informal norms of prosecutorial review for many warrants,[295] policy-level requirements could ensure that all necessary warrants — maybe those with the highest stakes — get an extra level of legal expertise while making the process more formal and more subject to scrutiny.

In a system where expediency is paramount but the judges who are reviewing the warrants are already overburdened, an obvious policy-level solution is to legislate more funding to the judiciary. This could come in the form of simply having more judges who review warrants, thereby spreading out the administrative load. But it could also be used to create new, specialized positions that are trained and solely focused on tasks like warrant review. States might also consider creating magistrate panels tasked with reviewing especially high-impact warrants, such as no-knock warrants, or more technically complicated warrants, such as requests for digital information from third-party service providers.

4. Institutional and Behavioral Reform. — Courts, judges, lawyers, and law enforcement need not wait for formal legislative action in order to enact meaningful change. Many of the problems that we have identified in this Article might credibly be addressed through simple, institutional- and individual-level reforms in how the warrant process is approached and who is involved. Indeed, we believe that some of the most impactful reforms might also be those that are the most feasible, as long as they account for the sorts of extralegal influences we have highlighted throughout this Article.[296]

For example, in our past work on bail decisions, we have advocated for various "nudge" policies that change the nature of the choice architecture in which judges make their decisions.[297] While it can be tempting to believe that hardline standards or regulations on judicial decisionmaking are a quick fix for undesirable behavior, these approaches often backfire.[298] Creating the warrant equivalent of a bail schedule, for example, where the probable cause determination and the extent of the warrant is purely determined by a precalculated set of factors, is inevitably going to be clunky and, depending on the source of the factors, may increase race- and class-based disparities.[299] Likewise,

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[295] *See supra* note 165 and accompanying text.

[296] For a discussion of the extralegal factors we felt were most relevant to warrant review, see *supra* section I.D, pp. 1975–82.

[297] de Figueiredo & Thorley, *supra* note 221, at 623.

[298] *See, e.g.*, de Figueiredo et al., *supra* note 107, at 392; Petkun, *supra* note 107 (manuscript at 56–57) (finding that the "six-month list" used to motivate faster decisions in U.S. federal trial courts does accelerate outcomes but likely at the cost of quality).

[299] *See, e.g.*, Megan Stevenson, *Assessing Risk Assessment in Action*, 103 MINN. L. REV. 303, 309 (2018) (evaluating the potential racial disparities of risk assessment algorithms in Kentucky);

simply requiring that judges spend more time on warrant review by instituting a timer will, by its nature, increase the amount of time an officer needs to wait for a warrant decision but may have no effect on the time the judge actually spends reviewing the warrant.[300]

Instead, adjusting the warrant review process so that it formally includes feedback loops or more individuals would strengthen its ability to serve as a true "check" on police behavior without ignoring the centrality of the judge or sacrificing expediency. A robust literature on auditing has demonstrated that the threat of external review (whether by colleagues or an independent agency) can have substantial impact on the amount of effort put into an action or report.[301] In the context of warrant review, courts might subject judges to occasional, random audits, where all their decisions over the course of an hour could be reviewed live by another judge. Or that auditing process could take a purely ex ante approach, where judges review a selection of their past decisions with other judges, law enforcement, prosecutors, and even representatives from the criminal defense bar. The same approach could be taken with law enforcement officers, where the group audit could help address sloppiness in affidavits and clarify the distinction between constitutionally valid and overly broad requests. These delayed reviews would also benefit from having data on warrant returns and hit rates, as we discussed above.[302]

For their part, judges should proactively push for more data transparency from their court systems and seek information regarding their own warrant practices. In our experience with this Article, judges have been genuinely shocked at the prospect of warrant review ever taking less than sixty seconds, let alone with the frequency we see in our data. Although we did not disclose data on their own behavior,[303] we suspect that nearly all judges consistently overestimate the amount of time they spend in their own reviews. Empirical studies have shown that becoming self-informed can have substantial effects on behavior and that being

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see also David Arnold et al., *Measuring Racial Discrimination in Bail Decisions*, 112 AM. ECON. REV. 2292, 2293 (2022) (using "quasi-random" judge assignment to identify racial disparities in bail decisions more broadly).

300 Empiricists and theorists are increasingly finding that judges, like all people, act strategically in the face of constraints and regulation. *See* LEE EPSTEIN & KEREN WEINSHALL, THE STRATEGIC ANALYSIS OF JUDICIAL BEHAVIOR 3 (2021); Pablo T. Spiller & Rafael Gely, *Strategic Judicial Decision Making* 2 (Nat'l Bureau of Econ. Rsch., Working Paper No. 13321, 2007), https://www.nber.org/papers/w13321 [https://perma.cc/4BZA-EUTA].

301 *See, e.g.*, Michael Hallsworth, *The Use of Field Experiments to Increase Tax Compliance*, 30 OXFORD REV. ECON. POL'Y 658, 660–64 (2014) (providing extensive review of the experimental literature surrounding tax policy, including auditing); Guilia Mascagni, *From the Lab to the Field: A Review of Tax Experiments*, 32 J. ECON. SURVS. 273, 278–81 (2018) (same).

302 *See supra* section I.C, pp. 1974–75.

303 We decided not to due to Institutional Review Board (IRB) restrictions.

exposed to peer behavior changes the way in which one approaches a given task.[304]

We would also encourage criminal defense attorneys to avail themselves of data on warrants (where it exists) to both identify circumstances that may have led to problematic outcomes and potentially use the data to substantiate arguments made in court. Although the process of gathering statewide, comprehensive data on the search and seizure process is — from our personal experience with this Article — complex and resource intensive, case- or defendant-level inquiries are well within the capabilities of attorneys. To the extent that rapid review times are more indicative of rubber stamping or mistakes by the judges (and our qualitative analysis in Part V suggests they may be[305]), attorneys or offices could use timestamp data to identify red flags that warrant more in-depth investigation. More directly, defense attorneys might consider raising review times when challenging the sufficiency of a given warrant in a suppression hearing or appellate review. While success will ultimately depend on showing that probable cause was not met, highlighting problematically fast review times might narrow the latitude that trial and appellate judges give to the initial approval.

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[304] While we are not aware of any experimental studies demonstrating peer effects in judicial behavior, randomized experiments conducted in the real world have demonstrated that knowing peer behavior changes one's approach to voting and household power usage. *See, e.g.*, Alan S. Gerber et al., *Social Pressure and Voter Turnout: Evidence from a Large-Scale Field Experiment*, 102 AM. POL. SCI. REV. 33, 38, 42 (2008); Ian Ayres et al., *Evidence from Two Large Field Experiments that Peer Comparison Feedback Can Reduce Residential Energy Usage*, 29 J.L. ECON. & ORG. 992, 1015 (2013).

[305] *See supra* section V.B, pp. 2037–40.