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ALL-CAPS

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A hallmark of consumer contracts is their use of long blocks of capitalized text. These "all-caps" clauses are meant to alert consumers to nonstandard, risky, or important aspects of the transaction that would otherwise be hidden in the fine print. Based on a belief in the power of all-caps, courts will often deny enforcement of many key terms—such as warranty disclaimers, liability releases, arbitration clauses, and automatic billing—unless they are presented in all-caps. This article is the first to empirically examine the effectiveness of all-caps. Using an experimental methodology, the article finds that all-caps fail to appreciably improve consent. Moreover, some evidence suggests that all-caps are harmful to older consumers. We collect evidence from standard form agreements used by the largest companies in the United States and find that, despite its limitations, three-quarters of consumer contracts contain at least one all-caps paragraph. Based on these findings and other evidence reported here, this article lays out the dangers and risks of continued reliance on all-caps and calls for abandoning all-caps.

I. Introduction

All-caps, blocks of fully capitalized text, are a hallmark of modern contracts.[1] The ubiquity of this unique staple of the legal genre owes to a century-old belief, held by courts, legislators, and consumer protection agencies alike, that all-caps improve consumer notice of important terms in their agreements. Courts refuse to enforce key terms without all-caps or similar formatting, citing a lack of notice that impairs consumer consent, thus entrenching and incentivizing the frequent use of all-caps. Despite the prevalence of

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[1]See, e.g., American Bar Association, Warranties and Online Sales, available at https://www.americanbar.org/groups/business_law/migrated/safeselling/warranties/ (Sept. 26, 2016), (noting the scope of the practice). The mixture of uppercase and lowercase letters originated in typography printing customs around 1465; the terms themselves refer to the different cases where the different letters were stored. Charles Bigelow, Typeface Features and Legibility Research, 165 Vision Res. 162, 167 (2019).

this supposed pro-consumer mechanism, its efficacy in improving consumer notice was never tested. This study attempts to fill this gap.

Contract scholarship tends to pay relatively little attention to contract formatting and appearance. In practice, however, the stakes of contract design, and all-caps in particular, are surprisingly high. Courts will readily deny a wrongful death claim if the formatting of an exculpatory waiver in the fine print appears in all-caps or similar "conspicuous" formatting.[2] Across the nation, statutes and courts rely on the supposed efficacy of all-caps to protect consumers, potentially substituting away from other, more substantive measures.[3] When the parties fail to capitalize a contractual term, courts often deny enforcement.[4]

Given its practical significance, studying the efficacy of all-caps is important for several reasons. If all-caps do not improve consumer notice and the meaningfulness of assent, then courts have been erroneously enforcing onerous terms in myriad cases—depriving consumers of recourse based on faulty assumptions. To commentators who believe consumers do not read contracts, this finding would have particular significance in demonstrating that even the most sustained effort to improve consumer readership fails.[5] Such a finding can undermine the logic in all cases where courts denied enforcement because of a lack of capitalization. Moreover, if all-caps are ineffective as a means of consumer protection, then alternative measures should be developed and implemented, and courts should desist the century-old policy of encouraging firms to use them in their contracts.[6]

Not the first to express interest in capitalization, we are the first to study block capitalization in the consumer contract context. A surprisingly small and fairly dated body of

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[2]See, e.g., Enserch Corp. v. Parker, 794 S.W.2d 2 (Tex. 1990) (requiring conspicuous indemnity language); Donahue v. Ledgends, Inc., 331 P.3d 342 (Alaska 2014); Dye v. Tamko Bldg. Prod., Inc., 908 F.3d 675, 678 (11th Cir. 2018).

[3]See Section II.

[4]See notes 44–49.

[5]See Ian Ayres & Alan Schwartz, The No-Reading Problem in Consumer Contract Law, 66 Stan. L. Rev 545 (2014). See also Yanees Bakos, Florencia Marotta-Wurgler & David R. Trossen, Does Anyone Read the Fine Print? Consumer Attention to Standard Form Contracts, 43 J. Legal Stud. 1 (2014) (providing empirical data that virtually no consumers read end users license agreements); Shmuel I. Becher & Esther Unger-Aviram, The Law of Standard Form Contracts: Misguided Intuitions and Suggestions for Reconstruction, 8 DePaul Bus. & Com. L.J. 199, 206 (2010) (providing empirical data that most consumers are not likely to read contracts ex ante); Clayton P. Gillette, Rolling Contracts as an Agency Problem, 2004 Wis. L. Rev. 679, 680 (2004) ("commentators agree that buyers, or the vast majority of them, do not read the terms presented to them by sellers"); Lewis A. Kornhauser, Comment, Unconscionability in Standard Forms, 64 Cal. L. Rev. 1151, 1163 (1976) ("In general the consumer will not have read any of the clauses, and most will be written in obscure legal terms."). For the formatting of conspicuous disclosures generally, see Mary Beth Beazley, Hiding in Plain Sight: "Conspicuous Type" Standards in Mandated Communication Statutes, 40 J. Legis. 1, 1–2 (2014).

[6]See also Beazley, supra note 5, at 2 (arguing that firms intentionally obfuscate disclaimers); Lauren E. Willis, Performance-Based Consumer Law, 82 U. Chi. L. Rev. 1309, 1311 (2015) (arguing that firms hamstring the disclosure project through the framing of disclosures).

research studied the legibility of capital letters, originating with the work of Miles A. Tinker.[7] This research focuses mostly on legibility—rather than notice or understanding—and has ambiguous implications for contracts. In general, it finds that capitalized letters are more perceptible and read more accurately, although they tend to slow down reading speeds and are not well liked by readers.[8] In terms of application, one study finds that patients can more accurately distinguish drug names if part of the name is capitalized.[9] However, the applicability of these studies to the modern consumer contract context is quite limited. Perceptibility at a distance plays a minor role and slow reading times may actually prove advantageous, with slower reading encouraging greater attention and deliberation. The research is also very dated, which raises special concerns given changing norms in print, reading habit, and printing technology. The key question of whether all-caps improve notice—and thus assent—was left open, which is possibly why this research was mostly ignored by courts and legislators.

The article starts in Section II by tracing the development of all-caps and conspicuous disclosure in contract law. Evolving during the 19th century, around the same time as mass-printed consumer contracts (mostly common carrier tickets), all-caps was developed as a solution to the problem of fine print. If a term appears in all-caps or larger type, the courts assumed that the consumer actually noticed it and, thus, the consumer's assent to the contract also encompasses this term. To this day, courts and legislators hold a deep commitment to the behavioral theory that all-caps improve consumer notice by drawing attention to key terms, and will deny enforcement to certain terms if they are not capitalized.

In Section III we present evidence on the pervasiveness of all-caps "in the wild." To this end, we collected and analyzed the standard form contracts of 500 of the most popular consumer companies in the United States—for example, Amazon and Uber. These forms are the basis of hundreds of millions of individual contracts between consumers and these companies. We use this database to generate the first-ever evidence of the pervasiveness of long blocks of text in consumer contracts. We find that over three-quarters of these contracts (77 percent) contain at least one all-caps clause.

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[7]Miles A. Tinker, Legibility of Print (1963).

[8]See id at 33–35, 58–59 (1963); Miles A. Tinker & Donald G. Paterson, Influence of Type Form on Speed of Reading, 12 J. Applied Psychol. 359 (1928); Miles A. Tinker & Donald G. Paterson, The Effect of Typographical Variations upon Eye Movement in Reading, 49 J. Educ. Res. 171, 181 (1955); Miles A. Tinker, Prolonged Reading Tasks in Visual Research, 39 J. Applied Psychol. 444 (1955); Maribeth Henney The Effect of All-Capital vs. Regular Mixed Print, as Presented on a Computer Screen, on Reading Rate and Accuracy, 16 AEDS J. 205–17 (1983). But see Jeremy J. Foster & Margaret Bruce, Reading Upper and Lower Case on Viewdata, 13 Appl. Ergon. 145 (1982) (finding no difference in reading speeds of nonsense passages in either upper- or lowercase); James E. Sheedy et al., Text Legibility and the Letter Superiority Effect 47 Hum. Factors 797 (2005) (finding that capital letters are 35 percent more legible than lowercase words). For a recent reviews, see Maria Lonsdale, Typographic Features of Text: Outcomes from Research and Practice, 48 Visible Lang. 29, 37–40 (2014) (review); and Willis, supra note 6, at 1349.

[9]R. Filik, K. Purdy, A. Gale & D. Gerrett, Drug Name Confusion: Evaluating the Effectiveness of Capital ("Tall Man") Letters Using Eye Movement Data, 59 Soc. Sci. & Med. 2597–01 (2004), doi:10.1016/j.socscimed.2004.0.

Section IV tests the effectiveness of these omnipresent all-caps clauses in lab settings with 670 participants.[10] Our primary experiment tests the effect of all-caps on various measures of notice. If all-caps clauses have a behavioral effect and do indeed improve notice, then respondents should be able to recall terms better when they are presented in all-caps than when they are not.[11] To test this hypothesis, we presented subjects with a detailed contract adapted from a common consumer contract for online music services. The control contract was entirely in normal print (low-caps).[12] The only difference in the treatment group's contract was that one single paragraph appeared in all-caps. We then asked subjects about their obligations under the contract and evaluated the accuracy of their responses.

The evidence shows that *all-caps fail to improve consumer consent in any appreciable manner.*[13] Using non-inferiority testing, we reject the hypothesis that all-caps is of practical significance. Instead, we find (limited) evidence that all-caps may make it *harder* for older readers to notice and process their contractual obligations. In our primary group, respondents over the age of 55 were *29 percentage points* more likely to misunderstand their obligations when the paragraph was capitalized than their age peers who read the paragraph in low-caps.[14] These findings demonstrate the failure of the widespread all-caps policy.

Beyond recall, all-caps may impact consumer consent in other ways. In Section V we conduct several exploratory studies to test these possibilities. One possibility is that all-caps are most helpful when time limits force consumers to effectively prioritize attention. Using strict time limits, we find no evidence to support this presumption. Instead, we find evidence that all-caps terms take longer to read, consistent with early psychology work that found reading capitalized words takes roughly 13 percent longer than non-capitalized words.[15] While slow reading may actually improve recall by giving consumers more time to reflect, our primary finding suggests otherwise.

We also tested whether it is possible to improve consumer consent using alternative means. To this end, we tested the effects of four forms of highlighting text relative to

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[10]Our primary study features 570 respondents. Cf. Meirav Furth-Matzkin & Roseanna Sommers, Consumer Psychology and the Problem of Fine Print Fraud, Stan. L. Rev. (forthcoming) ($N = 300$ in the largest study and $N = 100$ in the smallest); Tess Wilkinson-Ryan, Do Liquidated Damages Encourage Breach? 108 Mich. L. Rev. 633 (2010) ($N = 100$); Wilkinson-Ryan, infra note 81 ($N = 208$).

[11]We also consider, and reject, the possibility that all-caps is a signal of worse contract quality.

[12]We use the term low-caps to highlight that we are using standard English grammatical rules, which include some capitalization, for example, in names and the beginning of sentences. This is to be distinguished from either pure lowercase or small-caps.

[13]As will be explained, this conclusion is not based on failure to reject the null hypothesis; rather, on a non-inferiority test of statistical significance. See notes 95–97.

[14]The 55-years cutoff is for illustrative purposes; in our regression analysis, age is measured by specific year.

[15]See Miles A. Tinker & Donald G. Paterson, Influence of Type Form on Speed of Reading, 12 J. Applied Psychol. 359 (1928).

low-caps. We found strong evidence that the highlighting of a single line of text using boldface has a considerable positive effect on outcomes. We interpret this finding as suggesting that properly designed disclosure forms can be highly effective. The proper design, however, requires close consideration and further experimentation.

In interpreting these findings and considering their policy implications, a few caveats are important. First, we neither find nor argue that capitalization is always ineffective. We believe that a sufficiently motivated firm or actor might be able to find a combination of capitalization and formatting that would be effective.[16] Our findings and conclusions should be interpreted as suggesting that standard usage of all-caps text blocks is ineffective and possibly harmful.

Second, because lab experiments have known limitations, we took steps to ensure that subjects were recruited only from the United States and that subjects were actually engaging with our experiments.[17] Further, we emphasize that we are not proposing any specific intervention; instead, we seek to discover whether all-caps has its advertised effects.

In Section VI, our results carry negative implications for current legal policies and the future of disclosure. In light of the evidence presented here and the lack of clear evidence supporting the practice of all-caps, the empirical case for this policy is very weak. We also highlight that when firms wish to effectively communicate with consumers, such as in their marketing campaigns, they rarely use all-caps.[18] Similarly, some evidence shows that when firms use their contracts as part of their branding, they shy away from all-caps.[19] We thus believe that the deeply entrenched pro-all-caps policy should be abandoned.

Future discussions in disclosure law should focus on better alternatives to all-caps. We find that certain interventions can have a large impact on consumer consent, although we do not advocate any specific design methodology. We hope our findings encourage experimentation with notice-improving interventions.

II. ALL-CAPS in Contract Law

Contracts are based on consent.[20] A recalcitrant problem in consumer contracts, however, is that a minority of consumers actually read much of the written contract, and even

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[16]While capitalization is rare in the marketing context, a point we emphasis throughout, one sometimes finds capitalization in the context of brand logos, such as Pepsi's. See Tony Stark, Pepsi Logo, Logaster (Dec. 16, 2011), available at https://www.logaster.com/blog/pepsi-logo//.

[17]On MTurk, its benefits, and its limitations, see notes 80–81 and 91–94 and accompanying text.

[18]See, e.g., Alexander Hiam, Marketing for Dummies, at 133 (4th ed. 2014) ("avoid long stretches of copy set in all caps").

[19]David A Hoffman, Relational Contracts of Adhesion, U. Chi. L. Rev. 1395 (2018).

[20]See Omri Ben-Shahar, Contracts Without Consent: Exploring a New Basis for Contractual Liability, 152 U. Pa. L. Rev. 1829 (2004).

fewer read the fine print.[21] Consumer inattentiveness to contract terms fosters an information gap, enabling firms to cut costs by offering inferior terms without a demand loss.[22] Firms also control the design of the contract, so they can shroud key terms in the fine print, a phenomenon that may survive even competitive markets.[23]

A large scholarly debate is ongoing on how to improve consumer consent.[24] In practice, courts and legislators have adopted a solution based around conspicuous disclosure. If consumers do not read the fine print, then making the print less fine would improve reading. Thus, conspicuous disclosure, commonly in the form of all-caps, is presented as a pragmatic solution to the reading problem.

The idea of conspicuous disclosure of contract terms has a venerable but mostly neglected history. It dates back to at least the mid 19th century[25] and it developed in lockstep with the introduction of mass-printed consumer contracts, notably insurance policies and common carrier tickets.[26] In both instances, issues of fine print emerged,

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[21]Ayres & Schwartz, supra note 5. I emphasize that we know less than we should about readership rates in higher-stake settings, like real-estate transactions.

[22]See id. at 563 (if consumers are uninformed, "the seller has too little incentive to offer good contracts"). See also Oren Bar-Gill, The Behavioral Economics of Consumer Contracts, 92 Minn. L. Rev. 749, 774 (2008); Ryan Bubb & Richard H. Pildes, How Behavioral Economics Trims its Sails and Why, 127 Harv. L. Rev. 1593, 1644 (2014). There is also some evidence that firms intentionally sabotage disclosure, exacerbating the problem. Willis, supra note 6, at 1322–26.

[23]Bar-Gill supra note 22, at 744; Xavier Gabaix & David Laibson, Shrouded Attributes, Consumer Myopia, and Information Suppression in Competitive Markets, 121 Q. J. Econ. 505, 510 (2006); Oren Bar-Gill, Seduction by Contract: Law, Economics, and Psychology in Consumer Markets 19 (2012).

[24]See, e.g., Oren Bar-Gill, Defending (Smart) Disclosure: A Comment on More Than You Wanted to Know, 11 Jerusalem Rev. Legal Stud. 75–82 (2014) (arguing for simplified disclosures); Willis, supra note 6 (performance-based standards); Omri Ben-Shahar & Carl E. Schneider, The Failure of Mandated Disclosure, 83 Jerusalem Rev. Leg. Stud. 85 (2015) (reviewing alternatives); J.H. Verkerke, Legal Ignorance and Information-Forcing Rules, 56 Wm. & Mary L. Rev. 899, 955–58 (2015) (reviewing alternatives).

[25]Earliest references mostly relate to legislation that required the conspicuous disclosure of prices or waivers, for the purpose of giving parties "an opportunity of guarding against it." Frazier v. Drayton, 11 S.C.L. 471, 473 (S.C. Const. App. 1820), "for the inspection of all persons," Lyon v. McManus, 1811 WL 1554, at 3 (Pa. 1811); Flint v. Ohio Ins. Co., 1838 WL 28, at *4 (Ohio Dec. 1838) (holding that a common carrier of goods can restrict its liability through "notice [that] should be fixed in some conspicuous part, that persons delivering goods may have ample means of seeing the terms"); Nichols v. Bertram, 20 Mass. 342 (Mass. 1825) (noting a statute requiring the posting of charges in large or capital letters on a turnpike sign). See also Marshall v. Hann, 17 N.J.L. 425, 431 (1840) (holding that employees are bound by terms conspicuously posted in a public manner "if seen and understood" by them); Smith v. Dunham, 25 Mass. 246, 256 (1829) (rejecting the contention that the use of a special type to designate the word "witness" would have drawn attention because the word witness is "too common to have excited attention"). See also Gile v. Libby & Whitney, 1861 WL 5346 (N.Y. Gen. Term. 1861).

[26]Courts wrestled with the legal meaning of tickets, uncertain whether they should qualify as contracts. See Joseph H Beale, Tickets, 1 Harv. L. Rev. 17 (1887). Another instance of printed contracts was insurance contracts, Phoenix Ins. Co. v. Slaughter, 79 U.S. 404 (1870).

with tickets being further complicated by terms appearing on the backside.[27] In an 1858 case in Pennsylvania, the court held that waivers of liability must "be such as amounts to actual notice; or shown to have been so conspicuous that the party, sought to be affected by it, could not have failed to discover it without gross negligence."[28] In 1897, this issue came to the Supreme Court in an admiralty case known as *The Majestic*, where the Court declared a more or less general principle of conspicuous disclosure: "when a company desires to impose special and most stringent terms upon its customers, in exoneration of its own liability … those terms shall be distinctly declared and deliberately accepted."[29] The same principle was declared of insurance policies, when the Supreme Court held, in 1870, that "it would be better for [insurance companies] to employ type, in relation to … important subject, large enough to arrest the attention of an interested party."[30] This principle quickly received acceptance and became so widespread that Williston complained in his treatise that it was impossible to list all the relevant instances.[31]

Embedded in the rise of conspicuous disclosure was the theory that all-caps are a dominant, often dispositive, method of making text conspicuous.[32] As early as 1899, a conspicuous waiver in capital letters was per se effective.[33] An English case, quoted with

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[27]The general principle, against which courts were working, was that waivers and other terms on the backside of the ticket are not binding. See, e.g., Brown v. E. R. Co., 65 Mass. 97, 101 (1853).

[28]Verner v. Sweitzer, 32 Pa. 208, (1858). See also Blossom v. Dodd, 43 N.Y. 264, 268 (1870) (holding that a waiver must be as conspicuous and legible as other portions of the ticket).

[29]The Majestic, 166 U.S. 375, 386, 17 S. Ct. 597, 602, 41 L. Ed. 1039 (1897) (citing Henderson v. Stevenson [L. R. 2 H. L. 470]). The context there was inclusion of additional terms by reference, and future courts continued to wrestle with this question, Silvestri v. Italia Societa Per Azioni Di Navigazione, 388 F.2d 11, 14 (2d Cir. 1968) ("Judicial efforts to determine what suffices to meet the rule of The Majestic have produced distinctions of considerable nicety.").

[30]Phoenix Ins. Co. v. Slaughter, 79 U.S. 404, 407, 20 L. Ed. 444 (1870).

[31]Williston on Contracts § 6:47 (4th ed.). Some examples include U.C.C. § 2-316(2); 15 U.S.C. § 2303 and 16 CFR 700.; Cal. Bus. & Prof. Code § 17602(a); 15 U.S.C. § 1632 (Truth in Lending Act's requirement that disclosure must be made "clearly and conspicuously"). See also Ala. Code § 8-19D-2(a) ("it shall be unlawful … [to imply in mail solicitation] that the person being solicited has won … a prize or purported prize unless the qualifying language appears in print that is clear, easily read, and conspicuous"); K.S.A. § 50-903 (liability for failure to hold a sufficient quantity of a produce that is advertised as being on sale, "unless the available amount is disclosed fully and conspicuously"); V.T.C.A., Bus. & C. § 8.204; Dias v. Nationwide Life Ins. Co., 700 F. Supp. 2d 1204, 1216 (E.D. Cal. 2010); Spray, Gould & Bowers v. Associated Int'l Ins. Co., 71 Cal.App.4th 1260, 1272, 84 Cal.Rptr.2d 552 (Cal. Ct. App. 1999); Hadland v. NN Investors Life Ins. Co., 24 Cal.App.4th 1578, 1586, 30 Cal.Rptr.2d 88 (Cal. Ct. App. 1994).

[32]For example, in an early case, the court sought to determine whether a statute that required "large or capital letters" means capitals or merely letters of a large size." The court ruled that legislative intent "was that the letters should be easily legible." Nichols v. Bertram, 20 Mass. 342 (Mass. 1825).

[33]Toy v. Long Is. R.R. Co., 26 Misc. 792, 793, 56 N.Y.S. 182, 182 (N.Y. App. Term 1899). See similarly, J.N. Lama v. Dwellinghouse Ins. Co., 51 Mo. App. 447, 452 (Mo. Ct. App. 1892) (holding that because text was formatted in capitals and boldface, it was actually noticed). For early ideas on the effectiveness of all-caps, see Lowndes v. Pinckney, 18 S.C. Eq. 155, 184 (S.C. App. Eq. 1845) (noting the Act gave clear notice "as effectually as if the whole Act had been stamped on the bond in capital letters").

agreement by U.S. courts, noted that the written memo used capital letters and wondered: "What more could have been done to bring the conditions to the notice of the passenger?"[34] By 1937, one court found no occasion to even remark on the topic, holding tersely that because a word was printed in all-caps, the defendant must have read it.[35]

Given its venerable history, it is important to emphasize that all-caps is very much a living, modern doctrine, with ample legislation and case law that mandates the use of all-caps or at least sees them as dispositive evidence that the consumer read the contract.[36] The UCC requires that at least the headings of warranty disclaimers appear in capital letters,[37] and myriad state laws contain all-caps mandates.[38] Often, courts enforce terms only because they appear in all-caps,[39] as in *Rottner v. AVG*, where a consumer argued that

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[34]Hood v. Anchor Line (Henderson Bros.) Ltd. (1918) A.C. 837. See also Silvestri v. Italia Societa Per Azioni Di Navigazione, 388 F.2d 11, 17 (2d Cir. 1968).

[35]Broad v. Kelly's Olympian Co., 156 Or. 216, 233–34, 66 P.2d 485, 492 (Or. 1937) ("At [the top of the form], in capital letters, is the word 'Release.' Any one capable of signing the release … could have had no difficulty in reading this word.").

[36]Some statutes outright define conspicuous as "type in boldfaced capital letters." La. Rev. Stat. Ann. § 9:1131.2. See also Fla. Stat. Ann. § 718.103. Sometimes, legislators set language requirements that employ all-caps. See, e.g., 22 NYCRR 208.6. For enforcement in the courts, see Bluewater Trading LLC v. Fountaine Pajot, S.A., No. 07-61284-CIV, 2008 WL 895705, at 5 (S.D. Fla. Apr. 2, 2008); Brosville Cmty. Fire Dep't, Inc. v. Navistar, Inc., 4:14–cv–9, 2014 WL 7180791, at 4–5 (W.D. Va. Dec. 16, 2014). Disclaimers have been considered conspicuous where "the excluding language [itself was] in larger type" or capitalized. Armco, Inc. v. New Horizon Dev. Co. of Va., Inc., 229 Va. 561, 331 S.E.2d 456, 460 (1985) (citing Va. Code § 8.1–201(10)); *Young*, 1994 WL 506403, at *3 (relying on, albeit not citing, Va. Code § 8.1–201(10)). Hammond-Mitchell, Inc. v. Constr. Materials Co., CL05000082–00, 2008 WL 8200731, at *5–6 (Va. Cir. Ct. Apr. 28, 2008) ("ConRock used the correct differentiating type-all capitals on the reverse side of the delivery receipt which was referred to on the front of the ticket"); Rorick v. Hardi N. Am. Inc., No. 1:14-CV-204, 2016 WL 777575, at *2 (N.D. Ind. Feb. 29, 2016); Lease Acceptance Corp. v. Adams, 724 N.W.2d 724, at 732; 272 Mich. App. 209 (2006) (enforcing a forum selection clause, in part, because it was "printed entirely in conspicuous capital letters").

[37]See, e.g., U.C.C. § 1-201(b)(10).

[38]See, e.g., Fla. Admin. Code r. 2–18.002 (1996); Minn. Stat. Ann. § 559.21(3); N.Y. Gen. Bus. Law § 653(1); Ohio Rev. Code Ann. § 3121.29 (mandating a block of three paragraphs of all-caps in child support orders); 18 Del. Admin. Code 1405-10.0 (2018); Ala. Code § 8-26B-10(c); Ala. Code § 8-26B-10(c).

[39]Mark Sableman, Typographic Legibility: Delivering Your Message Effectively, 17 Scribes J. Leg. Writ. 9, 24 (2017) ("Courts have generally approved all-uppercase treatments."); Beazley, supra note 5, at 8 (noting that "all caps continues to be interpreted as meeting the standard for 'conspicuous type'"); Lauren E. Willis, Performance-Based Consumer Law, 82 U. Chi. L. Rev. 1309, 1349 (2015). Examples include Davis v. LaFontaine Motors, Inc., 719 N.W.2d 890, 895–96 (Mich. App. 2006); *Doe v.* SexSearch.com, 502 F. Supp. 2d 719 (N.D. Ohio 2007), aff'd on other grounds, 551 F.3d 412 (6th Cir. 2008); Fleming Farms v. Dixie Ag Supply, 631 So. 2d 922 (Ala. 1994); Karr-Bick Kitchens & Bath, Inc. v. Genini Coatings, Inc., 932 S.W.2d 877, 879 (Mo. Ct. App. 1996) ("The language excluding the warranties was written in capitalized letters and was more prominent than the other type on the label. … The language thus conformed with the definition of "'conspicuous'."). Perlman v. Wells Fargo Bank, N.A., 2012 WL 12854876, at *2 (S.D. Fla. Apr. 3, 2012); Walnut Equip. Leasing Co. v Moreno, 643 So. 2d 327 (La. Ct. App. 1994); Boston Helicopter Charter, Inc. v. Agusta Aviation Corp., 767 F. Supp. 363 (D. Mass. 1991); Potomac Plaza Terraces v. QSC Prods., 868 F. Supp. 346 (D.D.C. 1994). The illustration is based on Bruni v. Didion, 73 Cal. Rptr. 3d 395, 413 (Cal. Ct. App. 2008), as modified (Mar. 24, 2008) (finding a "strong showing of surprise" because—among other things—the arbitration clause was "not distinguished from the rest of booklet by either holding or capitalization").

a software defect led to the loss of information on his hard drive.[40] The defendant argued that implied warranties were disclaimed. The judge noted that: "Here, the [contract] presents the disclaimer in capital letters in section 5c … Consequently, Rottner's claim for any breach of the implied warranty will be dismissed."[41]

There are exceptions, but these mostly go to prove the rule.[42] In *Herrera v. First Northern Savings and Loan Association*,[43] the Tenth Circuit needed to decide whether an interest rate disclosure was "more conspicuous" than other disclosures, as required by the Truth in Lending Act.[44] The court did not find the APR disclosure to meet the standard, despite being in all-caps, because more than *30 other disclosures* in the contract were also in all-caps, yet agreed on principle that all-caps can be conspicuous and enforceable.[45]

Because all-caps are pivotal to the resolution of cases, it is also helpful to see cases where courts *refuse* to enforce terms because they do not appear in all-caps. In *Agroupur v. Scoular*, for example, a merchant defended an action for selling moldy protein drinks on the basis of a waiver. The court refused to enforce the waiver, holding that "the "statement is nestled in the middle of a larger paragraph … [and] is not set apart by any bold emphasis, capital letters, or any other type of visual distinction."[46] An even clearer example is *BHC v. Bally Gaming*, where the defendant sought to rely on a waiver included in the sale agreement of casino management hardware and software.[47] The court refused to enforce the waiver, noting that "[a]lthough two other paragraphs in the document contain sentences which are in capital letters, the subparagraph which purports to disclaim the warranty of merchantability does not contain any capital letters."[48] Very recently, a California court refused to enforce a warranty disclaimer of a vehicle infotainment system

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[40]Rottner v. AVG Techs. USA, Inc., 943 F. Supp. 2d 222 (D. Mass. 2013).

[41]Id. at 232.

[42]Some courts refuse to enforce back-of-page disclosure even when in all-caps. See, e.g., Hunt v. Perkins Mach. Co., 352 Mass. 535, 541, 226 N.E.2d 228, 232 (Mass. 1967); *Sierra Diesel*, 890 F.2d at 114. But see Roger's Fence, Inc. v. Abele Tractor & Equip. Co., 26 A.D.3d 788, 809 N.Y.S.2d 712 (4th Dep't 2006) (holding that a back-of-the-page term may be enforceable if a conspicuous notation on the front of the page directs attention to the disclaimer on the back).

[43]805 F.2d 896 (1986).

[44]Id. at 898.

[45]Id. at 900.

[46]Agropur, Inc. v. Scoular Co., No. 17-cv-1247, 2017 WL 3411944 at *2 (D. Minn. Aug. 8, 2017). All positive examples cited by the court were cases where capital letters were used.

[47]BHC Dev., L.C. v. Bally Gaming, Inc., 985 F. Supp. 2d 1276, 1292 (D. Kan. 2013)

[48]Id at 1292

because it "should have been in a larger font size, in all-caps, in bold, or set-off in some way from the surrounding text."[49]

What is the purpose of conspicuous, particularly all-caps, disclosure? While there are possible non-behavioral functions of all-caps,[50] courts and legislators have argued for the existence of a behavioral effect that would "excite attention,"[51] "arrest attention,"[52] render terms "eye-catching,"[53] and "avoid surprise."[54] Accordingly, the test for whether disclosure is conspicuous is whether it would be noticed and understood by a reasonable person,[55] or in the FTC's language, whether "consumers actually perceive and understand the disclosure."[56] Tellingly, courts have enforced otherwise inconspicuous disclosure when it was evident that the party did read and understand the terms.[57]

We noted already that the empirical literature on all-caps does not provide support for such hypothesized behavioral effects.[58] It is also worth noting that legal practitioners rarely discuss all-caps, let alone endorse them. A leading textbook on typography for

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[49]In re MyFord Touch Consumer Litig., 291 F. Supp. 3d 936, 941 (N.D. Cal. 2018). Bruni v. Didion, 160 Cal. App. 4th 1272, 1293, 73 Cal. Rptr. 3d 395, 413 (2008), as modified (Mar. 24, 2008) (finding that an arbitration clause was surprising because it was not capitalized).

[50]See generally Lon L. Fuller, Consideration and Form, 41 Colum. L. Rev. 799, 800–01 (1941) (noting the various functions of formalities in the law). Beyond the cautionary function described in the text, one could stipulate evidentiary, expressive, or channeling functions. The case law we reviewed did not mention these goals in the context of all-caps, and some cases can be read as rejecting these other functions. Such are cases where courts overlooked inconspicuous disclosure when it was clear that the other party had notice, or cases where enforcement is denied to formally conspicuously disclosed terms that are not easily accessible. Massey-Ferguson, Inc. v. Utley, 439 S.W.2d 57, 59 (Ky. 1969). See also James White and Robert Summers, Uniform Commercial Code, 441–42 (6th, 2010). Critics of all-caps likewise focus on whether it achieves its behavioral-cautionary function; see In re Bassett, 285 F.3d 882, 886 (9th Cir. 2002).

[51]Smith v. Dunham, 25 Mass. 246, 256 (1829).

[52]Phoenix Ins. Co. v. Slaughter, 79 U.S. 404, 407, 20 L. Ed. 444 (1870).

[53]Silvestri v. Italia Societa Per Azioni Di Navigazione, 388 F.2d 11, 18 (2d Cir. 1968).

[54]UCC § 2–316 cmt 10. See also Cate v. Dover Corp., 790 S.W.2d 559, 561 (Tex. 1990) ("the object of the conspicuousness requirement is to protect the buyer from surprise and an unknowing waiver of his or her rights"). For an early example, see Hollister v. Nowlen, 19 Wend. 236, 243 (N.Y. 1838) (noting that one factor of ascertaining actual notice is whether the print was in large or small letters).

[55]See, e.g., Thermo King Corp. v. Strick Corp., 467 F. Supp. 75, 78 (W.D. Pa.), aff'd, 609 F.2d 503 (3d Cir. 1979) ("We conclude, therefore, that such language is 'conspicuous,' since a reasonable person should have noticed and understood it.").

[56]Fed. Trade Comm'n, Disclosures: How to Make Effective Disclosures in Digital Advertising 6 (2013).

[57]Wayne Mem. Hosp., Inc. v. Elec. Data Sys. Corp., No. 87–905–CIV–5–H, 1990 WL 606686, at *6 (E.D.N.C. Apr. 10, 1990); Tenn. Carolina Transp., Inc. v. Strick Corp., 196 S.E.2d 711, 718 (N.C. 1973). See also White & Summers, supra note 50, at 440–46.

[58]See Section I.

lawyers counsels against the excessive use of all-caps.[59] In a rare decision that adversely remarked on all-caps, Judge Kozinski voiced a strong opposition: "there is nothing magical about capitals," he said. "Lawyers who think their caps lock keys are instant 'make conspicuous' buttons are deluded."[60] But perhaps most tellingly, Judge Kozinski also recognized that all-caps is still entrenched today. "The use of capitals as a talisman of conspicuousness," he noted, "has survived intact despite decades of improved literacy and technology."[61]

Conspicuousness is widely endorsed as a solution to the problem that consumers rarely read the fine print. Courts and legislatures widely believe that all-caps make a term conspicuous, thus improving consumer consent. This belief is made evident by the willingness of courts to ignore this requirement in some instances where it was clear that there was actual knowledge of the term at hand. The literature review reveals, however, that this belief has no empirical support. Although all-caps exact a heavy price from uninformed consumers by enforcing against them especially onerous terms, this belief rests on speculation alone. We now set out to present the first empirical evidence on all-caps in consumer contracts and their effects on consumer consent.

III. ALL-CAPS in Action: A Study of Industry Practices

Both casual observation and the case law suggest that all-caps provisions are very common in consumer transactions.[62] But how common is very common? Although we know that many consumer contracts are liberal with their use of polysyllabic words and difficult,

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[59]See Matthew Butterick, Typography for Lawyers 202 (2012). See also Ruth Anne Robbins, Painting with Print: Incorporating Concepts of Typographic and Layout Design into the Text of Legal Writing Documents, 2 J. Ass'n Legal Writing Directors 108, 116 (2004); Mark Sableman, Typographic Legibility: Delivering Your Message Effectively, 17 Scribes J. Leg. Writ. 9 (2017); Bryan A. Garner, Pay Attention to the Aesthetics of Your Pages, Mich. B. J. (Mar. 2010), available at https://www.michbar.org/file/barjournal/article/documents/pdf4article1664.pdf; Cheryl B. Preston, "Please Note: You Have Waived Everything": Can Notice Redeem Online Contracts? 64 Am. U. L. Rev. 535, 553 (2015) ("Key sections in wrap contracts are frequently presented in all capital letters, but that does not help."); Beazley, supra note 5, at 2.

[60]In re Bassett, 285 F.3d 882, 886 (9th Cir. 2002); Office of Inv. Educ. & Assistance, U.S. Sec. & Exch. Comm'n, A Plain English Handbook: How to Create Clear SEC Disclosure Documents 72 (1998) (proposing that text will not be written in all-caps).

[61]Id. at 886

[62]There is considerable litigation in this area. See, e.g., Kelker v. Geneva-Roth Ventures, Inc., 303 P.3d 777, 783 (Mont. 2013) (finding the arbitration clause in a payday loan agreement unconscionable because, inter alia, "no bold or capital letters highlight[ed] the arbitration clause"); Mitsch v. General Motors Corp., 833 N.E.2d. 936, 940 (Ill. 2005) (finding the warranty of merchantability disclaimer required under the Magnuson-Moss Act for the sale of used cars conspicuous, even though it did not mention merchantability, because it was "in all capital letters," among other things).

tortured grammatical constructions, we know very little about their formatting.[63] As conspicuousness is ultimately a question of formatting, this gap in our knowledge is troubling. Evaluating the practical importance of all-caps also bears on our standard of proof for their effectiveness; ceteris paribus, the more prevalent they are, the more important it is to verify that they indeed achieve their intended goals.

A. Methodology

To estimate the prevalence of all-caps in practice, we sought to examine various types of common consumer contracts. We report here novel evidence based on the analysis of the standard forms used by 500 of the most popular websites.[64] These forms serve the basis of *hundreds of millions* of individual consumer contracts, as most U.S. consumers have contractual relationships with at least a few of these large firms.

The selection of the firms was made on the basis of the Alexa Top Sites web service, which collects data on the most visited websites[65] and is widely considered to be a reliable measure.[66] The sites in the sample include household names such as Google, Facebook, Uber, and Amazon. The contracts themselves are wrap contracts, which structure the relationship between the firm and the consumer with relation to the usage of the website.

To analyze these contracts, we developed a script that algorithmically detected the case of words, sentences, paragraphs, and headers.[67] The script counted all instances of a letter being capitalized, and attempted to classify capitalization at the word, sentence, paragraph, and header level. One challenge in this respect is that there is no unique way to identify headers—or even paragraphs. The script defines a header as a sentence lacking a period. Capitalization of a paragraph was defined as a paragraph containing over 80 percent of its content in uppercase.

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[63]Uri Benoliel & Shmuel I. Becher, The Duty to Read the Unreadable, 60 B.C.L. Rev. 2257, 2277–81 (2019); Michael Rustad & Thomas Koenig, Wolves of the World Wide Web: Reforming Social Networks' Contracting Practices, 49 Wake Forest L. Rev. 1431, 1437 (2014).

[64]The data were collected and generously shared by Uri Benoliel and Shmuel Becher and form the basis of their article Uri Benoliel & Shmuel I. Becher, The Duty to Read the Unreadable, 60 B. C. L. Rev. 2257 (2019). The collection procedure is detailed there. Id. at 2270–71.

[65]See Amazon, Alexa Top Sites, available at https://aws.amazon.com/alexa-top-sites/ (last visited Mar. 1, 2019). The ranking itself is based on a combination of unique visitors and the number of page views, per visitor. See Amazon, How Are Alexa's Traffic Rankings Determined? available at https://support.alexa.com/hc/en-us/articles/200449744 (last visited Mar. 9, 2019).

[66]Joel R. Reidenberg et al., Disagreeable Privacy Policies: Mismatches Between Meaning and Users' Understanding, 30 Berkeley Tech. L.J. 39, 54 (2015) ("Alexa.com [is] the most prominent measurement company for web traffic data"); Arjun Thakur et al., Quantitative Measurement and Comparison of Effects of Various Search Engine Optimization Parameters on Alexa Traffic Rank, 26 Int'l J. Computer Applications 15, 15 (2011); ("Alexa Traffic Rank is the most popular website traffic measurement unit").

[67]The script uses Python's library "Docx," which allows interaction with Word documents and classifies words, sentences, and paragraphs.

Table 1: Analysis of Capitalization in the Standard Form Contracts

Attribute	*Capitalized*	*All*	*Ratio*
Words	225,973	2,523,251	8.9%
Sentences	6,706	101,140	6.6%
Paragraphs	2,388	38,614	6.2%
Headers	3,621	20,795	17.4%
At least one capitalized paragraph	386	500	77.2%

NOTES: Summary of analysis of capitalization employed in 500 forms used by leading U.S. companies.

B. Findings

Table 1 summarizes the main findings from the case analysis of the contracts. As the table shows, the great majority (~77 percent) of these contracts have at least one paragraph that is fully capitalized. The use of capitalized headers is also quite frequent, with 17.4 percent of all the headers formatted in all-caps.[68] Contract drafters will also capitalize certain key terms and names, so we find that roughly 9 percent of the words in these contracts are capitalized.

Overall, these findings demonstrate that capitalization is very common in practice. In interpreting these results, it is important to bear in mind that most U.S. adults are a party to many of these contracts, which include the contracts of firms such as Facebook, Amazon, Dell, and Uber. During the collection of the contracts, these websites had 10 million *unique* visitors.[69] Hence, these 500 form contracts represent *hundreds of millions* of individual contracts affecting the lives of most American adults. Additionally, the use of capitalization in end user license agreements (EULA) is not likely to be unique to online contracts; if anything, the online format permits more formatting opportunities than do print contracts.[70] Finally, it is remarkable how pervasive all-caps are in legal texts relative to any other type of text. One estimate is that only 5 percent of the average English text is capitalized.[71] In marketing materials—where firms have a monetary incentive to increase comprehension of their messaging—all-caps are very rarely used.[72]

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[68]Note, however, that there is no unique way to define headers and paragraphs, so this estimate may be both under- or over-inclusive. We ran a verification analysis by hand and found the script to be generally accurate.

[69]See Benoliel & Becher, supra note 64.

[70]See Mark Sableman, Typographic Legibility: Delivering Your Message Effectively, 17 Scribes J. Leg. Writ. 9, 9–10 (2017).

[71]Charles Bigelow, Typeface Features and Legibility Research, 165 Vision Res. 162, 167 (2019).

[72]See Hiam, supra note 18 (recommending that all-caps should not be used in marketing materials).

IV. ALL-CAPS and Consumer Consent: Experimental Analysis

The historical review suggests there is a widespread legal view that all-caps improve notice and thus the quality of consumer consent to contractual terms. By making the text conspicuous, consumers are believed to pay more attention to terms appearing in all-caps, allowing them to deliberate more effectively about the transaction. Relying on this positive effect of all-caps, courts will enforce some of the most important and onerous terms in consumer contracts. It becomes important, then, to study whether all-caps do indeed have this effect on consumer notice.

To study whether all-caps are effective requires an account of what all-caps are meant to achieve. Although courts and regulators have posited the behavioral effect of conspicuous disclosure—specifically, that it improves actual notice—they rarely discuss the exact mechanism.[73] Several mechanisms are possible. First, it is possible that conspicuous language helps the consumer economize attention. Conspicuous formatting indicates to the consumer where she should spend her "attention budget" because the highlighted terms are the most important ones. This possibility depends on contrast, meaning the quality of a term's visible difference from other terms. Another possibility is that conspicuous formatting improves the readability of the text; a larger font type reduces eye strain and highlights letter structure or simply draws attention more effectively.[74] A third possibility is that all-caps act as a "fire siren"—they do not facilitate readability or understanding, but their presence alerts the consumer to the possibility that the contract is especially onerous. A final possibility—and a counterintuitive one—is that conspicuous language is helpful because it *slows* down reading speeds, increasing deliberation time and improving the quality of consent overall.

These possibilities point to a testable hypothesis: all else equal, the consumer would have better recall of the conspicuous term than if the term was inconspicuous. The consumer notes the salient term more easily, finds it easier to read, or spends more time reading it—having the intended effect of the consumer more easily recalling its content accurately.[75] The "fire siren" presents a subtly different hypothesis: the reader may not recall the content better, but will infer that an all-caps clause is onerous. If asked, then, the consumer will believe a contract with an all-caps clause is more onerous than a contract without one. The current study evaluates these possibilities.

These function do not exhaust all the theoretical functions of conspicuous disclosure. Many formalities are based on evidentiary, cautioning, or channeling functions.[76] As Section II argues, this is not the view expressed in case law, which insists that

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[73]Gatton v. T-Mobile USA, Inc., 61 Cal. Rptr. 3d 344, 352 (Cal. Ct. App. 2007).

[74]If this is what courts believe, one would expect them to require the capitalization of the entire contract.

[75]Psychological research suggests that salient information is considerably easier to recall than non-salient information. Joseph W. Alba & Amitava Chattopadhyay, Salience Effects in Brand Recall, 23 J. Mkt. Res. 363 (1986).

[76]See note 50.

conspicuous disclosure has direct effect on consumer notice. As even critics of all-caps do not seem to subscribe to these other functions, we focus only on direct behavioral effects.

A. *Methodology*

The most direct and important measure of the effect of all-caps would be to evaluate consumer notice "in the wild." However, a field investigation presents many difficulties, fraught with a host of potential confounders. To see whether the consumer read the contract at all, one would have to monitor the consumer closely from beginning to completion of the transaction. Evaluating whether the consumer's understanding is due to the contract's formatting would require monitoring the consumer's interactions with other consumers, salespeople, or online materials. The wide variation in how salespeople communicate and treat different consumers,[77] could further confound the analysis. These challenges make field research exceedingly difficult and uncertain.

Randomized control trials—especially lab experiments—present a rigorous method of evaluating the relevant factors. In the lab, we can control for all variation between the contracts, negotiations, and products. Thus, variation in outcomes is more directly attributable to the treatment rather than to some external factor.

We recruited 570 U.S. respondents, a sample size common to similar studies.[78] Respondents were recruited through Amazon's Mechanical Turk (MTurk), the popular online platform for similar work.[79] This platform "has been studied extensively … a variety of experimental findings have been replicated using MTurk."[80] Although not perfect, MTurk is a standard way of ensuring greater subject variability than the leading alternative of recruiting undergraduates.[81]

The demographics of the sample, relative to the general U.S. population (in parentheses), are: 44.6 percent female (50.8 percent), median age 38 (38), 75 percent white (60.4 percent), a median household income of $52,000 ($57,652), and college degree or higher education 62.8 percent (30.9 percent).[82] Relative to the general

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[77]See, e.g., Ian Ayres, Fair Driving: Gender and Race Discrimination in Retail Car Negotiations, 104 Harv. L. Rev. 817 (1991) (finding, in a field experiment, that salespeople offered worse terms to minorities).

[78]See note 10.

[79]See, e.g., Furth-Matzkin & Sommers, supra note 10.

[80]Tess Wilkinson-Ryan, The Perverse Behavioral Economics of Disclosing Standard Terms, 103 Cornell L. Rev. 117, 150 n.162 (2017) (internal citations omitted).

[81]See generally Hillel J Bavli & Reagan Mozer, The Effects of Comparable Case Guidance on Awards for Pain and Suffering and Punitive Damages: Evidence from a Randomized Controlled Trial, 37 Yale L. Pol'y Rev. 405, 453 (citing "numerous studies" that show that the "MTurk worker population is relatively representative of the general population—and certainly more representative than traditional pools for surveys and experimentation").

[82]U.S. Census, available at https://www.census.gov/quickfacts/fact/table/US/LFE046217 (last visited July 31, 2019).

population, we find a general match, with the sample skewing slightly male, white, and less wealthy. We do not have any theoretical reason to expect that the race of participants will affect results in any particular direction. A larger relevant skew is with respect to education, which is related to literacy, although even here two points are worth remembering. First, this skew is much smaller than that of common alternative recruitment methods.[83] Moreover, some of this skew would likely bias results in favor of all-caps, as more educated readers might be, on average, more informed of the legal requirement to highlight key terms in contracts using conspicuous language.[84]

We also included a replication attempt using the same questionnaire, but almost a year later and on a different platform (Prolific) to test the consistency of our findings.[85] Because the original manuscript was already public, we used its results as a form of preregistration. The sample was smaller ($n = 100$), with different demographics. In the replication attempt, the sample demographics were 62 percent female (50.8 percent), median age 29.5 (38), 59 percent white (60.4 percent), a median household income of $54,000 ($57,652), and college degree or higher education 50 percent (30.9 percent). Relative to the original study, this sample was significantly younger (29.5 vs. 38), more female (62 percent vs. 44.6 percent), less white (59 percent vs. 75 percent), had about the same wealth, and was less educated (50 percent vs. 62 percent). We report the results of this study separately.

Our design uses a contract inspired by Spotify's end user license agreement.[86] Such agreements are common among providers of both online and offline services that offer a free trial period that converts automatically into a subscription-based service after the trial period lapses. Consumer agencies consider such agreements as potentially pernicious due to their stickiness, with consumers unwittingly paying for unwanted subscriptions.[87] Most courts and legislatures, however, are willing to enforce such charges—provided the consumer agreement is in all-caps—presuming that such disclosure is

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[83]Joseph Henrich et al., The Weirdest People in the World? 33 Behav. & Brain Sci. 61, at 63 (2010) (finding that 67 percent of U.S. subjects in psychology studies are college students and that this population is often "at the extreme end of the distribution").

[84]As a robustness check, we checked the effects of education and race in the sample and found no statistical differences; post-stratification by education had no effect.

[85]See https://www.prolific.co/.

[86]Spotify, Spotify Terms and Conditions of Use, available at https://www.spotify.com/us/legal/end-user-agreement/ (last modified Feb. 7, 2019) (For an example of an automatic billing disclosure, see § 3.3 of the Terms and Conditions of Use).

[87]Koren Grinshpoon, License to Bill: The Validity of Coupling Automatic Subscription Renewals with Free Trial Offers by Online Services, 28 Fordham Intell. Prop. Media & Ent. L.J. 301, 303 (2018); Fed. Trade Comm'n,"Free" Trial Offers? Fed. Trade, available at https://www.consumer.ftc.gov/articles/0101-free-trial-offers (last visited Feb. 9, 2019).

conspicuous.[88] This study is a test of whether the inclusion of such clauses indeed improves the quality of consumer consent.

Respondents were told that they were simulating a free-trial sign up for a new music streaming service called "TideTunes." They were then given and asked to read a two-page contract for the service, which consisted of 15 paragraphs. Respondents were asked to spend as much time reading this contract as they would read any similar contract outside the experiment.

Subjects were randomly split among two groups, control and treatment.[89] In the former group, the entire contract appeared in low-caps, that is, normal formatting. In the treatment group, a test paragraph appeared in all-caps. The test paragraph for this study is as follows:

> TERMS OF FREE TRIAL
> BY SIGNING UP FOR THIS FREE TRIAL, YOU ARE SIGNING UP FOR MEMBERSHIP WITH TIDETUNES. YOUR MEMBERSHIP WILL CONTINUE UNTIL YOU MANUALLY CANCEL IT. MEMBERSHIP INCLUDES AUTOMATIC BILLING OF THE CARD WE HAVE ON FILE AT THE END OF THE MONTH FOR THAT PERIOD. THE TERMS OF MEMBERSHIP APPLY TO THE FREE TRIAL. BY PROVIDING YOUR PAYMENT DETAILS, YOU AGREE TO THE TERMS OF AUTOMATIC BILLING. THE FREE TRIAL CANNOT BE TERMINATED PRIOR TO THE END OF THE TRIAL. IF YOU DO NOT WISH TO BE CHARGED ON A RECURRING MONTHLY BASIS, YOU MUST TERMINATE YOUR PAID SUBSCRIPTION THROUGH YOUR USER ACCOUNT OR TERMINATE YOUR ACCOUNT BEFORE THE END OF THE RECURRING MONTHLY PERIOD.

After being presented with the contract, respondents were moved to a new page, from which they could not go back, and were asked: "Imagine that you have signed up for a trial with TideTunes. When can you cancel your trial?" The options (presented in random order) were: (1) at any time; (2) after the trial period; (3) after seven days; (4) after three months; (5) after 14 days. The correct answer is (2).

Because many studies run the risk of respondents using guesswork to answer questions, making the responses unaffected by the researcher's stimuli, we used several measures to safeguard against this risk.

First, respondents on MTurk are incentivized to be attentive and "there is also evidence, both systematic and anecdotal, that MTurk subjects are particularly attentive, perhaps due to the formal mechanisms available for giving them feedback that affect reputation ratings."[90] As a result, many view this as a reliable tool of

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[88]Grinshpoon, supra note 88, at 320–28 (explaining that under California's Automatic Purchase Renewals Statute, automatic billing terms must be disclosed "clearly and conspicuously," which is defined as, inter alia, "in larger type than the surrounding text"); 322 n.106 (listing many states that have adopted this requirement and definition). See also Laura Koweler Marion & Leita Walker, Automatic Renewal Laws in All 50 States, Faegre, Baker, Daniels, available at https://www.faeghttps//www.faegrebd.com/webfiles/50-State%20Survey%20Automatic%20Renewal%20Laws.pdfrebd.com/webfiles/50-State%20Survey%20Automatic%20Renewal%20Laws.pdf.

[89]The covariates are well balanced between the two groups.

[90]Wilkinson-Ryan, supra note 81, at 150 n.162. Note that the incentive to be attentive was equal in both groups.

measurement.[91] To enhance the quality of MTurk responses, we used a new service called Positly, which adds a screening layer to MTurk.[92] This service allowed us to verify that all respondents were unique (i.e., that there was no overlap between subjects in the studies), came from the United States, and were within the relevant age range. Importantly, the website uses several quality metrics and attention and quality checks to screen out non-engaged users. Quite tellingly, users on Positly are given an opportunity to respond to the survey, and many complained that the content was boring and that it took them a long time to slog through the entire contract.[93]

Second, we gave the respondents a non-obvious term based on prior expectations alone, and we presented subjects with five options to choose from. Third, we measured—behind the scenes—how long subjects spent on reading the contracts. The average time to read (102 seconds) showed a nontrivial level of engagement with the text. Finally, the fact that the other experiments, reported below, produced large differences also suggests that respondents were reacting to the stimuli.

B. Findings

We tested the effect of all-caps by inquiring about a term that appears in all-caps in the treatment group: the consumer's cancellation rights. As noted, the contract only permits the consumer to opt-out at the end of the trial period ("THE FREE TRIAL CANNOT BE TERMINATED PRIOR TO THE END OF THE TRIAL."). If all-caps improve notice and recall of otherwise hidden terms, we would expect consumers in the all-caps group to answer this question correctly more often than consumers in the low-caps group. Figure 1 summarizes the findings.

The key finding here is that respondents in the all-caps treatment failed to show any improvement relative to the control. The differences between the groups were negligible; if anything, all-caps respondents were slightly more likely to be incorrect than low-caps respondents.

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[91]On the reliability of MTurk, see Kristin Firth, David A. Hoffman & Tess Wilkinson-Ryan, Law and Psychology Grows Up, Goes Online, and Replicates, J. Empirical Leg. Studies (2017) (concluding that MTurk samples replicate well across testing platforms).

[92]See https://www.positly.com/participants/. Positly enhances the quality of respondents along several dimensions. It aggregates data from independent researchers to screen out low-quality participants; it conducts attentions checks; it screens duplicate responses by the same individual; it uses a digital fingerprint technology to uniquely identify participants; and it uses IP addresses for geo-location. Although none of these methods is perfect, it increases the reliability of the baseline MTurk service and avoids some of its shortcomings.

[93]Some complaints include: "[the contract] was a bit long and not that easy to answer the main question without the agreement in front of me"; "I was afraid I would have to return this survey without pay since I could not remember certain verbiage from the contact"; "The contract was difficult to understand"; "a lot of reading and it does not explain whether I was right or wrong"; "none of the contracts gave me enough time to read" (with respect to Study 5).

Figure 1: All-caps.

DISCLAIMER OF FURTHER WARRANTY

THERE ARE NO WARRANTIES, EXPRESSED OR IMPLIED, EXCEPT AS SET FORTH ABOVE. THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION OF THE PRODUCT CONTAINED HEREIN. IN NO EVENT SHALL THE COMPANY BE LIABLE FOR INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES (SUCH AS LOSS OF ANTICIPATED PROFITS) IN CONNECTION WITH THE RETAIL PURCHASER'S USE OF THE PRODUCT.

Using a test of non-inferiority, we can reject with high *statistical significance* the possibility that all-caps meaningfully improves contractual outcomes.[94] While relatively uncommon in empirical legal studies, the non-inferiority test is common for drug testing in evaluating whether a new treatment is at least as good as the existing drug by a clinically significant margin.[95] The definition of clinical significance is contextual, and depends on a variety of factors. In defining clinical or, rather, contractual significance here, we take into account the high costs of errors. Enforcing especially onerous terms on the basis of the false belief in their effectiveness has large welfare consequences. We thus adopt here a clinical significance margin of 10 percentage points improvement, which we consider fairly conservative—in other words, we only consider all-caps to be sufficiently effective in improving consent if they are no less than 10 percent better than low-caps. Based on this level of clinical significance, the data allow us to reject the hypothesis that low-caps are worse than all-caps.[96]

If all-caps make text salient, there should be a difference between groups. Remembering all the contents of the 15 paragraph test contract is not easy. If all-caps make text conspicuous, they should draw attention to its existence, especially since psychological studies show that people tend to overly focus on salient features.[97] As discussed in Section II, courts rely on all-caps to improve consumer notice of specific, especially onerous, terms in contracts. If this theory is correct, then salience would be reflected in better

[94]To be clear, we do not conclude lack of effect on the basis of rejection of the null hypothesis but, rather, we test here the non-inferiority of the low-caps treatment.

[95]See Chow et al., supra note 79, at 8. Gisela Tunes de Dilva et al., Methods for Equivalence and Noninferiority Testing, 15 Biology of Blood & Marrow Transplantation 120 (2009). See also David H. Kaye, Forensic Commentary Series Hypothesis Testing in Law and Forensic Science: A Memorandum, 130 Harv. L. Rev. F. 127, 133 (2017).

[96]With $\delta = 0.1$, we can reject the null hypothesis that $H_0 : p_{LC} - p_{AC} \leq -\delta$ (where p is the percent correct for each subscript category): $z = 2.85$, $p < 0.01$. For illustration, this δ is equivalent to having 138 instead of 125 correct responses in the all-caps group, out of 283 participants. For a lower $\delta = 0.05$ we can reject the inferiority hypothesis with $p = 0.1$.

[97]See note 76.

recall. All-caps' failure to improve on low-caps undermines the existence or importance of a notice effect.

The "fire siren" theory suggests that, even without reading, the existence of all-caps signals to the consumer that the contract is especially onerous. Per the data, we also reject this hypothesis. Subjects were asked to answer a question with five potential answers.[98] The answers can be roughly ranked as being most lenient to the most stringent, from cancellation at any time to cancellation after three months. If the fire siren hypothesis were true, subjects in the all-caps group would be more likely to choose the stricter options. In fact, very few people—in either group—opted for either of the stricter options, the great majority choosing one of the two more lax options. Between these two groups, all-caps respondents were less likely to choose the strictest one. Overall, we do not find a fire siren effect.

As noted, we conducted a replication study using a different platform. Although the sample was small ($n = 100$), the results were strikingly similar: 43 percent correct (20/47) in the all-caps group relative to 42 percent correct in the low-caps group (22/53).[99] Despite the demographic differences, the results continue to hold within this sample.

We then examined how age and all-caps interact. The all-caps intervention could provide value to certain age groups or harm others, as differences in generational norms, attention span, eyesight, and so on might lead to different effects among age groups. Early research on sixth graders found that they do not exhibit differences in reading all-caps relative to low caps.[100] To test the age hypothesis, we estimated a logistic regression model where the dependent variable was accuracy and the independent variable was age. We controlled for race, education, and income.[101] Figure 2 reports the regression results.

The horizontal line in Figure 2 is the benchmark, that is, low-caps. The points show changes in accuracy as a result of the all-caps treatment across different age groups, ranging from 20 to 70. The bars around the points are the 99 percent confidence intervals. As the figure shows, all-caps have a strong negative effect on older readers.[102] The older the reader, the more harmful the effect all-caps has on their ability to answer the test question correctly, notwithstanding a general trend of older readers being significantly more likely to respond accurately. To provide a sense of the strength of this effect, Figure 3 splits the respondents into two age groups.

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[98]"Imagine that you have signed up for a trial with TideTunes. When can you cancel your trial? () At any time () After trial period () After seven days () After three months () After fourteen days."

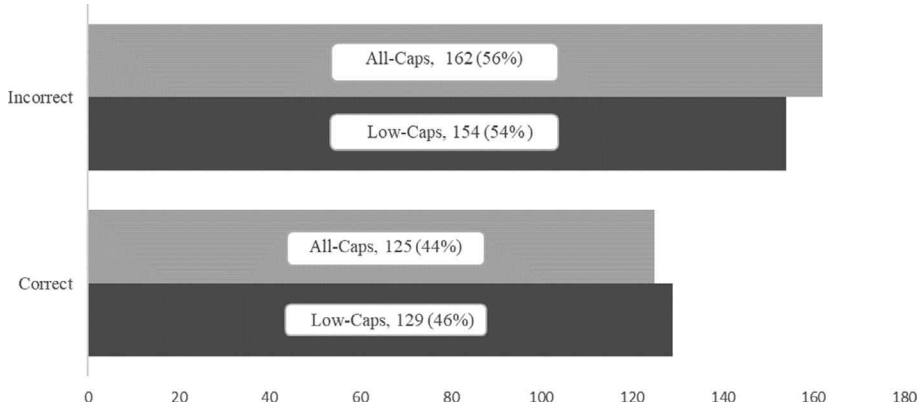
[99]Combining the results of the replication and the original study for power, the statistical significance of our results becomes stronger.

[100]Maribeth Henney The Effect of All-Capital vs. Regular Mixed Print, as Presented on a Computer Screen, on Reading Rate and Accuracy, 16 AEDS J. 205, 212 (1983).

[101]The results are unchanged even without the controls.

[102]$p < 0.01$. Note that for younger readers, the apparent positive effect of all-caps lacks statistical significance.

Figure 2: Accuracy in all-caps vs. low-caps.



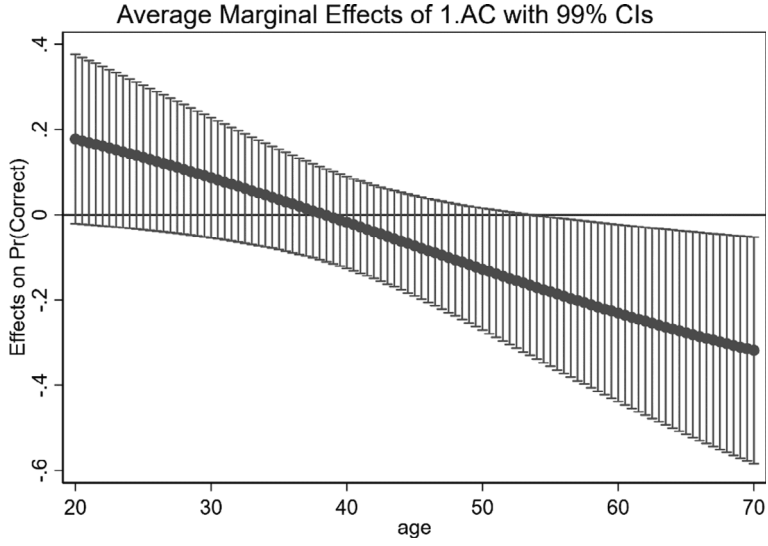
As Figure 3 illustrates, the difference in accuracy among younger respondents is negligible. However, for older audiences, the difference can be quite stark. In respondents over 55, 60 percent were wrong in the all-caps group, relative to only 31 percent in the low-caps group. This doubled error rate is a significant effect, and it is practically important given the stakes of mistakes regarding all-caps clauses.

We should qualify this specific finding. In our admittedly small replication attempt, this effect was not replicated. This may be due to the low power of the sample or because the replication sample was much younger. Regardless, caution is advised in interpreting the negative effects of all-caps, bearing in mind that all-caps is supposed to *improve* outcomes.

Before proceeding, we note several caveats. Tested subjects were attentive and spent time reading the contract; many real consumers may spend less time and effort in reading contracts. Additionally, respondents were not allowed to review their contracts again after reading them; in reality, that option is often available (although not commonly exercised). These design choices are necessary to verify that respondents are reacting to the stimuli, but come with limitations. We also think it is important to evaluate consumer understanding of the transaction at its execution, as many consumers will not review old contracts. Moreover, if all-caps fail to prove any effectiveness even in settings with motivated respondents, we think it should give more pause to proponents of all-caps.

This study shows that formatting certain contractual terms in all-caps fails to meaningfully improve outcomes for participants and may even, with some qualifications, harm older readers. The stakes of errors with the enforcement of all-caps are high; these are some of the most consequential terms in consumer contracts. Enforcing these clauses without evidence of their effectiveness was always questionable; now we show positive evidence that this practice is actually ineffective. Although caution is always prudent with

Figure 3: Average marginal effects of all-caps with 99 percent confidence intervals.



lab experiments, we believe that these findings are sufficiently clear to shift the burden of proof to those who believe in the efficacy of all-caps. We will return to discuss these findings after exploring some other aspects of all-caps.

V. Exploring Alternative Justifications and Interventions

Our analysis so far has established that all-caps are very common in practice, but their utility lacks any empirical support. Further, the evidence presented here suggests they fail to show any significant improvement over standard formatting. We now turn to a series of exploratory studies that extend these results and test them under various settings.

A. ALL-CAPS Under Time Pressure

1. Methodology

One limitation of the primary experiment is the lack of any time limit. Subjects could spend as much time as they saw fit on reading; closely reading the contract might diminish the usefulness of all-caps. In practice, time pressures are ubiquitous, and one study

found that as many as 65 percent of respondents reported not reading the fine print because they were "in a hurry."[103]

Recall that under one theory, all-caps are useful because they help direct consumers to the transaction's most important aspects. These positive effects would be most noticeable under time pressure, as the consumer has to actively choose where to focus her attention. Yet, one might worry that if capitalization results in text that is harder to read—which we explore later—consumers may spend less time reading.

To test the effect of all-caps under time pressure, we designed an exploratory series of three shorter contracts presented to readers under a strict time limit. When reading the contract, the subject saw a timer moving, noting the number of remaining seconds; once the time lapsed, the subject was moved to the next page with the test questions. A multiple-choice question followed each short contract, measuring the reader's recall of a specific term in the contract. The term appeared in the test paragraph, which was either ordinary low-caps (control) or all-caps (treatment). The control group had no way of knowing which paragraph contained the term paragraph, but the treatment group could infer this from the use of all-caps in this specific paragraph alone.

We tested 81 subjects, receiving 240 responses overall (as there were three tests per respondent). The demographics of the sample (relative to the demographics of the general U.S. population, in parentheses), are: 46 percent female (50.8 percent), median age 34 (38), 65 percent white (60.4 percent), college degree or higher education 47 percent (30.9 percent), median household income $50,000 ($57,652).[104] The sample skews somewhat male, younger, white, and poor, and significantly more educated. We do not have any theoretical reason to expect this skew to point in any specific direction, but, with the small sample size, these findings should be interpreted with caution.

In determining the time limit, we first administered the test to a small pilot group without a time limit. We measured the average time to read for the test group, imposing an increasingly lower limit for each test. Subjects were given 23 seconds to read Test 1, 20 seconds to read Test 2, and only 15 seconds to read Test 3. These time limits are fairly challenging. The pilot group's responses were not included in the analysis.

2. Findings

Figure 4 summarizes our findings regarding the inaccuracy of responses with the inclusion of the timer. As seen in the figure, subjects in the all-caps group failed to show any improvement under time pressure. In fact, as we increased the time pressure in Tests 2 and 3, we see the low-caps group performing better, with slightly higher accuracy rates,

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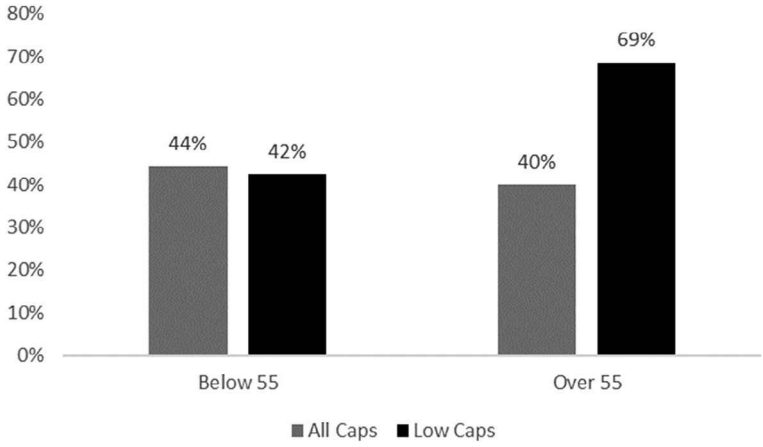
[103]Robert Hillman, Online Consumer Standard Form Contracting Practices: A Survey and Discussion of Legal Implications, in Is Consumer Protection an Anachronism in the Information Economy? 293 (Jane K. Winn, ed. 2006).

[104]U.S. Census, available at https://www.census.gov/quickfacts/fact/table/US/LFE046217 (last visited July 31, 2019).

Figure 4: Percentage of accuracy in different age groups.



although only the second result approached statistical significance.[105] In Tests 1 and 3, respondents were also presented with the option to respond "I don't remember." In both tests, the rates of failure to remember were very similar—43.9 percent (low-caps) versus 40 percent (all-caps) in Test 1 and 43 percent (low-caps) versus 43 percent (all-caps) in Test 3.

As in our primary experiment, all-caps fails to improve reader recall. The important feature of this variation was the use of a timer with a strict deadline. The timer added both a physical and a psychological constraint—reading long, complex texts within a short time is difficult and the existence of a countdown timer can also impose stress. This is comparable to a customer reading a contract in the dealership or at mortgage closing with the agent watching and expecting him or her to sign the agreement. Although lacking statistical significance, the results are indicative that even under these realistic constraints, all-caps does not improve outcomes.

The study's results are noteworthy for those who believe all-caps increase salience. If the use of all-caps increases text salience—indicating to the reader that this part of the text is not standard boilerplate but rather an important part of the agreement—we would expect readers to focus more attention on these clauses under time pressure. The large text would indicate to them that this term is worth attentive focus. These initial findings, however, weigh against the salience theory.

[105]Based on non-inferiority test, with $\delta = 0.1$, the results of the hypothesis testing for the three tests are, respectively, $p_1 = 0.25$, $p_2 = 0.1$, $p_3 = 0.2$. Note that these results may be related to the small sample size.

B. Subjective Sense of Difficulty and Reading Speeds

1. Methodology

What is the effect of all-caps on the consumer experience? Under one theory noted above, capitalization helps by increasing the font size and by using a more cognitively efficient typeface. Unlike the theory of salience, by contrast, this theory holds that capitalization is important for making the text more accessible. If this theory is true, we would expect at least one of the following hypotheses to be true. One, consumers would tend to rate all-caps as easier to read and understand; two, consumers would tend to spend less time reading a contract where the key parts are effectively highlighted.

In the following exploratory variant of the study, we presented 102 subjects with a version of the contract used for the primary study. The demographics of the sample (relative to the demographics of the general U.S. population, in parentheses), are: 45 percent female (50.8 percent), median age 36 (38), 84 percent white (60.4 percent), median household income $56,277 ($57,652).[106] This sample skews considerably white, but otherwise has low skew. Again, this is an exploratory study and it should be interpreted in this context.

Subjects were split among two groups, control and treatment. The entire control contract appeared in low-caps with the treatment contract being fully capitalized. Invisible to the participants, we set a clock to measure the time from the moment the participant first saw the contract until he or she clicked to the next page. Reading times were sufficiently long to indicate engagement, which we verified through attention checks and other quality controls.[107] We also asked subjects to rate their sense of the difficulty of understanding the contract they read on a sliding scale of 1–100, where 100 indicates the greatest difficulty.

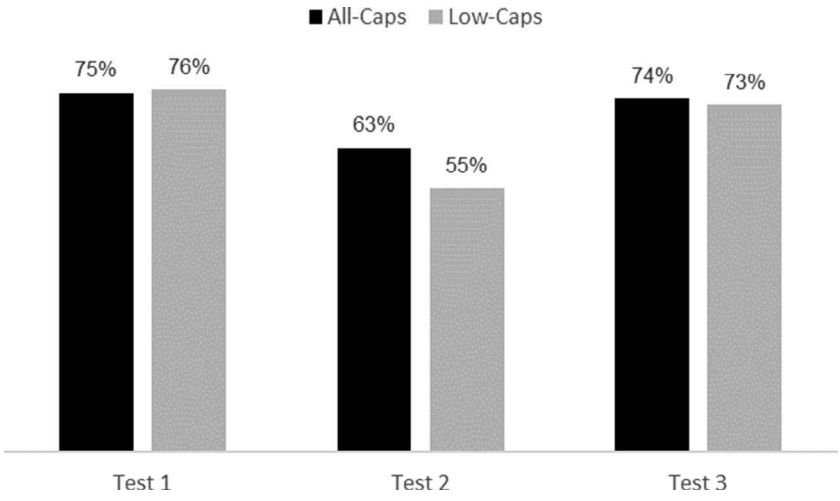
2. Findings

Figure 5 details the average ranking of the difficulty of reading and understanding the text for subjects in both groups. As the figure shows, respondents rated reading and understanding the capitalized contract as considerably harder than respondents rated reading and understanding the low-caps contract. In terms of reading difficulty (Panel A), the capitalization treatment received a rating of difficulty roughly 22 percent harder. Understanding was also rated as roughly 13 percent harder (Panel B) in the capitalization group. The difference in reading difficulty was statistically significant, suggesting that

[106]U.S. Census, available at https://www.census.gov/quickfacts/fact/table/US/LFE046217 (last visited July 31, 2019).

[107]As a reminder, by low-caps we mean the standard English convention, with letters opening a sentence and names being capitalized.

Figure 5: Percentage of mistakes under time pressure.



all-caps did not make reading easier.[108] Although in the same direction, the difference in the difficulty of understanding was not statistically significant.[109]

This finding indicates that capitalization may result in a greater sense of difficulty in reading the text and, to a lesser extent, understanding it. This puts pressure on the theory that capitalization increases the accessibility of legal texts.

The validity of self-reported subjective rankings of difficulty should not be dismissed out of hand; the negative valence of the experience of reading capitalized text may well dissuade consumers further from reading contracts. It is also worth noting that consumers were not comparing the contracts, but reporting their own sense of difficulty for the single contract they saw. This suggests, in our view, greater validity to the relative sense of confidence among the two groups.

In terms of reading speeds, we found that members of the all-caps group took longer to read the contract. The all-caps group averaged 94.7 seconds relative to 83.4 seconds in the low-caps group. This difference (13 percent) was not statistically significant, presumably due to the large variance in reading times between members in each group or the smaller sample size.[110] An additional confounding factor is that members of the all-caps group, who found the text more difficult to read, may have made less effort to read

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[108] $t(99) = 2.088$, $p < 0.05$.

[109] $t(99) = 1.21$, $p = 0.11$.

[110] $t(99) = 0.78$. $p = 0.22$.

the contract carefully.[111] Still, it is remarkable that this is the exact same effect size as previous work identified in non-legal contexts.[112]

We summarize this study as presenting early evidence against the capitalization-as-accessibility theory. The capitalization of text resulted in a greater sense of difficulty reading the text and failed to improve the sense of improved understanding of the text. Moreover, capitalization resulted in a negative effect on reading times: not statistically significant, but potentially large in practice. The caveats presented above also apply here. Different contracts may elicit different consumer responses, and it may be possible that in other settings, consumers will not prefer a low-cap contracts, or that some combination of formatting and content would make all-caps easier to read. Still, our findings present the first empirical evidence on this issue and they suggest the ineffectiveness of all-caps.

C. Alternative Methods of Conspicuousness

1. Methodology

Our findings cast doubt on the idea that all-caps improve the quality of consumer consent. In this study, we examine whether other means can improve the quality of consumer consent. As a preliminary comment, designing communications is a difficult undertaking, conducted by professionals who devote their careers to text design, marketing, and copywriting. We do not argue that a single communication mode is always superior, nor are we interested in discovering a single mode of improving notice or consent. We are interested in discovering whether it is possible, in principle, to improve contractual communications. This inquiry is important for two reasons. First, it may show that despite the current skepticism with disclosure, it may be possible to improve it.[113] Second, such an analysis also serves to evaluate whether the current design can capture behavioral differences.

We recruited a total of 286 respondents. The demographics of the sample (relative to the demographics of the general U.S. population, in parentheses) are: 42 percent female (50.8 percent), median age 34 (38), 80 percent white (60.4 percent), median household income $47,500 ($57,652).[114] The sample skews somewhat male, younger, and poorer, and significantly more white. We do not have any theoretical reason to expect this skew to point in any specific direction, but it is advisable to bear this in mind when interpreting our findings.

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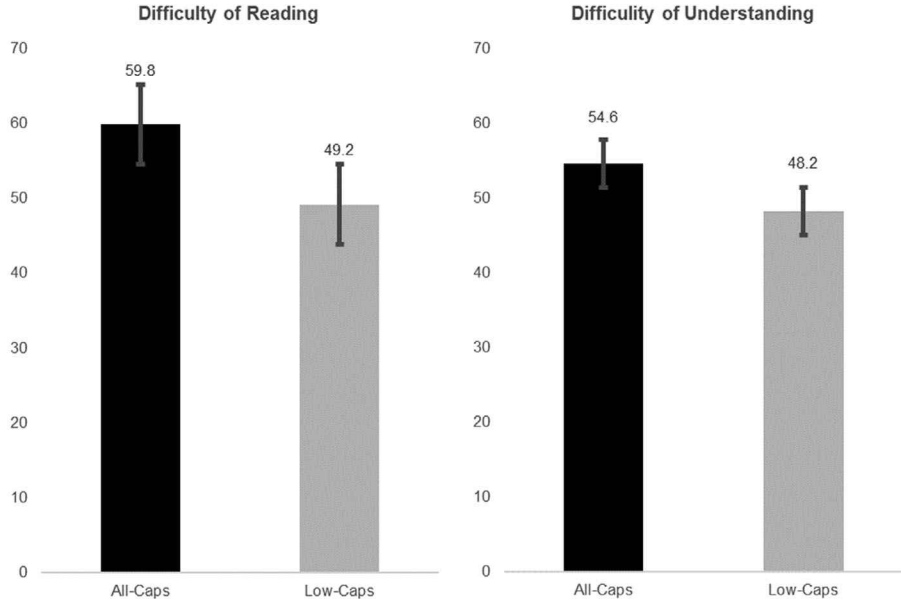
[111]We note that in both groups, recall rates were similar, meaning that the increased reading time did not result in higher likelihood of remembering the content.

[112]See Miles A. Tinker & Donald G. Paterson, Influence of Type Form on Speed of Reading, 12 J. Applied Psychol. 359 (1928).

[113]See, e.g., Omri Ben-Shahar & Carl E. Schneider, supra note 24; Ayres & Schwartz, supra note 5.

[114]United States, QuickFacts, supra note 83.

Figure 6: Self-reported difficulty of reading and understanding the contract.

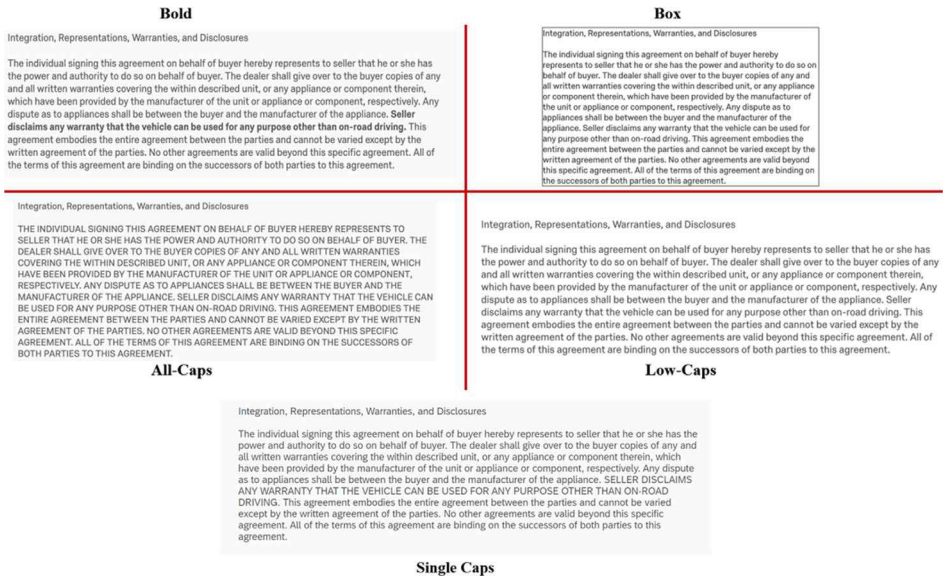


We presented respondents with a contract for the sale of a recreational vehicle (RV), which included a liability disclaimer. The key paragraph, reproduced below, was a disclaimer clause. The disclaimer waived liability for almost all uses of the RV, but the seller *assumed liability* when the RV is driven on the road. Respondents were randomly allocated to one of four groups, illustrated in Figure 6. The control, as always, was the group where the key paragraph was in low-caps. One treatment was all-caps. Another treatment involved the use of a box, as suggested by some courts and legislators, such as the so-called Schumer Box.[115] Another treatment was called single-caps, where we highlighted only a single sentence in capital letters. The last treatment was "bold"—where we presented the same sentence in boldface, rather than capital letters. The last two treatments consider two modes of selective highlighting of a single sentence.[116] Our chief

[115]Regulation Z, 12 C.F.R. § 226.1(b) (2011). Bennett v. Matt Gay Chevrolet Oldsmobile, Inc., 408 S.E.2d 111, 114 (Ga. Ct. App. 1991).

[116]As the last treatment involves changes—selective highlighting and boldface—it is not possible to disentangle which of the two changes is more important. Our intention here, however, is not to detect the best method of communication, but to see if any interventions can be helpful. We leave the more nuanced analysis of design to future work.

Figure 7: Four design choices. [Color figure can be viewed at wileyonlinelibrary.com]



concern is with the capitalization of *blocks* of text, not with analyzing the best mode of disclosure per se.

2. Findings

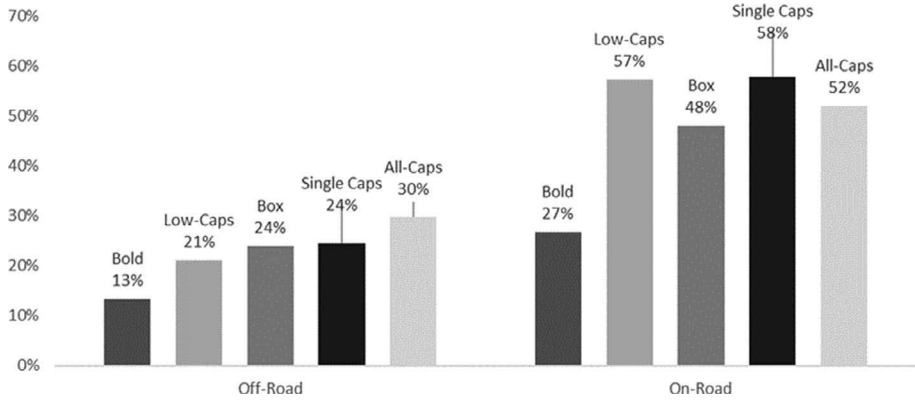
We measured the respondents' answers to two test questions: whether they can bring a lawsuit if the RV does not drive well off-road (the correct answer is "No"), and whether they can bring a lawsuit if the RV does not drive well on-road (the correct answer is "Yes"). Figure 7 describes the error rates among the different interactions.

As Figure 7 shows, the bold treatment performed considerably better than any other method of intervention. Focusing on the on-road question, the use of bold text had a wrong answer rate of 27 percent relative to 48 percent (box), 52 percent (all-caps), 57 percent (low-caps), and 58 percent (single-caps). In the off-road question, bold was again associated with a low error rate (13 percent), followed by low-caps (21 percent), box (24 percent), single-caps (24 percent), and, lastly, all-caps (30 percent).

To test the statistical significance of these differences, we estimated a logistic regression model of the probability of accurately answering the question with controls for the four different treatments. Figures 8 and 9 summarize our findings.

Figure 8 summarizes the data and Figure 9 estimates the treatment differences. In Figure 9, the horizontal line represents the baseline—low-caps—and the bars the effectiveness of these interventions relative to this baseline with a 95 percent confidence

Figure 8: Error rates, five treatment groups.



interval. As can be seen in Panel A, the bold treatment had a large, positive, and statistically significant effect in the off-road question and a large, positive, but statistically insignificant effect in the on-road question (Panel B).[117] The other treatments had a negative, but statistically insignificant, effect relative to the baseline. The lack of a statistically significant effect may be because there is no difference or due to the relatively small size of these groups.

These findings support the possibility that some methods of intervention can improve the ability of consumers to recall the terms of their agreements. The success of the bold approach suggests that consumers readily react to communicative interventions, and their recall can be significantly enhanced by designing targeted interventions. This is consistent with early psychological research showing that readers prefer boldface over other types of emphasis.[118] We note that the single-sentence capitalization intervention had little effect relative to box, but do not argue for more than tentative findings in favor of boldface. We believe a worthwhile takeaway is the demonstration that some well-designed interventions will have a large positive effect. The responses' sensitivity to intervention type also validates the idea that the subjects are not engaging in guesswork.

Any optimism regarding the methods of intervention should be tempered with the observation that other plausible interventions (all-caps, single-caps, and box) failed to improve upon the benchmark of low-caps. These negative findings highlight the difficulty of designing effective disclosure. Note that we cannot definitely say whether this is because there was no positive effect or because of the sample size.

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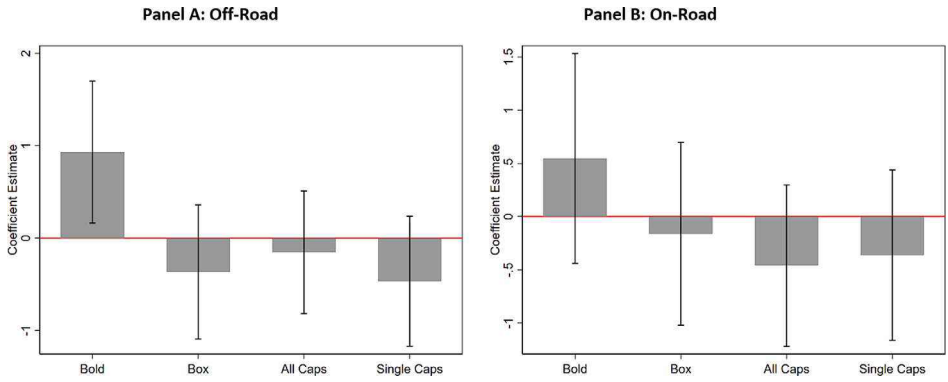
[117] $\Pr(correct) = F(\beta_0 + \beta_1 Bold + \beta_2 Box + \beta_3 AC + \epsilon)$. $p < 0.05$. Single-caps is not depicted (in edits), but is very similar to box (off road) and low-caps (on-road).

[118] Tinker, supra note 7, at 62.

Figure 9: Coefficient estimate of treatment differences. [Color figure can be viewed at wileyonlinelibrary.com]



We now revisit the "fire siren" effect. In the off-road question, the correct response was lack of a right to sue; in the on-road action, the correct response was that a right to sue did exist. If the fire siren effect is real, we would expect the all-caps participants to believe that a right does not exist in both cases at much higher rates than participants in the low-caps group. The findings, again, cast doubt on the fire siren effect, as the response rates were fairly similar in both groups.

VI. The Case Against Uppercase

This article studies a unique marker of the legal genre: the use of blocks of capitalized text in consumer contracts. In the first part, we highlighted how courts and policymakers enforce terms based on the belief that all-caps improve notice and thus the quality of consumer consent, despite a dearth of supporting evidence. Courts may take for granted that salience translates into better notice and that all-caps increase salience. The existing body of empirical research on the subject is limited, dated, and applied to materially different contexts; it is also ambiguous.

All-caps represents a living, influential, and modern doctrine, one with broad effects in areas as diverse as wrongful death claims, arbitration agreements, disclaimers of implied warranties, and many others. Legislators often mandate the use of all-caps, requiring certain disclosures to appear in all-caps or listing all-caps as a preferred mode of disclosure.[119] Through this nexus of legislative and judicial policies, consumers are locked into some of the most onerous terms for no other reason but capitalization.

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[119]See notes 36–41.

Using all-caps all but guarantees enforcement, and firms react to this permissive legal environment in predictable ways. Our analysis of the standard forms of 500 leading firms found that over 77 percent include at least one all-caps paragraph. This naturally leads one to question the firms' motives. Are firms naïve? Do firms genuinely believe that using all-caps will promote consumer understanding? Or—worse—do firms take advantage of judicial naiveté to hide some of the most onerous and costly terms in plain sight by using all-caps?[120] The latter option suggests a vicious dynamic. Not only do courts not protect consumers' interests by favoring all-caps, they invite abuse.

Our data cannot speak directly on this point, but we do think there is suggestive evidence that sheds light on these questions. Firms deal with consumers in a variety of contexts and, in some, firms deeply care about the effectiveness of communications. When firms market to consumers, firms use a rich, creative mix of text sizes, colors, typefaces, and backgrounds. While some individuals words or the occasional sentence will be capitalized, one never finds blocks of capitalized text. In legal texts, however—and despite many lawyers' awareness of all-caps' problematic nature—the use of all-caps is a staple.[121] Whatever one's view of firms' motivations, it should be clear that the legal system is permitting, encouraging, and often requiring the use of all-caps.

It is against this background that our findings should be interpreted. The primary experiment analyzed the responses of 570 people and demonstrated that all-caps fail to improve consent within a reasonable margin of effectiveness. Our replication attempt, despite a small sample and different demographic, repeated these findings. This suggests that the various legal policies built around all-caps' effectiveness are misguided. Normal print is no worse than all-caps.

The findings also suggest, with some caveats, that all-caps may be harmful to older readers. In our primary experiment, readers over 55 were shown to understand their agreements significantly worse when presented with all-caps text rather than standard low-caps text. Importantly, our experimental design involved a simple question—one that is relatively easy to answer correctly even on a quick skim. Even with this simple metric, older respondents frequently failed to answer the question correctly: the older group answered incorrectly at almost double the rate of same-age peers in the control group. We note that our small replication attempt could not affirm this finding, so we consider the question of whether all-caps is actively harmful—beyond just ineffective—open.

Our findings also allow us to reject the "fire siren" theory of all-caps. Under this theory, all-caps are like a fire siren in that one can easily hear it but hardly listen to it. A fire siren effect would lead readers to infer that a contract has onerous terms by virtue of having an all-caps clause, even if they do not read it. Testing this theory is difficult, but the response pattern between the two groups was too similar to support it. It seems that even as a fire siren, all-caps do not achieve their goals.

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[120]On firms attempting to sabotage disclosure, see Willis, supra note 6, at 1322–26.

[121]See Butterick, supra note 59.

The interpretation of these findings can be informed by cognitive research that suggests the use of all-caps homogenizes the difference between letter types because it lacks ascenders and descenders, thus making it harder to read.[122] Another possibility is that readers, perhaps more so today than in the past, simply lack experience reading all-caps. Another possibility is that the choice of typeface does more than alter the form. In human communications, form is itself a part of the message. In the past, the usage of all-caps was meant to designate "grandeur," "pomposity," or "aesthetic seriousness"; today, there is a growing convention that all-caps is similar in effect to yelling.[123] The negative emotional valence associated with all-caps might make reading more difficult or less appealing. To the extent that the old age effect is real, it might be explained by several factors. Impatience, lack of motivation, and differential stakes of charges are all possibilities. Factors related to eyesight may also provide a compelling explanation.

Exploratory in nature, this article tested the theory that all-caps would prove more beneficial in the presence of time pressure. With limited time, prioritizing attention becomes critical and if all-caps improves notice, one would expect it to do best under time pressure. Yet again, we could not detect any advantage from all-caps, though our small sample size in this specific experiment made our conclusions tentative.

It is also revealing that when people are asked to rate the difficulty of reading, they rank all-caps as harder to read. Similarly, we found evidence that reading times were longer under all-caps, but despite its large magnitude (13 percent), this finding was not statistically significant. We hypothesize that the longer reading times were counteracted by skimming, as (presumably) subjects wanted to end an unpleasant experience faster.

Taken together, our empirical findings suggest the failure of all-caps, one of the most common and onerous consumer policies in the United States.

We believe that there is a compelling reason to abolish judicial reliance on all-caps. Courts should stop giving *any* weight to the use of all-caps in contracts. In fact, there may be a reason to treat all-caps with suspicion, but we limit ourselves to calling for the renouncement of this practice.

In reaching this conclusion, we are well aware of the limitations of this, or any other, lab study in terms of generalization, replicability, and external validity. Our conclusion, however, rests on several mutually enforcing arguments that outweigh such concerns. First, our analysis of the literature shows that the hypothesis that all-caps would improve consumer consent was never validated; the longstanding legal preference of all-caps is based on purely theoretical considerations. Courts might have had a reason to think that all-caps could be effective, especially a century ago, but resting the full weight of such an onerous policy on an untested theory is deeply misguided. Contrary to the courts, our starting position should be the general skepticism about any intervention that

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[122]See Robbins, supra note 59.

[123]See Alice Robb, How Capital Letters Became Internet Code for Yelling, New Republic (Apr. 17, 2014), available at https://newrepublic.com/article/117390/netiquette-capitalization-how-caps-became-code-yelling; Practical Typography, All Caps, available at https://practicaltypography.com/all-caps.html (last visited Feb. 9, 2019).

is supposed to easily and dramatically increase the level of consumer notice—a recalcitrant problem in consumer law.

Second, our findings suggest the practical failure of all-caps in legal texts. There is no evidence that all-caps improve over normal text and, with some caveats, there is some suggestion that they harm older readers. That consumers dislike all-caps and consider them more difficult reinforces the idea that all-caps exact a price but produce no perceptible benefit. All-caps thus seems to be violating the basic Hippocratic precept: first do no harm.

Third is the problem of error costs, which are especially high here. If a court decides to enforce a liability waiver in the event of wrongful death because the judge believes that putting the waiver in all-caps truly informed the consumer, then all-caps has a series of unwanted effects. The consumer is deprived of redress and compensation, which the consumer believed were available. Indeed, the consumer may have paid more under this misguided belief and enforcing the waiver would deprive him or her the benefit of the bargain. From the firm's perspective, one effect of enforcement would be a deterrence shortfall, as the firm will not internalize the costs of its action. Enforcement would also encourage the firm to use all-caps. Given that the error costs, to prove that the all-caps intervention indeed improves consent, the bar should be set high. Exactly how high is a matter of debate, but at the very least, we can agree that speculation is an insufficient ground.

Fourth, we think there is a good a priori reason to approach all-caps with great suspicion. As we noted above, the world around us is replete with text meant to persuade consumers to buy products, text designed by ingenious copywriters and shrewd advertisers. Yet, when firms have a personal stake in the success of consumer communications, they almost never employ large blocks of capitalized text in their brochures, advertisements, and flyers. When these firms want to make attractive features conspicuous, they use myriad design choices that have no resemblance to the texts they use to obligate and bind consumers. As Professor Hoffman showed, when firms have skin in the game, they can even design fun and easy to read contracts.[124] We also draw confidence from the lived experience of many readers and the suggestion of some practitioners, all pointing in the direction of the ineffectiveness of all-caps.[125]

This study is not without limitations—the samples only roughly represented the general U.S. population, we did not study many possible formatting possibilities, did not test a large range of possible contracts, and we were limited to responses in the lab. Still, we believe that given the evidence presented here, courts and legislators should abandon the preference given to all-caps. In the diverse contexts where conspicuousness is required, courts should no longer accept all-caps as presumptively conspicuous and thus retreat from a century-long jurisprudence in disclaimers, waivers, arbitration clauses, choice-of-law provisions, and many more. We are aware that legal traditions die hard. Yet,

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[124]David A Hoffman, Relational Contracts of Adhesion, U. Chi. L. Rev. 1395 (2018).

[125]See note 59.

the stakes of this specific legal tradition are extremely high and come at a severe cost to consumers. Lacking any empirical support, this tradition should come to a stop.

VII. Conclusion

This study explores the common practice of using all-caps in consumer contracts and finds that it is without merit. Courts and legislators endorse this practice as a means of improving consumer consent, given the lack of attention consumers pay to the fine print. In reality, however, the belief in the power of all-caps has no empirical evidence to support it and the evidence produced here effectively disproves it. We believe this legal practice should be abolished.

What may come next is best left to the genius of copywriters and the prudence of lawyers. That courts have given a safe haven to firms that use all-caps has stalled much innovation in this field, but there is great potential for developments of new standards. As this article demonstrated, the targeted highlighting of key obligations has a strong and significant effect on consumer consent. There are many other possible interventions, but none will emerge so long as uppercase has the upper hand. We trust that this article will help shift the burden of proof back to firms and help prevent future caps-lock.