



# DIGITAL MARKETING

Welcome to the course!



Among every \$100 Hongkongers spend on retailing,  
how many dollars are spent online?





Only a quarter of Hong Kong's citizens currently shop online, and e-commerce accounts for just 11 percent of Hong Kong's total retail spend.

This is pretty low (mainland: 24%; world average: 9.7%).





Which products (or services) do Hongkongers purchase online?



## Top e-commerce merchant segments



Source: J.P. Morgan 2019 Payments Trends – Global Insights Report: Data has been provided to J.P. Morgan Merchant Services by Edgar, Dunn & Company via HKTDC Research & Statista.



What are the richest companies in the world?









































# Biggest Companies

market capitalization

## Mar 2011

## Rank of companies by market cap:

1	 <b>Apple</b> AAPL	\$2.849 T	\$174.61	-0.10%		 USA
2	 <b>Microsoft</b> MSFT	\$2.314 T	\$308.76	-0.71%		 USA
3	 <b>Saudi Aramco</b> 2222.SR	\$1.968 T	\$9.85	-0.81%		 S. Arabia
4	 <b>Alphabet (Google)</b> GOOG	\$1.828 T	\$2,758	1.61%		 USA
5	 <b>Amazon</b> AMZN	\$1.533 T	\$3,024	1.08%		 USA
6	 <b>Tesla</b> TSLA	\$935.21 B	\$931.25	-0.58%		 USA
7	 <b>Meta (Facebook)</b> FB	\$887.38 B	\$319.00	1.83%		 USA
8	 <b>Berkshire Hathaway</b> BRK-A	\$701.31 B	\$471,184	0.29%		 USA
9	 <b>TSMC</b> TSM	\$638.13 B	\$123.05	0.34%		 Taiwan
10	 <b>NVIDIA</b> NVDA	\$613.97 B	\$246.38	0.62%		 USA
11	 <b>Tencent</b> TCEHY	\$602.69 B	\$62.75	0.34%		 China
12	 <b>Visa</b> V	\$503.18 B	\$232.36	2.74%		 USA



Which company is the biggest opponent of HSBC?



It's the Internet finance industry! But why?



What's this product?



It is a phone cradle!

But why do people purchase it?





**Matthew Brennan** @mbrennanchina · May 14, 2019

Chinese phone cradle for boosting your phone's daily step count. Some insurance companies in China allow people who consistently reach a certain daily step count to get discounted health insurance premiums.



**Lê Nguyễn Hoang (Science4All)** @le\_science4all · May 14, 2019

Replying to @mbrennanchina

Aka adversarial poisoning attack on data-driven algorithms...



9



97



**Graeme Douglas** ✓ @graemedouglas · May 14, 2019

Replying to @mbrennanchina and @BBHLabs

Not just China - Vitality does this in the U.K.



4



5



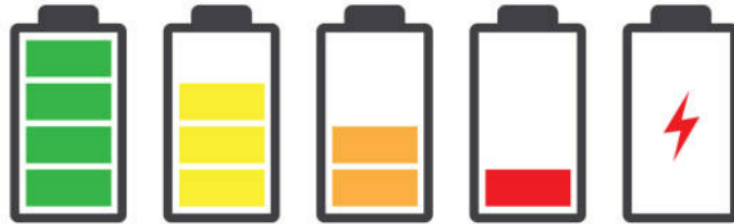
66



Uber collects data on your smartphone battery. But why?




Uber charges you higher prices when your battery is low,  
because it knows you cannot afford to wait!




Many retailers offer free Wi-Fi to their shoppers. But why?







When you connect to a retailer's free Wi-Fi, the retailer will be able to monitor your entire browsing history: Did you search the same product online? What's your real time geographic location?





How many couples meet their partners online?





According to a Stanford University research project, by 2017, 39 percent of heterosexual couples reported meeting their partner online.

For homosexual couples, the rate is more than 70% now!

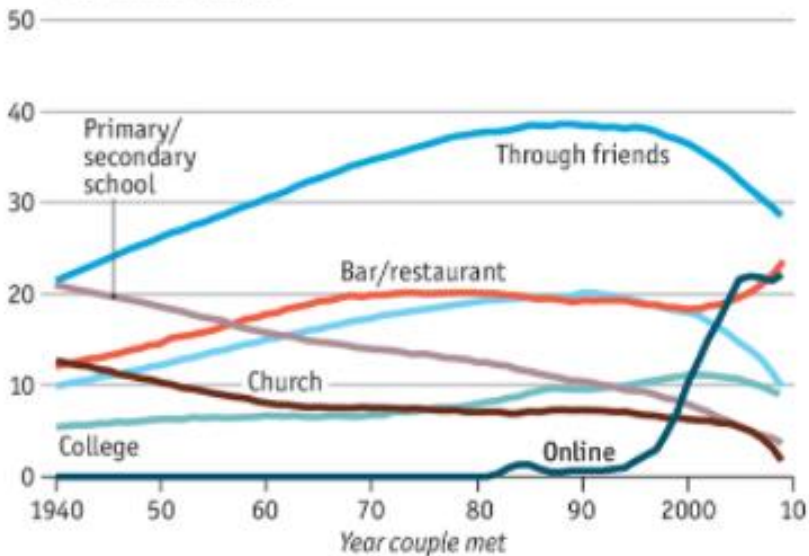


How couples met	1995, %	2017, %	Z score	Significance
Online	2	39	23.43	***
Through friends	33	20	-4.55	***
Through family	15	7	-8.47	***
Through or as coworkers	19	11	-5.16	***
In a bar or restaurant	19	27	2.38	*
In primary or secondary school	10	5	-6.62	***
In church	7	4	-2.52	*
Through or as neighbors	8	3	-4.54	***
In college	9	4	-1.17	

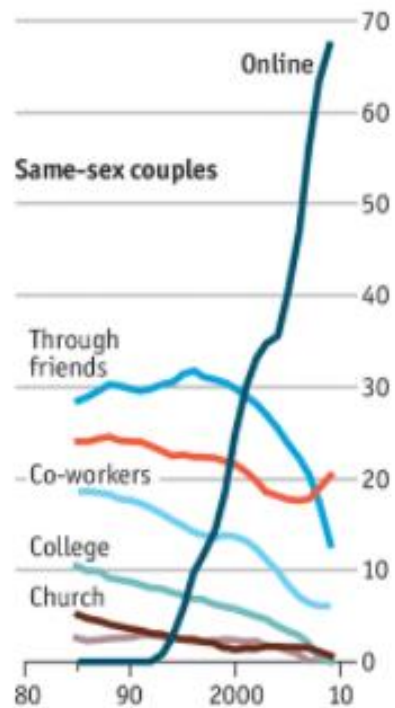
## Meet markets

United States, how couples meet, %

### Heterosexual couples



### Same-sex couples





On average, how much time does a Hong Kong youth spend on their smartphones?



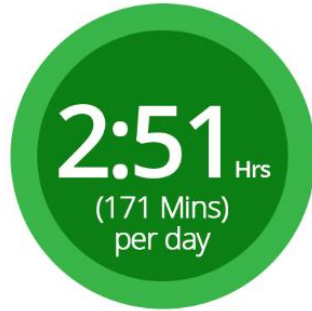


The consulting firm TNS said the average millennial aged 16 to 30 in the city spends 2.8 hours a day on their mobile devices.

In mainland China, that is 3.9 hours. In Japan, the number is 1.6 hours.



## Avg. Use Per Day



The average time spend on smartphones is 2hrs 51mins a day



The average time spend on smartphones AND tablets is 4hrs 33mins a day



## 18-29 Year Old Interactions

**22%**

check their phone every few minutes out of smartphone owners surveyed

**51%**

check their phone a few times per hour out of smartphone owners surveyed

## Social Interactions



The average user spends 1hr 16mins a day on the top 5 social media apps



The average user will tap, swipe, click their phone 2,617 times a day



I finally realized it.  
People are **prisoners**  
of their phones,  
that's why they are  
called **cell** phones.



Spirit Science



What is the world's most downloaded APP?



Name	Best for	No. of Downloads in 2021 ( <b>Forbes</b> )	Rating-Play Store (Google/Apple)
<b>TikTok</b>	Creating and sharing short creative video clips	656 million	4.5/4.9
<b>Instagram</b>	Sharing ideas and thoughts across social media through photos and videos	545 million	4.1/4.7
<b>Facebook</b>	Connecting with friends, families, and people with similar interests	416 million	3.2/2.2
<b>WhatsApp</b>	Communicating seamlessly using internet data	395 million	4.3/4.7
<b>Telegram</b>	Messaging and sending photos, videos, and other documents	329 million	4.5/4.3

# The Internet is changing our lives



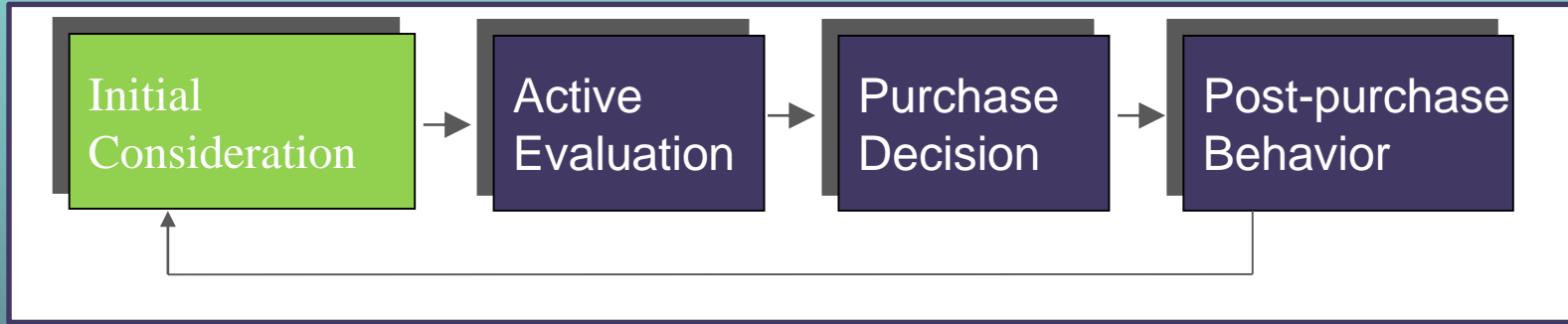


## Discussion

**How does Internet affect purchasing decisions?**



# Consumer buying decision




By consumer  
By traditional media such as TV ads  
How does digital media help?

# Via Targeted Online/Mobile Ads

Word of the Day Translate Games Blog




Dictionary.com definitions




NORDSTROM  
FREE SHIPPING  
FREE RETURNS  
ALL THE TIME.


Word of the Day  
**eudemonic**  
pertaining or conducive to happiness. [More...](#)


SIGN UP:  
email

    
Previous Words



Do You Give Presents or Gifts?


 Your Word Wednesday

 Our Blog


Pick our Word of the Day!


What's your favorite word? Did Charles Dickens coin

Friday, December 18  
*Decem-* means "ten" in Latin, so why is December our twelfth month? [Learn more here.](#)

 **(919) 439-1569**

**UNLIMITED CONFIDENCE**  
— Unlimited Mileage Warranty —

 Certified Pre-Owned by Mercedes-Benz



**Leith, Inc.**  
Authorized Mercedes-Benz Dealer [Click here](#)

Dictionary.com Social

# Via Influencers

sincerelyjules PHOTO sincerelyjules PHOTO

 sincerelyjules  sincerelyjules



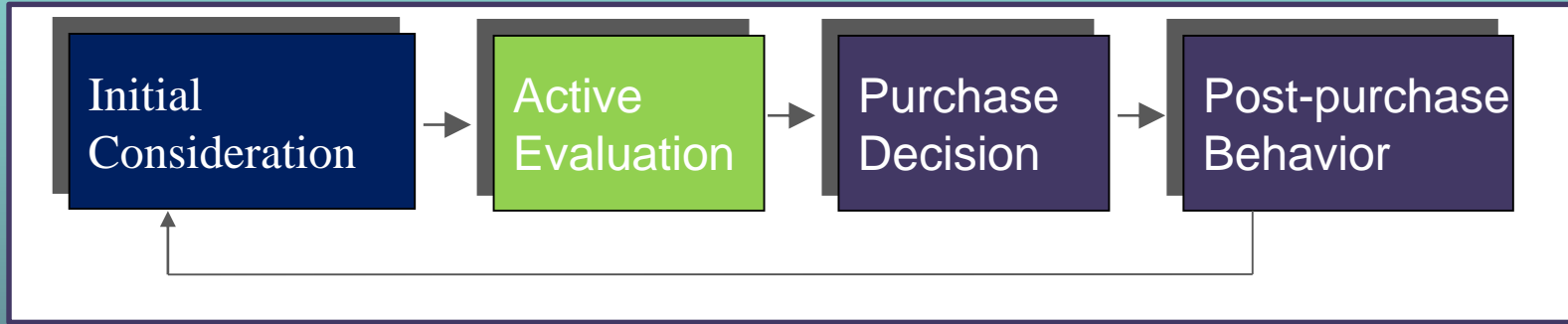
♥ 19176 likes    ♥ 21837 likes

● sincerelyjules Happy Sunday! 🍷 We #Célfie tee again!  
view all 234 comments  
\_\_julieteee\_\_ @\_manue\_\_ canon

● sincerelyjules Yesterday's easy breez  
♥  
view all 293 comments  
iamxoosia @sincerelyjules u have c  
love to have long i love them!



# Consumer buying decision



How is search done in the offline world?


Call/visit stores/friends

Problems?

Asymmetric information and high search cost

How does Internet/digital facilitate information search?


# Low-Cost Search by Search Engines

**OUR ADVICE**  
**Buy now** 

Prices are unlikely to decrease within 7 days <sup>①</sup>

Track prices  OFF

1162 of 1293 flights

**Fee Assistant** <sup>①</sup> 

Carry-on bag  0

Checked bag  0

**Stops**

Nonstop \$147

1 stop \$154

**Cheapest**  
\$147 • 1h 35m

**Best** <sup>①</sup>  
\$147 • 1h 40m

**Quickest**  
\$162 • 1h 34m

☰ Other Sort

**Delta® Flights from Raleigh to New York**


Enjoy Free In-Flight Entertainment on Delta Flights. Terms & Bag Fees Apply.



**\$162** nonstop

delta.com | Sponsored

**\$162**  
Delta

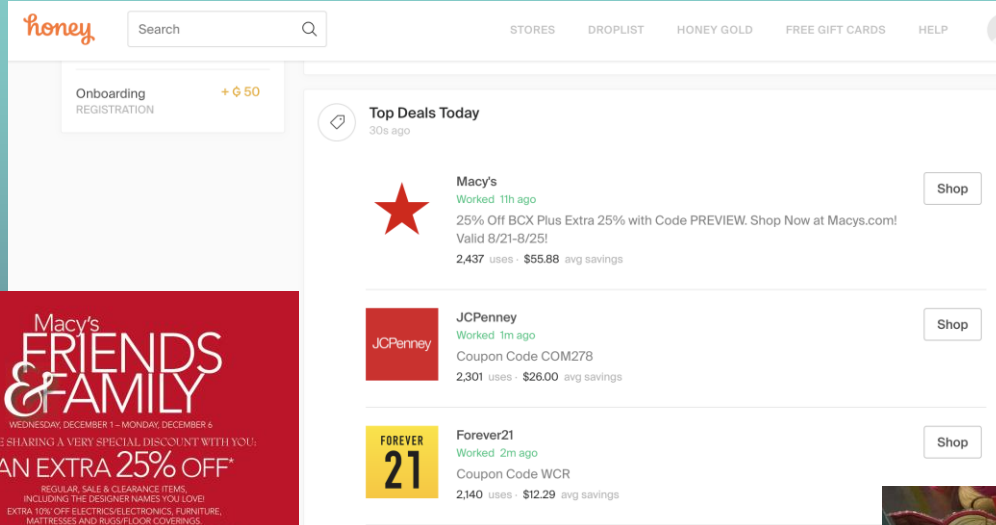
[View Deal](#)

**Cheapest** Rating: 9 

<input type="checkbox"/>		<b>5:35 am — 7:10 am</b> American Airlines	<b>nonstop</b>	<b>1h 35m</b> RDU - LGA	<b>\$147</b> Hacker Fare Basic Economy
<input type="checkbox"/>		<b>1:40 pm — 3:15 pm</b> United Airlines	<b>nonstop</b>	<b>1h 35m</b> EWR - RDU	


[View Deal](#)

# Coupons can be found more easily



The screenshot shows the Honey website interface. At the top, there is a search bar with the Honey logo and navigation links for STORES, DROPLIST, HONEY GOLD, FREE GIFT CARDS, and HELP. Below the search bar, there is a sidebar with 'Onboarding REGISTRATION + \$ 50'. The main content area is titled 'Top Deals Today' and lists three deals:

- Macy's**: Worked 11h ago. 25% Off BCX Plus Extra 25% with Code PREVIEW. Shop Now at Macys.com! Valid 8/21-8/25! 2,437 uses - \$55.88 avg savings. [Shop]
- JCPenney**: Worked 1m ago. Coupon Code COM278. 2,301 uses - \$26.00 avg savings. [Shop]
- Forever21**: Worked 2m ago. Coupon Code WCR. 2,140 uses - \$12.29 avg savings. [Shop]



**Macy's FRIENDS & FAMILY**  
WEDNESDAY, DECEMBER 1 - MONDAY, DECEMBER 6

WE'RE SHARING A VERY SPECIAL DISCOUNT WITH YOU!  
**AN EXTRA 25% OFF\***

REGULAR, SALE & CLEARANCE ITEMS, INCLUDING THE DESIGNER NAMES YOU LOVE!  
EXTRA 10% OFF ELECTRICS/ELECTRONICS, FURNITURE, MATTRESSES AND RUGS/FLOOR COVERINGS.

GET AN EXTRA 10% OR 20% OFF WHEN YOU SHOP ONLINE AT MACYS.COM PLUS, GET FREE SHIPPING\* WITH NO MINIMUM PURCHASE OF \$99 OR MORE!  
Enter code **MACYSFF** in the promotional code box at checkout to redeem your discount and receive **FREE SHIPPING**.  
Visit [www.macys.com/friends](http://www.macys.com/friends) for details and exclusions.  
\*Some restrictions apply. See coupon for details.

**FRIENDS & FAMILY**  
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Visit [www.macys.com/friends](http://www.macys.com/friends) for details and exclusions.  
\*Some restrictions apply. See coupon for details.

**MACYS**  
The House of **MACYS**.com

\*Some restrictions apply. See coupon for details. Offer valid on regular, sale and clearance items, including the designer names you love. Excludes electronics, furniture, mattresses and rugs/floor coverings. Extra 10% off electronics, furniture, mattresses and rugs/floor coverings. Offer valid on purchases of \$99 or more. Get free shipping with no minimum purchase of \$99 or more. Enter code MACYSFF in the promotional code box at checkout to redeem your discount and receive free shipping. Visit www.macys.com/friends for details and exclusions. Some restrictions apply. See coupon for details. ©2015 Macy's, Inc. All rights reserved. Terms and conditions apply. Offer ends 8/25/15.



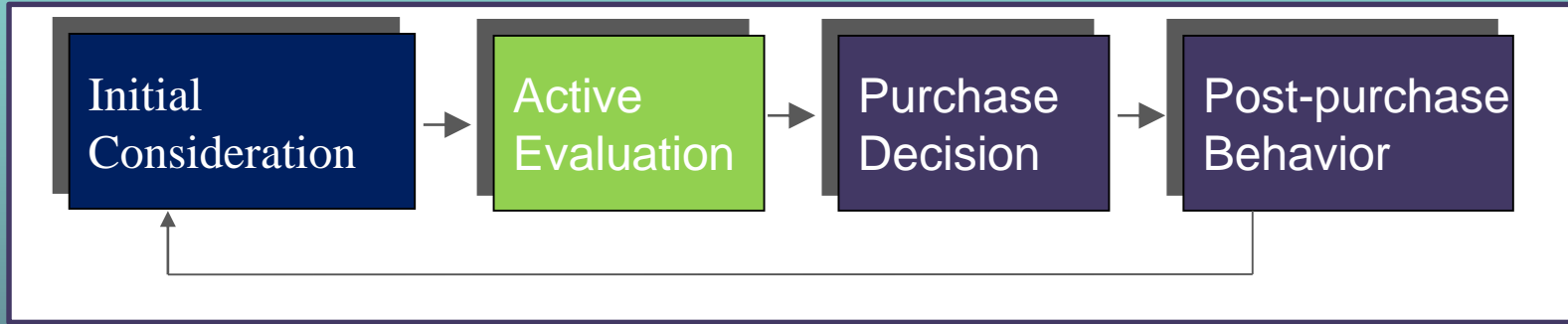
**Get the coupon.**  
Now in the @ app.  
Or text TOY10 or TOY25 to TARGET

scan at register

**\$10 OFF**  
Toys and games  
purchase of  
\$50 or more

**\$25 OFF**  
Toys and games  
purchase of  
\$100 or more

# Consumer buying decision



Implications of reduced search cost to firms?

More price competition

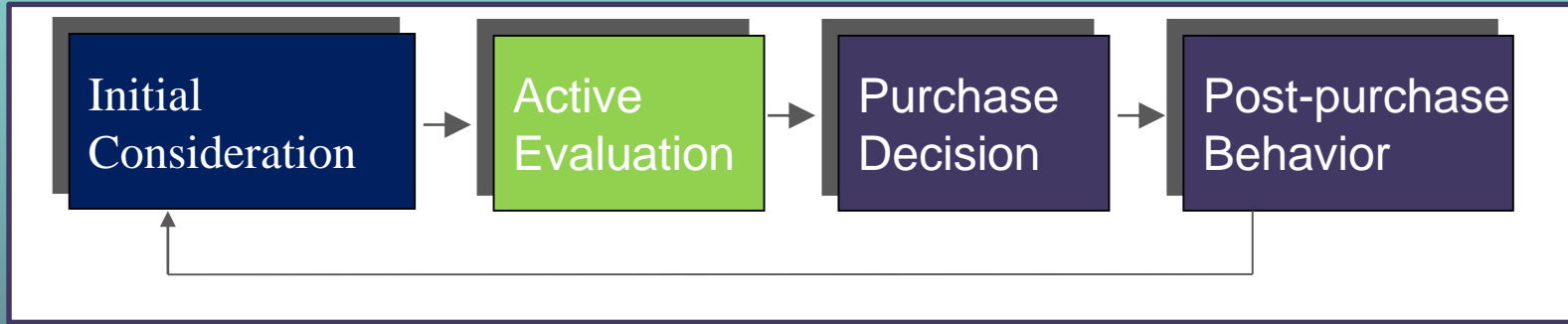
Less loyalty

How can manufacturers and retailers fight against price competition?

Increase product differentiation, even just perceived

Increase switching cost (e.g., loyalty program)

# Consumer buying decision



Evaluate alternatives in consideration set

Is the product performing as claimed?

Are there any unobservable attributes?

Does this product match my preference?

How does Internet & digital media facilitate evaluation?

# User Generated Content

Which Japanese restaurant will you visit?  
Why?


Rating vs. Volume


### japanese restaurant Chapel Hill, NC

**Filters**


\$ \$ \$ \$ \$ Open Now All Filters


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**1. MinGa**  4.5 stars 85 reviews  
116 Old Durham Rd  
Chapel Hill, NC 27517  
(919) 933-1773  
\$ \$ - Korean, Japanese


 I went to MinGa for lunch on Monday and was pleased with my experience there. The **restaurant** serves really authentic Korean and **Japanese** food, even serving the small cold appetizers that


---

**2. Oishii**  4.0 stars 50 reviews  
1129 Weaver Dairy Rd  
Chapel Hill, NC 27514  
(919) 932-7002  
\$ \$ - Sushi Bars, Japanese


 Tasty, but service and price are a little off. I came out here for dinner recently. As a **Japanese restaurant/sushi** place, it's pricier than most of the other places in Chapel Hill. However

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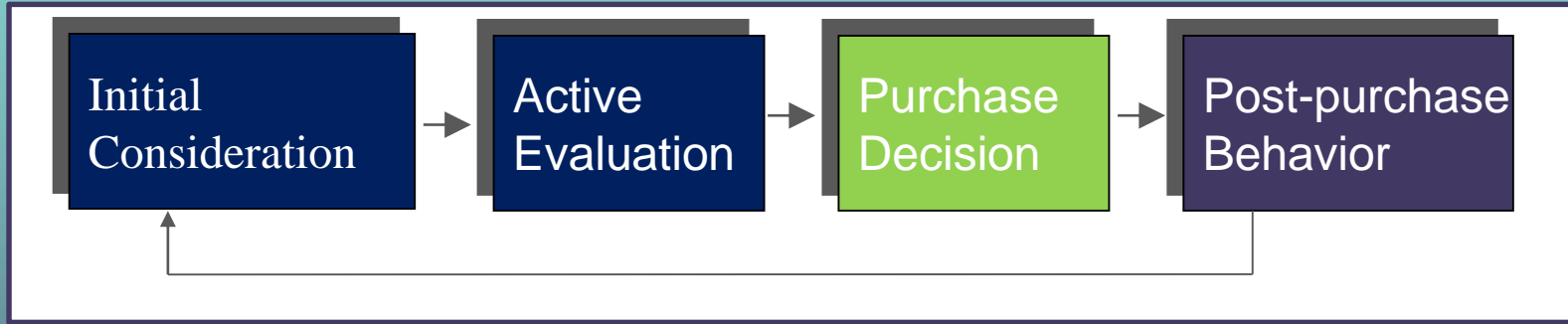
**3. Akai Hana Japanese Restaurant**  4.5 stars 108 reviews  
206 W Main St  
Carrboro, NC 27510  
(919) 942-6848  
\$ \$ - Japanese, Sushi Bars

 Very cool place, much more flair for detail and quality than I am used to in a typical **Japanese dinner restaurant**. NOTE: I can't comment on the sushi because I've never tried that portion

---

**4. Sushi Nikko**  4.0 stars 40 reviews  
104 NC 54  
Carrboro, NC 27510  
(919) 240-5046  
\$ \$ - Japanese

# Consumer buying decision



Purchase at an online store, offline store, or through a mobile app

# Showrooming

The practice of examining products in a store and then buying it online for a lower price.

Top categories affected by showrooming?

- Electronics & Appliances
- Books & Music
- Clothing & Shoes
- Furniture & Home

60% in 2013 -> 35% in 2018. Why?

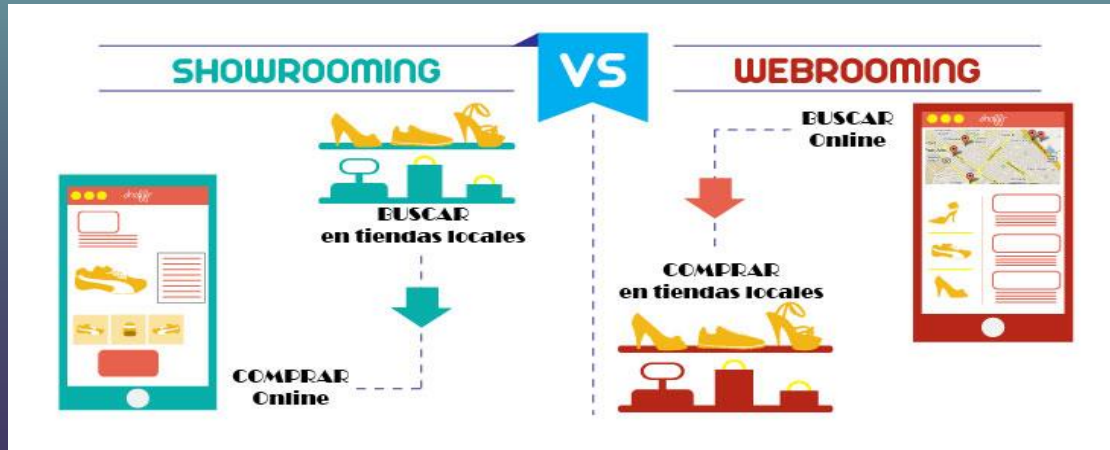
- Increasing online presence for traditional retailers
- Offer price matching
- Digital friendly in-store environment (e.g. e-payment, digital coupons)
- Flexible return policy





# Rise of webrooming

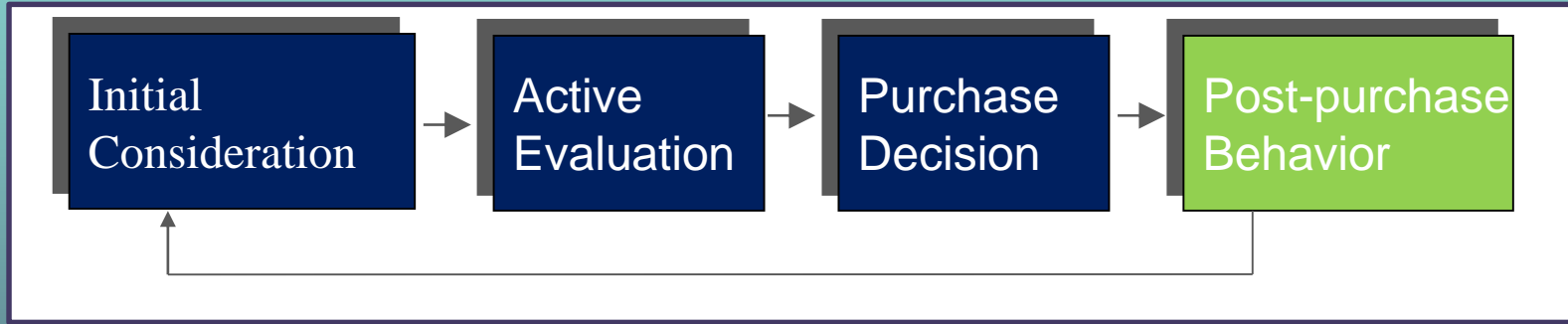
Webrooming refers to the process of researching products online and then visiting a store to make a purchase  
Webrooming more common than showrooming (46% vs. 35% in 2018)  
Millennials prefer webrooming



# Mobile Grocery Shopping



# Consumer buying decision



What does Internet & digital media add?

WOM generation

Positive ones can be used as promotional content

Negative ones can be used as useful feedbacks

Behavior-based recommendation

Customer purchase history becomes a piece of "Big Data"

# Key Takeaways

How has Internet/digital changed the way we shop?

Changes in search costs

Results in larger product assortment and lower prices

Implications to firms: focus on product differentiation, raising switch cost

Changes in availability and use of data

Allows firms to deliver more targeted messages

Allows users more easily to provide feedback (new data) to improve product/service

Allows users to be affected by others' choices

Changes in role of geographic proximity

Reduces the cost of communication with others

Encourages the use of multiple channels in shopping process

Offline context still matters in each stage of customer journey



# What is digital marketing?

“Digital Marketing is the use of Internet connected devices and electronic media to engage a customer.”

Search advertising  
Display advertising  
Social media marketing  
...





# What is this course about?

Overview of digital technology + Underlying Business/Marketing concepts

Aim is not mastery of all the topics, but to give an overview of most important topics

The list of topics covered in this course can be found in the syllabus.





# Who should take this course?

Undergraduate students

Learn the basics of Digital Marketing

Learn the basics of data analytics

Already have a background in basic marketing /advertising






# True or False?

This is a course that covers cases and examples without solid techniques.

**False:** You need to learn different algorithms, concepts, and methodologies throughout the course.








# True or False?

I am already an expert in HKTV Mall, Google, YouTube, Twitter, Instagram etc. There is no need for me to take this course.

False. I am not teaching you how to post on YouTube or how to order online. We are taking a quantitative approach to understand these online platforms.





# True or False?

The course teaches me how to become a successful entrepreneur in the digital age.

Likely False: This course is more technical. You will learn how to collect and analyze data, how to promote your brands online, but not how to start your own company.






# True or False?

The course is very demanding. I will struggle with the course.

Partially true and partially false. There will be some workload for you, but I believe this is manageable for most of you.



# This is not a course about...

Introduction to Marketing

Web development or Web Design

Public Relation/ Journalism

e-Commerce

Entrepreneurship class - build app/website, become a millionaire!

A specialized course intended for one specific aspect

- Search Engine Marketing

- Social Media

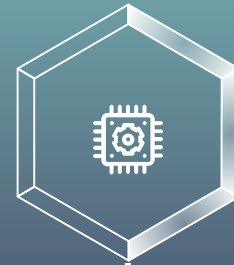
This course adopts methodologies from



**Computer  
Science**



**Statistics**



**Economics**




# Leveraging your competitive advantage

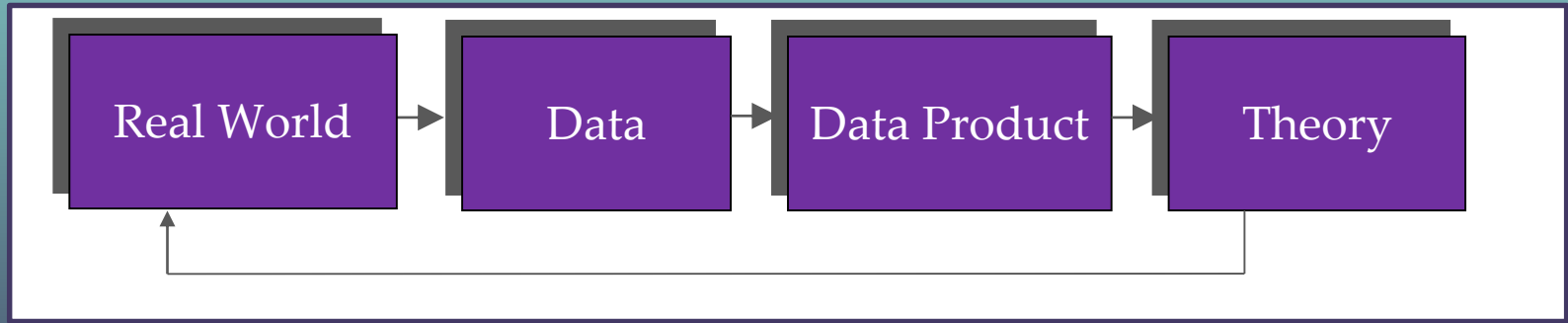
Compared to traditional marketers, you know how to program and how to analyze data.

Compared to statisticians and computer scientists, you understand consumers better, and know how to apply results to business settings.

Compared to economists, you not only know the theory, but also know how to apply the theory to solve real-world marketing problems, and test the theory using real-world data.



# The LOOP





**We emphasize on data, data, and data**

*“Talk is cheap, show me the data!”*







We solve problems for



**Firms**



**Platforms**



**Individuals**



# The Instructor

Xi Li, Associate Professor of Marketing. KKL 836

PhD in Management, University of Toronto.

M.Phil. in Operations Research, HKUST.

B.E. in Computer Science, Tsinghua University.

*Research interests:* Algorithms, big data and online marketplaces.



# Do I really want to take the course?

I don't know. It depends. But let me offer you some advice.

## Take the course if

You are interested in data analysis, and you are considering to become a data scientist in the future.

You want to understand how the digital marketing industry operates and evolves over time.

You want to explore rigorous research methodologies from different areas.

## Don't take the course if

You hate data analysis or programming.

You already know the materials to be covered in the class.

You want to pick an easy course to fulfill your credit requirement.



**Why should we study Digital Marketing?**






# Why go digital?

Consumers are online, more than ever before!

Firm productivity can be significantly improved by digital technology and data analytics

Better promotion effectiveness via SEO and online advertising  
Better engagement between firms and customers via social media



## Average Time Spend in the US, 2019

Hrs:mins per day among population



Digital **6:35**



TV **3:35**



Radio **1:20**



Newspaper **0:11**

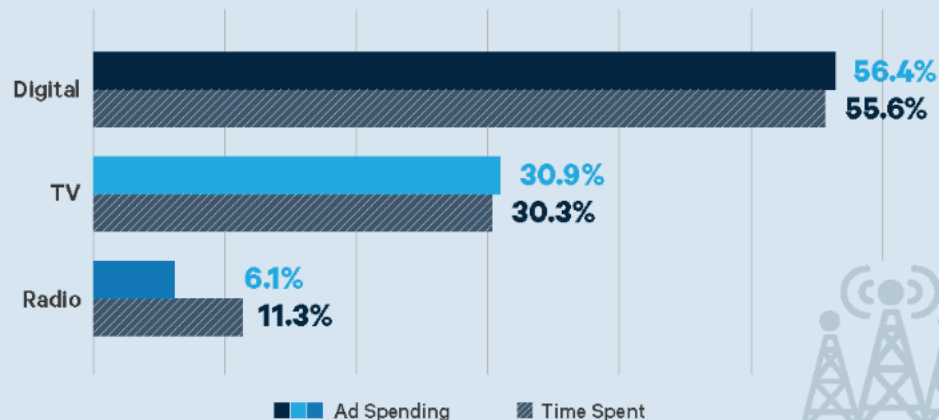


Magazines **0:09**

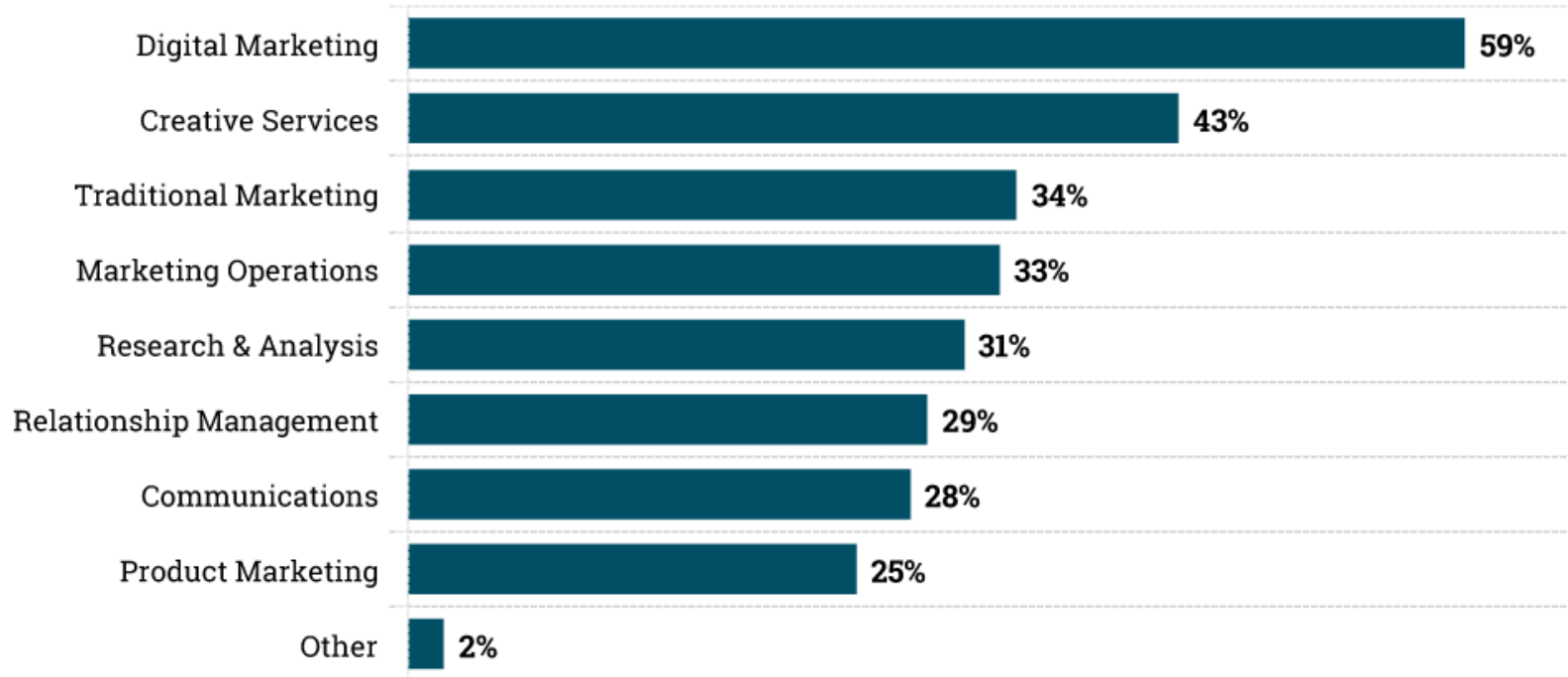


Average time users spend watching digital video everyday  
**2 hours, 13 minutes**

## Share of Time Spent with Media vs. Ad Spending in the US, 2019



# Demand for Marketing Talent in 2018, by Function



Published on MarketingCharts.com in May 2018 | Data Source: McKinley Marketing Partners

*Based on an October 2017 survey of 329 marketing professionals in the US from a mix of company types and sizes.*



# How is digital marketing different?

More targeted and context relevant

More use of personal devices rather than mass media

Use of social aspect and viral marketing

More measurability







# Additional Course Information



# Course Website

In addition to the official course website provided by the university, we will also use a semi-official course website. You can find the latest materials and updates on this course website.

[https://ximarketing.github.io/\\_pages/teaching/](https://ximarketing.github.io/_pages/teaching/)

Password for digital marketing: mkt2022



**Textbook? No.**



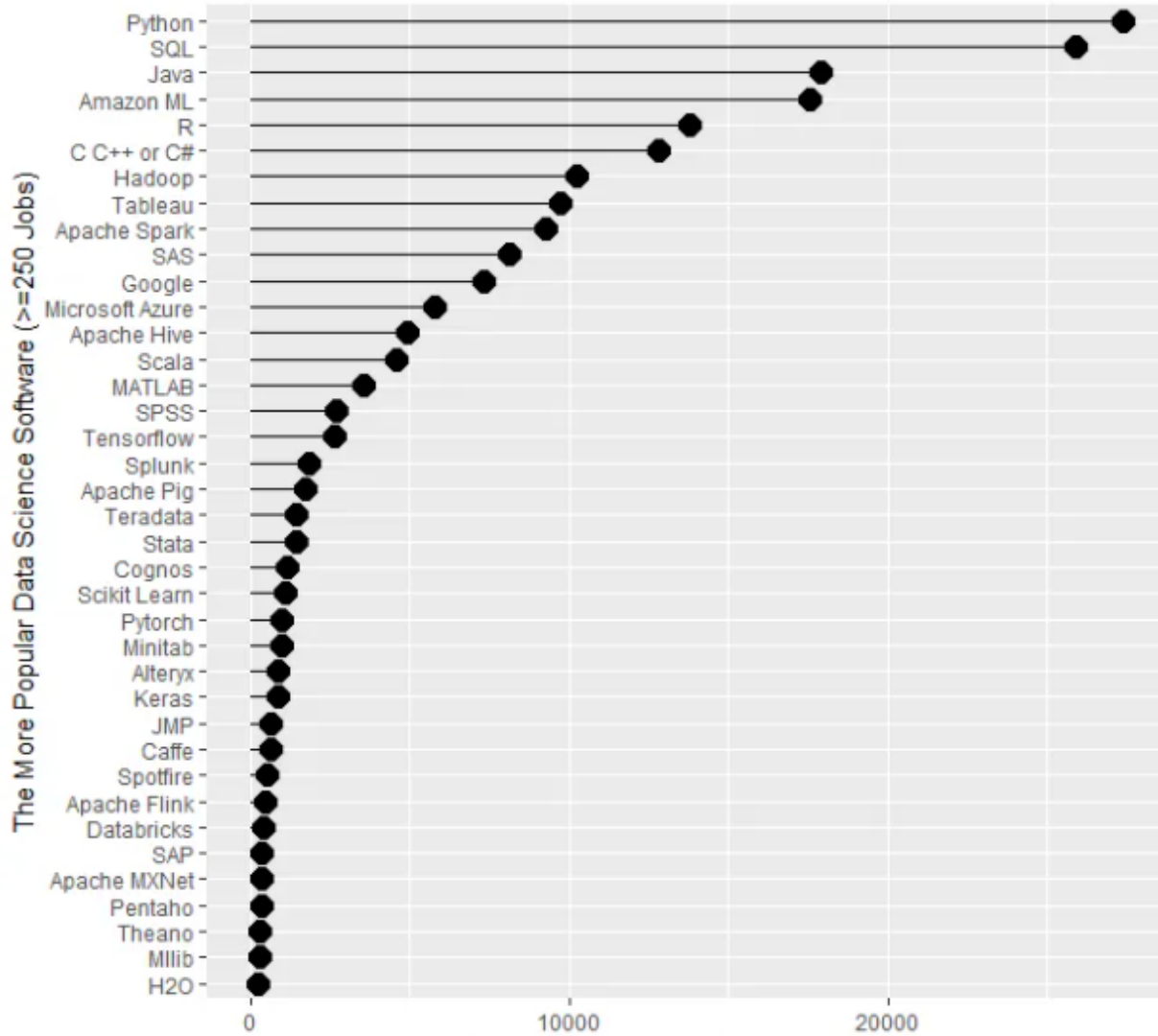
# Course Overview

## Data analytics with R.

You can use Excel or SPSS, but they are too simple and cannot handle complex data analysis projects.

R is a free software that is commonly used for statistical analysis.

It is not only useful for digital marketing, but also useful for other purposes such as machine learning and optimization.






# Course Overview

## Data visualization with Tableau.

Data visualization gives us a clear idea of what the information means by giving it visual context through maps or graphs.

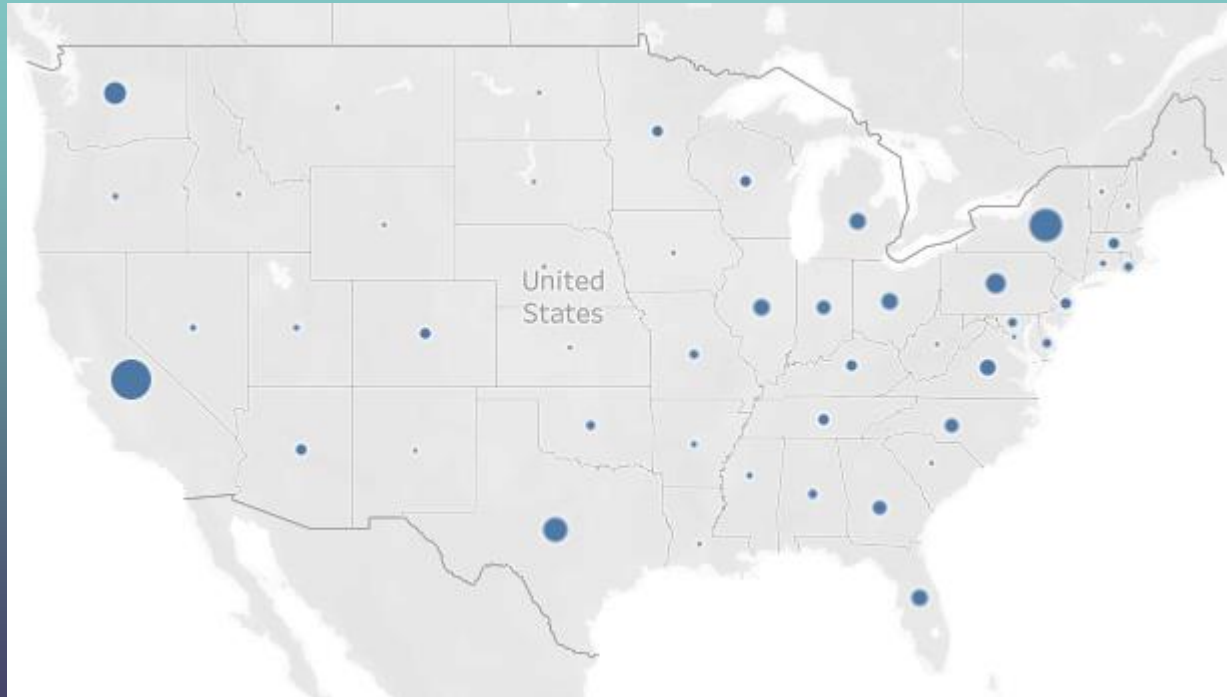
When you want to show your results to others, the best way to use figures --- *“A picture is worth a thousand words”*.



# Tableau

United States California	United States Texas	United States Illinois	United States Ohio	United States Michigan	United States Virginia
	United States Washington	United States North Carolina	United		
		United States Indiana	United States		
United States New York	United States Pennsylvania	United States Georgia			
		United States			
	United States Florida	United States			

# Tableau








# Course Overview

## Web Scraping with R.

Data scraping allow you to scrawl information from websites, e.g., online marketplaces. For example, you can collect product information from HKTV Mall, weather information from Hong Kong observatory, and tweets from Twitter.

Warning: Do not expect that you can become an expert in data scraping within one class. This is simply an introduction, and you need more practice yourself.



# Course Overview

This may be the only web scraping class in a business school (I don't know the answer, through).

We will see how to gather information from HKU faculty webpage:






# Course Overview

## Search Engine Optimization.

We all know that Google is the most popular search engine (and even the website) over the world.

We are going to address the following questions: (1) How does Google (and other search engines) work? (2) How to improve your page rank on Google, so that consumers can more easily find your website through searching?



# Course Overview

## Paid Search.


While SEO allows you to improve your page rank for free, you can also spend money to get more attentions from consumers.

We are going to address the following questions: (1) What is online advertising? (2) How does Google sell its search results through auctions? (3) How to buy paid ads? (4) How to develop you keywords list?



# Course Overview

## Display Advertising and Content Creation.

- How to offer targeted ads based on user behavior?
  - How are displayed ads bought and sold?
  - How to design content?
  - What is click fraud?
- 



# Course Overview

## Social network and mobile marketing

We will discuss ways to take advantage of the social network to engage your users and amplify the influence of your brand.

We will introduce some measures of social networks and use R to process social network data.

We will also discuss some characteristics of mobile marketing.



# Course Overview

## Social media.

Setting guidelines and policies for your social media: make sure that you are using social media platforms in a correct way.

Managing social media campaigns using HootSuite.

Ways to engage your users through social media.

AB testing for social media optimization.



# Course Overview

## Social media (Continued).

Social listening: listening to your consumers on social media. Social listening is useful for brand monitoring, watching the competition.

Influencer marketing – amplifying your brand on social media.





# Grading

Your grades will be determined by the following components:

Group-level data-analysis task: 15%

No presentation; report needed

Group-level research project: 25%

Both in-class presentation and report required

In class participation: 10%

Final examination: 50% (open book open notes, MC questions only)




# Data Analysis

In this course, we are introducing a practice class on data analysis. This is one unique feature of our course.

You have already learned about R and Tableau. Perhaps you can also use many other tools such as SPSS, Excel, Python etc.

I will give you some real digital marketing data, and your goal is to study the data using the tools you know --- It's entirely up to you how you want to play with the data!






# Data Analysis

You are going to work with your teammates on the data project. Then, each group will submit a report illustrating the findings from the data. **It will be graded, and it affects your final grade.**

We will start with the data analysis in the class, and you will finish all the analysis after the class.

The purpose of the data project is to help you understand the data analysis methodologies and gain a sense of real data that data scientists are analyzing everyday.



# Overall Course Structure

We have 11 lectures for each class.

For class 1A, the Sep 12 class will be cancelled (public holiday).

For class 1B, the Sep 9 class will be cancelled as well to make the two sessions consistent. I will leave the time to you to form your groups and discuss your project. I will also stay in my office to answer questions from you.

**So, no class next week!**



# Overall Course Structure

We have 11 lectures over the entire semester. Among them, we are going to have

- 1 introduction class (today)
  - 1 data workshop
  - 8 regular lectures
  - 1 class for project presentation
- 

# Research Project

**Good news:** Because we already have the data analysis task, you do not need to collect or analyze data in your research project.

What you need to do: **Choose a company and analyze the company's digital marketing strategy.**

You are free to choose your own company, but make sure that the company is active in digital marketing (at least it should have social media accounts and its own website).

# What you should focus on

Company website: Any issues? What can the company do to improve its website?

Social media (e.g., Facebook, Instagram, Twitter): Is the company managing its social media accounts? Any issues? What would you suggest the company?

Online sentiment: How people are discussing the company or its brands in online review platforms (e.g., TripAdvisor, Amazon)? What's wrong?



# Suggested After-Class Workload

Group level:

Data Analysis Task: 6 hours (+ 3 hours in class exercise)

Research Project: 12 hours (No data analysis required).

Individual preparation for final: 6 hours

In sum: around 24 hours





# More on course workload

It seems that the course has several components (data analysis, research project and final), in fact the workload is not that much:

In the past, we need to collect data and analyze the data in the research project, but now you do not need to do so. Moreover, I will give you the data directly so that you do not need to collect it.

As you work on the research project, you will use most of the concepts taught in class, so it will be very easy to review for the final exam.

# More on course workload





# TODO List

If you decide to take this course, here is what you should do after today's class (Important!):

Form groups with your classmates. Think about the papers you are going to present and the project you are going to work on.

Individual task: Install R on your laptop. We will be using it in the next class.



# Group Formation

Each group consists of at most 6 students (and at least 1).

You need to choose a name for your group, e.g., “Marketers”, “Fantastic”, “A Plus” ...

Email the TA (Yana Lo; yanalo@hku.hk) your group information (group name, your own names and student numbers) before **Sep 17 (Class 1B) / Sep 20 (Class 1A)**.

Let the TA know if you cannot find a group.



# Let's Download and install R.

Your installation path must NOT contain any non-English characters. Otherwise, you will have troubles using it.

安裝路徑必須為純英文，否則運行可能出錯。





**Next, let's download R-Studio.  
It is also free.**

Your installation path must NOT contain any non-English characters. Otherwise, you will have troubles using it.

安裝路徑必須為純英文，否則運行可能出錯。





# Final Remainder

No class next week. You can use the time to form groups and think about your project. You can also discuss with the instructor in the morning of Sep 9.

