Social Media and Web Analytics
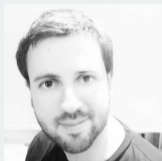
Course Introduction, Spring 2024

Lachlan Deer

Learning Goals for this Lecture

- Understand the logistical structure of the course
- Meet your Instructors
- Develop an understanding what Social Media & Web Analytics comprises of
- Understand the topic coverage in this course
- Explain how you will be assessed

1/ Logistics

Meet Your Instructors

Name:	Lachlan Deer
Contact:	via Slack or tisem.social.media@gmail.com
Role in Course:	Lectures
Profile:	Personal Webpage
Office Hours:	Monday, 3pm - 4pm, Online or K 711
Office Hour Format:	Hybrid, 15 min slots
Booking Link:	Click Here

Name:	Roshini Sudhaharan
Contact:	via Slack or tisem.social.media@gmail.com
Role in Course:	Lab Sections
Profile:	Personal Webpage
Office Hours:	Wednesday, 2pm-3pm
Office Hour Format:	Hybrid, 15 min slots
Booking Link:	Click Here

Class Structure

- **In person**, no recordings

- **Lectures**
    - Learning methods and doing marketing analytics (together)
    - Discussing academic papers

- **Lab Sections** (*on campus*)
    - Doing and discussing marketing analytics
        - Based on weekly "Lab Assignments"
    - Mix of coding and "theory"
    - Led by student discussion

Where to Find Stuff

- **Course website** is your # 1 resource
  - Canvas only used for group allocation, grades
- **Discussion / Chat**: Slack
  - Group Chat across different 'channels'
- **Email** (if you must): tisem.social.media@gmail.com
  - *Not* our personal email addresses
- **Office Hours**
  - Sign up using links
  - Check the Syllabus for instructions

Textbooks, Readings

- **No Textbook** for the class
  - Become outdated fast as digital markets and social media change rapidly
  - … as does taste in methods
  - Some emphasise too much of the hype, remainder are too dry
- **My job**: filter through the sea of information and teach what is useful and relevant
  - No hype, hopefully not too dry
- **Your job**: read over assigned readings, learn the skills
  - I've curated course content to (hopefully) deliver the most insight with the least technical details
  - Coding skills acquired should be easy to transfer to a different problem
- Lecture slides will be on course website as PDFs

Things to Keep in Mind

- This course is running in a **new format** this year
  - With a larger **emphasis on methods** and **doing marketing analytics**
  - There will likely be bugs ...
  - ... We'll work through them together
- **Mix of students** at various **levels**, from various **backgrounds**
  - Some of the best experiences in class: learning from others perspectives

2/ What is Social Media & Web Analytics?

What is Marketing Analytics?

Marketing Analytics is the practice of collecting and analyzing consumer and firm data to optimize a firm's marketing effectiveness and improve business/marketing decisions

- **A young field** with fast progress
  - Since the 1970s: Conjoint Analysis
  - Since the 1990s: Structural Models
  - In the last decade: Rise of Modern Causal Inference, Machine Learning
- The number of new methods is increasing fast
- Most important methods originate outside the discipline of marketing,
  - Near the applications, the substance, the problem to be solved
  - From adjacent fields: economics, statistics, psychology, data science, political science

Marketing Analytics is an unusually diverse discipline, cross-roads of other fields, great place for a broad perspective on methods

What is the Subfield of *Digital Marketing Analytics*?

- Digital Marketing Analytics ↔ Social Media and Web Analytics
  - Applying **marketing analytics** to the **online world**
    - Websites, Online Advertising, Retail Platforms, Social Media
- Quickly becoming one of the largest fields within marketing
  - Lots of data
  - Increasingly the main place where consumers and firms interact

What is *This* Course About?

We want to:

1. Understand and use statistics
   - Using facts you know to learn about facts you don't know
   - Understand statistical theory underlying specific methods
   - Feel comfortable using these methods in your own work
   - Learn, implement, apply, interpret, and explain methods even *after* the class ends
   - The practical tools of research: theory, applications, simulation, programming — whatever is useful

2. Learn how to define a topic for research, identifying the big idea, designing a research strategy to answer the question
   - Biggest factors impacting success: the question and the research design

3. Apply these techniques to digital markets and social media platforms

Types of Empirical Analysis

What kind of empirical analysis are of interest to us as marketers?

- Descriptive Analysis
- Causal Analysis
- Predictive Analysis

Descriptive Analysis

Descriptive Analysis: summarise characteristics of a data set

- What does the data look like?
    - Means, standard deviations distribution of data
    - Results are (stylised) *facts*

Examples:

- How are users who discuss the US election connected on Twitter?
- What topics are discussed on Yelp Reviews?
- Are discussions on Reddit about Albert Heijn different from those on Twitter?

Causal Analysis

Causal Analysis: Does A lead to B?

- Might also care about the mechanism of how it happens

Examples:

- Do Facebook ads increase product purchases?
- Does product adoption by influencers increase demand?
- Do tweets by TV studios increase the number of viewers of their show?

We'll spend a lot of time in this space

Predictive Analysis

Predictive Analysis: How can I best predict an outcome?

- When A occurs, so does B

Examples:

- Is this review posted by a real person or by a bot?
- How many retweets does Nike expect its next tweet to get?
- Who is a new Twitter user likely to follow?

Not the focus of this class

- Can discuss it in Week 8 if there is the demand …

How to do Social Media & Web Analytics

Social Media & Web Analytics needs to combine tools from multiple areas:

1. Statistical / Econometric Methods
2. Text Analytics - 'Text-as-data'
3. Network Analytics
4. Machine Learning

The exact **mix of these** used in any project depends on:

- **The question** you want to answer
  - Example: Can one deliver valuable insight by ignoring the network structure?
- **Personal taste**

Course Strategy

We could teach you:

- The latest and greatest methods, but soon after you graduate they will be old
- All the methods that might prove useful for you, but soon after you graduate you will be old

Instead, **we teach the fundamentals**

- Then you can learn new methods invented after class

Balance of emphasis: proofs v. concepts & intuition

- Baby Stats: dumbed down proofs, vague intuition
- Math Stats: rigorous mathematical proofs, no data experience
- **Practical Stats**: math when needed, deep concepts and intuition
    - Ultimate Goal: how to do empirical research, in depth
    - Procedure: Traverse from theoretical foundations to practical application (including "how to do" computations)

Good and Bad News ...

Good news: high quality social media & web analytics is incredibly useful

Why?

- Impacts a wide variety of industries
  - Media & entertainment, politics, health care, FMCG, fashion & beauty, etc
- It provides real answers to real problems in marketing and business strategy
  - And *people care about the answers*

Being able to do (good) social media & web analytics ensures many (enjoyable) job prospects

Good and Bad News …

Bad News: Its *hard*

- One needs to learn about statistics, text analysis, networks (*and* machine learning)
- … **and** be able to work on causal and predictive questions

(That seems like *a lot*…)

- And… learning the tools can be boring

Opinion: I think the upside far, far outweighs the bad.

3/ Where We Are Going

Course Objectives

1. Explain and evaluate the challenges and opportunities online markets and social media present marketers.
2. Summarize state of the art knowledge from the academic marketing literature about online markets and social media's impact on marketing.
3. Provide intuitive explanations of statistical concepts from the areas of linear regression, causal inference, natural language processing and network analytics
4. Implement statistical analysis to analyze social media data using tools from linear regression, causal inference, natural language processing and network analytics
5. Interpret their own and other's statistical analysis of social media data
6. Prescribe Managerial and Marketing strategies to improve business performance based on analytical findings.
7. Appraise and critique the assumptions behind statistical analysis of social media data in a given setting and propose alternative methodologies to improve existing analysis

What We Will Cover

Four substantive blocks:

1. Research Design (Lectures 2 & 3)
2. Field Experiments (Lectures 4 & 5)
3. Quasi-Experiments (Lectures 6, 7 & 8)
4. Text Analytics (Lectures 9, 10 & 11)

Lectures 12 and 13? Based on your preferences

Each class: Use examples from online markets, advertising, and social media to illustrate the concepts

Building an Analytics Toolkit

1. **Casual Inference**
   - A/B Testing
   - Difference in Differences & Matching Methods
2. **Text-as-Data**
   - Summarising Text
   - Measuring Sentiment
   - Identify topics being discussed

Building an Analytics Toolkit: Software

1. R **- purpose built statistical software**

- Wide variety of statistical and graphical techniques
- Can do most analysis marketers need to do
- It's free and open source, and has a *friendly* user community

2. **Git - Version Control**

- Track the changes to our code and writing systematically
- Improves 'replicability'
    - *Highly valued* by employers in marketing analytics companies and in quantitative consulting

Your task before the Week 2:

- Install required software on your computer
- Coding Bootcamp - refresh your skills where required

4/ Assessment

Group Assignments (40%)

- **2 group assignments** - each 20% of final grade.
    - Group Allocation: random + changes between assignments
    - *Group Assignment 1*: Casual Inference
    - *Group Assignment 2*: Text Analytics
- **Assignment Structure**:
    - Multiple Parts
    - Each part has multiple exercises
    - Mix of analytics and interpretation
    - Goal: walk through solving a problem
- **Submission via GitHub Classroom**
    - We'll introduce you to the details over next weeks

Final Exam (60%)

Essentials:

- Closed Book, Pencil/Pen and Paper
- 3 hours in length

Structure:

- PART A: Multiple Choice (30%)
- PART B : Short answer questions (40%)
- PART C: A Structured essay question (30%)

Coverage:

- Everything from lectures, labs, and readings
- *Including* writing / explaining short code snippets

Lab Assignments (Ungraded)

Essential Notions:

- Learning by doing… especially for methods
- Mix of coding and conceptual
- *Invest your time in these, it will pay off*

Answers?

- Selected answers posted online
- Cover some material in Lab Section with one week lag

Why?

Practice for group assignment and exam

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      title={"Social Media and Web Analytics: Course Introduction"},
      author={Lachlan Deer},
      year={2024},
      url = "https://tisem-digital-marketing.github.io/2024-smwa"
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```

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