

Wikimedia Foundation v. NSA
No. 15-cv-0062-TSE (D. Md.)

Plaintiff's Exhibit 2

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF MARYLAND**

WIKIMEDIA FOUNDATION,

Plaintiff,

v.

NATIONAL SECURITY AGENCY /
CENTRAL SECURITY SERVICE, *et al.*,

Defendants.

No. 1:15-cv-00662-TSE

DECLARATION OF JONATHON PENNEY

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I. QUALIFICATIONS

1. I am an Associate Professor at the Schulich School of Law and Director of the Law & Technology Institute at Dalhousie University, located in Halifax, Canada. I submit this declaration in support of Plaintiff Wikimedia Foundation's ("Wikimedia's") Opposition to Defendants' Motion for Summary Judgment. Unless otherwise stated, I have personal knowledge of the facts herein.

2. I am a legal academic and social scientist. I hold a DPhil (Ph.D.) in Information, Communication, and the Social Sciences and an M.S.T. in Legal Research from the University of Oxford, as well as an L.L.M. from Columbia Law School, and a J.D. and B.A. from Dalhousie University.

3. I have extensive experience in the scientific study of social phenomena, specifically as it relates to online behavior. During my doctoral studies at Oxford, I received substantial training in empirical, statistical, and social science methods. In addition to my professorship, I also hold appointments at leading research centers in my field. I am currently a Research Fellow at the Citizen Lab, located at the University of Toronto's Munk School of Global Affairs and Public Policy; a Research Associate of Princeton's Center for Information Technology Policy and the Civil Servant Project at the Massachusetts Institute of Technology's Media Lab; and was formerly a Berkman Fellow and Research Affiliate at the Berkman Klein Center for Internet & Society at Harvard University.

4. I have a deep understanding of "chilling effects" theory—the idea that laws, surveillance, or other regulatory actions may "chill" or deter individuals from exercising their rights or freedoms. A central focus of my doctoral dissertation at Oxford was the study of Internet surveillance-related chilling effects. I collected and analyzed data that showed increased public

awareness of National Security Agency (“NSA”) surveillance practices resulted in a reduction of privacy-sensitive Wikipedia article page views, and concluded this reduction was evidence of a statistically significant “chilling effect.”

5. My doctoral dissertation, which included this Wikipedia “chilling effects” study, was peer reviewed by two examiners for my doctoral thesis defense at the University of Oxford in November 2015. The examiners were Urs Gasser, Professor at Harvard Law School and Executive Director of Harvard University’s Berkman Klein Center for Internet and Society, and Joss Wright, Senior Research Fellow at the Oxford Internet Institute, University of Oxford, and a Turing Fellow at the Alan Turing Institute, the United Kingdom’s national institute for data science and artificial intelligence. The thesis, which included the study, was successfully defended and accepted with no corrections. The study was also formally peer reviewed, and a draft paper based on it accepted for presentation, by members of the Program Committee for the Inaugural Society for Empirical Legal Studies (SELS) Global Junior Empirical Legal Scholars Workshop in December 2015. The Program Committee reviewed all submissions and selected the best papers for presentation at the workshop. The Program Committee included some of the leading empirical legal scholars internationally, including David Abrams, Professor of Law, Business Economics, and Public Policy at University of Pennsylvania Law; Bernie Black, the Nicholas D. Chabraja Professor at Northwestern University School of Law; Valarie Hans, Professor at Cornell Law School; and Eyal Zamir, Augusto Levi Professor of Commercial Law and Director of the Center for Empirical Studies of Decision Making and the Law at Hebrew University.

6. Informally, the study was also peer reviewed by computational social scientist Nathan Matias in May 2016, who at the time was a doctoral candidate at the Massachusetts Institute of Technology’s Media Lab and is now a Post-Doctoral Research Associate at Princeton University,

cross-appointed in Princeton's Psychology Department, Sociology Department, and the Center for Information Technology Policy. In addition, Matthew Salganik, Professor in the Department of Sociology at Princeton University, has reviewed the study, using it as part of course materials for his class, "Computational Social Science: Social Research in the Digital Age," at Princeton University's Sociology Department. He has also cited the study multiple times in his leading text on computational social science research and methods.¹

7. The study was also informally peer reviewed via numerous presentations to faculty, academic researchers, graduate students, and a range of other experts in 2015 and 2016, including Harvard University's Berkman Klein Center for Internet and Society in May 2015 and April 2016; and the 5th Annual Workshop on Free and Open Communications on the Internet (FOCI) Workshop, USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Washington, D.C. in August 2015.

8. In 2016, I published the findings from my doctoral research in the *Berkeley Technology Law Journal*. I have also published other research on chilling effects and online privacy in peer-reviewed data science and policy journals. My statement of qualifications, including my professional curriculum vitae and list of publications, is attached as Appendix B.

II. ASSIGNMENT

9. Wikimedia has retained me to provide expert consultation, analyses, and testimony in the lawsuit *Wikimedia Foundation v. National Security Agency, et al.*, No. 1:15-cv-00662-TSE (D. Md.). My assignment is to provide opinions on the chilling effects associated with "Upstream" Internet surveillance conducted by the Defendant National Security Agency ("NSA"). Neither

¹ See MATTHEW SALGANIK, BIT BY BIT: SOCIAL RESEARCH IN THE DIGITAL AGE (2017).

Wikimedia nor anyone else is compensating me for this work, and my participation is not dependent on the opinions provided or the outcome of the case.

III. SUMMARY OF OPINIONS

10. Based on the empirical evidence and my statistical analysis, I conclude that public awareness of NSA surveillance programs, including Upstream surveillance, which became widespread during the June 2013 Snowden disclosures, is highly likely to have had a large-scale chilling effect on Wikipedia users.

11. I arrive at this conclusion based on (1) the statistically significant and substantial drop in view counts immediately following June 2013 for Wikipedia articles that would likely raise privacy concerns for users aware of NSA Internet surveillance; (2) the statistically significant trend reversal in monthly views for those articles after June 2013, which indicates a sustained impact on viewership that did not course correct after this revelation; and (3) the lack of comparable statistically significant reductions and reversals in monthly article views for comparator Wikipedia articles over the same time period.

IV. OVERVIEW OF CHILLING EFFECTS THEORY & SUPPORTING EMPIRICAL EVIDENCE FOR SURVEILLANCE RELATED CHILL ONLINE

12. Chilling effects theory posits that government surveillance can harm individuals by “chilling” or deterring them from exercising their rights and freedoms out of fear of legal punishment, social sanction, or to avoid invasions of privacy and reputational risks. There is an extensive body of legal scholarship establishing the underpinnings of chilling effects theory.²

² See generally Frederick Schauer, *Fear, Risk, and the First Amendment: Unraveling the “Chilling Effect,”* 58 B.U. L. REV. 685 (1978) (the leading academic account of chilling effects theory); Daniel Solove, *A Taxonomy of Privacy*, 154 U. PENN. L. REV. 477 (2006) (analyzing theory in the context of modern surveillance practices and data gathering, focusing on how government surveillance of online activities creates a broader atmosphere of conformity and self-censorship).

13. Some social science research has indicated that self-reported or expressed concerns about privacy do not necessarily reflect people's actual behavior online, a phenomenon sometimes referred to as the "privacy paradox."³ However, especially in recent years, empirical studies have tested and confirmed the tenets of chilling effects theory as they apply to online behavior, including specifically as it relates to online government surveillance.

14. Social science research and empirical studies have been conducted that demonstrate online behavior is chilled as a result of government surveillance. Importantly, multiple studies confirm specifically that public awareness surrounding NSA surveillance activities, including Upstream surveillance, created a chilling effect online. *See also infra* Part V.A.i (establishing significance of public awareness and shock created by media coverage of the Snowden disclosures).

15. A Massachusetts Institute of Technology (MIT) study on Google search traffic by Alex Marthews and Catherine Tucker, later published in 2017 as a peer reviewed chapter in the Cambridge University Handbook on Surveillance Law, found a statistically significant 4% reduction in Google searches after the June 2013 Snowden disclosures for certain search terms that would raise privacy concerns for Internet users aware of NSA surveillance online.⁴ This finding, that awareness of online surveillance chilled Internet users from searching for certain topics and content, strongly supports the conclusions I draw herein. It also provides additional evidence that

³ See Spyros Kokolakis, *Privacy Attitudes and Privacy Behaviour: A Review of Current Research on the Privacy Paradox Phenomenon*, COMPUTERS & SOC'Y 1 (2015) (providing a comprehensive explanation and review of "information privacy paradox" literature).

⁴ Alex Marthews & Catherine Tucker, *Government Surveillance and Internet Search Behavior*, in CAMBRIDGE UNIVERSITY HANDBOOK ON SURVEILLANCE LAW (David Gray et al. eds., 2017).

Internet users were generally aware of NSA surveillance starting as of June 2013, and it impacted their online activities.

16. Elizabeth Stoycheff's 2016 experimental study, later published in a peer reviewed article entitled "Under Surveillance: Examining Facebook's Spiral of Silence Effects in the Wake of NSA Internet Monitoring," found that exposing participants to "terms of agreement," which reminded participants that their online activities could be subject to interception and surveillance, chilled those participants from expressing their political views, especially those participants who believed their political views were controversial or less popular.⁵ Again, this chilling effect, due to awareness of online surveillance, is consistent with findings from my own observational study.

17. Andrea Forte et al.'s 2017 qualitative study on Wikipedia editors, published in a peer reviewed paper entitled "Privacy, Anonymity, and Perceived Risk in Open Collaboration: A Study of Tor Users and Wikipedians," found evidence that editors were chilled from certain activities on Wikipedia due to awareness of government surveillance.⁶ For example, one Wikipedia editor stated that surveillance "has a chilling effect on the way that we do business and on the ability which Wikipedia has, [as] an enterprise, to continue. Because people are far less likely to engage with us, if they know that the American government is watching their every move." Another Wikipedia editor confirmed these chilling effects, stating, "for the Edward Snowden page, I have pulled myself away from adding sensitive contributions, like different references, because I thought the name may be traced back to me in some way." These findings are also consistent with my conclusions about chilling effects on Wikipedia use.

⁵ Elizabeth Stoycheff, *Under Surveillance: Examining Facebook's Spiral of Silence Effects in the Wake of NSA Internet Monitoring*, 93(2) JOURNALISM & MASS COMMUNICATION 296 (2017).

⁶ Andrea Forte, Nazanin Andalibi, and Rachel Greenstadt, *Privacy, Anonymity, and Perceived Risk in Open Collaboration: A Study of Tor Users and Wikipedians*, in CSCW 1800 (2017).

18. A series of survey-based empirical studies of Americans published by PEW Research Center in 2013, 2014, and 2015 found people were chilled in their online activities due to their awareness of government surveillance programs after June 2013.⁷ A Pew Research Center survey of 475 adult Americans conducted between November 26, 2014 and January 3, 2015, and published in a report entitled “Americans’ Privacy Strategies Post-Snowden” in March 2015, found 87% of respondents were aware of “government surveillance programs to monitor phone use and internet use” due to the Snowden disclosures. Among that 87%, 34% had taken “at least one step to hide or shield their information from the government” such as changing privacy settings, using social media less, avoiding certain apps, speaking more in person than online, and avoiding using “certain terms in online communications.” It also found 25% changed the patterns of their own use of various technological platforms “a great deal” or “somewhat” since the Snowden revelations. Similarly, a survey of 1,801 adults conducted between August 7-September 16, 2013, and published in a report entitled “Americans’ Privacy Strategies Post-Snowden” in August 2014, found that survey respondents were less willing to discuss the “Snowden-NSA story” online “than they were in person” with 86% indicating they would speak about the story “in person” but only 42% would speak about it on social media. Again, a July 2013 survey of 1,002 American adults ages 18 and older, published in a report entitled “Anonymity, Privacy, and Security Online” in September 2013, found 86% tried to use the Internet in ways to minimize the visibility of their digital footprints, including 55% saying that had “used the internet in ways to

⁷ KEITH N. HAMPTON ET AL., PEW RES. CTR., SOCIAL MEDIA AND THE ‘SPIRAL OF SILENCE,’ 4 (2014), http://www.pewinternet.org/files/2014/08/PI_Social_networks_and_debate_082614.pdf; LEE RAINIE ET AL., PEW RES. INTERNET PROJECT, AMERICANS’ PRIVACY STRATEGIES POST-SNOWDEN 4 (Mar. 16, 2015), http://www.pewinternet.org/files/2015/03/PI_AmericansPrivacyStrategies_0316151.pdf; Lee Rainie et al., *Anonymity, Privacy, and Security Online*, Pew Res. Ctr. (2013), http://www.pewinternet.org/2013/09/05/anonymity_privacy_and_security_online.

avoid being observed or seen” by a range of people, groups, and institutions, including government and law enforcement. All of these studies are consistent with the results of my empirical study of Wikipedia page view traffic. They also critically support June 2013 as the initial date that people became aware of NSA surveillance activities, including Upstream surveillance.

19. A PEN American Center study of writers in 2013 and 2015 also found evidence of chilling effects associated with awareness of government surveillance after the Snowden revelations in June 2013.⁸ The October 2013 survey of 520 American writers, later published in a report entitled “Chilling Effects: NSA Surveillance Drives U.S. Writers to Self-Censor” in November 2013, found that 28% of the writers surveyed had “curtailed or avoided” certain online activities due to “fear of surveillance” and another 12% “seriously considered” doing so; 24% “deliberately avoided certain topics in phone or email conversations,” and another 9% have “seriously considered it”; and 16% have refrained from “conducting Internet searches or visiting websites on topics that may be considered controversial or suspicious,” and another 12% have “seriously considered it.” A second PEN American survey of 772 international writers living in 50 countries, conducted from August to October 2014 and later published in a report entitled “Global Chilling: The Impact of Mass Surveillance on International Writers” in January 2015, found 34% of writers living in “free countries” have “avoided writing or speaking on a particular topic, or have seriously considered it, due to fear of government surveillance,” and another 42% have “curtailed or avoided activities on social media, or seriously considered it, due to fear of

⁸ FDR GROUP & PEN AMERICAN CENTER, CHILLING EFFECTS: NSA SURVEILLANCE DRIVES U.S. WRITERS TO SELF-CENSOR 3–4 (2013), http://www.pen.org/sites/default/files/Chilling%20Effects_PEN%20American.pdf; FDR GROUP & PEN AMERICAN CENTER, GLOBAL CHILLING: THE IMPACT OF MASS SURVEILLANCE ON INTERNATIONAL WRITERS (2015), http://www.pen.org/sites/default/files/globalchilling_2015.pdf.

government surveillance.” Again, these findings are consistent with my conclusions here concerning chilling effects on Wikimedia users.

20. Other recent qualitative and quantitative studies also document how government surveillance has a chilling effect on various online and offline activities. Karin Wahl-Jorgenson et al.’s qualitative and quantitative study of how surveillance impacts U.K. journalists, published in a peer-reviewed paper in 2017, found “many” journalists interviewed “cited personal experience with surveillance” and how it has had a “chilling effect on reporting practices.”⁹ Lina Dencik and Jonathan Cable’s qualitative study involving focus groups and interviews among journalists and activists in the United Kingdom, and published in a peer-reviewed journal in 2017, found evidence of surveillance chilling effects among participants “both for ordinary communication and for pursuing particular forms of social change or expressing dissent.”¹⁰ Paul Lashmar’s study involving interviews with journalists after the Snowden revelations, published in a peer reviewed journal in 2017, found all participants believed the existence of mass government surveillance would “chill” and deter confidential sources from speaking with journalists.¹¹ Additionally, Margot Kaminski and Shane Witnov’s 2015 law review article cites a range of other social science

⁹ Karin Wahl-Jorgensen, Lucy K. Bennett, & Jonathan Cable, *Surveillance Normalization and Critique: News coverage and journalists’ discourses around the Snowden revelations*, 5(3) DIGITAL JOURNALISM 386 (2017).

¹⁰ Lina Dencik and Jonathan Cable, *The Advent of Surveillance Realism: Public Opinion and Activist Responses to the Snowden Leaks*, 11 INTERNATIONAL JOURNAL OF COMMUNICATION 763 (2017).

¹¹ Paul Lashmar, *No more sources? The impact of Snowden’s revelations on journalists and their confidential sources*, 11(6) JOURNALISM PRACTICE 665 (2017).

research to support the assumption that surveillance has a chilling effect on speech and other behavior.¹²

21. Finally, my own survey-based study of over 1200 American Internet users, published in a peer-reviewed journal in 2017, found that awareness of possible government online surveillance has a chilling effect on a range of online activities, including 62% of participants being much less likely or somewhat less likely to “speak or write about certain topics online”; 78% indicating they would be “more careful” about what they “search for online”; and 60% being much less or somewhat less likely to share personally created content online, among other findings.¹³ I also found that participants with greater awareness of news about the NSA were statistically more chilled by government surveillance. All of these studies, and their findings, support my conclusions here concerning chilling effects on Wikimedia users.

V. WIKIPEDIA STUDY—DESIGN, METHOD, AND RESULTS

22. As part of my doctoral research at Oxford, I designed an empirical study to test chilling effects theory, focusing on Internet user interaction with Wikipedia, one of the world’s most viewed websites and an important source knowledge and information for people around the globe. The study examined Wikipedia article page view traffic before and after June 2013, to test the hypothesis that increased public awareness about NSA surveillance would lead to users being less likely to view Wikipedia articles on certain privacy-sensitive topics. This Part summarizes the study’s design, methodology, and findings.

¹² See Margot E. Kaminski & Shane Witnov, *The Conforming Effect: First Amendment Implications of Surveillance, Beyond Chilling Speech*, 49 U. RICH. L. REV. 465, 480 (2015).

¹³ Jonathon Penney, *Internet Surveillance, Regulation, and Chilling Effects Online: A Comparative Case Study*, 6(2) INTERNET POLICY REVIEW (2017).

A. Design

23. My design emphasizes a quasi-experimental approach—commonly accepted in social science—to understanding the impact of NSA surveillance activity on user behavior—studying behavior both immediately following the June 2013 revelations, described as “level” changes, and the longer-term rates of viewership, described as “trend” changes. Combined, the decrease in level and trend constitute the full “chilling effect” of NSA surveillance.

24. To test my hypothesis, I used the most robust experimental design available given the available information and context around the NSA surveillance revelations. The “gold-standard” approach, randomized control trials, for definitive proof of a causal relationship between the NSA activity and viewership is not possible in this instance, as the revelations were widespread and impossible to assign randomly. Thus, I chose a robust quasi-experimental approach common in social science research—an interrupted time series (ITS) design with segmented regression analysis. ITS offers a powerful statistical means to analyze whether page views for privacy-concerning Wikipedia articles were impacted by public awareness about NSA surveillance programs after the June 2013 Snowden revelations.¹⁴ In an ITS design, a series of observations on the same outcome, collected at equally spaced intervals over time, before and after an

¹⁴ For discussion of interrupted time series research design, see DONALD T. CAMPBELL, JULIAN C. STANLEY & NATHANIEL L. GAGE, EXPERIMENTAL AND QUASI-EXPERIMENTAL DESIGNS FOR RESEARCH 37–43 (1966) (discussing the components of time series designs and their methodological advantages and limitations); A.K. Wagner et al., *Segmented Regression Analysis of an Interrupted Time Series in Medication Use Research*, 27 J. CLINICAL PHARMACY & THERAPEUTICS 299 (2002) (discussing advantages of using of segmented regression analysis along with ITS design); Monica Taljaard et al., *The use of segmented regression in analysing interrupted time series studies: an example in pre-hospital ambulance care*, 9 IMPLEMENTATION SCIENCE 1 (2014); Mylene Lagarde, *How to do (or not to do) ... Assessing the impact of a policy change with routine longitudinal data*, 27:1 HEALTH POLICY AND PLANNING 76 (2012); Robert B. Penfold & Fang Zhang, *Use of Interrupted Time Series Analysis in Evaluating Health Care Quality Improvements*, 13:6 ACAD. PEDIATRICS S38 (2013) (discussing the advantages and limitations of employing time series analysis to understand and explore the impact of policy changes).

intervention, are used to test the immediate and longer term effect of the intervention.¹⁵ A major strength of the design is its ability to distinguish the impact or effect of an intervention from the “secular” trend, that is, the trend or changes that would have occurred over time but for the intervention.¹⁶

25. In order to be a valid indicator of causal change, an ITS design requires primarily that the point of “intervention”—in this case public knowledge of NSA surveillance activities—be clear and fairly immediate. The prior research cited above on public awareness supports this date as an unambiguous intervention point to use when testing this hypothesis, and I further lay out evidence of public awareness below. I also conducted ITS segmented regression on “comparator” articles with the same intervention point to further test the ITS approach with reasonable “control” groups, insulating the impacts of the intervention. The effects of an ITS are estimated by comparing both level and trend in the pre- and post-intervention periods through the use of segmented regression. Here, the time period studied before and after the June 2013 revelations is long enough to control for overall trends (for example, seasonality or other long-term changes in page views) and to determine if the decline in page views was temporary or more permanent and damaging. The data after the intervention have a different level and trend than the pre-intervention series, indicating public awareness of NSA surveillance impacted users’ Wikipedia use.

i. Intervention Selection

26. On June 6, 2013, stories in *The Guardian* and *The Washington Post* detailed previously undisclosed information and leaked classified documents about the surveillance practices of the

¹⁵ Taljaard, *id.*; Lagarde, *id.*

¹⁶ Taljaard, *id.*

United States and other Western governments.¹⁷ The June 2013 revelations (also, “Snowden revelations”) were followed by stories in June and subsequent months covering a vast array of government surveillance practices and operations.¹⁸

27. The revelations caused a “media and political storm,” receiving widespread coverage both in traditional and new media outlets, and sparking a “heated international debate” in the United States, Europe, Russia, and beyond.¹⁹

28. Governments cited the “War on Terror” to defend the surveillance programs, and this justification was reflected in media coverage of the Snowden revelations.²⁰ The Snowden leaks and coverage, as media scholar Vian Bakir has noted, highlighted the previously limited public awareness about government surveillance activities while also augmenting that awareness.²¹

29. Indeed, in the United States, the widespread media coverage has led to greater awareness and concern among the general public about government surveillance activities and

¹⁷ Glenn Greenwald, *NSA Collecting Phone Records of Millions of Verizon Customers Daily*, *GUARDIAN* (June 6, 2013), <http://www.theguardian.com/world/2013/jun/06/nsa-phone-records-verizon-court-order>; Barton Gellman & Laura Poitras, *U.S., British Intelligence Mining Data from Nine U.S. Internet Companies in Broad Secret Program*, *WASH. POST* (June 6, 2013), <http://www.washingtonpost.com/investigations/us-intelligence-mining-data-from-nine-us-internet-companies-in-broad-secretprogram/2013/06/06/3a0c0da8-cebf-11e2-8845-d970ccb04497story.html>; Glenn Greenwald, *NSA Collecting Phone Records of Millions of Verizon Customers Daily*, *GUARDIAN* (June 6, 2013), <http://www.theguardian.com/world/2013/jun/06/nsa-phone-records-verizon-court-order>.

¹⁸ See David Lyon, *Surveillance, Snowden, and Big Data: Capacities, Consequences, Critique*, 1 *BIG DATA & SOC’Y* 1, 2 (2014) (discussion and analysis of subsequent news stories covering surveillance revelations).

¹⁹ Vian Bakir, *Agenda Building, and Intelligence Agencies: A Systematic Review of the Field from the Discipline of Journalism, Media, and Communications*, 20 *INT’L J. PRESS/POL.* 131 (2015).

²⁰ *Id.* at 133; see Jie Qin, *Hero on Twitter, Traitor on News: How Social Media and Legacy News Frame Snowden*, 20 *INT’L J. PRESS/POL.* 166 (2015) (finding that a predominant “framing” in traditional news media coverage of the Snowden surveillance disclosures focused on national security terrorism, along with international relations).

²¹ See Bakir, *supra* note 19, at 133.

anti-terrorism efforts more generally. A Pew study in 2014 found that 87% of U.S. adults had heard something about “the government collecting information about telephone calls, e-mails, and other online communications” as part of “efforts to monitor terrorist activity” (with 43% hearing “a lot” and 44% hearing “a little”); another 80% agreed or strongly agreed that “Americans should be concerned” about government surveillance.²² This increased awareness of online government surveillance presented a unique opportunity for chilling effects research. The surveillance revelations and widespread surrounding publicity constituted an “exogenous shock,” or focal point, to study the effects of surveillance on Internet use behavior.

30. I examined view count data for privacy-sensitive Wikipedia articles before and after June 2013, to see if the greater awareness about potential NSA surveillance online may have “chilled” or deterred Internet users from viewing such privacy-sensitive content on Wikipedia. In other words, I tested the following hypothesis: due to chilling effects caused by increased awareness of NSA surveillance online, including Upstream surveillance, Internet users will be less likely to view Wikipedia articles on topics that raise privacy-related concerns.

ii. Data Selection

31. To select privacy-sensitive Wikipedia articles to track in the study, I matched 48 Wikipedia articles with a list of “terrorism” related keywords that the U.S. Department of Homeland Security (DHS) uses to track and monitor social media.²³ This DHS keyword list

²² MARY MADDEN, PUBLIC PERCEPTIONS OF PRIVACY AND SECURITY IN THE POST-SNOWDEN ERA, PEW RES. INTERNET PROJECT 2–3 (Nov. 12, 2014), http://www.pewinternet.org/files/2014/11/PI_PublicPerceptionsofPrivacy_111214.pdf.

²³ The keyword list has been publicly available online since 2012, and was updated and re-posted by the DHS in 2013: U.S. DEP’T OF HOMELAND SEC., NATIONAL OPERATIONS CENTER MEDIA MONITORING CAPABILITY ANALYST’S DESKTOP BINDER (2011), <https://epic.org/foia/epic-v-dhs-media-monitoring/Analyst-Desktop-Binder-REDACTED.pdf>. This was later updated and posted online by the DHS. See U.S. DEP’T OF HOMELAND SEC., PRIVACY IMPACT ASSESSMENT FOR THE OFFICE OF

categorizes certain search terms or keywords in relation to a range of different issues such as “Health Concern,” “Infrastructure Security,” and “Terrorism.” Forty-eight Wikipedia articles were included in the study that corresponded with DHS keywords listed as relating to “terrorism” (“Terrorism Wikipedia Article Group”).²⁴ The Terrorism Wikipedia Article Group included articles on “dirty bomb,” “suicide attack,” “nuclear enrichment,” and “eco-terrorism,” among others.²⁵ Keywords relating to “terrorism” were used because the U.S. Government cited terrorism as a key justification for its online surveillance practices and media coverage largely framed the Snowden revelations around terrorism and national security.²⁶

32. The DHS keyword list was used for pragmatic methodological reasons, that is, a non-random means to select groupings of Wikipedia articles. It was hypothesized that Wikipedia articles coinciding with these terrorism-related topic keywords may include the kind of information or content users may avoid accessing in light of potential government surveillance. To test that hypothesis, a survey of 415 independent Internet users was also conducted to provide additional evidence that Wikipedia articles associated with these “terrorism” keywords raised

OPERATIONS COORDINATION AND PLANNING (2013), https://www.dhs.gov/sites/default/files/publications/privacy/PIAs/privacy_pia_ops_NOC%20MMC%20Update_April2013.pdf.

²⁴ Locating Wikipedia articles coinciding with each keyword was done manually; there was a Wikipedia article that corresponded perfectly with the vast majority of keywords in the “terrorism” DHS keyword category. There were a few discrepancies, however: the Wikipedia article “environmental terrorism” was used for the keyword “environmental terrorist”; the keyword “target” was excluded as they were too many potentially corresponding Wikipedia articles; the Wikipedia article “political radicalism” was used for the DHS keyword “radicalism” because there were too many potentially corresponding articles; the keyword “enriched” was excluded as it was redundant with the included Wikipedia article “nuclear enrichment”; and there were also no Wikipedia articles corresponding with DHS keywords “weapons cache,” “suspicious substance,” “plot,” and “homegrown.” Wikipedia articles corresponding with the remaining 48 DHS “terrorism”-related keywords were all included in the study.

²⁵ See *infra* Appendix A, Table 11 (“48 Terrorism Article Group” list), Table 12 (privacy-sensitive score for each of 48 articles).

²⁶ See *supra* note 20.

privacy concerns for Internet users aware of government surveillance online. Respondents in the survey were recruited through Amazon's Mechanical Turk ("MTurk"), a platform researchers have used to carry out a range of empirical and social science research, including survey research.²⁷

33. A total of 415 independent Internet users participated in the crowdsourcing project through MTurk, and they rated each of the 48 topics to which the Wikipedia articles in the data set corresponded. The survey questions were designed to explore the likelihood that the topics would raise privacy-related concerns for Internet users.²⁸ To minimize self-selection and response bias (a limitation difficult to avoid in non-random sampling), the brief questionnaires were described as merely an "Online Information Study" to potential MTurk participants. The results from the survey are set out in Table 10 and Table 12 of Appendix A.

iii. Data Collection

34. Having selected the 48 Terrorism Wikipedia Articles Group, the study aggregated Wikipedia article view count data on a monthly basis for these Wikipedia articles over a 32-month period, from the beginning of January 2012 to the end of August 2014. The study used data for English language article view counts from stats.grok.se, an online portal that provided access to non-mobile Wikipedia article view count data on a daily and monthly basis, and which was based

²⁷ Gabriele Paolacci & Jesse Chandler, *Inside the Turk: Understanding Mechanical Turk as a Participant Pool*, 23:3 CURRENT DIRECTIONS PSYCHOL. SCI. 184, 186 (2014), <http://cdp.sagepub.com/content/23/3/184.abstract>; Matthew J.C. Crump, John V. McDonnell & Todd M. Gureckis, *Evaluating Amazon's Mechanical Turk as a Tool for Experimental Behavioral Research*, 8:3 PLOS ONE e57410, e57410 (2013), <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0057410>.

²⁸ Respondents were asked to indicate on a scale of 1 to 5 (1 being very unlikely and 5 being very likely): how likely they thought they would be in trouble if the U.S. government found out that they accessed information about the topic in question (Government Trouble Rating); how "privacy-sensitive" they viewed each topic as (in this case, 5 being highly sensitive and 1 not at all) (Privacy-Sensitive Rating); how likely they would be to delete the browser history on their computer after accessing information about the topic (Browser Delete Rating); and how likely they would avoid viewing or accessing information on the topic if they knew the Government was monitoring people's activities online (Avoidance Rating).

on a Wikimedia maintained page view dataset. The portal has been used in a range of peer-reviewed research.²⁹ These Wikipedia article views, or “page views,” represent the number of times a Wikipedia article was “requested” from Wikimedia’s servers (such as by a non-mobile web browser user clicking on a link to load the Wikipedia article).³⁰ The Terrorism Wikipedia Articles generated nearly 81 million total page views over the course of the 32-month study period.

B. Method of Analysis

35. A strength of an ITS design is that there are multiple measures before and after the intervention in the time series; such multiplicity controls for changes in level and trends in the data and increases the robustness of results.³¹ Thus, my study used Wikipedia article view counts to create a time series over a 32-month period from January 2012 to August 2014 (n=32), with the June 2013 NSA surveillance revelations as the “intervention” that interrupts the time series, dividing it into two segments: before and after June 2013. The study also isolated the impact and lasting effect of the intervention by similarly analyzing the level and trend data for “comparator” Wikipedia articles groups.

²⁹ Research has included studies involving market trends, health information access, and social-political change, among others. *See, e.g.,* Michela Ferron & Paolo Massa, *WikiRevolutions: Wikipedia as a Lens for Studying the Real-Time Formation of Collective Memories of Revolutions*, 5 INT’L J. COMM. 1313 (2011) (examining Wikipedia as a “lens” through which to understand real-time social and political upheaval and change); Michaël R. Laurent & Tim J. Vickers, *Seeking Health Information Online: Does Wikipedia Matter?* 16:4 J. AM MED. INFORMATICS ASS’N 471 (2009) (using Wikipedia traffic data from stats.grok.se to study the relevance of Wikipedia to how people access to health information online); Helen Susannah Moat et al., *Quantifying Wikipedia Usage Patterns Before Stock Market Moves*, 3 SCI. REP. 1 (2013) (investigating Wikipedia article traffic and usage in relation to stock market changes).

³⁰ The raw Wikipedia article page view statistics track total views or loads of the Wikipedia articles or pages in question, not unique visitors. *See Pageview Statistics*, WIKIPEDIA.ORG, https://en.wikipedia.org/wiki/Wikipedia:Pageview_statistics.

³¹ *See* CAMPBELL, STANLEY & GAGE, *supra* note 14, at 37; Lagarde, *supra* note 14; Penfold & Zhang, *supra* note 14, at S39; Wagner et al., *supra* note 14, at 308.

36. Two statistical approaches were used to analyze the interrupted time series. I first conducted a simple comparison of the mean number of views for all the Wikipedia articles in the dataset before and after June 2013. Second, I used a segmented regression analysis to estimate article view trends for the pre/post time segments. The results are reported and analyzed in what follows, with statistically significant findings tabulated and presented graphically.³²

37. Autocorrelation is the tendency for observations taken over a period of time to be correlated or related to each other. It can be a potentially confounding factor for statistical results arrived at through an ITS design.³³ My study corrected for auto-correlation using the Prais-Winsten method for the second set of results described below—the 47 Wikipedia Terrorism Article Group—and one comparator group, the 34 infrastructure-related Article Group.³⁴ *See infra* Part C.ii-iii (results for these two sets of article groups).

³² A statistically significant result is a result that is not attributed to random chance. Statistical hypothesis testing is used to determine whether the result of a data set is statistically significant. This test provides a probability value or *p*-value, which represents the probability that random chance could explain the result. Generally, a *p*-value of 0.05 or lower is considered to be statistically significant. It means there is a less than 5% chance that the results are explained by chance, and thus this low probability means we can reject to “null” hypothesis, which assumes that any effect or result is due to chance. A *p*-value of 0.01 or lower, which means there is a less than 1% chance that the results are explained by chance, is considered to be highly statistically significant. John Concato & John A Hartigan, *P values: from suggestion to superstition*, 64 JOURNAL OF INVESTIGATIVE MEDICINE 1166, 1166–67 (2016); Valen E. Johnson, *Revised standards for statistical evidence*, 110:48 PNAS 19313, 19313, 19316 (2013) (describing the “classical hypothesis tests”, including “highly significant” *p*-value level at 0.01); David M. Lane, *Significance Testing*, in (David M Lane, ed.) ONLINE STATISTICS EDUCATION: AN INTERACTIVE MULTIMEDIA COURSE OF STUDY 376, 376–77 (2018), http://onlinestatbook.com/Online_Statistics_Education.pdf.

³³ The Durbin-Watson Test Statistic provides a diagnostic test for autocorrelation. *See* Lagarde, *supra* note 14 at 77, 79. A general rule of thumb is a Durbin-Watson Test result of 1.5 to 2 discloses no autocorrelation concern, while a result closer to 1 (or less) or 3 (or more) may suggest autocorrelation. *See* W. PAUL VOGT & R. BURKE JOHNSON, A DICTIONARY OF STATISTICS & METHODOLOGY: A NONTECHNICAL GUIDE FOR THE SOCIAL SCIENCES 118 (2011).

³⁴ The Durbin-Watson autocorrelation diagnostic test only showed autocorrelation concerns for these two Article Groups. The Prais-Winsten method is the recommended statistically method to control for auto-correlation. *See* Lagarde, *supra* note 14 at 77, 79.

C. Results

38. The results described below provide evidence of a chilling effect associated with the June 2013 public awareness about NSA surveillance programs.

i. First Set of Results: 48 Terrorism Wikipedia Article Group

39. The average monthly views for all 48 Wikipedia articles in the Terrorism Wikipedia Article Group combined show a noteworthy decrease in views after June 2013. Figure 1 illustrates this decline in page views pre- and post- June 2013, over the course of the 32-month period from January 2012 to August 2014.

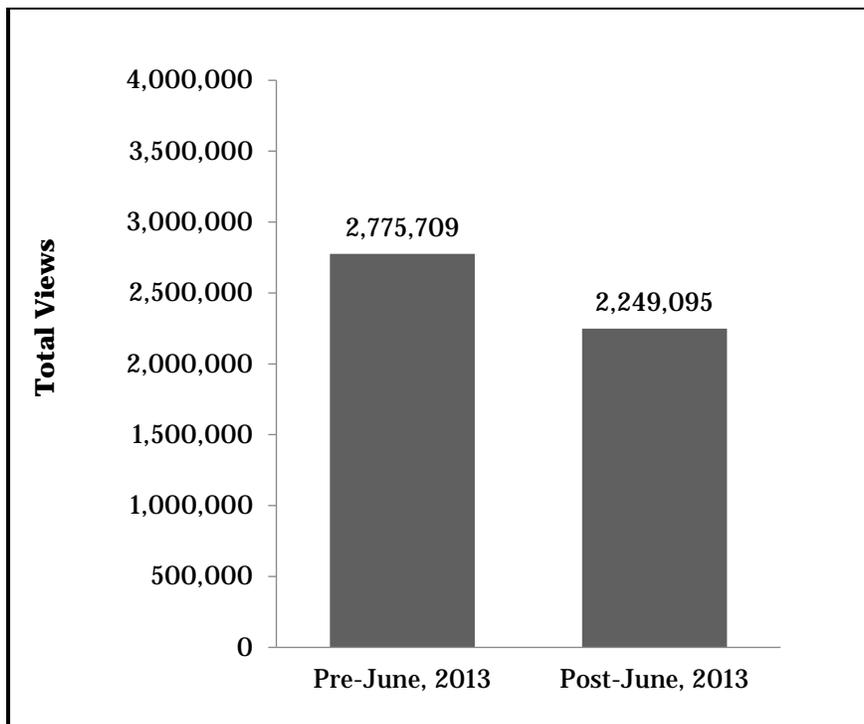


Figure 1. Average Monthly View Counts, Pre- and Post- June 2013. The reduction after the June 2013 surveillance revelations is consistent with a chilling effect.

40. The difference in mean monthly page views before and after June 2013 is notable—a reduction of 526,614 in the average monthly views for the articles, which represents approximately

a 19.5% drop in article view counts. This difference is statistically significant³⁵ and consistent with a chilling effect. To strengthen this inference, further analysis was done using segmented regression, a statistical method of analysis that controls for other variables.

41. The results based upon the more robust segmented regression statistical analysis are also consistent with the hypothesized chilling effects. The first set of results (*see* Table 1 of Appendix A) show that, based on the monthly article view trend existing before June 2013, there was a reduction of 995,085 article views in June 2013, which was a large, sudden, and statistically significant drop in the total view counts for the 48 Terrorism Wikipedia Article Group. The predicted article views for the month of June 2013 based on the pre-June monthly article view trends was 3,199,053, meaning the 995,085 reduction represents an immediate drop-off of 31%. The 31% drop in total view counts is consistent with an immediate and noteworthy chilling effect following the June 2013 revelations.

42. The chilling effect conclusion is further strengthened once the “*Ham*as” Wikipedia article was excluded from the 48 Terrorism Wikipedia Article Group. The *Ham*as Wikipedia article was a significant outlier,³⁶ with view counts skyrocketing in November 2012 and July 2014,

³⁵ “Cohen’s *d*” is a test used to determine the “effect size” of a difference between two means, that is, whether the difference (as here) is substantial enough to be meaningful. It is calculated by dividing the means by the standard deviation. A result of 0.8 or more is considered a large effect. Here, the Cohen’s *d* value was over 1. *See* David M. Lane, *The Difference Between Two Means*, in (David M Lane, ed.) ONLINE STATISTICS EDUCATION: AN INTERACTIVE MULTIMEDIA COURSE OF STUDY 349, 349 (2018), http://onlinestatbook.com/Online_Statistics_Education.pdf.

³⁶ Model diagnostics identified two influential outlier data points. The first outlier concerned view counts for the Wikipedia articles in the data set in November 2012 (Cooks D value = 0.1644942), and the other was for view counts in July 2014 (Cooks D value = 0.4121233). Examining more closely the view counts for the entire 48 Wikipedia articles in group, the *Ham*as article stood out: it had view counts of 928,533 for November 2012, and then 1,220,490 for July 2014, which are far beyond the mean number of view counts for the article across all months in the study (134,574 monthly views). If we exclude these two outlier months, the contrast between the view counts for the *Ham*as article during those two months and other months in the dataset is even starker, with the mean being 71,912. An assessment that these view counts were outliers is confirmed by the z-scores for those two data points (3.01 and 4.11, respectively).

which corresponded with Gaza conflicts between Hamas and the Israeli Defense Force during those months.³⁷ Once this single Wikipedia article was excluded, an even clearer picture emerged from the data.

ii. Second Set of Results: 47 Wikipedia Terrorism Article Group (Without Hamas Outlier)

43. Similar to the first set of results, this second set of results (set out in Table 2 of Appendix A) for the 47 Terrorism Wikipedia Article Group (excluding the Hamas article outlier) also showed an immediate and statistically significant decrease in view counts following increased public awareness about NSA surveillance in June 2013: an immediate drop of 693,617 total views. Using the predicted 3,034,721 article views for June 2013 based on the pre-June trend, this reduction represents an immediate drop-off of 23%. This similarly sharp and sudden decrease in view counts after June 2013 is consistent with a chilling effect.

44. Importantly, the second results also showed a statistically significant change in the overall trend in the month-to-month views of the 47 Terrorism Wikipedia Articles Group. Rather than increasing on a monthly basis, the page view trend after June 2013 is decreasing. Before June 2013, the data show an increase of 41,421 views per month. After June 2013, the data show a decrease of 67,513 in views per month. This change is important because it means that the public awareness about NSA surveillance programs is associated with a longer term decrease in views

³⁷ For a “timeline” of the conflict and the IDF operation against Hamas, see *TIMELINE: Israel Launches Operation Pillar of Defense Amid Gaza Escalation*, HAARETZ (Nov. 20, 2012), <http://www.haaretz.com/news/diplomacy-defense/timeline-israel-launches-operation-pillar-of-defense-amid-gaza-escalation.premium-1.479284>; Amos Harel, *At the Crossroads of a Gaza Ground Operation*, HAARETZ (Jul. 12, 2014), <http://www.haaretz.com/news/diplomacy-defense/.premium-1.604601>. The notion that major conflicts, including the Gaza conflicts, draw “significantly higher levels” of activity on the social media platform Twitter is consistent with findings from previous research. See Thomas Zeitzoff, John Kelly & Gilad Lotan, *Using Social Media to Measure Foreign Policy Dynamics: An Empirical Analysis of the Iranian–Israel Confrontation (2012–13)*, 52 J. PEACE RES. 368, 372 (2015).

for the Wikipedia articles studied, consistent with a longer term chilling effect; Figure 3 illustrates this trend. Figure 2 below illustrates both the statistically significant drop off and shift in the overall trend in the view count data after June 2013.

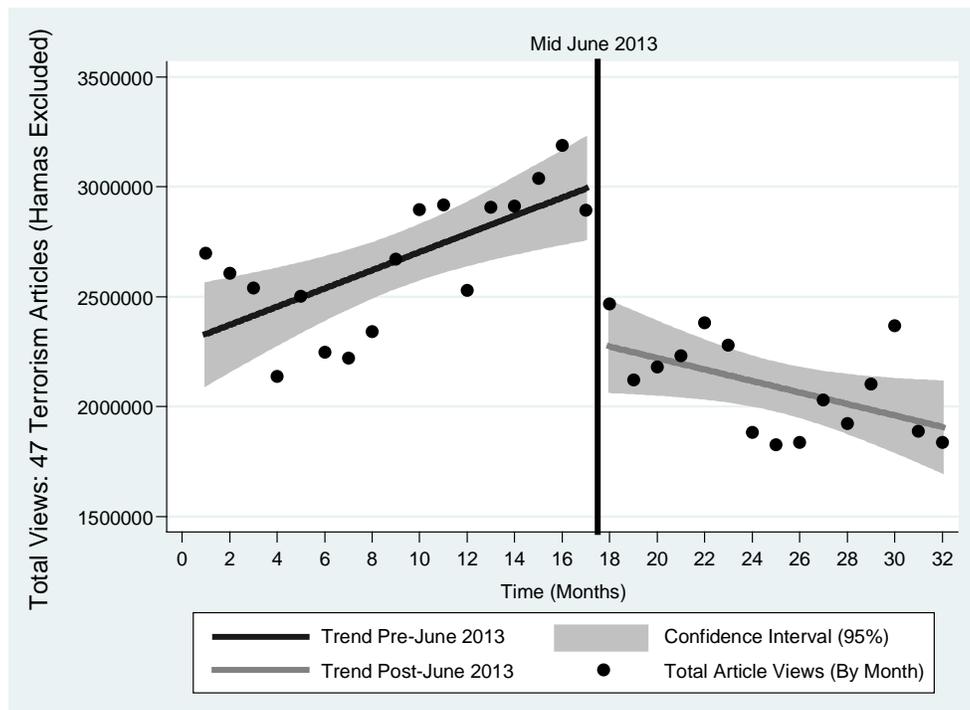


Figure 2. *Pre and Post June 2013 Article View Trends (Outliers Excluded).* The sudden drop in views and trend shift—from increasing monthly views over time to decreasing after June 2013—is consistent with a significant and long-term chilling effect.

45. The shifting trend of the data, which in this case is a sudden and immediate drop, is particularly consistent with a chilling effect arising from the public awareness about NSA surveillance after the June 2013 revelations. If the outlier view count data relating to the Hamas article is excluded, the decline in page views is slightly less substantial (e.g., 23% compared to the 31% drop-off if the Hamas data remains in the study) but in either case, a substantial and statistically significant decrease.

46. Moreover, there is a change in the overall trend in the data. Before June 2013, total views of the Wikipedia articles in the dataset slowly increase each month. After June 2013,

however, with the increased public awareness about NSA surveillance programs, there is a change in the “slope,” or data trend. Without the outlier “ Hamas” view counts in July 2014, the total views for the Terrorism Wikipedia Articles Group are on a downward path as seen in Figure 2. All of this is consistent with a chilling effect associated with the public awareness about NSA surveillance programs due to June 2013 revelations and reporting—both the reduction in view counts in June 2013 and the overall shift in the monthly article view trend thereafter.

47. The data findings in Table 2 and visualized in Figure 2 offer evidence demonstrating a long-term chilling effect due to the June 2013 surveillance revelations, which is not only associated with an immediate drop in views but also a long-term chill on accessing these Wikipedia articles, as users accessed information on these topics less and less frequently.

iii. Third Set of Results: 31 Most Privacy-Sensitive Wikipedia Terrorism Article Group

48. An additional analysis of the 31 most privacy-concerning Wikipedia articles in the 47 Terrorism Wikipedia Article Group (the articles associated with keywords receiving the highest sensitivity responses in the MTurk survey described in ¶ 33)³⁸ strengthens the chilling effects hypothesis. Using the 983,860 predicted article views for June 2013 (based on the pre-June monthly view trend), showed an even greater reduction in views in June 2013 of 26% (highly statistically significant at $p < 0.01$ level) as well as a highly statistically significant reversal in the overall month to month view counts, due to a reduction of 41,554 monthly views after June 2013. These results, where more privacy-concerning Wikipedia articles lead to an even greater statistically significant view count reduction in June 2013, as well as a likewise reversal in the overall article views on a monthly basis after June 2013, is consistent with a chilling effect

³⁸ This set includes the 31 terrorism-related articles, among the full-set of 48, that had a combined average privacy rating score above 2 from the MTurk survey—the median score for the set of 48. *See infra* Appendix A, Table 13 (“31 Article Group” list including combined privacy-sensitive score).

hypothesis. Correcting for auto-correlation using the Prais-Winsten method for the 47 Terrorism Wikipedia Article Group did not change these key findings.

49. Further strengthening this chilling effects hypothesis, overall Wikipedia article view traffic trends do not explain these results. Identical analysis of view counts for the English Wikipedia home page (non-mobile platforms data) for the same 32-month period can be found at Table 3 of Appendix. There are clear differences. First, while there is a reduction in views for the English Wikipedia homepage in June 2013, the reduction is significantly less (16% if one considered predicted views for June 2013 based on previous trends). So, even assuming a full 16 percentage points in the total 23% drop off for the 47 terrorism-related Wikipedia articles³⁹ simply reflects overall English Wikipedia trends, that still leaves 7% of the reduction in article views in June 2013. Similarly, using the 31 most privacy-concerning terrorism-related Wikipedia articles, which as noted above had a 26% reduction in June 2013,⁴⁰ would leave a 10% drop unaccounted for by background trends. This is more than twice the noteworthy and statistically significant 4% reduction in Google privacy-sensitive searches that Marthews and Tucker found after June 2013.

50. Moreover, while there is a statistically significant change in monthly article views after June 2013 for the English Wikipedia Homepage, there are again significant differences. The monthly rate of change before June 2013 for the homepage was less than 1 percent of views per month (0.97%) and after June 2013, views reduced on a monthly basis by 0.22%. By stark contrast, the results for the 31 most privacy-concerning Wikipedia Terrorism Articles Group showed that before June 2013, there was a statistically significant monthly increase in views that amounted to a 6% overall increase in article views per month, and after June 2013, monthly views decreased

³⁹ See *supra* ¶ 43.

⁴⁰ See *supra* ¶ 48.

by 2% a month. In other words, the 31 most privacy-concerning article views for these articles were increasing at six times the rate of the English Wikipedia homepage on a monthly basis, and after June 2013 were decreasing monthly at ten times the rate of the English Wikipedia homepage. These differences all suggest that these findings for the 47 Terrorism Wikipedia Articles Group and the 31 most privacy-concerning Terrorism Wikipedia Articles Group reflect more than mere background Wikipedia trends.⁴¹

51. A further analysis of the 31 most privacy-concerning Terrorism Articles Group, which includes English Wikipedia Homepage views (non-mobile platforms data) as a control (see Table 8), provides even more support. Using the 1,012,950 predicted article views for June 2013, these results also showed a greater reduction in views in June 2013 of 31% (highly statistically significant at $p < 0.01$ level), as well as a highly statistically significant reversal in the overall month-to-month view counts, due to a reduction of 46,226 monthly views after June 2013. An identical analysis of the 47 Terrorism Articles Group, also with English Wikipedia Homepage views as a control (see Table 9), yielded a 20% highly statistically significant reduction in views in June 2013 and a highly statistically reversal in overall month-to-month view, due to a reduction of 60,504 monthly views after June 2013. There was also no correlation found between either the 31 or 47 Terrorism Article Groups and the English Wikipedia Homepage views. These findings are consistent with a chilling effects hypothesis.

iv. Comparator Wikipedia Article Groups

52. The conclusions of this statistical analysis are further strengthened by analyses carried out on three different “comparator” groups of Wikipedia articles. Using the same statistical methods described above, analyses of the comparator groups showed neither a statistically

⁴¹ Marthews & Tucker, *supra* note 4, at 3.

significant reduction in article views in June 2013, nor a shift in the overall trend in article views after that month. These comparator Wikipedia article groups included a group of 25 security-related Wikipedia articles;⁴² 34 infrastructure-related Wikipedia articles;⁴³ and a group of the 26 most popular Wikipedia articles in 2012, 2013, and 2014.⁴⁴

53. As Figure 3 illustrates, unlike the 47 Terrorism Wikipedia Article Group, results from an identical analysis for the group of 25 domestic “security”-related Wikipedia articles showed no statistically significant reduction in article views in June 2013 and no statistically significant change in the trend in the data.

⁴² The methodology for selecting Wikipedia articles for the security comparator group was the same as that used for the original 48 Wikipedia Terrorism articles. Wikipedia articles corresponding with keywords set out in the DHS keyword list for domestic security (“DHS & Other Agencies” keyword category) were included. Locating Wikipedia articles coinciding with each keyword was again done manually, and similarly, there was a Wikipedia article that corresponded perfectly with the vast majority of keywords in the “DHS & Other Agencies” keyword category. The 25 Wikipedia articles are included in Appendix A at Table 14.

⁴³ The methodology for selecting Wikipedia articles for the infrastructure group was the same as for the terrorism and domestic security Wikipedia article groups. Here, Wikipedia articles were selected that corresponded to DHS keywords for the “Infrastructure Security” keyword category. Again, locating articles was straightforward, as there was a Wikipedia article that corresponded naturally with the vast majority of keywords in the “Infrastructure Security” keyword category. All 34 Wikipedia articles are included in Appendix A at Table 15.

⁴⁴ The top 10 most popular English Wikipedia articles (in terms of article views) for each of years 2012, 2013, and 2014 (the years included in the 32-month study period) were included in the “popular” Wikipedia article comparator group. This was determined by consulting the Wikimedia Tool Lab’s “Wikitrend” reports (<https://tools.wmflabs.org/wikitrends>), resulting in a set of 26 Wikipedia articles comparator group, including articles like “Google,” “Facebook,” “Breaking Bad,” “Game of Thrones,” and “World War II.” Certain Wikipedia articles like “Facebook” and “Google” were in the top ten most popular articles for more than one year, hence 26 articles instead of 30. The 26 popular articles group is listed in Appendix A at Table 16.

Figure 3. *The highly statistically significant (at the $p < 0.01$ level) substantial view count reduction in June 2013 as well as the shift to fewer monthly article views after June 2013 for the terrorism articles is consistent with a chilling effect. There are no statistically significant findings for the comparator article groups.*

Wikipedia Article Group	Monthly trend pre-June 2013	Change in view count in June 2013	Change in monthly trend after June 2013	Model Fit
47 Terrorism Articles	41,420.51** $p=0.00$	-693,616.9** $p=0.00$	-67,513.1** $p=0.00$	Yes $F=0.00$
25 Security Articles	11,135.0 $p=0.187$	-24,638.34 $p=0.84$	-20,465.87 $p=0.12$	No $F=0.45$
34 Infrastructure Articles	-11,079** $p=0.00$	-12,721.0 $p=0.77$	2,431.84 $p=0.61$	Yes $F=0.00$
26 Popular Articles	-48,458 $p=0.798$	-1,716,643 $p=0.53$	177,324.7 $p=0.551$	No $F=0.79$

Statistically significant findings in bold (* $p < 0.05$, ** $p < 0.01$).

54. In fact, the overall model fit for this analysis was not significant, meaning the public awareness about NSA surveillance programs in June 2013 revelations has no value for predicting article views and view trends for these 25 domestic security related articles.⁴⁵

55. The 34 “infrastructure” Wikipedia article comparator group results also showed no statistically significant reduction in article view counts after the June 2013 revelations, nor any statistically significant change in the overall month-to-month trend in the view count data after that month. Correcting for autocorrelation in these results does not change these key observations.

56. Finally, the results for an identical analysis on the 26 “popular” Wikipedia article comparator group likewise showed no statistically significant reduction in views or any monthly

⁴⁵ When the F-test or F-value for a regression analysis result is not significant (greater than 0.05) then the analysis (and results) are not reliable and have no predictive value. See Karen Grace-Martin, *Assessing the Fit of Regression Models*, THE ANALYSIS FACTOR: MAKING STATISTICS MAKE SENSE (Online), <https://www.theanalysisfactor.com/assessing-the-fit-of-regression-models/>; MARKO SARSTADT AND ERIK MOOI, A CONCISE GUIDE TO MARKET RESEARCH: THE PROCESS, DATA, AND METHODS USING IBM SPSS STATISTICS 212 (2014).

change in view count trends in relation to June 2013. Like the security comparator groups, the model fit for this analysis was not significant.

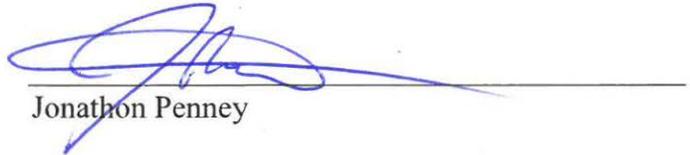
57. These results are all consistent with a chilling effects hypothesis. Unlike the privacy-concerning 47 Terrorism Wikipedia Article Group, the comparator Wikipedia article groups showed no comparable page view reductions in June 2013, nor a change in view count data trends after June 2013. These comparator results strengthen the conclusion that the statistically significant shift in article view counts post-June 2013 for the privacy-concerning Wikipedia articles is attributable to NSA-related chilling effects, and not to other background or confounding variables.

VI. CONCLUSION

58. In sum, I conclude that the highly statistically significant and substantial reduction in view counts in June 2013, as well as the highly statistically significant trend reversal in the monthly article views after June 2013, for both the 47 Terrorism Wikipedia Articles Group and the 31 most privacy-concerning Terrorism Wikipedia Articles Group, offers compelling evidence that increased public awareness about NSA surveillance programs in June 2013 had a chilling effect on Wikipedia users.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Executed on December 18, 2018 in Halifax, Canada.



Jonathon Penney

APPENDIX A**Table 1: First Results, 48 Terrorism-related Articles Study Group**

(No autocorrelation concerns with Durbin-Watson Test of 1.50)

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	23522364**	171743.1	0.000
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	47038.28**	16760.41	0.009
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-995085.2*	241987.6	0.000
Change in Views Immediately After 6/2013			
Change in slope (β_3)	-35517.69	26272.41	0.187

* $p < 0.05$, ** $p < 0.01$ **Table 2: Second Results, 47 Terrorism-related Articles (Hamas Excluded)**

Durbin-Watson Test Result (1.33)

Results correcting auto-correlation (Prais-Winsten method) in parenthesis

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	2289153** (2349041.0)	109751.5 (144474.7)	0.000 (0.000)
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	41420.51** (34813.9)*	10710.65 (13824.52)	0.001 (0.02)
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-693616.9** (-594574.2)**	154640.9 (186174.7)	0.000 (0.00)
Change in Views Immediately After 6/2013			
Change in slope (β_3)	-67513.1** (-65683)**	16789.25 (22514.01)	0.000 (0.00)

* $p < 0.05$, ** $p < 0.01$

Table 3: Global English Wikipedia Article Views, Non-Mobile (Millions)

(No autocorrelation concerns with Durbin-Watson Test of 1.89)

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	7385.11**	204.48	0.000
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	70.57**	19.95	0.000
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-1397.96**	288.11	0.007
Change in Views Immediately After 6/2013			
Change in slope (β_3)	-90.97**	31.28	0.000
Change in Views (Monthly) After 6/2013			

* $p < 0.05$, ** $p < 0.01$ **Table 4: Full 25 Domestic Security-related Wikipedia Articles Comparator Group**

Note: This model's fit was not significant (Prob > F = 0.447)

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	708187.3**	84366.66	0.00
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	11135.07	8233.34	0.187
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-24638.34	118873.4	0.837
Change in Views Immediately After 6/2013			
Change in slope (β_3)	- 20465.87	12905.99	0.124
Change in Views (Monthly) After 6/2013			

* $p < 0.05$, ** $p < 0.01$

Table 5: 34 Infrastructure Security-related Articles Comparator Group

Durbin-Watson Test Result (1.09)
Results correcting auto-correlation (Prais–Winsten method) in parenthesis

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	771772.3** (785975.7**)	30948.71 (42559.45)	0.000 (0.000)
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	-11079.82** (-11847.06**)	3020.28 (4040.79)	0.001 (0.007)
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-12721.07 (-20678.15)	43607.01 (52816.07)	0.773 (0.698)
Change in Views Immediately After 6/2013			
Change in slope (β_3)	2431.84 (3464.15)	4734.38 (6663.93)	0.612 (0.607)
Change in Views (Monthly) After 6/2013			

* $p < 0.05$, ** $p < 0.01$

Table 6: 26 Most Popular Wikipedia Articles (2012/2013/2014) Comparator Group

Note: This model's fit was not significant (Prob > F = 0.7938)

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	2.58x10⁷**	1920624	0.000
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	-48458.14	187433.7	0.798
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-1716643	2706177	0.531
Change in Views Immediately After 6/2013			
Change in slope (β_3)	177324.7	293807.6	0.551
Change in Views (Monthly) After 6/2013			

* $p < 0.05$, ** $p < 0.01$

Table 7: 31 Terrorism-related Wikipedia Articles Study Group

No autocorrelation concerns with Durbin-Watson Test of 1.52

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	471146.3**	45966.52	0.000
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	28484.1**	4485.87	0.000
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-253556.5**	64767.24	0.000
Change in Views Immediately After 6/2013			
Change in slope (β_3)	-41554.21**	7031.73	0.000
Change in Views (Monthly) After 6/2013			

* $p < 0.05$, ** $p < 0.01$ **Table 8: 31 Terrorism-related Wikipedia Articles Study Group (with Control)**

Results Controlling For English Wikipedia Homepage Views (Raw, Non-Mobile)

No autocorrelation concerns with Durbin-Watson Test of 1.62

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	850386.4*	314365.4	0.01
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	32108.35**	5349.31	0.000
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	- 325345**	87120.19	0.000
Change in Views Immediately After 6/2013			
Change in slope (β_3)	-46226.01 **	7955.04	0.000
Change in Views (Monthly) After 6/2013			
Global English Wikipedia Views Control	-51.35	42.11	0.233
Correlation with English Wikipedia Homepage Views (Non-mobile; in millions)			

* $p < 0.05$, ** $p < 0.01$

Table 9: 47 Terrorism-related Wikipedia Articles Study Group (with Control)

Results Controlling For English Wikipedia Homepage Views (Raw, Non-Mobile)

Durbin-Watson Test Result (1.29)

Results correcting auto-correlation (Prais–Winsten method) in parenthesis

Independent Variable	Coefficients	Standard Error	P-value
Coefficient (β_0)	1720195 * (1657787*)	762994.1 (715964.1)	0.03 (0.03)
Expected Total Views at Beginning of Study			
Pre June 2013 trend in data (β_1)	35983.25 * (29381.58)	12983.28 (14928.98)	0.01 0.05
Change in Views (Monthly) Before 6/2013			
Change in level (β_2)	-585915.8* (-490610*)	211448.8 (212517.7)	0.01 0.03
Change in Views Immediately After 6/2013			
Change in slope (β_3)	- 60504.2** (-56997.38*)	19307.63 (24479.42)	0.00 0.03
Change in Views (Monthly) After 6/2013			
Global English Wikipedia Views Control	77.04 (92.61)	102.22 (93.44)	0.46 (0.33)
Correlation with English Wikipedia Homepage Views (Non-mobile; in millions)			

* $p < 0.05$, ** $p < 0.01$ **Table 10: Independent Rating Results of 415 Internet Users**

Rating Type	Mean Rating
Government Trouble Rating	1.95
Privacy-Sensitive Rating	2.01
Browser History Delete Rating	2.00
Avoidance Rating	2.62

Table 11: 48 Terrorism Article Group List

Topic Keywords	Wikipedia Articles
Al Qaeda	https://en.wikipedia.org/wiki/Al-Qaeda
terrorism	https://en.wikipedia.org/wiki/terrorism
terror	https://en.wikipedia.org/wiki/terror
attack	https://en.wikipedia.org/wiki/attack
Iraq	https://en.wikipedia.org/wiki/iraq
Afghanistan	https://en.wikipedia.org/wiki/afghanistan
Iran	https://en.wikipedia.org/wiki/iran
Pakistan	https://en.wikipedia.org/wiki/pakistan
agro	https://en.wikipedia.org/wiki/agro
Environmental terrorism	https://en.wikipedia.org/wiki/Environmental_terrorism
Eco terrorism	https://en.wikipedia.org/wiki/Eco-terrorism
Conventional weapon	https://en.wikipedia.org/wiki/Conventional_weapon
Weapons grade	https://en.wikipedia.org/wiki/Weapons-grade
dirty bomb	https://en.wikipedia.org/wiki/Dirty_bomb
Nuclear Enrichment	https://en.wikipedia.org/wiki/Nuclear_enrichment
Nuclear	https://en.wikipedia.org/wiki/nuclear
Chemical weapon	https://en.wikipedia.org/wiki/Chemical_weapon
Biological weapon	https://en.wikipedia.org/wiki/Biological_weapon
Ammonium nitrate	https://en.wikipedia.org/wiki/Ammonium_nitrate
Improvised explosive device	https://en.wikipedia.org/wiki/Improvised_explosive_device
Abu Sayyaf	https://en.wikipedia.org/wiki/Abu_Sayyaf
Hamas	https://en.wikipedia.org/wiki/hamas
FARC	https://en.wikipedia.org/wiki/FARC
Irish Republican Army	https://en.wikipedia.org/wiki/Irish_Republican_Army
Euskadi ta Askatasuna	https://en.wikipedia.org/w/Euskadi_ta_Askatasuna
Hezbollah	https://en.wikipedia.org/wiki/hezbollah
Tamil Tigers	https://en.wikipedia.org/wiki/Tamil_Tigers
PLO	https://en.wikipedia.org/wiki/Palestine_Liberation_Organization
Palestine Liberation Front	https://en.wikipedia.org/wiki/Palestine_Liberation_Front
Car bomb	https://en.wikipedia.org/wiki/Car_bomb
jihad	https://en.wikipedia.org/wiki/jihad
Taliban	https://en.wikipedia.org/wiki/taliban
Suicide bomber	https://en.wikipedia.org/wiki/Suicide_bomber
Suicide attack	https://en.wikipedia.org/wiki/Suicide_attack
AL Qaeda in the Arabian Peninsula	https://en.wikipedia.org/wiki/Al-Qaeda_in_the_Arabian_Peninsula
Al Qaeda in the Islamic Maghreb	https://en.wikipedia.org/wiki/Al-Qaeda_in_the_Islamic_Maghreb
Tehrik-i-Taliban Pakistan	https://en.wikipedia.org/wiki/Tehrik-i-Taliban_Pakistan
Yemen	https://en.wikipedia.org/wiki/yemen
Pirates	https://en.wikipedia.org/wiki/pirates
Extremism	https://en.wikipedia.org/wiki/extremism

Somalia	https://en.wikipedia.org/wiki/somalia
Nigeria	https://en.wikipedia.org/wiki/nigeria
Political radicalism	https://en.wikipedia.org/wiki/Political_radicalism
Al-Shabaab	https://en.wikipedia.org/wiki/Al-Shabaab
nationalism	https://en.wikipedia.org/wiki/nationalism
Recruitment	https://en.wikipedia.org/wiki/recruitment
Fundamentalism	https://en.wikipedia.org/wiki/fundamentalism
Islamist	https://en.wikipedia.org/wiki/islamist

Table 12: 48 Terrorism Article Group List with Privacy Survey Scores

Topic Keywords	Government Trouble	Browser Delete	Privacy Sensitive	Avoidance
Al Qaeda	2.20	2.11	2.21	2.84
terrorism	2.19	2.05	2.16	2.79
terror	1.98	1.96	2.01	2.64
attack	1.92	1.91	1.92	2.56
Iraq	1.60	1.74	1.76	2.25
Afghanistan	1.61	1.71	1.75	2.23
Iran	1.62	1.73	1.78	2.25
Pakistan	1.59	1.71	1.75	2.22
agro	1.51	1.80	1.76	2.29
Environmental terrorism	2.20	2.20	2.24	2.92
Eco terrorism	2.22	2.20	2.22	2.92
Conventional weapon	2.03	2.16	2.07	2.81
Weapons grade	2.18	2.22	2.17	2.99
dirty bomb	2.72	2.55	2.50	3.45
Nuclear Enrichment	2.22	2.21	2.21	2.92
Nuclear	1.84	1.97	1.91	2.55
Chemical weapon	2.43	2.36	2.39	3.16
Biological weapon	2.44	2.39	2.39	3.18
Ammonium nitrate	2.49	2.44	2.26	3.24
Improvised explosive device	2.82	2.64	2.53	3.46
Abu Sayyaf	2.02	1.96	1.99	2.57
Hamas	1.90	1.93	1.97	2.49
FARC	1.83	1.88	1.90	2.46
Irish Republican Army	1.62	1.77	1.83	2.24
Euskadi ta Askatasuna	1.86	1.88	1.88	2.43
Hezbollah	1.86	1.90	1.96	2.46
Tamil Tigers	1.76	1.86	1.87	2.39
PLO	1.77	1.87	1.91	2.42
Palestine Liberation Front	1.81	1.89	1.95	2.47
Car bomb	2.72	2.61	2.50	3.40
jihad	2.15	2.19	2.17	2.89
Taliban	2.06	2.03	2.10	2.70
Suicide bomber	2.25	2.31	2.24	2.97
Suicide attack	2.30	2.36	2.29	3.04
AL Qaeda in the Arabian Peninsula	2.01	1.98	2.06	2.63
Al Qaeda in the Islamic Maghreb	2.05	1.98	2.06	2.60
Tehrik-i-Taliban Pakistan	1.96	1.96	1.97	2.59
Yemen	1.60	1.72	1.74	2.18
Pirates	1.44	1.67	1.67	2.10
Extremism	1.64	1.90	1.86	2.40

Somalia	1.50	1.68	1.67	2.12
Nigeria	1.48	1.66	1.64	2.07
Political radicalism	1.75	1.91	1.97	2.48
Al-Shabaab	1.84	1.89	1.89	2.48
nationalism	1.48	1.71	1.73	2.20
Recruitment	1.74	1.90	1.87	2.54
Fundamentalism	1.60	1.79	1.80	2.32
Islamist	1.79	1.89	1.93	2.45
MEAN	1.95	2.00	2.01	2.62

Table 13: 31 Most Privacy-Concerning Terrorism Article Group (survey privacy-rating above 2)

Topic Keywords	Wikipedia Articles	Combined Privacy Rating
Al Qaeda	http://en.wikipedia.org/wiki/Al-Qaeda	2.34
terrorism	http://en.wikipedia.org/wiki/terrorism	2.30
terror	http://en.wikipedia.org/wiki/terror	2.15
Environmental terrorism	http://en.wikipedia.org/wiki/Environmental_terrorism	2.39
Eco terrorism	http://en.wikipedia.org/wiki/Eco-terrorism	2.39
Conventional weapon	http://en.wikipedia.org/wiki/Conventional_weapon	2.27
Weapons grade	http://en.wikipedia.org/wiki/Weapons-grade	2.39
dirty bomb	http://en.wikipedia.org/wiki/Dirty_bomb	2.81
Nuclear Enrichment	http://en.wikipedia.org/wiki/Nuclear_enrichment	2.39
Nuclear	http://en.wikipedia.org/wiki/nuclear	2.07
Chemical weapon	http://en.wikipedia.org/wiki/Chemical_weapon	2.59
Biological weapon	http://en.wikipedia.org/wiki/Biological_weapon	2.60
Ammonium nitrate	https://en.wikipedia.org/wiki/Ammonium_nitrate	2.61
Improvised explosive device	http://en.wikipedia.org/wiki/Improvised_explosive_device	2.86
Abu Sayyaf	http://en.wikipedia.org/wiki/Abu_Sayyaf	2.14
FARC	http://en.wikipedia.org/wiki/FARC	2.02
Euskadi ta Askatasuna	http://en.wikipedia.org/w/Euskadi_ta_Askatasuna	2.01
Hezbollah	http://en.wikipedia.org/wiki/hezbollah	2.05
Palestine Liberation Front	http://en.wikipedia.org/wiki/Palestine_Liberation_Front	2.03
Car bomb	http://en.wikipedia.org/wiki/Car_bomb	2.81
jihad	http://en.wikipedia.org/wiki/jihad	2.35
Taliban	http://en.wikipedia.org/wiki/taliban	2.22
Suicide bomber	http://en.wikipedia.org/wiki/Suicide_bomber	2.44
Suicide attack	http://en.wikipedia.org/wiki/Suicide_attack	2.50
AL Qaeda in the Arabian Peninsula	http://en.wikipedia.org/wiki/Al-Qaeda_in_the_Arabian_Peninsula	2.17
Al Qaeda in the Islamic Maghreb	http://en.wikipedia.org/wiki/Al-Qaeda_in_the_Islamic_Maghreb	2.17
Tehrik-i-Taliban Pakistan	http://en.wikipedia.org/wiki/Tehrik-i-Taliban_Pakistan	2.12
Political radicalism	http://en.wikipedia.org/wiki/Political_radicalism	2.03
Al-Shabaab	http://en.wikipedia.org/wiki/Al-Shabaab	2.03
Recruitment	http://en.wikipedia.org/wiki/recruitment	2.01
Islamist	http://en.wikipedia.org/wiki/islamist	2.02

Table 14: 25 Domestic Security Article List

Topic Keywords	Wikipedia Articles
Department of Homeland Security	https://en.wikipedia.org/wiki/United_States_Department_of_Homeland_Security
Federal Emergency Management Agency	https://en.wikipedia.org/wiki/Federal_Emergency_Management_Agency
Coast Guard	https://en.wikipedia.org/wiki/Coast_guard
Customs and Border Protection	https://en.wikipedia.org/wiki/Customs_and_Border_Protection
Border patrol	https://en.wikipedia.org/wiki/Border_Patrol
Secret Service	https://en.wikipedia.org/wiki/Secret_Service
Bureau of Land Management	https://en.wikipedia.org/wiki/Bureau_of_Land_Management
Homeland defense	https://en.wikipedia.org/wiki/Homeland_defense
Agent / Espionage	https://en.wikipedia.org/wiki/Espionage
Task Force 88	https://en.wikipedia.org/wiki/Task_Force_88_(anti-terrorist_unit)
Central Intelligence Agency	https://en.wikipedia.org/wiki/Central_Intelligence_Agency
Fusion center	https://en.wikipedia.org/wiki/Fusion_center
DEA	https://en.wikipedia.org/wiki/DEA
Secure Border Initiative	https://en.wikipedia.org/wiki/Secure_Border_Initiative
Federal Bureau of Investigation	https://en.wikipedia.org/wiki/Federal_Bureau_of_Investigation
Alcohol and Tobacco Tax and Trade Bureau	https://en.wikipedia.org/wiki/Alcohol_and_Tobacco_Tax_and_Trade_Bureau
U.S. Citizenship and Immigration Services	https://en.wikipedia.org/wiki/United_States_Citizenship_and_Immigration_Services
Federal Air Marshal Service	https://en.wikipedia.org/wiki/Federal_Air_Marshal_Service
Transportation Security Administration	https://en.wikipedia.org/wiki/Transportation_Security_Administration
Air Marshal	https://en.wikipedia.org/wiki/Air_marshal
Federal Aviation Administration	https://en.wikipedia.org/wiki/Federal_Aviation_Administration
National Guard	https://en.wikipedia.org/wiki/National_Guard
Disaster Relief / Emergency Management	https://en.wikipedia.org/wiki/Emergency_management
U.S. Immigration and Customs Enforcement	https://en.wikipedia.org/wiki/U.S._Immigration_and_Customs_Enforcement
United Nations	https://en.wikipedia.org/wiki/United_Nations

Table 15: 34 Infrastructure Article List

Topic Keywords	Wikipedia Articles
Information security	https://en.wikipedia.org/wiki/Infrastructure_security
Airport	https://en.wikipedia.org/wiki/Airport
Airplane	https://en.wikipedia.org/wiki/Airplane
Chemical burn	https://en.wikipedia.org/wiki/Chemical_burn
CIKR	https://en.wikipedia.org/wiki/CIKR
AMTRAK	https://en.wikipedia.org/wiki/Amtrak
Collapse	https://en.wikipedia.org/wiki/Collapse
Information infrastructure	https://en.wikipedia.org/wiki/Information_infrastructure
Telecommunications network	https://en.wikipedia.org/wiki/Telecommunications_network
Telecommunication	https://en.wikipedia.org/wiki/Telecommunication
Critical infrastructure	https://en.wikipedia.org/wiki/Critical_Infrastructure
National Information Infrastructure	https://en.wikipedia.org/wiki/National_Information_Infrastructure
Metro	https://en.wikipedia.org/wiki/Metro_station
WMATA	https://en.wikipedia.org/wiki/Washington_Metropolitan_Area_Transit_Authority
Subway	https://en.wikipedia.org/wiki/Subway
BART	https://en.wikipedia.org/wiki/Bay_Area_Rapid_Transit
MARTA	https://en.wikipedia.org/wiki/Metropolitan_Atlanta_Rapid_Transit_Authority
Port authority	https://en.wikipedia.org/wiki/Port_authority
NBIC	https://en.wikipedia.org/wiki/NBIC
Power grid	https://en.wikipedia.org/wiki/Electrical_grid
Power	https://en.wikipedia.org/wiki/Power
Smart	https://en.wikipedia.org/wiki/Smart
Full body scanner	https://en.wikipedia.org/wiki/Full_body_scanner
Electric power	https://en.wikipedia.org/wiki/Electric_power
Failure	https://en.wikipedia.org/wiki/Failure
Power outage	https://en.wikipedia.org/wiki/Power_outage
Blackout	https://en.wikipedia.org/wiki/Blackout
Brownout	https://en.wikipedia.org/wiki/Brownout
Port	https://en.wikipedia.org/wiki/Port
Dock (maritime)	https://en.wikipedia.org/wiki/Dock_(maritime)
Bridge	https://en.wikipedia.org/wiki/Bridge
Flight cancellation and delay	https://en.wikipedia.org/wiki/Flight_cancellation_and_delay
Delay	https://en.wikipedia.org/wiki/Delay
Electric power transmission	https://en.wikipedia.org/wiki/Electric_power_transmission

Table 16: 26 Most Popular Articles in 2012, 2013, and 2014 Comparator Group

Topic Keywords	Wikipedia Articles
Facebook	https://en.wikipedia.org/wiki/Facebook
Wiki	http://en.wikipedia.org/wiki/Wiki
Deaths in 2012	https://en.wikipedia.org/wiki/Lists_of_deaths_by_year#2012
One Direction	https://en.wikipedia.org/wiki/One_Direction
The Avengers (2012 film)	https://en.wikipedia.org/wiki/The_Avengers_(2012_film)
Fifty Shades of Grey	https://en.wikipedia.org/wiki/Fifty_Shades_of_Grey
2012 phenomena	https://en.wikipedia.org/wiki/2012_phenomenon
Google	https://en.wikipedia.org/wiki/Google
The Dark Knight Rises	https://en.wikipedia.org/wiki/The_Dark_Knight_Rises
The Hunger Games	https://en.wikipedia.org/wiki/The_Hunger_Games
Deaths in 2013	https://en.wikipedia.org/wiki/Lists_of_deaths_by_year#2013
Breaking Bad	https://en.wikipedia.org/wiki/Breaking_Bad
G-force	https://en.wikipedia.org/wiki/G-force
World War II	https://en.wikipedia.org/wiki/World_War_II
Youtube	https://en.wikipedia.org/wiki/YouTube
List of Bollywood Films 2013	https://en.wikipedia.org/wiki/List_of_Bollywood_films_of_2013
United States	https://en.wikipedia.org/wiki/United_States
Online shopping	https://en.wikipedia.org/wiki/Online_shopping
Java	https://en.wikipedia.org/wiki/Java
Alive	https://en.wikipedia.org/wiki/Alive
Deaths in 2014	https://en.wikipedia.org/wiki/Lists_of_deaths_by_year#2014
Climatic Research Unit email controversy	https://en.wikipedia.org/wiki/Climatic_Research_Unit_email_controversy
Amazon.com	https://en.wikipedia.org/wiki/Amazon.com
2014 FIFA World Cup	https://en.wikipedia.org/wiki/2014_FIFA_World_Cup
Ebola virus disease	https://en.wikipedia.org/wiki/Ebola_virus_disease
Game of Thrones	https://en.wikipedia.org/wiki/Game_of_Thrones

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Dr. Jonathon Penney is a lawyer and social scientist who does research at the intersection of law, technology, and human rights. From the internet today to artificial intelligence and beyond tomorrow, his work aims to understand technology's role in public and private sector censorship, surveillance, and other emerging legal/regulatory practices. He has held appointments at the leading research centers in his field, including the Oxford Internet Institute, University of Oxford; Harvard's Berkman Klein Center for Internet and Society; Princeton's Center for Information Technology Policy; and the Massachusetts Institute of Technology's Media Lab. He is also the author of numerous publications and is a frequent speaker at technology law and policy conferences around the world.

Dr. Penney has studied law at Columbia Law School as a Fulbright Scholar and at Oxford as a Mackenzie King Scholar. He holds a doctorate in "Information, Communication, and the Social Sciences" from the interdisciplinary Oxford Internet Institute at the University of Oxford.

He has a particular expertise in measuring and exploring the impact of surveillance and other data driven and technology-focused regulatory activities, and is author of the book *Chilling Effects: Understanding the Impact of Surveillance and Other Technological Threats* (forthcoming in Cambridge University Press, 2019). His work has received international attention and coverage, including the *Washington Post*, *Reuters International*, *New York Times*, *Newsweek*, *TIME Magazine*, *NBC News*, *Forbes*, *Psychology Today*, *Le Monde*, *The Guardian*, *Freitag*, *Il Fatto Quotidiano*, *The Times of India*, *Indian Express*, *Jerusalem Post*, *Huffington Post*, *Politico*, *Slate*, *Motherboard*, *The Hill*, *The Index on Censorship*, as well as coverage by Pulitzer Prize winning journalist Glenn Greenwald in *The Intercept*.

CURRENT APPOINTMENTS / AFFILIATIONS

Schulich School of Law, Dalhousie University

Associate Professor, July 2018 – Present

Director, Law and Technology Institute, September 2017 – Present

Center for Information Technology Policy, Princeton University

Research Affiliate, September 2017 – Present

MIT Media Lab, Massachusetts Institute of Technology

Research Associate (Civil Servant Project), January 2018 – Present

Citizen Lab, Munk School of Global Affairs, University of Toronto

Research Fellow, September 2017 – Present

EDUCATION

Oxford Internet Institute, University of Oxford (Balliol College)

DPhil, Doctorate in Information, Communication, and the Social Sciences, January 2016

Thesis: *Chilling Effects in the Internet Age: Three Case Studies*

Committee: Dr. Victoria Nash (Oxford), Dr. Urs Gasser (Harvard), Dr. Joss Wright (Oxford)

Google Policy Fellow; SSHRC Doctoral Fellow; Centennial Scholar

Columbia Law School, Columbia University

LLM, Master of Laws, May 2009 (Harlan Fiske Stone Scholar; Fulbright Scholar; GLS Scholar)

Faculty of Law, University of Oxford (Wolfson College)

MSt, Master of Studies (Law), July 2007 (Lady Margaret Hall Award; Mackenzie King Scholar)

Associate-Editor, *Oxford University Commonwealth Law Journal*

Schulich School of Law, Dalhousie University

JD, Juris Doctorate, May 2003 (Dean's List; Tom Wilcox Award)

Editor of Reviews, *Dalhousie Journal of Legal Studies*

Faculty of Arts and Social Sciences, Dalhousie University

BA, Philosophy with minor Computer Science credits, May 2000 (Dean's List)

PAST APPOINTMENTS / EMPLOYMENT

Berkman Klein Center for Internet & Society, Harvard University

Berkman Fellow/Research Affiliate, September 2012 – September 2015

Citizen Lab, Munk School of Global Affairs, University of Toronto

Google Policy Fellow, May 2011 – September 2011

PVNETS Project, Oxford Internet Institute, University of Oxford

Project Coordinator, September 2010 – September 2012

Faculty of Law, Victoria University of Wellington, Wellington, NZ

InternetNZ Cyberlaw Senior Research Fellow, September 2009 – September 2010

Regulatory Division, Ontario Regional Office, Department of Justice, Toronto

Litigation Counsel, September 2004 – September 2008

PUBLICATIONS

Books

"Chilling Effects: Understanding the Impact of Surveillance and Other Technological Threats"
Cambridge University Press, forthcoming 2019

Articles

"The Expressive Value of Cyber-Stalking Laws" (2019) *Fordham Law Review* ____, forthcoming
(with Danielle Citron)

“Privacy, Chilling Effects, and Personalized Legal Automation: The DMCA as an Empirical Case Study” (2019) *Stanford Technology Law Review* ____

“Chilling Effects and the GDPR” (2019) *European Law Journal* ____, forthcoming (**peer reviewed**)

“Advancing Human Rights-by-Design in the Dual-Use Technology Industry” (with Lex Gill, Sarah McKune, and Ron Deibert), (2019) *Columbia Journal of International Affairs*, forthcoming (**peer reviewed**)

“Internet Surveillance, Regulation, and Chilling Effects Online: A Comparative Case Study”, (2017) 6(2) *Internet Policy Review* 1 (**peer reviewed**)

- Invited to write op-ed discussing paper’s findings for *Slate*; research has also received coverage from *WIRED Magazine*, *Global Voices’ Netizen Report*, *Slate France*, *Business Insider*, *Privacy Weekly*, *European Digital Rights’ EDRi-Gram Report*, and *Columbia University’s The Education Lab*.
- Top ten most downloaded article in July 2017 for multiple Social Science Research Network (SSRN) subject areas, incl. “Cyberspace Law”, “Information Privacy Law” and “National Security Law”.

“Chilling Effects: Online Surveillance and Wikipedia Use”, (2016) 31 *Berkeley Technology Law Journal* 117

- Received extensive media coverage internationally, including the *Washington Post*, *New York Times*, *Newsweek*, *Reuters*, *NBC News*, *Forbes*, *Huffington Post*, *Le Monde*, *Der Freitag*, *Times of India*, *Jerusalem Post*, *Russia Today*, *Daily Mail*, *ABC News Australia*, *The Pakistan Express Tribune*, etc, as well as coverage by Pulitzer Prize winning journalist Glenn Greenwald in *The Intercept*
- #1 most downloaded article on SSRN in the week of May 13th, 2016 and the #2 most downloaded in the week of May 6, 2016; #66 most downloaded in last 12 months

“The Cycles of Global Telecommunication Censorship and Surveillance”, (2015) 35 *University of Pennsylvania Journal of International Law* 693

“Virtual Inequality: Challenges for the Net’s Lost Founding Value”, (2012) 10 *Northwestern Journal of Technology & Intellectual Property* 209

“Open Connectivity, Open Data: Two Dimensions of the Right to Seek, Receive, and Impart Information”, (2012) 4 *Victoria University of Wellington Law Review* 1 (**peer reviewed**)

“Internet Access Rights: A Brief History and Intellectual Origins” (2011) 38 *William Mitchell Law Review* 10 (**invited contribution**)

“Ivan Rand’s Ancient Constitutionalism” (2010) 61 *UNB Law Journal* 43; (2010) 34 *Manitoba Law Journal* 43 (**peer reviewed**)

- This article won the **2011 Peter Oliver Prize in Canadian Legal History** (for “best article”), Osgoode Society for Canadian Legal History, Law Society of Upper Canada

“Technology and Judicial Reason: Digital Copyright, Secondary Liability, and the Problem of Perspective” (2010) 22 *Journal of Intellectual Property* 253 (2010) (**peer reviewed**)

“Understanding the New Virtualist Paradigm” (2009) 12 *Journal of Internet Law* 6

“Privacy and the New Virtualism” (2008) 10 *Yale Journal of Law & Technology* 194

“The Embarrassing Preamble? Understanding the ‘supremacy of God’ and the Charter” (2006) 39:2

University of British Columbia Law Review (with Robert Danay) 287 (**peer reviewed**)

“Deciding in the Heat of the Constitutional Moment: Constitutional Meaning and Change in the Quebec Secession Reference” (2005) 28:1 Dalhousie Law Journal 217 (**peer reviewed**)

“The Evolving Approach to Section 15(1): Diminished Rights or Bolder Communities?” (2005) 29 SUPREME COURT LAW REVIEW (2d) 137 (presented at the 8th Annual Constitutional Cases Conference at Osgoode Hall Law School, April 2005) (**peer reviewed**)

A Constitution for the Disabled or a Disabled Constitution? Toward a New Approach to Disability for the Purposes of Section 15(1)” (2003) 1 Journal of Law & Equality 83 (**peer reviewed**)

- Supporting document for World Health Organization and Pan-American Health Organization’s 2004 International Convention on Intellectual Disabilities

Book Chapters / Contributions to Collective Works

“Cyber Security, Empiricism, and Human Rights: The Case of State and Non-State Surveillance” in Paul Cornish (eds), Oxford Handbook on Cyber Security (Oxford University Press, forthcoming 2019) (**peer reviewed**)

“Canadian Privacy Law and the Post War Freedom of Information Paradigm” in Gloria González Fuster, Rosamunde van Brakel and Paul De Hert (eds, Research Handbook on Privacy and Data Protection Law: Values, Norms and Global Politics (Edgar, forthcoming 2018) (**peer reviewed**)

“*Zeran v AOL’s Chilling Effect Claims*” in Eric Goldman, ed, *Zeran v America Online 20 Years Later: A Compendium* (forthcoming 2018)

“Trade Secrets as Intellectual Property: Three Questions,” in Mistrale Goudreau, Margaret Ann Wilkinson, & Florian Martin-Bariteau, eds, *New Paradigms in the Protection of Inventiveness, Data and Signs: Changing Perceptions of the Role of Intellectual Property* (Toronto: Irwin Law, forthcoming 2018) (**peer reviewed**)

Copyright’s Media Theory and the Internet: The Case of the Chilling Effects Doctrine,” in Courtney B Doagoo, Mistrale Goudreau, Madelaine Saginur & Teresa Scassa, eds, *Intellectual Property for the 21st Century: Interdisciplinary Perspectives on Intellectual Property Law* (Toronto: Irwin Law, 2013) (R) (**peer reviewed**)

Essays / Reports / Working papers

“Planet Netsweeper”, Citizen Lab Research Report No. 2018-3, Citizen Lab, Munk School of Global Affairs and Public Policy, University of Toronto, 2018

- This report documented how a Canadian company Netsweeper’s web filtering technology has been used by oppressive governments around the world to facilitate censorship and other human rights abuses around the world received widespread media attention in Canada, including a special feature coverage on *CBC’s The National*, the broadcaster’s flagship national news program.

“Children and Cyberwar: Victimization and Protection” in Dustin Johnson, ed, *Allons-Y: Theory Into Action*, vol 2 (Halifax: The Roméo Dallaire Child Soldiers Initiative, August 2017).

“Can Cyber-Harassment Laws Encourage Online Speech?” in *Harmful Speech Online: At the Intersection of Algorithms and Human Behavior*, Berkman Klein Center Research Publication/Report, Berkman Klein Center for Internet & Society, Harvard University, 2017

“Chilling Effects and the DMCA: Comments in Response to Notice of Inquiry”, submission to the U.S. Copyright Office for its Study of Section 512 of Title 17, United States Code (the Digital Millennium Copyright Act), March 30, 2016

“Warrant Canaries Beyond the First Amendment” in *Internet Monitor 2014: Reflections on the Digital World: Platforms, Policy, Privacy, and Public Discourse*, Berkman Klein Center Research Publication/Report, Berkman Klein Center for Internet & Society, Harvard University, 2014

“Code is Law, But Law is Increasingly Determining the Ethics of Code” in *Internet Monitor 2014: Reflections on the Digital World: Platforms, Policy, Privacy, and Public Discourse*, Berkman Klein Center Research Publication/Report, Berkman Klein Center for Internet & Society, Harvard University, 2014

“Communications Disruption and Censorship Under International Law”, Free and Open Communications on the Internet (FOCI) Working Paper No. 9, USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Bellevue, Washington, 2012 (**peer reviewed**)

Doctoral Thesis

“Chilling Effects in the Internet Age: Three Case Studies” (DPhil Thesis, University of Oxford, November 2015 [unpublished]) (**peer reviewed**)

- Successfully defended in November, 2015 with with no corrections, confirmed December 2016, and degree officially awarded in May 2018.

Public Policy / Commentary / Op-Eds

“How Surveillance Contributes to Fake News”, Freedom to Tinker Blog, Center for Information Technology Policy, Princeton University, November, 2018 (forthcoming)

“(Mis)Conceptions about the Impact of Surveillance”, Freedom to Tinker Blog, Center for Information Technology Policy, Princeton University, February 14, 2018

“Whose Speech Is Chilled by Surveillance?” Slate Magazine (Online), July 11, 2017

“How Surveillance Harms”, Policy Options (Blog), December 12, 2016, Institute for Research on Public Policy (IRPP), Montreal, QC

“How can Atlantic Canada benefit from CETA?”, Policy Options (Blog), October 25, 2016, Institute for Research on Public Policy (IRPP), Montreal, QC

“Harper’s Charter Activism.”, Policy Options (Blog), March 13, 2016, Institute for Research on Public Policy (IRPP), Montreal, QC

“An Amended Bill C-51 is Still a Problem: Lessons from the U.S.”, Policy Options Magazine (May-June, 2015), Institute for Research on Public Policy (IRPP), Montreal, QC

“How Laws Are Increasingly Determining the Ethics of Code”, Slate Magazine, January 9, 2015

“Constitutional Dialogue v2.0? Contentious Government Responses to the Supreme Court of Canada” (August 2014) Int’l J Const L Blog

“Doomed to Rely on the Mask”, Policy Options Magazine , May-June, 2014) Institute for Research on Public Policy (IRPP), Montreal, QC

“Forget CSIS: It’s the Political Parties that Own Our Privacy”, Toronto Star, March 17, 2014

“Fighting Surveillance: What Canadian Companies Can Do” Citizen Lab (Blog), Munk School of Global Affairs, University of Toronto, February 13, 2014

“Deleting Revenge Porn”, Policy Options Magazine , (Nov-Dec 2013), Institute for Research on Public Policy (IRPP), Montreal, QC

“Watching the Watchers: A Role for the ITU in the Internet Age”, Cyberdialogue Blog, March 5, 2013, University of Toronto (**invited contribution**)

“Outsourcing Cyberwar”, *The Future of Fighting and How the Canadian Military Must Adapt: Strategic Studies Working Group*, Canadian International Council & Canadian Defence and Foreign Affairs Institute, May 25, 2012 (**invited contribution**)

“Time to Get Serious About Cyber-Security”, The Mark News (28 July 2011); Information Warfare Monitor, Citizen Lab, Munk School of Global Affairs, University of Toronto (July 2011)

“Countering the Anti-Counterfeiting Trade Agreement”, Computer World, November 27, 2009

PRESENTATIONS / TALKS / INVITED LECTURES

Featured Speaker, “The First Amendment and Modern Surveillance”, co-hosted by Yale Law School Information Society Project and Knight First Amendment Institute, Columbia University, November 14, 2018 (**invited**)

“Geneva Dialogue On Responsible Behaviour in Cyberspace “, Swiss Federal Department of Foreign Affairs, Geneva, Switzerland, November 1-2, 2018 (**invited**)

Session Discussant, “AI in Criminal Justice”, DeepMind / Princeton CITP Limits of AI in Public Service Workshop, Center for Information Technology Policy, Princeton University, September 28, 2018 (**invited**)

“Measuring the Impact of Surveillance and Other Online Threats at Scale”, The Emergence of Computational Legal Studies: The Promises and Challenges of Data-Driven Legal Research, First Annual Computational Legal Studies Workshop, Department of Law / Law and Technology Centre, University of Hong Kong, Hong Kong, June 28-29, 2018 (**invited**)

“Internet Surveillance: An Empirical and Comparative Case Study”, 11th Annual Privacy Law Scholars Conference, George Washington University Law Center, Washington DC, May 30-31 2018 (**invited**)

Featured Speaker, RightsCon Summit (Toronto), May 16-18 2018, Toronto (**invited**)

Panelist, “Have We Entered a Brave New World of Global Content Takedown Orders?”, Panel

organized by Harvard's Berkman Klein Center for Internet, RightsCon Summit, May 18, 2018, Toronto (**invited**)

Panelist, "Data Driven Decency: New, Collaborative Experiments to Diminish Online Hate and Harassment Online", Panel organized by Harvard's Berkman Klein Center for Internet and Society, RightsCon Summit, May 17, 2018, Toronto (**invited**)

Panelist, "The surveillance tool we love to carry: Cell phones searches and privacy in the evolving legal landscape", Panel organized by Canadian Civil Liberties Association, RightsCon Summit, May 16, 2018, Toronto (**invited**)

"Chilling Effects and the DMCA? An Empirical Case Study on Copyright Enforcement Online", Intellectual Property Law Discussion Group, Faculty of Law, University of Oxford, May 8 2018 (**invited**)

"Chilling Effects: How Laws and Surveillance Impact Us Online", CITP Luncheon Speaker Series, Center for Information Technology Policy, Princeton University, March 27, 2018 (**invited**)

"Mitigating the Impact of Automated Legal Processes on Internet Users", Civil Servant Research Summit, Center for Civic Media, MIT Media Lab, Cambridge, MA, January 28, 2018 (**invited**)

Presenter/Panelist, "Cybersecurity and Human Rights in the Online World", Political Science in the Digital Age: International Political Science Association (IPSA/AISP) International Conference, Hannover, Germany, December 4-6, 2017 (**invited**)

"Chilling Effects: How Laws and Surveillance Impact Us Online", OII Brown Bag Lunch Speaker Series, Oxford Internet Institute, University of Oxford, September 7, 2017 (**invited**)

"The Comparative Dimensions of Regulatory Chilling Effects Online", Rump Session Talk, 6th Annual Workshop on Free and Open Communications on the Internet (FOCI), USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Vancouver, B.C., August 14, 2017

"Documenting the Impact of Surveillance on Civil Society" (with Tabasum Akseer), Connaught Summer Institute on Monitoring Internet Openness and Rights, Munk School of Global Affairs, University of Toronto, July 12, 2017 (**peer reviewed**)

"Trade Secrets for Open Societies: Some Modest Proposals For Reform", Sixth Annual Intellectual Property Scholars Workshop, University of Ottawa, Ottawa, May 10, 2017 (**peer reviewed**)

"The Comparative Dimensions of Chilling Effects Online", Internet Law Work-in-Progress Conference, Santa Clara High Tech Law Institute, Santa Clara Law School, Santa Clara, March 4, 2017

Presenter/Panel Discussant, "Cyberwarfare and International Humanitarian Law", 12th Annual International Humanitarian Law Conference, Schulich School of Law, Dalhousie University, January 27, 2017 (**invited**)

"Chilling Effects: Online Surveillance and Wikipedia Use", Privacy Law Workshop, Faculty of Law, University of Toronto, Toronto, November 19-20, 2016

Speaker Series Lecture, "Mass Hacking and the New Transparency: Legal and Public Policy Implications", Information Technology Policy Speaker Series, Computational Social Science Institute / Faculty of Computer Science, University of Massachusetts (Amherst), November 4, 2016 **(invited)**

"New Transparency Challenges", Connaught Summer Institute on Monitoring Internet Openness and Rights, Munk School of Global Affairs, University of Toronto, July 7, 2016 **(peer reviewed)**

Moderator / Discussant, "Privacy, the Internet, and the Right to be Forgotten", European Union Center for Excellence (EUCE) / Canadian International Council (CIC), Dalhousie U., April 20, 2016

"Chilling Effects: Insights on how laws and surveillance impact people online", Berkman Luncheon Series, Berkman Klein Center for Internet & Society, Harvard University, April 27, 2016 **(invited)**

"Chilling Effects and the DMCA? An Empirical Case Study on Copyright Enforcement Online", Internet Law Work-in-Progress Conference, New York Law School, New York City, March 5, 2016

Panel Discussant, "The Trans-Pacific Partnership: Economic, Social and Legal Implications for Atlantic Canada", Canadian International Council (CIC)/ Centre for Foreign Policy Studies, Dalhousie University, Delta Barrington, Halifax, March 2016

"Chilling Effects: Online Surveillance and Wikipedia Use", Cornell Law Society for Empirical Legal Studies (SELS) Global Junior Empirical Legal Scholars Workshop, Hebrew University, Jerusalem, Israel, December 2015 **(peer reviewed)**

Panel Discussant, "CETA: Intellectual Property Law Implications", CETA on the Brink? Post-Politics and the Finalization of the Canada-EU Trade Deal, European Union Center for Excellence (EUCE) / Canadian International Council (CIC), Dalhousie University, November 13, 2015

"Online Surveillance and Chilling Effects, 5th Annual Workshop on Free and Open Communications on the Internet", 2th Annual Free and Open Internet Communications (FOCI) Workshop, USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Washington, D.C., August 10, 2015 **(invited)**

"Network Interference and Censorship Measurement: Ethical and Legal Issues", Connaught Summer Institute on Monitoring Internet Openness and Rights, Citizen Lab, Munk School of Global Affairs, University of Toronto, June, 27, 2015 **(peer reviewed)**

"Chilling Effects? Wikipedia Use and Online Surveillance", Fellows/Research Affiliates Discussion Group, Berkman Center for Internet & Society, Harvard University, May 6, 2015

"So... I Have This Genius Idea: Copyright, Trademarks, and Patents for Business and Innovative Ideas", (with Heather R Oke), Mixed Media Monthly: A Speaker Series About Art and the Business of Art, Artists Legal Information Society (ALIS), Art Gallery of Nova Scotia, April 16, 2015

"A Taxonomy of Chilling Effects", Internet Law Work-in-Progress Conference, Santa Clara High Tech Law Institute, Santa Clara Law School, Santa Clara, March 7, 2015

"Intellectual Property & NPOs: Issues, Suggestions, Best Practices", (with Alayna Kolodziechuk),

presentation to the Intellectual Property Law Section, Canadian Bar Association (Nova Scotia Branch), Pattersons LLP, January 16, 2015

“Internet Intermediaries and Corporate Transparency: The U.S. Experience”, Connaught Summer Institute on Monitoring Internet Openness and Rights, Citizen Lab, Munk School of Global Affairs, University of Toronto, July, 29, 2014

“The Cycles of Global Telecommunications Censorship and Surveillance” University of Toronto—Osgoode Hall Law School Junior Scholars Workshop, Osgoode Hall Law School, April 25, 2014

Moderator / Discussant, “Transparency Reporting”, Transparency Working Group, Cyber Dialogue 2014: After Snowden, Whither Internet Freedom?, Canada Centre for Global Security Studies, University of Toronto, March 31, 2014

Moving Beyond Transparency Reporting: Internet Regulation & DMCA Parallels”, Transparency Workshop, Boalt School of Law, University of California (Berkeley), November 19, 2013

Guest Lecture, “Copyright Law in Canada” Class: Law Information and Society (Prof. Bertrum MacDonald), School of Information Management, Dalhousie University, November 25, 2013

Panel Discussant, International Relations and Digital Technology Project, ID RTP Collective, Munk School of Global Affairs, University of Toronto, September 13, 2013 (**invited**)

“Early Weather Legal Report: Issues on the Horizon”, 3rd Annual Workshop on Free and Open Communications on the Internet (FOCI), USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Washington, D.C., August 13, 2013

“Welcome to Oz: Beyond a Black and White Debate on Internet Regulation (and Control)” (with Ryan Budish), Connaught Summer Institute on Monitoring Internet Openness and Rights, Citizen Lab, Munk School of Global Affairs, University of Toronto, July 22, 2013 (**invited**)

Panel Discussant, Transparency Reporting and Empirical Research in Intermediary Liability Standards Workshop, Institute for Information Law (IViR), University of Amsterdam, Amsterdam, NL, June 29, 2013 (**invited**)

Panel Discussant, Intermediary Liability and Freedom of Expression Roundtable, Institute for Information Law (IViR), University of Amsterdam, Amsterdam, NL, June 28, 2013 (**invited**)

Panel Discussant, “Cyberspace Governance: Exploring constitutive principles and values, today and into the future” Panel, Cyber Dialogue 2013: Governance without Governance in Cyberspace?, Canada Centre for Global Security Studies, University of Toronto, March 17-18, 2013 (**invited**)

“The Cycle of Global Telecommunications Technologies”, Internet Law Work-in-Progress Conference, Santa Clara High Tech Law Institute, Santa Clara Law School, Santa Clara, March 16, 2013

“Internet Censorship and the Ghosts of Infowars Past”, Berkman Center Luncheon Series, Berkman Center for Internet & Society, Harvard University, February 26, 2013 (**invited**)

“Doxxing, Hacker Culture, and the First Amendment” (with Molly Sauter), Berkman Fellows Hour, Berkman Center for Internet & Society, Harvard University, December 18, 2012

“Code as Speech and Other Challenges”, Junior Scholars Workshop, Schulich School of Law, Dalhousie University, November 7, 2012

“Lessons for the Law & Politics of Internet Censorship Resistance Today” 2012-2013 Information Management Public Lecture Series, Faculty of Management, Dalhousie University, November 6, 2012 (**Invited**)

Commentator/Respondent, “Business Method Patents Are Coming to Canada”, 42nd Annual Workshop on Consumer and Commercial Law, Schulich School of Law, Dalhousie, Oct 12-13, 2012

“Communications Disruption and Censorship Under International Law”, 2nd Annual Free and Open Internet Communications (FOCI) Workshop of the 21st USENIX Security Symposium, Advanced Computing Systems Association (ACSA), Bellevue, Washington, August 8, 2012 (**peer reviewed**)

“Copyright’s Media Theory and the Internet: The Case of the Chilling Effects Doctrine”, Fifth Annual Intellectual Property Scholars Workshop, University of Ottawa, Ottawa, May 2012 (**peer reviewed**)

“Privacy Models for SenseCam (and Similar Research)” (with Paul Kelly), SenseCam2012: Third Annual Symposium, Exeter College, University of Oxford, April 3-4, 2012

Panel Discussant, Privacy and Financial Inclusion Conference, Birbeck College, University of London, London, UK, September, 2011

Panel Discussant/Moderator, “Copyright and Remix Culture”, Remix Cinema Conference, University of Oxford, Oxford, UK, March 2011

“Open Connectivity, Open Data: Two Dimensions of the Right to Seek, Receive, and Impart Information in New Zealand”, 2010 Annual Public Lecture in Cyberlaw, Faculty of Law, Victoria University of Wellington, Wellington, New Zealand, July 1, 2010 (**invited**)

Panel Discussant (and Co-organizer), “Public ACTA: Conference on the Anti-Counterfeiting Trade Agreement”, Wellington Town Hall, Wellington, New Zealand, April 2010

Panel Discussant and Panel Co-Chair, “Copyright Future: Authors, Owners, Orphans, Users, and Repeat Infringers”, New Zealand Centre for International Economic Law, Victoria University, October 2009 (**Invited**)

Panel Discussant, “Governance and Virtual Worlds”, State of Play IV: Law and the Past, Present, and Future of Virtual Worlds, New York Law School, New York City, June 2009 (**invited**)

“The Emancipation Proclamation as a Constitutional Document”, Cornell Law School Inter-University Graduate Conference, Cornell Law School, April 14, 2009

“The Evolving Approach to Section 15(1): Diminished Rights or Bolder Communities?” (with Roselyn J. Levine, Q.C.), 8th Constitutional Cases Conference, Osgoode Hall Law, York U. Toronto, April 2005

CURRENT GRANT FUNDED RESEARCH PROJECTS

PRINCIPAL INVESTIGATOR / CO-INVESTIGATOR (**FUNDED**)

Mitigating the Impact of Automated Enforcement Online

Princeton University / Massachusetts Institute of Technology / Dalhousie University

Fund: Artificial Intelligence Ethics & Governance Fund, MIT Media Lab

Amount: \$154,736 CAD (125,000 USD) over 2 years (Fall 2017-2019)

Role: Co-Principal Investigator

Co-Investigators: Ethan Zuckerman, Associate Professor and Director, Center for Civic Media, MIT Media Lab; J. Nathan Matias, Postdoctoral Fellow, Princeton University; Merry Mou, a MIT Computer Science graduate student

This research project explores the impact of online platforms deploying algorithms and automated processes to enforce legal rights and obligations, monitor/surveil users, or police content and other online services, including testing legal, regulatory, and technological measures to mitigate negative side effects and, in the long run, protect people's rights and freedoms. We also expect to provide invaluable insights into how businesses and corporate platforms can more effectively employ these automated processes, while balancing business aims with user rights and consumer interests. Our methods are empirical, interdisciplinary, often collaborative with online platforms themselves, and use big data sources—like online platform data—and data analytics along with innovative and experimental research designs to do so. Our first case study in a series of such studies in collaboration tracks the impact of automated processes and “bots” enforcing copyrights online at mass scale under the U.S. Digital Millennium Copyright Act (DMCA). This study involves 100,000 social media users and documents the impact of these bots on users and platforms while testing different measures to mitigate any negative side effects like chilling effects and self-censorship. Other studies will look at automated content moderation on platforms, as well as biases in surveillance algorithms.

Toward a Public Interest Approach to Publicly Accessible Platform Data (**FUNDED**)

University of Ottawa / Dalhousie University / Ryerson University

Fund: Insight Grant, Social Sciences and Humanities Research Council (SSHRC)

Amount: \$189,916 over 4 years (Fall 2018-2022)

Role: Co-Principal Investigator / Applicant

Co-Investigators: Teresa Scassa, Canada Research Chair in Information Law at University of Ottawa; and Pamela Robinson, Associate Professor, School of Urban and Regional Planning, Ryerson University

This is a multi-year SSHRC Insight grant funded project investigates the legal, ethical, and policy dimensions of publicly accessible platform data. This will include, among things, examining the issues of ownership, user rights, control, and privacy in relation to this data, and challenges raised by related emerging technologies and data practices like big data analytics, automated and algorithmic data scraping and processing, and automated platform content moderation. The project will confront issues of tort law, contract law, property law, as well as new and evolving forms of e-contracts, consumer protection, and commercial transactions

Connected Canada: Digital Citizenship in Canada Today (**FUNDED**)

University of Ottawa / Dalhousie University / University of British Columbia / Public Policy Forum

Fund: Connection Grant, Social Sciences and Humanities Research Council (SSHRC)

Amount: \$24,592CAD over 1 year (Spring 2017-2018)

Role: Co-Principal Investigator / Applicant

Co-Investigators: Elizabeth Dubois, Assistant Professor, University of Ottawa; Alfred Hermida, Professor, School of Journalism, University of British Columbia; Florian Martin-Bariteau, Assistant Law Professor/Director, Center for Law and Technology, University of Ottawa

This is a multi-university, multi-partner SSHRC Connection grant used to fund a national conference to lay the foundations for a research agenda on “digital citizenship in Canada”, including a significant technology law component. The October 2017 conference brought together academics across disciplines, policy makers, government officials, think tanks, civil society groups, and the private sector to investigate the internet Canada, including its history, emerging technologies, and applications, to understand what digital citizenship in Canada looks like, who is excluded from this vision, and how Canadian law and policy might respond.

PRINCIPAL INVESTIGATOR / CO-INVESTIGATOR (SUBMITTED)

Regulatory Gaps and Best Practices For a Rapidly Shifting Environment

Advanced Data Science Alliance (ADA)

Fund: Tri-Council Network Centres of Excellence Grant

Amount: \$25 million over 5 years

Role: Co-Principal Investigator

ADA Scientific Co-Leads: Kelly Lyons (University of Toronto), Eleni Stroulia (University of Alberta), and Stan Matwin (Dalhousie University)

Theme Co-Leads: Lisa Austin, Professor of Law, University of Toronto; David Lie, Professor of Computer Engineering

Co-Principal Investigators: David Lyon, Professor of Sociology and Queen’s Research Chair in Surveillance Studies, Queen’s University; Ian Kerr, Professor of Law and Canada Research Chair, University of Ottawa

This project will be part of a large scale Tri-Council Networks Centres of Excellence project led by the Advanced Data Science Alliance (ADA), a multi-sectoral and trans-disciplinary national research network that, in partnership with industry and the public sector, will identify and address barriers to data-related innovation and enhance competitiveness in key sectors of the Canadian economy. There are 8 sub-themes in network, with law and policy addressed within the “Ethical, Accountable Technologies” sub-theme. The work on this sub-theme is led by University of Toronto’s Lisa Austin and David Lie and aims to develop multidisciplinary approaches to new regulatory and ethical challenges for advanced data science methods, with special focus on emerging technologies like AI and machine learning, through research and training based on notions of corporate social responsibility and data justice. All Co-Leaders and Principal Investigators for the theme project are committed to multidisciplinary work and have academic backgrounds spanning law, philosophy, sociology, economics, computer engineering, and computer science. As well, the British Columbia, Alberta, and Federal Privacy Commissioners Offices will act as receptor partners for the grant and will help assist, support, and develop relating research, networking, and training opportunities.

COLLABORATOR

Internet Monitor and Transparency Project

Berkman Klein Center for Internet and Society, Harvard University

Fund: MacArthur Foundation

Amount: \$1,242,760CAD over 5 years (\$400,000USD 2013-2015; \$600,000USD 2015-2018)

Role: Collaborator

Principal Investigator: Urs Gasser, Professor, Harvard Law School and Executive Director, Berkman Klein Center for Internet and Society, Harvard University

The award supports an applied research agenda to inform and shape policy development for governments and technology companies related to privacy, transparency, innovation, and security. The three areas of engagement include: 1) reducing privacy and security risks raised by private sector and government data sharing; 2) improving transparency and accountability associated with data acquisition and use by private companies; and 3) addressing harmful speech online. Currently building collaborative partnerships with private sector internet companies to broaden and standardize transparency reporting, to allow research on released data (in progress), including the impact of corporate surveillance and data disclosure. This also includes contributing to a large multi-faceted report on the impact of harmful speech online.

The Digital Copyright Takedown Project

Boalt School of Law, University of California (Berkeley) / Columbia University

Fund: Alfred P. Sloane Foundation and the Berkeley Digital Library Copyright Project

Amount: \$1,517,924CAD over 6 years (\$836,849USD 2011-2013; \$384,565USD 2014-Present)

Role: Collaborator

Principal Investigators: Jennifer Urban, Professor, Boalt School of Law, University of California (Berkeley); Karaganis, American Assembly, Columbia University

A research project led by Jennifer Urban (Faculty of Law, UC Berkeley) and Joe Karaganis (American Assembly, Columbia University) that brings together range of scholars and researchers from universities around the world to collaborate on large-scale research project exploring intellectual property, copyright, and other intermediary liability enforcement systems and measures employed globally.

RECENT PAST GRANT FUNDED RESEARCH PROJECTS

PRINCIPAL INVESTIGATOR

CETA's Privacy and IP Implications for Canada

European Union Center for Excellence, Dalhousie University

Fund: European Commission

Amount: \$10,000CAD (2015)

Role: Co-Principle Investigator / Applicant

Co-Investigators/Co-Applicant: Ruben Zaiotti, Director, European University Center for Excellence, Dalhousie University

This project, funded by the European Union (EU) (grant for funds succeeded via grant application in coordination with the European Union Center for Excellence at Dalhousie), examines the privacy and intellectual property law implications of the Comprehensive Economic Trade Agreement (CETA) between Canada and the EU. This grant funded participation in a symposium (examining trademark law/geographical indications under CETA), organizing/holding a conference on Europe's Right to be Forgotten (RTBF) in Canada,

and a report on CETA's implications for Canadian intellectual property laws.

Chilling Effects in the Digital Age: Three Case Studies

Doctoral Thesis, Oxford Internet Institute / Balliol College, University of Oxford

Funds: Doctoral Fellowship, Social Sciences and Humanities Research Council; Canada; Balliol College Graduate Student Bursary Fund; Canadian Centennial Scholarship Fund

Amount: \$80,000CAD over 4 years (\$20,000CAD/year, 2010-2014) along with miscellaneous amounts from year to year from the Balliol College scholarship and bursary funds;

Role: Principal Investigator / Applicant

My doctoral dissertation at Oxford explored the phenomena of regulatory chilling effects online through three empirical legal case studies, one involving the impact of online surveillance, another on the impact of the digital copyright enforcement online, and another survey-based study comparing the impact of different forms of online state actions/regulation. Primarily funded a SSHRC Doctoral Fellowship (converted from a CGS to take abroad).

PROJECT COORDINATOR

Privacy Value Networks (PVNets) Project

Oxford Internet Institute, University of Oxford

Fund: Engineering and Physical Sciences Research Council (EPSRC), United Kingdom

Amount: \$2,534,953CAD over 4 years (£1,553,090, 2008-2012).

Role: Project Coordinator

Principal Investigator: Ian Brown, Professor, Oxford Internet Institute, University of Oxford

Collaborators: MA Sasse, Professor, University College of London; TNH Henderson, Professor, University of St. Andrew

A public and private sector research collaboration, funded by the UK's Engineering & Physical Sciences Research Council (EPSRC), on data privacy involving multiple universities and consulting firms. Coordinated all aspects of the project, including facilitating collaboration and communication among participants, organizing and chairing project meetings, formulating and administering project plan, monitoring deadlines, drafting and formulating project status reports, funding agency communications and relations, financial reporting, contracts, project deliverables, and their dissemination.

RESEARCH ADVISORY WORK

Ethics Feedback Panel for Networking and Security Research

Research Ethics Project, Microsoft Research, Cambridge, MA

Role: Panel Member / Collaborator

Principal Investigators: Stuart Schechter, Microsoft Research, Cambridge, MA and Bendert Zevenbergen, Postdoctoral Fellow, Princeton's Center for Information Technology Policy

The Networking and Security Research Ethics Feedback Panel (EFP) is an initiative led by Microsoft Research's Stuart Schechter. The EFP is a forum populated by volunteer experts in privacy, surveillance, and network security research that aims to help researchers identify ethics-related risks from their experiments and reduce these risks. The EFP encourages researchers to submit their research proposals for feedback prior to submitting them for

institutional review, so that they may integrate risk-reduction measures suggested by panelists and use panelists' feedback to inform institutional reviewers.

SELECTED MEDIA SPOTS / PRESS COVERAGE

I have been interviewed and quoted in media as an expert and my research received press coverage nationally and internationally, including the *Washington Post*, *New York Times*, *Newsweek*, *Reuters*, *TIME Magazine*, *NBC News*, *Le Monde*, *The Guardian*, *Forbes*, *Huffington Post*, *Politico*, *Slate*, *Motherboard*, *The Hill*, *The Globe and Mail*, *Toronto Star*, *CBC News*, *Global News*, *The Daily Mail*, *The Index on Censorship*, *Der Freitag*, *Il Fatto Quotidiano*, *The Times of India*, *Indian Express*, *Jerusalem Post*, as well as coverage by Pulitzer Prize winning journalist Glenn Greenwald in *The Intercept*.

Research covered in Lily Newman "The ACLU's Biggest Roadblock to Fighting Mass Surveillance" **WIRED Magazine**, June 29, 2018

Research covered in A.J. Marsden and William Nesbitt, "I Spy with My Little Eye: The Origins and Effects of Mass Surveillance" **Psychology Today**, November 6, 2017

Research covered / quoted in Tilman Bayer, "The chilling effect of surveillance on Wikipedia readers, and other recent research" in **Wikipedia Research Newsletter**, Vol 7:4, July 24 2017

Research covered / quoted in Peggy Sastre, "Sur Internet, les femmes et les jeunes s'autocensurent le plus", **Slate France**, July 16, 2017

Research covered in Tonya Riley, "Future Tense Newsletter: Trump's Idea for a U.S.-Russia Cybersecurity Unit Is Unbearably Dumb", **Slate Magazine**, July 12, 2017

Research covered in Gary Natriello, "The Chilling Effects of Surveillance", Ed Lab, Teachers College, **Columbia University**, July 12, 2017

Research covered in News, "Women and young people are hurt the most by internet surveillance – and it's getting worse", **Business Insider**, July 8, 2017

Research cited in John Naughton, "Google, not GCHQ, is the truly chilling spy network", **The Guardian**, June 18, 2017

Research recommended in Global Voices Advocacy, "In 'State of Emergency,' Internet Shutdowns Leave Ethiopians, Venezuelans Struggling to Connect", **Netizen Report**, June 1, 2017

Research covered / quoted in Jonathan Shaw, "The Watchers: Assaults on Privacy in America", **Harvard Magazine**, January-February, 2017

Research mentioned in Cynthia Wong, "The Dangers of Surveillance in the Age of Populism", **Newsweek**, February 2, 2017

Research covered in George Bowden, "Nine Important Stories of the Year That Slipped Under the Radar", **Huffington Post** (United Kingdom), December 27, 2016

Research mentioned in Henry Peck, "Speech Restrictions Cannot Be Wordplay", **Human Rights**

Watch (Dispatches Blog), October 26, 2016

Quoted in James Bradshaw, "Turkey's Erdogan uses FaceTime, social media to thwart military coup", **Globe and Mail**, July 26, 2016

Research covered in The Mackenzie Institute, "The Chilling Effect – How Mass Surveillance is Changing Your Online Behavior" (Video), June 26, 2016

Radio Interview (with host Dan Jones), "The Chilling Effect", **Radio Berkman 237**, Berkman Klein Center for Internet & Society, Harvard University, May 18, 2016

Research noted in Janus Kopfstein, "Lack of Online Privacy Has Chilling Effect, U.S. Department of Commerce Says", **Motherboard VICE**, May 14, 2016

Research covered in Brady Dale, "Humans Are the Best Sensors—Pairing Flickr With the News", **New York Observer**, May 6, 2016

Research covered / quoted in Annika Kremer, "Studie beweist Selbstzensur durch Überwachung", **Der Freitag** (Germany), May 6, 2016

Research covered / quoted in Tim Cushing, "The Chilling Effect Of Mass Surveillance Quantified", **Techdirt**, May 2, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations", **The Daily Mail** (United Kingdom), May 1, 2016

Research covered in News, "Study: Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations", **Jerusalem Post**, May 1, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged", **The Nation (Pakistan)**, May 1, 2016

Research covered / quoted in, News, "People Too Afraid To Search Privacy-Sensitive Topics After Snowden Revelations— Oxford Study", **Russia Today**, May 1, 2016

Research covered / quoted in Joshua Kopstein, "Snowden's Leaks Made People Less Likely to Read About Surveillance", **Motherboard**, April 30, 2016

Research covered in Yael Grauer, "Traffic to Wikipedia Entries Related To Terrorism Plummeted In Light of NSA Spying", **Forbes**, April 29, 2016

Research covered in Le Monde Pixels, "Traffic Après les révélations Snowden, moins de visites sur les pages Wikipédia sensibles", **Le Monde (France)**, April 29, 2016

Research covered in Amaelle Guiton, "Web : de la surveillance de masse à l'autocensure", **Libération (France)**, April 29, 2016

Research covered / quoted in Nieuws, "Als de staat meeluistert zijn burgers minder vrij", **Joop VARA** (Netherlands), April 29, 2016

Research covered / quoted in Glenn Greenwald, "New Study Shows Mass Surveillance Breeds Meekness, Fear, and Self-Censorship", **The Intercept**, April 28, 2016

Research covered / quoted in Marius Jorgenrud , “Færre leser om terror på Wikipedia etter Snowden-avsløringene, **Digi No** (Norway), April 28, 2016

Research covered in “Traffic to Wiki Terrorism Entries Plunged After Snowden Leaks”, **Hindustan Times** (India), April 28, 2016

Research covered in News, “Traffic to Wikipedia terrorism entries plunged after Snowden revelations, study finds”, **Reuters Africa**, April 28, 2016

Research covered in News, “Denúncias de Snowden fizeram cair tráfego de páginas sobre terrorismo na Wikipedia, entenda”, **Tudo Celular** (Brazil), April 28, 2016

Research covered in Giulio Cupini and Fabio Scalet, “Privacy, lo spionaggio ci rende più ignoranti”, **Il Fatto Quotidiano** (Italy), April 28, 2016

Research covered in News, “Internet Users Avoid Searching for 'Terrorism' on Web After Snowden Leak”, **Sputnik News** (Russia), April 28, 2016

Research covered in Tim Starks, “Morning Cyber-Security Report”, **Politico**, April 28, 2016

Research covered / quoted in Jeff Guo, “New Study: Snowden’s disclosures about NSA spying had a scary effect on free speech”, **Washington Post**, April 27, 2016

Research covered / quoted in Joseph Menn, “Traffic to Wikipedia terrorism entries plunged after Snowden revelations, study finds”, Reuters (International), April 27, 2016

Research covered in NBC News Report, “Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations”, **NBC News**, April 27, 2016

Research covered / quoted in “Wikipedia Terrorism Entries Traffic Fell After Snowden NSA Reveal”, **Newsweek Magazine**, April 27, 2016

Research covered in News, “Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations, Study Finds”, **The New York Times**, April 27, 2016

Research covered / quoted in Cory Bennett, “Snowden revelations had chilling effect on web browsing”, **The Hill**, April 27, 2016

Research covered / quoted in Rudy Takala, “Study: Snowden leaks have made web users paranoid about what they browse”, **Washington Examiner**, April 27, 2016

Research covered / quoted in Andrew Blake, “NSA surveillance has had a chilling effect on Internet browsing: report”, **Washington Times**, April 27, 2016

Research covered in “Wikipedia traffic to terrorism entries plunge after Snowden revelations, study finds”, **Business Insider**, April 27, 2016

Research covered / quoted in J. Nate Matias, “The Effects of Surveillance and Copyright Law on Speech: Jon Penney at Berkman”, **MIT Center for Civic Media** (Blog), Massachusetts Institute of Technology, April 27, 2016

Research covered in News, “Consultas sobre terrorismo en Wikipedia bajan tras el escándalo de

Snowden: estudio", **Radio Fórmula** (Mexico), April 27, 2016

Research covered / quoted in Torsten Klein, "Studie zu Chilling Effects: Wikipedia-Artikel zu Terrorismus werden weniger gelesen", **Heise Online** (Germany), April 27, 2016

Research covered in News, "Wikipedia Pages on Terror See Traffic Plunge Post Snowden Leaks", **The Times of India**, April 27, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations: Reports", **Indian Express**, April 27, 2016

Research covered in News, "Security Revelations See Fall in Web Traffic – Study", **Otago Daily** (New Zealand), April 27, 2016

Research covered in News, "Wikipedia traffic to terrorism entries plunge after Snowden revelations, study finds", **ABC News** (Australia), April 27, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations, Study Finds", **Eyewitness News** (South Africa), April 27, 2016

Research covered in Esti Utami, "Setelah Pengakuan Snowden Pengakses Info Terorisme Menurun", **Suara News** (Indonesia), April 27, 2016

Research covered in News, "Wikipedia traffic to terrorism entries plunge after Snowden revelations, study finds", **Gulf Daily News Online** (Bahrain), April 27, 2016

Research covered in News, "Wikipedia traffic to terrorism entries plunge after Snowden revelations, study finds", **The Peninsula (Qatar)**, April 27, 2016

Research covered in "Traficul către paginile de Wikipedia dedicate terorismului a scăzut semnificativ după dezvăluirile lui Snowden (studiu)", **Agerpres** (Romania), April 27, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations, Study Finds", **The Express Tribune** (Pakistan), April 27, 2016

Research covered in News, "Traffic to Wikipedia terrorism entries plunged after Snowden revelations", **Free Malaysia Today**, April 27, 2016

Research covered in News, "Traffic to Wikipedia Terrorism Entries Plunged After Snowden Revelations, Study Finds", **Standard Media** (Kenya), April 27, 2016

Quoted in Robin Levinson King, "FCC met with Canadian researcher to understand CRTC", **The Toronto Star**, February 26, 2015

Quoted in Rebecca Lau, "Internet users receive illegal downloading notices, but what do they mean?", **Global News**, February 24, 2015

Quoted in Robin Levinson King, "Canadian viewers will get to see U.S. ads during 2017 Super Bowl", **The Toronto Star**, January 29, 2015

Quoted in M Donovan, "Failure to Connect: Nova Scotia's Digital Divide", **The Coast**, Oct 1, 2015

Quoted in: Sam Frizell, "Here's What Facebook Can Do With Your Personal Data in the Name of Science" **TIME Magazine** (July 7, 2014)

Quoted in "Elections Bill Exacerbates Lack of Privacy, Political Parties Micro Target Voters", **The Hill Times**, April 7 2014

Television Interview / Quoted in "NS Government hires Ontario lawyers to fight Bluenose II lawsuit:", **Global News** (TV), September, 2013

Quoted extensively in: Anonymous, "The Great Firewall of China", **Index on Censorship Uncut** Blog (15 March 2013)

ACADEMIC HONOURS AND DISTINCTIONS

- 2016 –
 - Best Moot Team (Dalhousie), Best Oral Advocate (Gabby Lemoine, Dalhousie), Harold G. Fox IP Moot Competition, Toronto (Moot Team Coach / Supervisor)
 - Research Affiliation, Civil Servant Project, MIT Media Lab (2018 – Present)
 - Research Affiliation, CITP, Princeton University (2017 – Present)
 - Research Fellowship, Citizen Lab, University of Toronto (20,000CAD) (2017 – 2018)
- 2013 – 2015
 - Nomination, Law Students Association Award for Excellence in Teaching Law, Schulich School of Law, Dalhousie University (Spring 2015)
 - Centennial Scholarship, Centennial Scholarship Fund, London, U.K. (2014)
 - Research Affiliation, Berkman Klein Center for Internet and Society, Harvard University (2013 – 2015)
- 2012 – 2013
 - Berkman Fellowship, Berkman Klein Center for Internet and Society (now Berkman Klein Center), Harvard University (2012 – 2013)
 - Research Fellowship, Citizen Lab, University of Toronto (2012 – 2017)
 - Research Affiliate, The Takedown Project, UC Berkeley Law; Eisenhower Institute, Columbia University (2013 – Present)
- 2010 – 2012
 - Google Policy Fellowship, Citizen Lab, University of Toronto (7,500USD) (2011)
 - 2011 Peter Oliver Prize in Canadian Legal History (c/o Osgoode Society/Law Society of Upper Canada) for "best article on Canadian legal history"
 - Invited to give 2010 Annual Public Lecture on Cyberlaw at Victoria University of Wellington Law School, Victoria University, Wellington, New Zealand
 - Social Sciences & Humanities Research Council Canadian Graduate Scholarship (converted to a Doctoral Fellowship to use abroad) (2010 – 2014)
- 2006 – 2009
 - Harlan Fiske Stone Scholar Distinction, Columbia Law School (2009)
 - Fulbright Scholarship, Canada-U.S. Fulbright Foundation (2008 –2009)
 - Columbia Graduate Legal Studies Scholarship, Columbia Law School (2008 –2009)
 - Lady Margaret Hall Award, University of Oxford (top student in the college's Social Sciences Division) (2007)
 - Mackenzie King Travelling Scholarship, Mackenzie King Trust (2006 –2007)
- 2001 – 2003
 - Tom Wilcox Award, Schulich School of Law, Dalhousie University (2003)
 - Dean's List Distinction, Schulich School of Law, Dalhousie University (2003)
 - Reviews Editor, Dalhousie Journal of Legal Studies, Dalhousie Law (2003)
 - Dean's List Distinction, Dalhousie University (2000)

TEACHING

- 2012 – Schulich School of Law, Dalhousie University**
Law and Technology (2014 – Present)
Upper Year Major Paper Seminar, Fall Term
- Contract Law – Fall and Winter (2012 – Present)
Mandatory First Year Course, Full Year
- Harold G. Fox Intellectual Property Moot (Coach/Supervisor) (2017 – Present)
Won top moot team and top mooter in first year participating (2017-2018)
- Aboriginal and Indigenous Law in Context – (Facilitator) (2018 – Present)
First year 2 credit mandatory intensive course; I will facilitate, review, and engage student presentations as part of the Winter term module
- Intellectual Property Law – (2012 – 2016)
Upper Year General Survey Course, Winter Term
- 2009 – 2010 Faculty of Law, Victoria University of Wellington**
Internet Law and Regulation – Spring 2010
Upper Year / Graduate Seminar

GRADUATE SUPERVISION

Supervisor / Second Reader

- Maria Dugas (Canada), LLM student, Thesis: “The Theoretical Case Against Criminalized Copyright Infringement in Canada” (Completed: 2017)
- Ashwin Krishnan (India), LLM student, Thesis: “Towards an Effective Regime Against Online Copyright Infringement in India” (Completed: 2016)
- Olefunke Salami (Nigeria), LLM student, Thesis: “Privacy Protection for Mobile Health (mHealth) in Nigeria” (Completed: 2015)
- Farhan Raouf (Pakistan), LLM student, Thesis: “Modernizing Pakistan's Blasphemy Laws as Hate Speech” (Completed: 2014)

Directed Research Papers

- Manal Alotiaba (Saudi Arabia), LLM student, “Anti -Cybercrime Law, Revenge Porn and Cyber Misogyny: A Comparative Analysis of the KSA, Canada, Egypt, and Pakistan” (Completed: 2018)
- Liam Randhawa (Canada), “Luxury Fashion Brand Accessories: Perverting Trademark Law Theories” (Completed: 2016)

Examiner

- Nick Hooper (Canada), LLM student, “Language’s Empire: The Linguistic Foundations of Administrative Law” (Expected completion: Fall 2018)

PROFESSIONAL SERVICE

University Committees / Leadership

Director, Law and Technology Institute (September 2017 – Present)
Senator (Law School Rep.), Senate Standing Committee, Dalhousie U. (September 2017 – Present)
Chair, Information Technology Committee (2014 – Present)
Member: Research Committee (2012 – Present)
Member, Information Technology Committee (2012 – Present)
Associate, Jean Monnet European Union Centre for Excellence (2012 – Present)

Steering / Program Committees / Conference Chair

Steering Committee Member, Free and Open Communications on the Internet Workshop, USENIX Security Symposium, Advanced Computing Systems Association (2017– Present)
Co-Chair (with Nicholas Weaver of UC Berkeley), Free and Open Communications on the Internet Workshop (FOCI), USENIX Security Symposium, Advanced Computing Systems Association (ACSA) (2016-2017).
Program Committee: Free and Open Communications on the Internet Workshop, USENIX Security Symposium, Advanced Computing Systems Association (ACSA) (2012-2016)

Research Advisory Work

Member, Ethics Feedback Panel for Networking and Security Research, The Research Ethics Project, Microsoft Research, Cambridge, MA (2013 – Present)

PROFESSIONAL DESIGNATIONS AND MEMBERSHIPS

Bar Admissions

Law Society of Upper Canada, Province of Ontario, Canada (Year of Call: 2004)
New York State (Year of Call: 2013)

Professional Certifications

Certificate, Professional Training for Social Scientists, Saïd Business School, Oxford University
Certificate of Completion, Tri Council Policy Statement: Ethical Conduct for Research Involving Humans Course on Research Ethics (TCPS2: CORE)

Research Affiliations

Center for Information Technology Policy, Princeton University (2017 – Present)
Civil Servant Project, MIT Media Lab, Massachusetts Institute of Technology (2018 – Present)
Citizen Lab, Munk School of Global Affairs, University of Toronto (2012– Present)

Takedown Project, UC Berkeley Law / Columbia University (2012– Present)

Associate, Jean Monnet European Union Centre for Excellence (2012 – Present)

Organizations and Professional Membership

International Political Science Association (IPSA), Paris (since 2017).

Electronic Frontier Foundation (EFF), San Francisco, California (since 2012)

InternetNZ, Internet Society of New Zealand, (since 2009)

Oxford Union Debating Society (OUDS), University of Oxford (since 2007)