Data Ethics: Understanding Big Data, Algorithmic Bias, and Research Ethics

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Megan Denver
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Northeastern University
NULab for Texts, Maps, and Networks

Feel free to ask questions at any point during the presentation!

Discussion

What does research mean to you?

What are some of your research practices?

What are some guidelines you follow when doing research?

How might research be helpful or harmful?

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Workshop Agenda

- Objectives
- Introduce ‘Big Data’ Concepts
- Activity: Animal or Plant?
- Algorithmic bias and the criminal justice system
- Research ethics

Slides, handouts, and data available at **http://bit.ly/33xzyUr**

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Workshop Goals

- Understand the ways in which technologies reflect cultural, social, and political biases.
- Explore the basic process for machine learning algorithms
- Understand the ways data is being used in society as well as how algorithms impact and shape our daily lives and the criminal justice system
- Explore the ways in which these questions and methods are influencing how humanists and social scientists do research and practice their craft

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What is ‘Big Data’?

Big data has been called the ‘new oil’ by some. Shoshana Zuboff argues that we now live in an era of ‘surveillance capitalism,’ in which large amounts of information–usually our personal information–are being analyzed quickly and typically used for profit.

The four components of big data are: **volume**, **variety**, **velocity** and **veracity**

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Big Data: What is it and why should we care?

- Big data is characterized by its **scale**
- Big data **sources** include: digitized records, social media/internet activity, or sensors from the physical environment.
- Big data is often **privately owned**
  - Example: an insurance company purchasing social media activity from facebook in order to make specific insurance sales decisions.

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AWARENESS | SCIENCE & TECH | AUG 3, 2019 AT 11:08 AM.

Google's File on You is 10 Times Bigger Than Facebook's — Here's How to View It

Google, Amazon, Apple, and Microsoft are all central players in "surveillance capitalism" and prey on our data.

THE ANTI-MEDIA

Example: If you have **location services** turned on for Google (like if you use Google maps), Google can track your every move. Go to:

https://www.google.com/maps/timeline

Ethical Implications

- Cambridge Analytica Controversy
- Big data also raises questions of autonomy, anonymity, privacy, discrimination, and bias.
- Questions to consider:
  - How are we being represented online?
  - How is our data being used?
  - Who is using it and for what purposes?
  - How might it be used in the future?

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DIY Cybersecurity and Tightening your Privacy

Want to make your life more private? Follow this “DIY Guide to Feminist Cybersecurity”

https://hackblossom.org/cybersecurity/

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Algorithms

Big data relies on the collection of high amounts of information and **algorithms** to parse through, categorize, and "read" that information.

Algorithms are a set of procedures to be followed by certain technologies (computers, cell phones, etc). Algorithms typically rely on data and a set of instructions to "read" that data in some way.

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So what do algorithms have to do with the criminal justice system?

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Risk Assessment: Algorithmic Bias

Risk assessment: used to determine the likelihood that someone will reoffend, not appear for trial, etc..

What happens when machine learning algorithms are used to help determine risk assessment?

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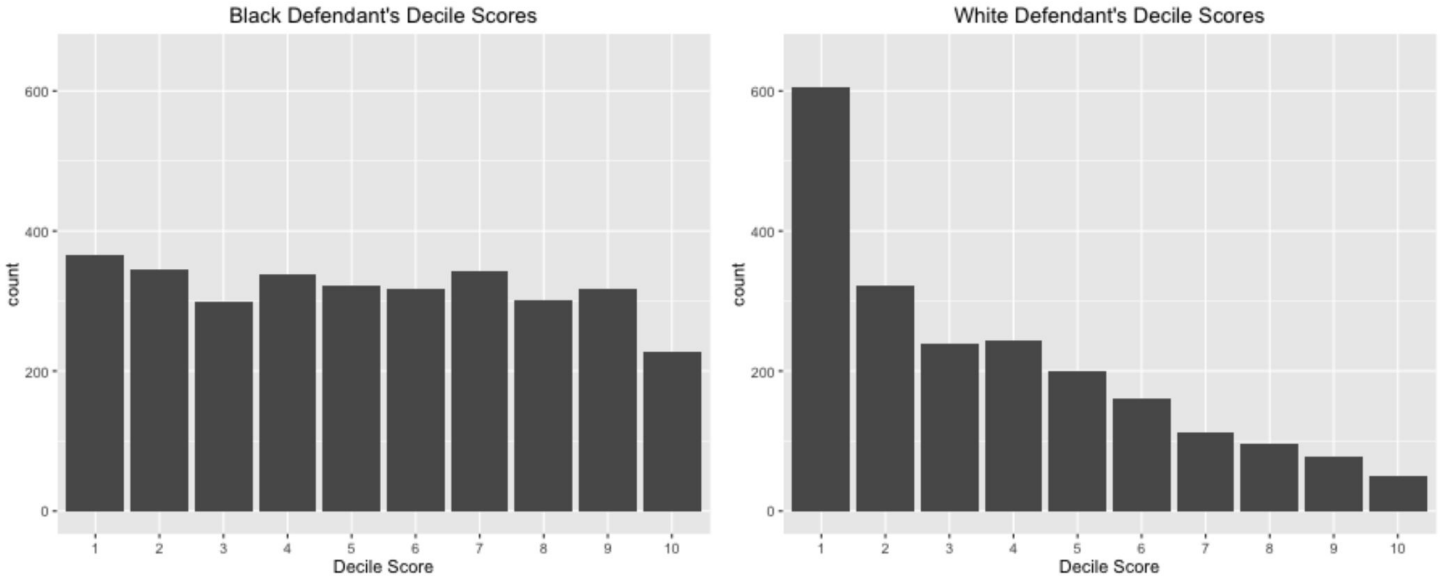
COMPAS Algorithm & ProPublica's Analysis

The COMPAS recidivism algorithm does not "see" race. Yet…



https://www.propublica.org/article/machine-bias-risk-assessments-in-criminal-sentencing
https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm

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Algorithmic Bias

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Class Discussion

Based on the readings (the ProPublica article and the FAT/ML site) and your own knowledge:

- What is your opinion using risk assessment algorithms? In what ways are they beneficial and/or harmful?
- Based on the ProPublica analysis, what are some recommendations you might have for those in the judicial system making decisions?
- What are the best and worst practices for decision making?

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So what can we do?

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Questions Researchers Must Ask

- What **information** is being collected and from where? To whom does this data **belong**?
- How is it being **collected**? Do **participants** know that it is collected, how it will be collected, and how will it be used?
- **How** will the data be analyzed? What **biases** and **ideologies** may be implicit in this analysis?
- Who will this research impact? Who will it **benefit**? Who will it potentially **harm**?

Feel free to ask questions at any point during the presentation!

Thank you!

If you have any questions, contact us at:

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Office Hours: **Tuesdays from 1–3PM in 401 Nightingale Hall**

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