

MKTG-212: Data and Analysis for Marketing Decisions

Updated for online instruction - changes marked by red font or lines in the left margin

Important: all listed times are US Eastern Time

Instructor: Professor Ryan Dew (ryandew@wharton.upenn.edu)

Teaching Assistants:

- Henrique Laurino dos Santos (hlauri@wharton.upenn.edu)
- Emily Zhao (emizhao@wharton.upenn.edu)

Online Course Format

Moving forward, you have two options for learning in MKTG-212: you may either attend live, streamed lectures via BlueJeans, or watch recordings of the lectures. The live lectures will work just like in-person lectures, and you will be able to ask questions using the chat feature of BlueJeans. For students who cannot join the live lectures, recordings of the lectures will be made available immediately following the live lectures, as well as audio recordings and the usual lecture slides. I will also provide notes and tutorial files when needed, especially to help with mastery of course tools (i.e., R and Excel). To review and answer questions about the course content, especially for students who watch the recorded lectures, I will be holding digital office hours at multiple times throughout the week. The TAs will also hold their normal office hours, where you can ask questions about the assignments. There will also be Canvas discussion threads for each lecture, where you can ask questions. Everything will be posted to Canvas, including the links to the lectures and office hours, which you can find under Virtual Meetings. Finally, I have included an FAQ section at the end of the syllabus, to address common concerns.

Schedule:

Live Lectures (via BlueJeans): Mondays and Wednesdays, 10:30 AM - 12:00 PM

Digital Office Hours (via BlueJeans):

- Primarily focusing on reviewing and answering questions about *lecture content*:
 - Mondays: 1:30 - 2:30 PM and 9:00 - 10:00 PM
 - Wednesdays: 3:00 - 4:00 PM
 - Thursdays: 9:30 - 10:30 AM
- Primarily focusing on *assignments, quizzes, and exams*: Wednesdays, 4:30 - 5:30 PM

TA Digital Office Hours (via BlueJeans): Fridays, 2:00 - 3:00 PM

Course Description

Data is increasingly driving marketing decisions. Firms have access to more data, and more detailed data on their customers and the marketing environment than ever before. Such data may include in-store and online customer transactions, product usage data, data from A/B testing, customer surveys, and data on prices and advertising. This course is an introduction to the fundamentals of data-driven marketing, including topics from marketing research and analytics. Using real-world applications from various industries, the goal of the course is to familiarize students with several types of marketing problems as well as how to leverage data to make effective marketing decisions. The course will involve formulating critical problems, developing relevant hypotheses, analyzing data and, most importantly, drawing inferences and telling convincing narratives, with a goal of producing actionable results.

Course Goals

By the end of this course, you should be able to:

- Ask quantifiable questions about marketing decisions
- Know what data exist or can be gathered to answer marketing questions, and understand which kinds of questions these sources can answer
- Understand and apply statistical tools for answering many marketing questions
- Create experiments and statistical models for marketing analytics
- Intelligently discuss recent advances in marketing research and analytics, including machine learning, recommendations, and personalization

Course Policies

- **Prerequisites:** Introductory statistics (e.g. STAT101); MKTG101 highly recommended.
- **Textbook:** There is no required textbook. There are two optional textbooks:
 - *R for Marketing Research and Analytics* by Chapman and Feit (CF on syllabus)
(Digital: https://franklin.library.upenn.edu/catalog/FRANKLIN_9977137149303681)
 - *Marketing Research* by Aaker, Kumar, Leone, and Day (AKLD on syllabus)
- **Canvas:** This course will rely heavily on Canvas. All links to the live lectures and office hours will be posted on Canvas, on the Virtual Meetings. All announcements will be made through Canvas, all readings, lecture slides, and recordings will be posted on Canvas, and all homework submissions and exams will be done through Canvas.
- **Lecture slides and recordings:** All of the lectures will be recorded. Lecture slides and lecture recordings will be made available on Canvas after the live lectures. I will also include

audio-only versions of the recorded lectures, that may be easier to download and listen to with unstable internet connections. To find these recordings:

- Video recordings from the in-person live lectures from the first half of the semester are still available on the **Class Recordings** page on Canvas
 - Video recordings from the online live lectures from the second half of the semester will be available on the **Virtual Meetings** page on Canvas
 - Audio recordings will be available under **Files > Audio Recordings**
-
- **Grades:** Grades will always be posted on Canvas when ready. Do not email asking for your grade.
 - **Required Software:** Excel (with Analysis ToolPak), R (see “Software” below)
 - **Readings:** There are a few required readings and podcasts, marked in bold on the syllabus. These are typically very short and will be posted on Canvas.
 - **Assignments:** All assignments should be submitted to Canvas. *No late submissions will be accepted*, and there are no make-up assignments.
 - **Questions:** All questions about the assignments should either be posted on the Canvas discussion board, or asked during office hours. Please do not email the professor or TA questions about assignments. If you have a question, chances are others do, too, and we can help everyone by addressing questions online.

Software

In this class, we will make extensive use of two of the most popular data analysis tools in practice: Microsoft Excel and the R statistical programming language. Becoming familiar with these tools is fundamental to marketing research and analytics. If time permits, we may also explore other tools.

I will assume you have some basic familiarity with Excel. I will not assume you know anything about R. For all tools, the examples we use in class will be posted to Canvas, as well as step-by-step tutorials showing you how to carry out the analyses. Assignments will primarily entail replicating these analyses in new settings. This is not a coding class!

I will demonstrate all analyses in class using R or Excel. You may use whatever software you like to do homework (e.g., R, Excel, Python, JMP, Stata), but I can't offer help for programming languages besides Excel and R. Instructions on downloading and setting up R will be available on Canvas. Please email me if you do not have access to Excel.

Assessment

The final course grade will be determined by:

- 50% - Exams
 - 20% = Midterm (your better score of two)
 - 30% = Final exam
- 30% - Assignments
- 10% - Online quizzes (graded for completion; miss up to 2 with no penalty)
- **10% - Participation (SEE BELOW)**

Grades will always be posted to Canvas when ready. Do not email asking for your grade.

Exams:

There will be three exams—two midterms and one final—that test your comprehension of course concepts. These are individual, open book, take-home exams. The final will occur during the regularly scheduled final exam period and is cumulative. All three exams will be administered through Canvas. Of the two midterms, only the higher score will count toward your final grade. Note that this policy only applies to the midterms; the final exam will count for everybody. *No coding (Excel or R) will be required during the exams.*

Exam policies:

- Because the midterms are take-home, and because only the higher of your two scores counts, there will be **no make-up midterm exams or extensions, no exceptions.**
- Only SDS-approved exam accommodations will be accepted, **no exceptions.** If you have SDS-approved exam accommodations, it is your responsibility to make me aware of these, and to make sure they appear in Canvas before taking your exams.

Assignments:

There will be several assignments which will focus on applying the ideas and methods learned in class. Often, these assignments will involve working with real company data. As mentioned above, you may use whatever tool you like to do these assignments (including Excel and R). However, if you use something other than Excel or R, we can't provide support. You have the option of working in a group for all the assignments.

Group policies:

- Groups may be up to five students. You may also work individually.

- Groups must be formed on Canvas before submitting the assignment. Make sure all your group members have joined the group before submitting the assignment. You can join a group by going to the “People” tab on Canvas.
- There is no need to stay with the same group for all three assignments, although you may if you want to.
- We will not carry-over the groups from assignment to assignment: you must form the group on Canvas for each assignment.

Online quizzes:

These will be given most weeks on Canvas. The questions are based on the content of that week’s lectures. **They are always due on Sunday at 11:59PM on Canvas.** They are graded for completion, and you can miss up to two quizzes without penalty. These quizzes are designed to help you prepare for the exams and will contain questions *very similar* to the exam questions. They will also help me assess whether everyone is comfortable with that week’s lecture content.

Participation:

This part of your grade will be determined by attending lectures. For the online portion of the course, this means either attending the live lectures, or listening to the recorded lectures *during the week that they are recorded.*

I will track attendance using the polling software Poll Everywhere. In the online portion of the class, there will be one poll per week, with a unique code and question that will be displayed during either the Monday or the Wednesday lecture. This poll will remain live until the following Monday’s lecture, when it will switch to a new poll. *You must record your response during the week that the lecture is recorded to have your participation counted for that week.*

You are allowed to miss up to three attendance checks with no penalty. This allowance holds across both the in-person and online portions of the class. For example, a student who missed three lectures in the first half of the semester will lose points if he or she misses an attendance check in the online portion of the class. On the other hand, a student who checked-in to every lecture in the first half of the course can miss up to three online checks with no penalty.

Grade Cut-offs:

There is no curve. I am happy to award an A to anyone who has earned it. The tentative cut-offs for determining your final letter grade are:

A	93.00%
A-	90.00%
B+	87.00%
B	83.00%
B-	80.00%
C+	75.00%
C	70.00%
D	60.00%

These are the *lowest possible scores* to achieve each letter grade. This is the grading scheme I have used previously in this course, and will likely use again this year. A+ will be awarded at my discretion. In the past, A+ was given for achieving a high total score (>97%), together with actively attending and participating in class.

Tentative Course Schedule

bold = deliverable/required

AKLD = Aaker, Kumar, Leone, and Day textbook; CF = Chapman and Feit textbook

Readings

Module 1: Foundations of Data and Analysis

1/15	1.	Course Introduction	AKLD Ch. 3-4
1/20	<i>No Class - MLK Day</i>		
1/22	2.	Primary Data	AKLD Ch. 8-10,
1/27	3.	Surveys	Modal American , AKLD Ch. 11-12, 14-15
1/29	4.	Secondary Data	AKLD Ch. 5-7
2/3	5.	Experimentation and A/B Testing	AKLD Ch. 13
2/5	6.	Tools of Data Analysis	
2/10	7.	Hypothesis Testing	AKLD Ch. 17-18, CF Ch. 6
2/12	8.	Applications: Hypothesis Testing	
2/17	9.	Regression I	Optimizely , AKLD Ch. 19, CF Ch. 7
2/19	10.	Regression II	
2/21	Assignment 1 Due		
2/24	11.	Midterm Exam I	
2/26	12.	Advanced Regression	CF Ch. 9, 13

Module 2: Marketing Research

3/2	13.	Conjoint Analysis I	AKLD Ch. 21, CF pp. 246-252
3/4	14.	Conjoint Analysis II	

No Class - Spring Break

3/23	15.	Online Overview + Intro to CBC	
3/25	16.	Choice-Based Conjoint	CF Ch. 13
3/25	Assignment 2 Due (by 11:59 PM ET)		
3/30	17.	Cluster Analysis	AKLD Ch. 20, CF Ch. 11
4/1	18.	Factor Analysis	AKLD Ch. 20, CF Ch. 8
4/6	19.	Applications: Factor and Cluster Analysis	
4/8	20.	New Product Diffusion	
4/13	21.	Text Analysis	
4/15	22.	Midterm Exam II	
4/17	Assignment 3 Due (by 11:59 PM ET)		

Module 3: Marketing Analytics

4/20	23.	Customer Lifetime Value (CLV)	Planet Money: CLV
4/22	24.	Digital Marketing and Attribution	
4/27	25.	Guest Lecture: Analytics	
4/29	26.	Machine Learning and Personalization	Facebook and YouTube
4/29	Assignment 4 Due (by 11:59 PM ET)		

**Final exam will be available and must be submitted on Canvas between
Tuesday 5/5, 12AM ET and Tuesday 5/12, 11:59PM ET**

Frequently Asked Questions (FAQ)

I'm not going to be able to attend the live lectures, and I'm worried that this will impact my comprehension of the course material. What can I do?

While I hope many people are able to attend our live lectures, I know there will be many people who cannot. The fact that people are quite literally spread across the globe makes it impossible. If you want live interaction, but can't come to the lectures, please come to the digital office hours! During these sessions, I will answer questions about the course material, either using face-to-face video chat, or by taking questions from the chat feature on BlueJeans. I will also review any concepts people found confusing. Think of these sessions like a combination of office hours and recitation.

I'm worried about the assignments. How can I collaborate with my group if we can't meet face-to-face?

The first thing to note about the assignments is that they are designed so that they could be completed individually (and, in fact, many students did complete Assignment 1 individually). That being said, I know many folks find the assignments difficult, and will prefer to work in groups. To help you succeed on assignments, during one of my digital office hours (Wed 4:30 - 5:30), addressing questions about the assignments will be the priority. We can also address questions about the assignments in the other office hours, after questions about course content. I've also extended the deadlines for Assignments 2 and 3, and dramatically shortened Assignment 4.

Finally, just in case you aren't already familiar with them, here are a few other tools that can help you collaborate with your team members online:

- All Penn students can use **BlueJeans** to conduct their own video conferences, which may be useful for collaborating. To set up your meetings, go to meeting.upenn.edu
- Most of you already know and use **Google Docs**, but just in case you don't, Google Docs provide a way to collaborate in real time on assignment write-ups: <http://docs.google.com>
- If you're very ambitious, you might try using **Slack** to message and coordinate with your group members. Slack is a popular collaboration tool in the real world (so you might as well practice now!), and has a free version: <https://slack.com/pricing/free>

Will not going to the live lectures affect my participation score?

No! Each week, there will be one Poll Everywhere poll, which will be live until the following Monday's live lecture. That means, as long as you watch the lectures during the week in which they're scheduled, you'll still be able to sign-in, just like we did in class, and you'll still get full participation points.

Can I still schedule a time to meet with you about course concerns and questions?

Absolutely! While I hope people will utilize the scheduled office hours as their first-choice solution, if you can't attend them, or have a concern you think would be best addressed one-on-one, you should send me an email. We can find a time to meet via BlueJeans, or on the phone.