Research Ethics and Best Practices: Special topics for Social Data Science

Bernie Hogan

Python for Social Data Science, Week 4, Lecture 3

November 1, 2018

The function of research ethics

- Research ethics are definitely a subset of philosophical ethics although normative ethics in philosophy tend to cover much wider range than just scientific research.
- Research ethics assumes a power differential between researcher and subject and is principally concerned with doing no harm to research subjects.
- Research ethics draws from the logic of normative ethics in philosophy to understand what should or should not be involved in the collection of data:
  - ***Utilitarian***: The most happiness for the most people / the least suffering for the fewest people. Seen as "consequentialist", i.e. focused on consequences.
  - ***Deontological***: Actions based on essential criteria or principles outside of the system. Human rights aren't calculable.
  - ***Virtue***: Value of things in and of themselves, without referent to another system. E.g., I value honesty; people's reasons for honestly aren't as important as their practice of it.

The relationship between principles and current research ethics

- Each set of normative ethical principles comes into play in a research ethics application.
- Virtue ethics are expected of the researcher.
- We use predominantly use deontological principles (particularly in Europe) for guiding decisions on approval.
- Sometimes an application falls short on deontics but has value; e.g., deception, wherein utilitarian ethics are sometimes used to determine the acceptability of the research.
- The GDPR would seem to make a lot of things more deontic, but there are still provisions for research. For example, there is slightly more latitude for the processing of personal information (but it still must be securely stored).

Things which should be considered in an application

- Are you collecting personally identifiable information?
- Are you creating new knowledge about an individual?
- Is the presentation of data sufficiently coarsened?
- What’s your data storage plan?
- With whose consent is the data being taken?

Consent: A utilitarian issue

- Despite what you might assume, consent is not a deontological issue in research, but one that is highly, highly weighted towards consent as a right. This is different than data processing outside research, which typically requires affirmative consent (e.g., don't auto-add people; you need clear, positive affirmation). Some research designs challenge individual affirmative consent:
  - Data streams
  - Ego-network studies (aka personal networks, egonets)
  - Personal communication stores / phone logs / message data etc…
  - Audit studies / A/B interventions
- Typically the reference to past work, a defense of the social good and demonstration of virtue get this work approved. It is much more plausible to override consent for indirect parties than for a particular respondent.
  - That is, we would expect you to have a consent form with any human subjects work, but we won't ask for consent of a third party who is mentioned in email.

Deception and virtue

- It is not the case that the revelation of deception is always a good or bad thing, it's dependent on the method.
- In **audit studies** (i.e. A/B field studies), revelation leads to potential pool contamination and anguish (e.g., people assume general things about themselves from their individual responses). The goal is to resemble the population as much as possible and only take a representative sample's worth of audited data.
- In **false information in experiments**, debriefing is a must. For example, when asking people if they can spot the fake news story, you must tell the individual afterwards that some of this information was false or misleading.

City & Community

Racial and Ethnic Biases in Rental Housing: An Audit Study of Online Apartment Listings

Bernie Hogan*
Oxford Internet Institute, University of Oxford

Brent Berry
Department of Sociology, University of Toronto

As rental markets move online, techniques to assess racial/ethnic rental housing discrimination should keep pace. We demonstrate an audit method for assessing discrimination in Toronto's online rental market. As a multicultural city with less segregation and more diverse visible minorities than most US cities, Toronto lends itself to multiname audit studies. We sent 5,620 fictitious email inquiries to landlords offering apartments on *Craigslist*, a popular Internet classifieds service. Each landlord received one inquiry each from five racialized groups—Caucasian, Black, E/SE Asian, Muslim/Arabic, and Jewish. In our experiments, "opportunity denying" discrimination (exclusion through nonresponse) was 10 times as common as "opportunity diminishing" discrimination (e.g., additional rental conditions). We estimate Muslim/Arabic-racialized men face the greatest resistance, with discrimination occurring in 12 percent of experiments. The level of discrimination is modest but significant for Asian men (7 percent), Blacks (5 percent), and Muslim/Arabic women (5 percent). Discrimination was evenly spread throughout the city.

Experimental evidence of massive-scale emotional contagion through social networks

Adam D. I. Kramer[a,1], Jamie E. Guillory[b,2], and Jeffrey T. Hancock[b,c]

[a]Core Data Science Team, Facebook, Inc., Menlo Park, CA 94025; and Departments of [b]Communication and [c]Information Science, Cornell University, Ithaca, NY 14853

Edited by Susan T. Fiske, Princeton University, Princeton, NJ, and approved March 25, 2014 (received for review October 23, 2013)

Emotional states can be transferred to others via emotional contagion, leading people to experience the same emotions without their awareness. Emotional contagion is well established in laboratory experiments, with people transferring positive and negative emotions to others. Data from a large real-world social network, collected over a 20-y period suggests that longer-lasting moods (e.g., depression, happiness) can be transferred through networks [Fowler JH, Christakis NA (2008) *BMJ* 337:a2338], although the results are controversial. In an experiment with people who use Facebook, we test whether emotional contagion occurs outside of in-person interaction between individuals by reducing the amount of emotional content in the News Feed. When positive expressions were reduced, people produced fewer positive posts and more negative posts; when negative expressions were reduced, the opposite pattern occurred. These results indicate that emotions expressed by others on Facebook influence our own emotions, constituting experimental evidence for massive-scale contagion via social networks. This work also suggests that, in contrast to prevailing assumptions, in-person interaction and nonverbal cues are not strictly necessary for emotional contagion, and that the observation of others' positive experiences constitutes a positive experience for people.

demonstrated that (*i*) emotional contagion occurs via text-based computer-mediated communication (7); (*ii*) contagion of psychological and physiological qualities has been suggested based on correlational data for social networks generally (7, 8); and (*iii*) people's emotional expressions on Facebook predict friends' emotional expressions, even days later (7) (although some shared experiences may in fact last several days). To date, however, there is no experimental evidence that emotions or moods are contagious in the absence of direct interaction between experiencer and target.

On Facebook, people frequently express emotions, which are later seen by their friends via Facebook's "News Feed" product (8). Because people's friends frequently produce much more content than one person can view, the News Feed filters posts, stories, and activities undertaken by friends. News Feed is the primary manner by which people see content that friends share. Which content is shown or omitted in the News Feed is determined via a ranking algorithm that Facebook continually develops and tests in the interest of showing viewers the content they will find most relevant and engaging. One such test is reported in this study: A test of whether posts with emotional content are more engaging.

The experiment manipulated the extent to which people ($N =$

Editorial Expression of Concern: Experimental evidence of massivescale emotional contagion through social networks

PNAS July 22, 2014 111 (29) 10779; published ahead of print July 3, 2014 https://doi.org/10.1073/pnas.1412469111

See original article:

Experimental evidence of massive-scale emotional contagion through social networks

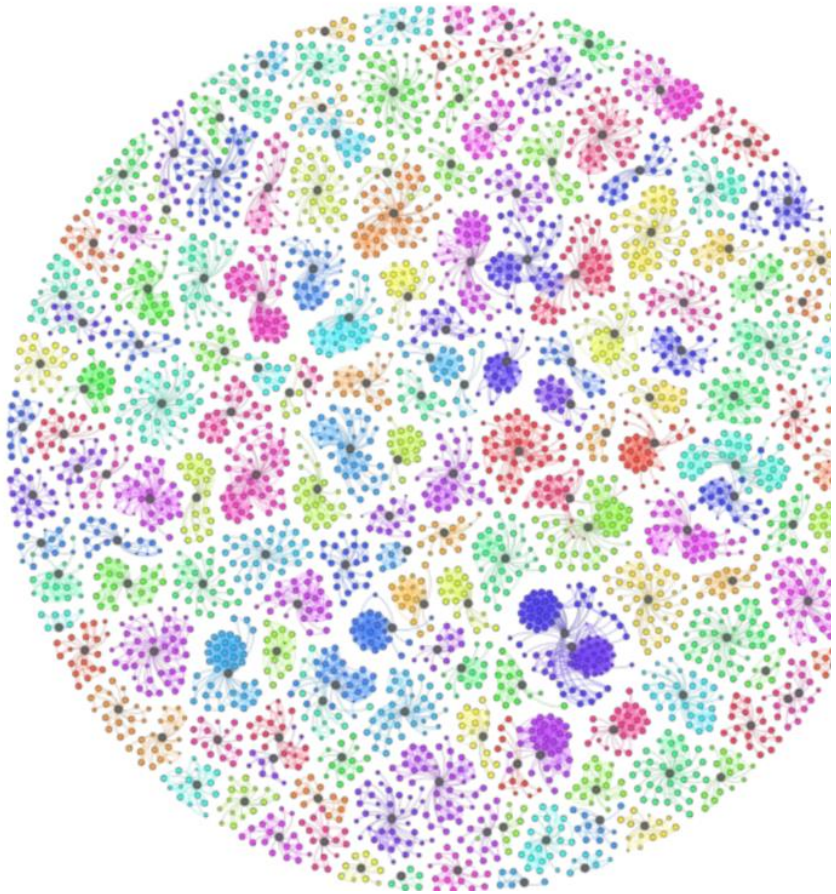
Article | Info & Metrics | PDF

PSYCHOLOGICAL AND COGNITIVE SCIENCES PNAS is publishing an Editorial Expression of Concern regarding the following article: "Experimental evidence of massive-scale emotional contagion through social networks," by Adam D. I. Kramer, Jamie E. Guillory, and Jeffrey T. Hancock, which appeared in issue 24, June 17, 2014, of *Proc Natl Acad Sci USA* (111:8788–8790; first published June 2, 2014; 10.1073/pnas.1320040111). This paper represents an important and emerging area of social science research that needs to be approached with sensitivity and with vigilance regarding personal privacy issues.

Triangulation / Entity Resolution

- Triangulation is different than an audit study. Here we are identifying particular people or creating new knowledge about a particular (set of) person(s). In audit studies we are generalising about a population.
  - It's harder here to justify not having the consent of the person(s) involved. This is especially the case if that data is going to be displayed or released in any form. Thus, finding racists on one corner of Reddit and following them around the site (or the web) does not mean displaying a real case in a paper or justify releasing that data, even if naming and shaming would seem like a utilitarian net positive. Even if public to begin with, your structuring of that data in ways that the person did not consider can still have consequences.
  - But what about merging egonets from a health survey and discovering high risk or even likely infected people?

Soc Networks. 2017 January ; 48: 250–255. doi:10.1016/j.socnet.2016.10.001.



Validation of tie corroboration and reported alter characteristics among a sample of young men who have sex with men

Gregory Phillips II[a], **Patrick Janulis**[a], **Brian Mustanski**[a], and **Michelle Birkett**[a]

[a]Northwestern University, Feinberg School of Medicine, Department of Medical Social Sciences, 625 N. Michigan Ave., Chicago, IL 60611, USA

Abstract

The differences between direct ties (i.e., ties between a respondent and their nominees) and ties between nominees (indirect) are key to understanding network structure, yet remain understudied. Within a sample of 175 young men who have sex with men, we explored the corroboration of sex and drug ties, and factors associated with corroboration. The majority of instances in which there was no corroboration for either sex or drug ties was due to one individual not appearing in another respondent's network. When an individual did appear in another respondent's network, direct sex and drug ties were corroborated in most cases. We also found that more indirect sex ties were corroborated than direct sex ties (95.7% vs. 88.9%), but the reverse was true for indirect versus direct drug ties (73.1% vs. 84.1%). Strength of relationship and frequency of communication were both associated with confirmed direct ties, but not with indirect ties. Based on these findings, we recommend that direct and indirect ties be treated differently in network analyses.

k-ANONYMITY: A MODEL FOR PROTECTING PRIVACY[1]

LATANYA SWEENEY

School of Computer Science, Carnegie Mellon University, Pittsburgh, Pennsylvania, USA
E-mail: latanya@cs.cmu.edu

Received May 2002

Consider a data holder, such as a hospital or a bank, that has a privately held collection of person-specific, field structured data. Suppose the data holder wants to share a version of the data with researchers. How can a data holder release a version of its private data with scientific guarantees that the individuals who are the subjects of the data cannot be re-identified while the data remain practically useful? The solution provided in this paper includes a formal protection model named *k*-anonymity and a set of accompanying policies for deployment. A release provides *k*-anonymity protection if the information for each person contained in the release cannot be distinguished from at least *k*-1 individuals whose information also appears in the release. This paper also examines re-identification attacks that can be realized on releases that adhere to *k*-anonymity unless accompanying policies are respected. The *k*-anonymity protection model is important because it forms the basis on which the real-world systems known as Datafly, μ-Argus and *k*-Similar provide guarantees of privacy protection.

Keywords: data anonymity, data privacy, re-identification, data fusion, privacy.

Journal of Reliable Intelligent Environments (2018) 4:39–55
https://doi.org/10.1007/s40860-018-0054-5

ORIGINAL ARTICLE

Building accountability into the Internet of Things: the IoT Databox model

Andy Crabtree[1] · Tom Lodge[1] · James Colley[1] · Chris Greenhalgh[1] · Kevin Glover[1] · Hamed Haddadi[2] · Yousef Amar[3] · Richard Mortier[4] · Qi Li[4] · John Moore[4] · Liang Wang[4] · Poonam Yadav[4] · Jianxin Zhao[4] · Anthony Brown[5] · Lachlan Urquhart[5] · Derek McAuley[5]

Received: 25 August 2017 / Accepted: 12 January 2018 / Published online: 27 January 2018

Abstract

This paper outlines the IoT Databox model as a means of making the Internet of Things (IoT) accountable to individuals. Accountability is a key to building consumer trust and is mandated by the European Union's general data protection regulation (GDPR). We focus here on the 'external' data subject accountability requirement specified by GDPR and how meeting this requirement turns on surfacing the invisible actions and interactions of connected devices and the social arrangements in which they are embedded. The IoT Databox model is proposed as an in principle means of enabling accountability and providing individuals with the mechanisms needed to build trust into the IoT.

Keywords GDPR · Accountability · Internet of Things (IoT) · IoT Databox

Indirect consent

- This is not implied consent or tacit consent (which is superseded by affirmative consent).
- It is about a third-parties who will appear in the process of collecting data from an individual who themselves have given consent.
- Indirect consent should **never** lead to the *revelation* of personally identifying information.
  - It is not appropriate to show labels on a specific egonet from a specific study, or to show real messages where the research subject is the recipient. Use sufficient fictitious or simulated examples wherever possible.
- Indirect information is still reasonable for use and analysis as it can contextualise the individual. Besides, incidental collection is virtually inevitable.
- Data storage also figures heavily here. Data with indirect PII tends not to be available for third party access even if the respondent has volunteered their own data. It is usually held on for a mandated time (3 years here) and then destroyed.

Tastes, Ties, and Time: Facebook data release

September 25, 2008

In collaboration with Harvard sociology graduate students Kevin Lewis and Marco Gonzalez, and with UCLA professor Andreas Wimmer and Harvard professor Nicholas Christakis, Berkman Fellow Jason Kaufman has made available a first wave of Facebook.com data through the Dataverse Network Project.

The dataset comprises machine-readable files of virtually all the information posted on approximately 1,700 FB profiles by an entire cohort of students at an anonymous, northeastern American university. Profiles were sampled at one-year intervals, beginning in 2006. This first wave covers first-year profiles, and three additional waves of data will be added over time, one for each year of the cohort's college career.

Though friendships outside the cohort are not part of the data, this snapshot of an entire class over its four years in college, including supplementary information about where students lived on campus, makes it possible to pose diverse questions about the relationships between social networks, online and offline.

Special thanks are due to Kevin Lewis, and to Marco Gonzalez, for their heavy lifting on the project.

Researchers may access the data at http://dvn.iq.harvard.edu/dvn/dv/t3.
A brief application and consent form are required for access.
Questions about the data and the access process may be sent to Kevin Lewis.

Last updated September 25, 2008

UPDATE (10/13/10): The T3 dataset is still offline as we take further steps to ensure the privacy of students in the dataset. Please check back later at this site for additional updates- a notice will be posted when the distribution process has resumed.

“But the data is already public”: on the ethics of research in Facebook

Michael Zimmer

Published online: 4 June 2010

Abstract In 2008, a group of researchers publicly released profile data collected from the Facebook accounts of an entire cohort of college students from a US university. While good-faith attempts were made to hide the identity of the institution and protect the privacy of the data subjects, the source of the data was quickly identified, placing the privacy of the students at risk. Using this incident as a case study, this paper articulates a set of ethical concerns that must be addressed before embarking on future research in social networking sites, including the nature of consent, properly identifying and respecting expectations of privacy on social network sites, strategies for data anonymization prior to public release, and the relative expertise of institutional review boards when confronted with research projects based on data gleaned from social media

The dataset comprises machine-readable files of virtually all the information posted on approximately 1,700 [Facebook] profiles by an entire cohort of students at an anonymous, northeastern American university. Profiles were sampled at 1-year intervals, beginning in 2006. This first wave covers first-year profiles, and three additional waves of data will be added over time, one for each year of the cohort’s college career.

Though friendships outside the cohort are not part of the data, this snapshot of an entire class over its 4 years in college, including supplementary information about where students lived on campus, makes it possible to pose diverse questions about the relationships between social networks, online and offline. (N.A. 2008)

Facebook Social Network for 100 Universities

View | Resources | History

The dataset consists of one hundred collegiate Facebook friendship networks. The dataset also includes information on gender, high-school, dorm, academic major, and some other attributes. Note that names of users have been stripped away, and attributes have been assigned numeric values to help protect identities.

Read more »

Resources

100 school sample size=197M

zip

100 school sample size=197M

http://people.maths.ox.ac.uk/~porterm/data/facebook100.zip [downloaded 84 times]

View

[URL unobtainable]

5 school sample size=13M

zip

5 school sample size=13M

http://people.maths.ox.ac.uk/~porterm/data/facebook5.zip [downloaded 73 times]

View

[URL unobtainable]

Traud A. L., Kelsic, E. D., Mucha, P. J., & Porter, M. A. (2011). Comparing Community Structure to Characteristics in Online Collegiate Social Networks. *SIAM Review*, *53*(3), 526–543.

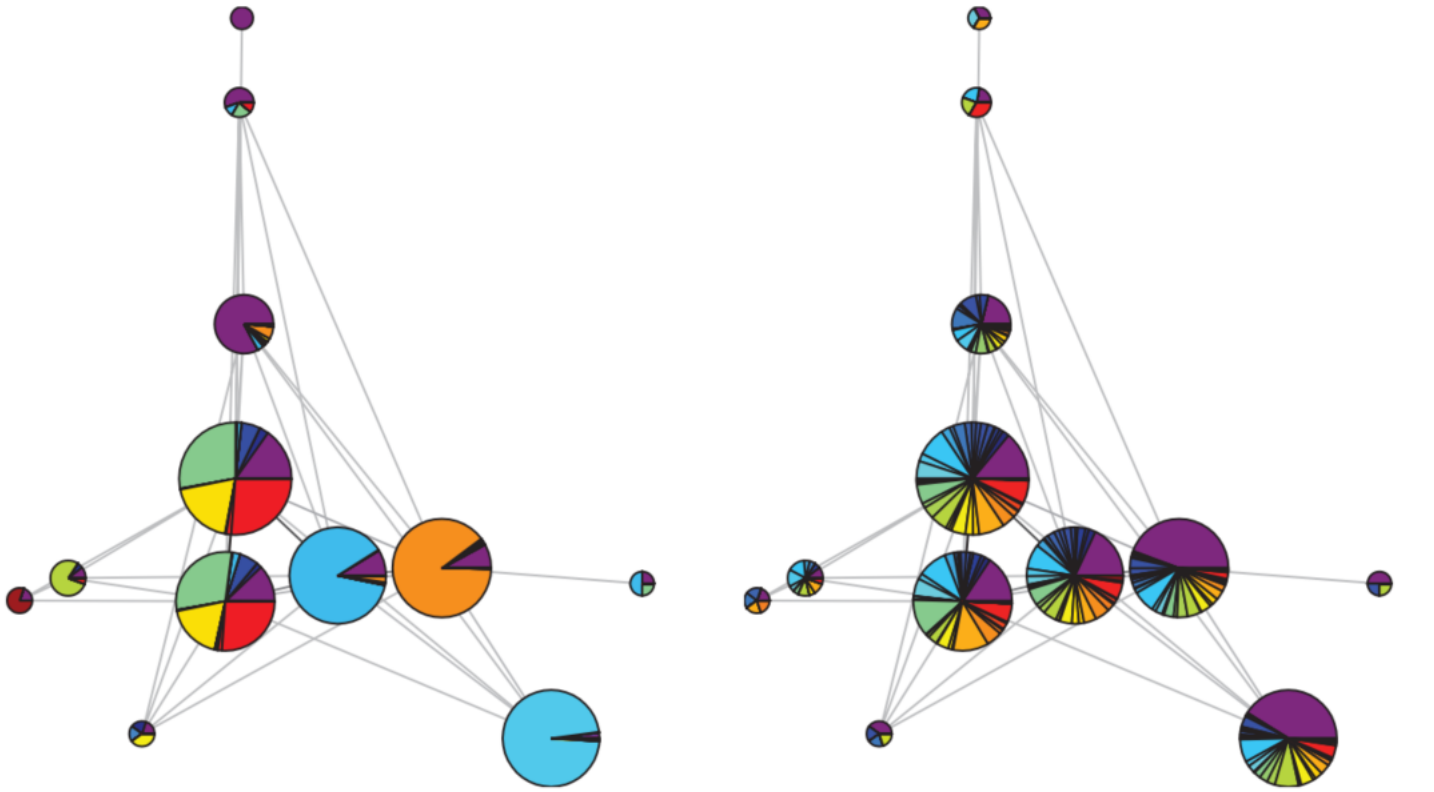


Fig. 4.1 *Pie charts of Princeton, colored by (left) class year and (right) major. (As before, purple slices correspond to people who did not identify the relevant characteristic.)*

Data minimization

- Data should be considered not necessarily or merely the new oil, but also the new uranium. **It's radioactive**. In the right hands it's power, but stored incorrectly it can leak and contaminate who ecosystems.
- The best way to safeguard yourself is to not be greedy in the first place. In standard European data processing you should only be taking what data you need and for what duration you need it. Research, again, is more flexible, but ethics committees still tend to favour a light footprint.

Situating the University

- Research ethics do not merely concern the virtue of the researcher, but their protection as well. Often, recommendations made by the research ethics committee will concern the safety and risk to wellbeing of the researcher.
- The **university assumes liabilities** when it takes on research through ethical approval. It doesn't want to be liable for a lawsuit. Further to this, it will not grant retroactive ethical approval. You can get a statement saying the research conforms to ethical standards, but not ethical approval sufficient for grants, most journals and civil law.
- But also, these committees can concern **well being and security of the researcher**. For example, what about the safety, legality and mental health of a researcher of dark web topics (e.g., terrorism, child abuse imagery, illicit drug trading)? The university will have certain safeguards, such as recommending counselling for researchers who have to do work on sensitive topics. But sometimes, very rarely, research is not permitted on these grounds. The vast majority of the time, however, the work is eventually approved.
- The research ethics review is a **facilitative process**, not a combative one.

Platform Criminalism

The 'Last-Mile' Geography of the Darknet Market Supply Chain

Martin Dittus
Oxford Internet Institute
University of Oxford
Oxford, UK
martin.dittus@oii.ox.ac.uk

Joss Wright
Oxford Internet Institute
University of Oxford
Oxford, UK
The Alan Turing Institute
London, UK
joss.wright@oii.ox.ac.uk

Mark Graham
Oxford Internet Institute
University of Oxford
Oxford, UK
The Alan Turing Institute
London, UK
mark.graham@oii.ox.ac.uk

ABSTRACT

Does recent growth of darknet markets signify a slow reorganisation of the illicit drug trade? Where are darknet markets situated in the global drug supply chain? In principle, these platforms allow producers to sell directly to end users, bypassing traditional trafficking routes. And yet, there is evidence that many offerings originate from a small number of highly active consumer countries, rather than from countries that are primarily known for drug production. In a large-scale empirical study, we determine the darknet trading geography of three plant-based drugs across four of the largest darknet markets, and compare it to the global footprint of production and consumption for these drugs. We present strong evidence that cannabis and cocaine vendors are primarily located in a small number of consumer countries, rather than producer countries, suggesting that darknet trading happens at the 'last mile', possibly leaving old trafficking routes intact. A model to explain trading volumes of opiates is inconclusive. We cannot find evidence for significant production-side offerings across any of the drug types or marketplaces. Our evidence further suggests that the geography of darknet market trades is primarily driven by existing consumer demand, rather than new demand fostered by individual markets.

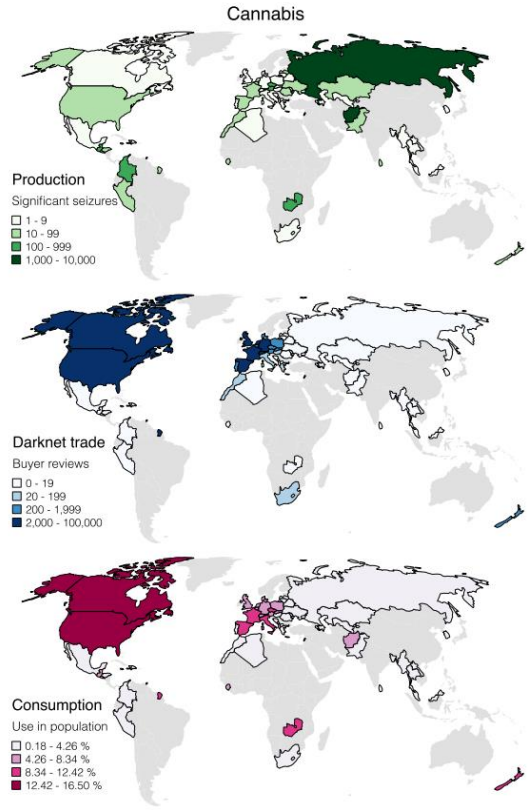


Figure 2: Global distribution of cannabis production, trade, and consumption[9].

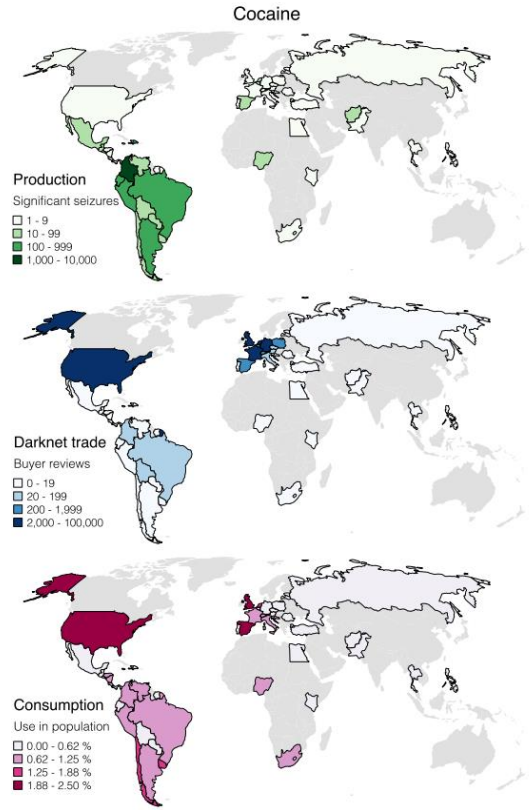


Figure 3: Global distribution of cocaine production, trade, and consumption.

Practical considerations

- The CUREC forms vary in complexity. Most research uses a 1/A form, which can be approved by the DREC (Departmental Research Ethics Committee). Some research requires a 2, which has to be approved at the social science and humanities IDREC (inter-departmental REC). It's slower and to be avoided if possible. The forms are available through CUREC and should be discussed with your supervisor.
  - https://researchsupport.admin.ox.ac.uk/governance/ethics/apply/sshidrec
  - The most up-to-date forms, but these are to be submitted through the department (OII or your supervisor's, not directly to SSH-IDREC).
- Please speak with Scott about details for your specific courses and thesis, but I do believe that a CUREC should be submitted in mid-Hilary, as is the case with SSI, even if your work uses anonymized data. If it's human subjects in any way, it has to go in. This was not the case for course work.

Procedures and best practices

- CUREC have a notion of procedures, which are approved procedures that main certain invasive or difficult work can still be approved by departmental committees. Available here:
  - https://researchsupport.admin.ox.ac.uk/governance/ethics/resources/ap
- They also have a notion of best practice guides for domains of research. I was partially involved in the Internet-based research guide, (BP6) but moreso, Andy Przybylski at the department and most of all Claudia Kozeny-Pelling at the division. It evolves.
  - https://researchsupport.admin.ox.ac.uk/governance/ethics/resources/bpg

Approaches to data presentation

- For each of these think about:
  - Who benefits; is it differential?
  - Are there any harms? Indirectly?
  - Can confidentiality or anonymization be useful?
  - Data storage and data access?
- Consider presenting the following information in a paper:
  - A twitter account, with photo and tweet…from an account that was deleted after you submitted the paper.
  - A full text quote (long enough to be likely unique and thus reverse searchable)
  - A whole network map that shows communication hierarchies

Future issues in research ethics

Some I've considered as boundary cases:

- Deepfakes / ML likenesses: Can we render people without their consent?
- Unintentional discoveries: What if we identify people in ways we didn't expect (unintentional outing, for example)
- Hacked data: Is it okay to mine data from "The Fappening" or "The Snappening?", What about data from "Ashley Madison leaks?"

What issues do you see on the horizon?

References

- Crabtree, A., Lodge, T., Colley, J., Greenhalgh, C., Glover, K., Haddadi, H., … Mcauley, D. (2018). Building accountability into the Internet of Things : the IoT Databox model. *Journal of Reliable Intelligent Environments*, *4*, 39–55. https://doi.org/10.1007/s40860-018-0054-5
- Dittus, M., Wright, J., & Graham, M. (2018). Platform Criminalism: The "Last Mile" Geography of the Darknet Market Supply Chain. In *World Wide Web*. Lyon, France: International World Wide Web Conference Committee.
- Hogan, B., & Berry, B. (2011). Racial and Ethnic Biases in Rental Housing: An Audit Study of Online Apartment Listings. *City & Community*, *10*(4), 351–372. https://doi.org/10.1111/j.1540-6040.2011.01376.x
- Kramer, A. D. I., Guillory, J. E., & Hancock, J. T. (2014). Experimental evidence of massive-scale emotional contagion through social networks. *Proceedings of the National Academy of Sciences*, *111*(24), 8788–8790.
- Kuhns, L. M., Birkett, M., Mustanski, B., Muth, S. Q., Latkin, C., Ortiz-Estes, I., & Garofalo, R. (2015). Methods for Collection of Participant-aided Sociograms for the Study of Social , Sexual and Substance-using Networks Among Young Men Who Have Sex with Men. *Connections*, *35*(1). https://doi.org/http://dx.doi.org/10.17266/35.1.1
- Phillips, G., Janulis, P., Mustanski, B., & Birkett, M. (2017). Validation of tie corroboration and reported alter characteristics among a sample of young men who have sex with men. *Social Networks*, *48*, 250–255. https://doi.org/10.1016/j.socnet.2016.10.001
- Sweeney, L. (2002). k-anonymity: A model for protecting privacy. *International Journal of Uncertainty Fuzziness and Knowledge Based Systems*, *10*(5), 557–570. Retrieved from http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.163.9182&rep=rep1&type=pdf
- Traud, A. L., Kelsic, E. D., Mucha, P. J., & Porter, M. A. (2011). Comparing Community Structure to Characteristics in Online Collegiate Social Networks. *SIAM Review*, *53*(3), 526–543.
- Zimmer, M. (2010). "But the data is already public": on the ethics of research in Facebook. *Ethics and Information Technology*, *12*(4), 313–325. https://doi.org/10.1007/s10676-010-9227-5