Social Media and Web Analytics

Course Introduction

Lachlan Deer
Tilburg University
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Learning Goals for this Week

- Understand the logistical structure of the course
- Meet your Instructors
- Develop an understanding what's needed in a Social Media Analytics toolkit
- Understand the topic coverage in this course
- Explain how you will be assessed

Logistics

Structure in the Online Space

- **Online**, mostly asynchronous

- Lectures

  - Series of (hopefully) short videos
  - Approx. 50/50 split between 'substantive' and 'methods'

- Tutorials

  - Analytics focused
  - Self-guided
  - Work through a guided RMarkdown document

- Discussion Sections - *LIVE!*

  - Optional, Two sessions per week - different topics in each section
  - 90 min open *discussion* led by an instructor but emphasis on student discussion
  - Topics: 'vote in advance'
  - Turn on your camera!

Where to Find Stuff

- Course website is your # 1 resource

  - Canvas only used for quizzes, 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  - Become outdated fast as social media changes rapidly
  - Some emphasise too much of the hype, remainder are too dry
  - I do like Aral's *'Hype Machine'* though ... but its audience is not quite this class

- **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 papers, learn the skills

  - I've curated course content to (hopefully) deliver the most insight with the least technical details
  - Readings shouldn't be 'hype', occasionally dry
  - Coding skills acquired should be easy to transfer to a different problem

- Lecture slides will be on course website as PDFs

Coding, Maths and Stats

This is an **analytics** class (it's even in the course name!)

- We will develop an analytics toolkit

    - Mainly 'code based', occasionally we'll need some maths and stats
    - … I've tried to minimise unnecessary maths / stats

- Coding backgrounds among students is heterogeneous

    - Principle: Leave no-one behind
    - Instructors are here to help catch you up and provide further guidance as needed
    - $\implies$ work with us, even when it is hard
    - Be willing to learn from each other, form virtual study groups, use the Slack chat etc

… More on coding stuff *later*

Things to Keep in Mind

- This course is **brand new**

  - We look at **current** state of the art knowledge
  - There will be bugs …
  - … We'll work through them together

- Mix of students at various levels, from various backgrounds

  - Learn from other's unique perspectives

- I (awkwardly) straddle the line between marketing & economics

  - I care about 'mechanisms' and explaining why things happen
  - I care about more than only the 4P's
  - I'm not a 'data scientist' or computer scientist
  - $\implies$ pragmatism towards analysis that asks interesting questions

Meet the Instructors

Lachlan: Background

- Born and raised in Australia

- **New to the Netherlands**: first year here

  - Currently live in Rotterdam
  - Journey to the the Netherlands: London $\rightarrow$ Zurich $\rightarrow$ the Bay Area $\rightarrow$ Zurich $\rightarrow$ Chicago
  - Still learning the ins and outs of the Netherlands *and* the university
  - … and have yet to explore anywhere more than 2km from my apartment!

- Now: Assistant Prof @ Tilburg University

Lachlan: Areas of Expertise

- **Substantive**

  - Quantifying the impact of Twitter on demand for new products (Movies)
  - Quantifying relationship between advertising and social media discussions
  - Understanding the role of Social Media Networks in Political Revolutions (Arab Spring)

- **Methods**:

  - Working with 'big' data
  - Text-as-data
  - Network analytics
  - Econometrics / statistics

Bottom Line: *analysing social media data to answer economic and marketing questions*

Lachlan: Areas of Expertise

Why is all this relevant?

- I've used social media data throughout my career
  - From constructing simple tables and figures to convince firms to update their decisions and strategies
  - ... to quite elaborate statistical / econometric models
    - that appeal to other academics

I believe in the value of what I am teaching

Hendrik: Background

- Dutch, Utrecht Based

  - But studying & working at Tilburg

- Lecturer in the Marketing Department

  - Might know me from:
  - Business Research classes for BSc, BE (MBEO, IOM) and Pre-Master (BRT)
  - Strategic Marketing Management
  - Bachelor's / Master's Thesis

Hendrik: Interests

- Academics:

  - Education, marketing research
  - Data analytics

- Real World:

  - Cycling (mountain biking, road cycling, long distance trips)
  - Music $\rightarrow$ streaming Spotify all day

Social Media Analytics:
A possibly biased perspective

What is Social Media Analytics?

Social Media Analytics is the application of statistical methods to understand behaviour on social media websites to make business decisions

- It's generally *empirical*, sometimes theoretical (i.e. mathematical)

What kinds 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?

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?

How to do Social Media Analytics

Social Media Analytics needs to combine tools from three areas:

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

The exact mix of these depends on:

- The question you want to answer
  - Example: Can one deliver valuable insight by ignoring the network structure?
- Personal taste
  - ... I've increasingly started to value the network side of things lately
  - ... This view is not necessarily representative of all marketers

Good and Bad News …

Good news: high quality social media analytics is incredibly useful

Why?

- Social media 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 analytics ensures many (enjoyable) job prospects

Good and Bad News ...

Bad News: Its *hard*

- One needs to learn about networks, text analysis *and* statistics
- ... **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.

Where We Are Going

Course Objectives:

1. Learning/delivering marketing insights from state of the art research in social media marketing and the effects of user generated content,
2. Improving analytics & coding skills.

What We Will Cover

Four Blocks:

1. **Social Media Networks** (Week 1)
   - Structure of Social Media Networks
2. **Branding and Community** (Weeks 2 & 3)
   - Online Reputation
   - Structure of Online Communities
3. **Word of Mouth and Influence** (Weeks 4 & 5)
   - Word of Mouth
   - Influencers
4. **Advertising and Social Media** (Weeks 6 & 7)
   - Viral Marketing
   - Social Advertising

Building an Analytics Toolkit

1. **Network Analytics**

   - Summarise and plot network data
   - Identify communities within a network
   - Diffusion patterns in a network

2. **Text-as-Data**

   - Summarising Text
   - Classifying Text into predefined categories
   - Measuring Sentiment
   - Identify topics being discussed

3. **Statistics/Econometrics**

   - Regression Modelling: OLS and extensions
   - Causal Inference
   - Prediction Models & 'machine learning'

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

This week:

- Install required software on your computer
- Coding Bootcamp - build up and/or sharpen your skills in these areas

Assessment

Group Assignments (40%)

- **2** group assignments - **each 20% of final grade**.

- Group Allocation: random + changes between assignments

- **Group Assignment 1**: Evaluating & Managing Online Reputation

- **Group Assignment 2**: TBA

- 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 next week

Final Project (55%)

- Submitted **individually** (on GitHub Classroom)

- **Goal**: Conduct independent analysis of some social media or web data

  - Put this skills you learn to use on a new, self-defined problem
  - Topics: you can choose - must be (loosely) related to Social Media / Web Analytics

- 3 Milestones to complete

  - **Milestone 1**: Proposal and Data Collection
  - **Milestone 2**: Literature Review + Motivating Figure / Table
  - **Milestone 3**: Final Report + Video Presentation

- Project Grade:

$$Grade = 0.20 \times \text{Milestone } 1 + 0.20 \times \text{Milestone } 2 + 0.6 \times \text{Milestone } 3$$

Weekly Quizzes (5%)

- Review Quizzes (on *Canvas*)
  - 3 attempts
  - 5 - 10 questions, mix of marketing questions + analytics questions
  - Goal: check that you've worked through the material each week
- We take your best **5** *completed* quiz grades.

License & Citation

Suggested Citation:

```
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      title={"Social Media and Web Analytics: Course Introduction"},
      author={Lachlan Deer and Henrik de With},
      year={2021},
      url = "https://tisem-social-media.github.io/2021-spring"
}
```


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