



# LGST 642x

## **Big Data, Big Responsibilities: The Law and Ethics of Business Analytics**

Q2 2016 | MW 10:30am-12pm | JMHH F65

### **Overview**

Significant technologies always have unintended consequences, and their effects are never neutral. A world of ubiquitous data, subject to ever more sophisticated collection, aggregation, analysis, and use, creates massive opportunities for both financial gain and social good. It also creates dangers in areas such as privacy and discrimination, as well as simple hubris about the effectiveness of management by algorithm. This course introduces students to the legal, policy, and ethical dimensions of big data, predictive analytics, and related techniques. It then examines responses—both private and governmental—that may be employed to address these concerns.

### **Instructor**

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Office Hours: Monday 12:30-2pm, or by appointment

### **Learning Objectives**

Good data-driven decision-making means not just generating solutions, but understanding how to use them. Some of the most sophisticated firms in terms of data science expertise have already gotten into trouble over concerns about privacy, security, manipulation, and discrimination. Failure to anticipate such issues can result in ethical lapses, public relations disasters, regulatory sanctions, and even legal liability. My goal is to help you develop the skills to use analytics in the most responsible way, while remaining focused on your business objectives. After completion of the course, you should be able to:

1. Identify where algorithms depend on human judgments or assumptions.
2. Describe legal rules and regulatory obligations, in the U.S. and elsewhere, that may apply to business analytics.
3. Evaluate claims that applications of analytics raise ethical or public policy concerns.
4. Appreciate the perspectives of multiple actors on controversies about privacy, manipulation, and algorithmic bias.
5. Develop thoughtful responses to concerns about the uses of data science.
6. After graduation from Wharton, don't destroy the world, crash the economy, go to jail, or all of the above. (Money-back guarantee not available.)

The course is non-quantitative, although a basic familiarity with data science techniques is assumed. Many of the questions it covers do not have simple answers, either because concepts such as privacy cannot be reduced to binary choices, or because the scenarios involved are still unfolding. A major goal of the course is to help you develop your own well-grounded viewpoints.

## Materials

All readings are contained in a coursepack available through Study.net, or are available for free online at the hyperlinks provided in this syllabus.

## Course Requirements and Grading

### Case Study Analysis (25%)

Pick a specific example from one of the optional readings. (E.g., in the article for class #4, the discussion about retailers tracking customer movements in stores). Imagine you are at the company or companies involved. Management asks you for recommendations. How would you assess the legal/ethical risks? What steps could be taken to mitigate them? Should the company move forward, or take other actions?

You have the choice of doing this assignment on either the first half of the course (due following class #8) or the second half (due following class #13). You may also submit both assignments, in which case you will receive the higher of the two grades.

You may choose the format for your submission. It could be a paper or memo (up to 2500 words), a slide deck, a screencast with audio narration, a video, an animation, a blog post, or another way to frame your analysis. (If you have an idea, feel free to check with me before starting.) I value creativity highly.

Regardless of the format, the same grading criteria will apply, taking into account effort and originality. I am looking for work that is well-organized, well-written, and well-reasoned. It should be persuasive, but should take counter-arguments or contrary examples into consideration. The most successful submissions will demonstrate critical engagement with the course materials, and will illustrate their points with concepts introduced in the course. You are welcome to incorporate examples from your own research. Any statement that quotes or relies upon a source, whether from the course readings or outside materials, should include a footnote or an in-line (parenthetical) reference with a bibliography.

### Group Activity (15%)

We will do a group negotiation during class #13. You will take on roles and attempt to develop a consensus to address concerns about business analytics. You will receive credit as follows:

- Individual pre-negotiation prep sheet (5%)
- Group proposal, or explanation of your failure to reach consensus (10%)

### Exam (40%)

There will be one take-home exam, which will be made available toward the end of the course. It will test your comprehension of the required readings and the concepts developed in class.

### Participation (20%)

You will be assessed on the overall quality of your contributions to the course. Attendance is one factor in the participation score, but not the primary one.

## Classroom Expectations and Participation

- Please arrive on time.
- Bring a name tent and display it for each class.
- Turn off all electronic devices not used for active note-taking.
- Be prepared to contribute to the class discussion.

Participation is your responsibility. Prepare for class. Raise your hand, and make comments that show engagement with the readings and course concepts. Don't be afraid to make a mistake or take a stand. That's how learning happens.

The course is interactive, so it won't be as successful (nor will you) if students are frequently absent. That being said, we all face tradeoffs in life. I recognize that students will sometimes miss class for understandable but unexcused reasons such as recruiting. Your grade will reflect your overall level of participation; active, high-quality contributions may counterbalance an occasional absence.

There is no way to "make up" a class. However, you may miss (or show up late by more than 10 minutes) one class session during the quarter for any reason, without penalty.

If you cannot attend a class, I encourage you to get notes from another student and/or watch the class recording. Video recordings of all sessions will be available on Canvas. You don't need to tell me in advance, or contact me afterwards to explain an un-excused absence (i.e., not involving a medical issue, obligatory university/athletic trip, or family/personal emergency.) If you believe your absence should be excused, please email me an explanation and, where possible, documentation.

## Instructor Bio

Professor Kevin Werbach is an expert on the business, legal, and social implications of internet and communications technologies. He has published numerous academic and popular works on internet policy, telecommunications regulation, and legal aspects of emerging technologies. He is a pioneer in the emerging field of gamification, and the co-author of *For the Win: How Game Thinking Can Revolutionize Your Business*, which has been translated into six languages. Over 300,000 students worldwide have registered for his Coursera Massive Open Online Course (MOOC). He has received the Wharton MBA Program Teaching Innovation and Curricular Innovation Award, and was named Wharton's first-ever "Iron Prof".

Professor Werbach co-led the review of the Federal Communications Commission (FCC) for the Obama Administration's Presidential Transition Team in 2008. For nine years he hosted Supernova, a leading technology executive conference. Prior to joining the Wharton faculty, he was the editor of *Release 1.0*, a renowned technology report for senior executives, and co-organizer, with Esther Dyson, of the annual PC Forum. He also served as Counsel for New Technology Policy at the FCC during the Clinton Administration. Werbach is a *magna cum laude* graduate of Harvard Law School, where he was Publishing Editor of the Law Review, and he graduated *summa cum laude* from the University of California at Berkeley.

## Syllabus

All readings are found in the coursepack, and hyperlinks are provided below to online versions. Where there are questions listed under a reading, be prepared to address them in class discussion.

With the exception of the first and last week, Monday's class will generally introduce substantive and legal concepts through lecture and discussion. Wednesday's class will be built around interactive activities to apply and integrate your knowledge.

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### WEEK 1: FOUNDATIONS

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#### 1. THE PROMISE AND THE PERIL

How might data science change the relationships among firms, customers, employees, other firms, and governments? What are some of the legal or ethical concerns that may arise?

The White House, [Big Data: Seizing Opportunities, Preserving Values](#) (2014), pp. 1-10

- *What are the key innovations of big data and business analytics?*

Leo Hickman, [How Algorithms Rule the World](#), The Guardian, July 1, 2013

- *Algorithms are cool! Why should we worry if they rule the world?*

#### 2. "IT'S JUST MATH"

Algorithms rely on human decisions about how data are collected, analyzed, and used. Failure to appreciate this can lead to problems.

Neil Richards and Jonathan King, [Three Paradoxes of Big Data](#), 66 Stanford Law Review Online 41 (2013)

- *What practical problems arise from the three paradoxes the authors identify?*

Zeynep Tufekci, [The Real Bias Built In at Facebook](#), N.Y. Times, May 19, 2016

- *Why was Facebook criticized for its Trending Topics?*
- *Why does Tufekci say that algorithms are not neutral? What does that even mean?*
- *If algorithms are inherently biased, does that undermine the value of analytics in business?*

#### Optional

Tarleton Gillespie, [Algorithms, Clickworkers, and the Befuddled Fury Around Facebook Trends](#), NiemanLab, May 19, 2016

Nicholas Diakopoulos, [Sex, Violence, and Autocomplete Algorithms](#), Slate, August 2, 2013

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### WEEK 2: ALGOFAIL

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#### 3. LIMITS OF ANALYTICS

The first step to responsible use of analytics is to appreciate its limitations and known statistical issues.

Gary Marcus & Ernest Davis, [8 \(No, 9!\) Problems with Big Data](#), N.Y. Times, April 6, 2014

- *What are some of the common themes in the authors' list of problems?*

David Lazer et al, [The Parable of Google Flu: Traps in Big Data Analysis](#), Science, March 14, 2014

- *Why was Google Flu Trends so accurate initially, and not subsequently?*
- *Should the failure of Google Flu make us skeptical about the potential of business analytics?*

#### Optional

Alexis Madrigal, [The Deception That Lurks in Our Data-Driven World](#), Fusion, October 6, 2015

Paul Ohm, [The Underwhelming Benefits of Big Data](#), 161 Univ. of Penn. Law Review Online 339 (2013)

#### **4. GOOGLE IMAGE TAGGING EXERCISE**

Jacky Alciné just wanted to look through his photos...

### WEEK 3: DATA PROTECTION

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#### **5. PRIVACY AND SECURITY IN A BIG DATA WORLD**

Are there limits on how data should be collected, used, and shared?

Neil Richards & Jonathan King, [Big Data and the Future for Privacy](#) (2016), pp. 3-15

- *What is privacy? Why is it important?*
- *How does big data change the way we think about privacy?*

The White House, [Big Data: Seizing Opportunities, Preserving Values](#) (2014), pp. 15-21

- *What are the key elements of the U.S. approach to privacy law?*
- *Do you think the U.S. legal framework is effective in general? Will it be effective for the novel challenges of big data and business analytics?*

Paul M. Schwartz, [Data Protection Law and the Ethical Use of Analytics](#), Centre for Information Policy Leadership (2010), pp. 18-26

- *How does the European approach to privacy differ from the U.S.?*
- *How should companies respond to the legal requirements around privacy?*

#### Optional

Solon Barocas and Helen Nissenbaum, [Big Data's End Run Around Procedural Privacy Protections](#), Communications of the ACM (November 2014)

Elizabeth Weise and Jessica Guynn, [Uber Tracking Raises Privacy Concerns](#), USA Today, Nov. 19, 2014

Alessandro Acquisti et al, [Privacy and Human Behavior in the Age of Information](#), Science, January 30, 2015

David Streitfeld, N.Y. Times, [Data-Crunching Is Coming to Help Your Boss Manage Your Time](#), August 17, 2015

Stephanie Clifford and Quentin Hardy, [Attention, Shoppers: Store is Tracking Your Cell](#), N.Y. Times, July 14, 2013

David Streitfeld, [Google Concedes That Drive-By Prying Violated Privacy](#), N.Y. Times, March 12, 2013

Woodrow Hartzog and Daniel Solove, [The FTC as Data Security Regulator: FTC v. Wyndham and Its Implications](#), Bloomberg BNA Privacy and Security Law Report, April 14, 2014

## 6. PERILS OF PREDICTION

If sensitive attributes can be inferred from other data, does it even make sense to talk about privacy any more?

Charles Duhigg, [How Companies Learn Your Secrets](#), N.Y. Times Magazine, Feb. 16, 2012

- *How does Target analyze customer data to make inferences about customers?*
- *In your opinion, is the Target system an intrusion on privacy? Why or why not?*
- *Do Target's actions violate any legal rules?*
- *Do Target's actions violate any ethical norms?*
- *Should Target do anything differently?*

### Optional

Michal Kosinski et al., [Private Traits and Attributes Are Predictable From Digital Records of Human Behavior](#), 110 Proceedings of the National Academy of Sciences 5802 (2013)

Jennifer Doleac, [The Unintended Consequences of 'Ban the Box'](#), Real Clear Markets, May 31, 2016

Rachel Emma Silverman, [Bosses Tap Outside Firms to Predict Which Workers Might Get Sick](#), Wall St. Journal, February 17, 2016

## WEEK 4: MANIPULATION

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## 7. INFLUENCING USERS

To what extent does analysis itself influence behavior? And what are the limits on using analytics not merely to understand and predict customer actions, but to shape them?

Zeynep Tufekci, [Algorithmic Harms Beyond Facebook and Google: Emergent Challenges of Computational Agency](#), J. on Telecomm. & High Tech L. (2015), pp. 203-209

- *What was Facebook trying to achieve in its emotional contagion study?*
- *Why were Facebook's actions controversial?*
- *What is "algorithmic gatekeeping"? Why does Tufekci believe it is a concern?*

Tristan Harris, [How Technology Hijacks People's Minds—from a Magician and Google's Design Ethicist](#), Medium, May 18, 2016

- *Why are the techniques that Harris describes effective?*
- *Do you share Harris' concerns about the addictive character of such approaches?*

#### Optional

Evgeny Morozov, [Your Social Networking Credit Score](#), Slate, January 30, 2013

Lamont Wood, [Algorithms and Experiments Make Strange Bedfellows at SXSW](#), ComputerWorld, May 14, 2016

Robert Epstein, [How Google Could Rig the 2016 Election](#), Politico, August 19, 2015

### 8. THE CREEPY FACTOR

If an approach makes some people uncomfortable, how seriously should we take their objections?

Rebecca Rosen, [Is This the Grossest Advertising Strategy of All Time?](#), The Atlantic, October 3, 2013

- *What exactly does the author find new and objectionable about this marketing approach?*

## WEEK 5: FAIRNESS

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### 9. ALGORITHMIC MARKET POWER AND INEQUALITY

Should we be concerned about algorithmic monopolies or other anti-competitive practices? And what about those left out by the big data revolution?

Jennifer Valentino-Devries, et al, [Websites Vary Prices, Deals Based on Users' Information](#), Wall St. Journal, December 24, 2012

- *Do you find algorithmic pricing practices troubling?*

Ryan Calo, [Digital Market Manipulation](#), 82 George Washington Law Review 995 (2014), pp. 1003-1012, 1020-24

- *How do online intermediaries, in Calo's account, engage in forms of manipulation?*

Jonas Lerman, [Big Data and its Exclusions](#), 66 Stanford Law Review Online 55, September 3, 2013

- *How are the author's concerns about digital exclusion different from, and similar to, the issues of digital discrimination?*

#### Optional

The White House, [Big Data and Differential Pricing](#) (2015), pp. 8-19

Salil Mehra, [Antitrust and the Robo-Seller: Competition in the Time of Algorithms](#), 100 Minnesota Law Review (2015), pp. 1-5, 13-18, 43-55

David Ingold and Spencer Soper, [Amazon Doesn't Consider the Race of Its Customers. Should It?](#), Bloomberg, April 21, 2016

Ann Carrns, [When Good Drivers Pay More for Insurance Than Bad Ones](#), N.Y. Times Bucks Blog, January 29, 2013

Jen Schradie, [Big Data Not Big Enough? How the Digital Divide Leaves People Out](#), MediaShift, July 31, 2013

John Markoff, [Microsoft Finds Cancer Clues in Search Queries](#), N.Y. Times, June 6, 2016

**(NO CLASS WEDNESDAY – THANKSGIVING)**

## WEEK 6: DISCRIMINATION

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### 10. ALGORITHMIC BIAS

When is a differential effect a neutral reflection of the state of the world, and when is it tantamount to illegitimate discrimination? The use of analytics has the potential both to counteract and to reinforce systematic biases.

Solon Barocas & Andrew Selbst, [Big Data's Disparate Impact](#), California Law Review (2015), pp. 677-93

- *What are the ways that the authors believe big data can produce discrimination?*

Kate Crawford, [The Hidden Biases in Big Data](#), Harvard Business Review, April 1, 2013

- *What did the services the author describes do wrong?*

#### Optional

Latanya Sweeney, [Discrimination in Online Ad Delivery](#), ACM Queue, April 2, 2013

Julia Angwin et al, [Machine Bias](#), ProPublica, May 23, 2016

Jennifer Stark and Nicholas Diakopoulos, [Uber Seems to Offer Better Service in Areas With More White People. That Raises Some Tough Questions](#), Washington Post, March 10, 2016

Julia Angwin, Surya Mattu, and Jeff Larson, [The Tiger Mom Tax: Asians Are Nearly Twice as Likely to Get a Higher Price from Princeton Review](#), ProPublica, September 1, 2015

Don Peck, [They're Watching You at Work](#), The Atlantic, November 20, 2013

Jack Clark, [Artificial Intelligence Has a "Sea of Dudes" Problem](#), Bloomberg Technology, June 23, 2016

### 11. BUSINESS ANALYTICS ON TRIAL

Based on a “ripped from the headlines” episode of a TV drama, we’ll act out a realistic scenario of alleged algorithmic discrimination

Watch the “Good Wife” video segment on the Canvas site.

Prepare to assume your pre-assigned role in a mock trial.

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## WEEK 7: RESPONSES

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### 12. MOVING FORWARD

Are there viable responses to the challenges we’ve discussed in the course?

Neil Richards & Jonathan King, [Big Data and the Future for Privacy](#), Handbook of Research on Digital Transformations (2016), pp. 16-21

- *What is “soft regulation” and how is it different from ordinary regulation?*

Kate Crawford and Jason Schultz, [Big Data and Due Process: Toward a Framework to Redress Predictive Privacy Harms](#), 55 Boston College Law Review pp. 93-99, 121-28 (2014)

- *How is the “due process” approach different from existing laws we’ve discussed?*
- *Will this approach be effective?*

Christian Sandvig et al, [An Algorithm Audit](#) (2014)

- *How effective do you think the audit method described in the paper can be at identifying and helping to address problems with algorithms?*

### 13. GUEST LECTURE: SORELLE FRIEDLER (HAVERFORD)

Sorelle Friedler is an Assistant Professor of Computer Science at Haverford College and an Affiliate at the Data & Society Research Institute. She is one of the organizers of the Workshop on Fairness, Accountability, and Transparency in Machine Learning (fatml.org) and has received a Fellowship and recent NSF grant for her work on preventing discrimination in machine learning.

Suresh Venkatsubramanian, [Algorithmic Fairness: From Social Good to a Mathematical Framework](#), LSE Media Policy Project Blog, June 14, 2016

- *Do you think technical approaches such as those described by the author can be effective?*

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## WEEK 8: CONCLUSION

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### 14. STAKEHOLDER NEGOTIATION EXERCISE AND COURSE WRAP-UP

You will be assigned a role in a group negotiation to identify industry commitments and/or legislative changes to address concerns about the dangers of unchecked use of business analytics.

Submit pre-negotiation worksheet for your role