

00:03 - So yeah, my name is professor Robert Smith.
00:07 Thank you for coming to this event.
00:09 First I wanna explain why I referred to this
00:12 as a shameless sales pitch.
00:14 You know, I teach mostly the junior
00:19 and senior level courses, mostly the advanced courses.
00:23 I'm developing some graduate level courses
00:25 and by the time students get to me, right.
00:29 And they show up and they're
00:31 in a class called marketing analytics,
00:33 they've got kind of preconceived notions
00:35 on what statistics is, what analytics is,
00:40 what data science or math is, right?
00:45 And most of them, they're marketing students
00:47 and they're like, I'm creative, right.
00:50 I'm into brands.
00:52 And I really didn't choose this field because of numbers.
00:55 And they kinda refer to my area
00:59 as the dark side of marketing.
01:01 I very rarely get to talk to sophomores and freshmen,
01:06 let alone high schoolers.
01:08 So this is kind of a rare opportunity for me,
01:10 the tables have kinda turned quite a bit
01:13 and I wanna take this opportunity to provide you guys
01:17 with a blatantly shameless sales pitch
01:21 on why you should come over
01:24 to this dark side of marketing, right?
01:27 So this presentation is going to be orchestrated
01:29 around eight reasons that I've come up with
01:33 for why you should come to the dark side of marketing,
01:36 the marketing analytics side.
01:39 So reason number one,
01:42 data science is the math of our generation, right?
01:46 And I am aware that I'm being very generous
01:49 to myself when are referred
01:50 to us as members of the same generation,
01:53 but indulge me for a second.
01:55 To properly introduce data science,
01:57 I need to contextualize it
01:59 with the other maths that you guys are aware of.
02:03 So I know I have people from all over the world,
02:07 for this, I will focus
02:10 on the American math education curriculum, right,
02:15 as a case study to kinda prove my point.
02:18 So if you came through the American high school system,
02:24 your experience with math is likely to be very similar
02:28 for all of you, right?
02:30 Most likely you learned algebra,
02:35 you have learned geometry, you've learned trigonometry,
02:39 and you've learned calculus, right?
02:42 Unless if you went to a very strange university
02:46 a very strange high school,

02:48 it kind of all of them teach the same four maths.
02:51 So anytime something is that standardized,
02:54 you sort of have to ask yourself, like, why?
02:56 Like what's the historical context here?
02:59 Why are all the highest schools in America all agreed
03:04 that these are the four maths that everybody should learn?
03:07 Well, I've done a lot of reading on this
03:10 and the explanation actually goes back 200 years.
03:14 200 years ago Harvard was like, all right,
03:19 we're Harvard, we're one of like, I don't know
03:22 10 universities in the world.
03:23 If you wanna come to Harvard,
03:25 then you have to pass this test.
03:27 And on this test they tested algebra,
03:31 and they tested geometry.
03:33 And that test became the SAT test, by the way.
03:36 So all the high schools were like, Oh, okay, crap,
03:40 I guess we need to teach algebra and geometry.
03:43 And that created, what's called the geometry sandwich
03:46 where you've got algebra one, then geometry and algebra two
03:49 and all the high schools followed suit,
03:51 it became a standardized approach to teaching maths
03:55 that started in 1820.
03:58 That was not updated for over a hundred years.
04:03 And then in the 1950s, there was the Sputnik crisis.
04:07 There were tensions with Soviet union and they said,
04:11 okay you know, maybe Americans are falling behind
04:14 in the maths and sciences.
04:16 So they added trigonometry and they added calculus.
04:20 So most of the high schools really trigger what,
04:23 okay I guess we need to teach trigonometry and calculus.
04:26 And that was in the 1950s,
04:28 and it has not been updated since.
04:32 So we're talking about 200 years span
04:35 and we've updated the American high school math
04:38 curriculum one time right.
04:41 Now just because it's old doesn't necessarily mean
04:44 that it's outdated, maybe these are the four maths
04:46 that define the current world.
04:49 So we've looked into this, right.
04:52 There have been surveys done
04:54 where they looked at a sample of people
04:57 that earn a hundred thousand dollars or more per year.
05:02 I actually think it was \$70,000 or more per year.
05:04 And they asked them,
05:06 which of these maths do you use on a daily basis?
05:10 So 4% of the sample said algebra, 4% said geometry,
05:18 trigonometry 1%, and calculus 2% right?
05:24 Notice, like in this list we don't have statistics.
05:28 So they also asked about, what about statistics?
05:30 How many of you use statistics on a daily basis?
05:33 And the answer was whopping 70%, right?
05:37 The math Wars have begun, the revolution is in place.
05:40 This is our math.

05:42 It's going to define our, your generation.
05:45 We are the data science generation, whether we like or not.
05:48 So that's reason number one.
05:51 Reason number two,
05:53 you always know why you're doing what you're doing.
05:57 So I wanna speak with you,
05:58 everybody has a different relationship with math
06:01 but when they met difficult for me, especially calculus,
06:05 is that most of the time that I was doing the math,
06:08 I really didn't know why I was doing it.
06:11 I made good grades and I had just,
06:16 the application was always outside
06:18 of the scope of the classroom.
06:20 And we were just practicing doing, doing, doing,
06:23 and we never knew what it was that we were doing.
06:26 So when I was learning derivatives and integrals
06:28 and inverse functions and logarithmic transformations
06:31 and sine and cosine, it was just like, okay,
06:34 I'll just memorize some of this stuff,
06:36 put it down on a piece of paper and hand it to my teacher.
06:39 You know, they put a little box around the answer
06:41 show my work and I'd get an A,
06:42 and I'd be like, okay I don't know what I did,
06:44 I don't know when I would ever use that,
06:46 but that's not the case in data science.
06:49 A lot of people call it data science a decision science.
06:52 We always start with a question, right?
06:56 So unlike the other maths
06:58 where the emphasis is on the calculation,
07:02 in data science, we start with the question,
07:05 this is the beauty of it.
07:06 And the true beauty of it is that question
07:08 can be anything that tickles your fancy.
07:11 Anything that you're interested in.
07:14 Honestly, I got into data science
07:17 because I was trying to answer some of these questions.
07:20 I was very into sports and I started using sports data
07:24 and I wanted to build predictive models,
07:26 that can help me predict sports outcomes
07:28 for whatever reason you could fill in those blanks.
07:31 And I started teaching myself statistics
07:34 to satisfy that interest of mine.
07:38 I was very interested in psychology
07:41 and predicting irrational consumer behaviors,
07:44 And I wanted to use statistics to explain those behaviors.
07:49 So with my students, in my advanced courses,
07:54 we are building predictive models
07:57 to answer questions that my students come up with.
08:00 So some of the things that we've answered
08:02 this is just a silly joke.
08:04 Why does Adam Sandler keep landing movies?
08:07 We built an econometrics model
08:09 to calculate the monetary value that Adam Sandler brings
08:13 to a movie production company.

08:15 And it turns out he keeps making movies,
08:18 even though he's a pretty terrible actor
08:20 because he has a very, very
08:22 very large market that he appeals to.
08:25 Why do vegetarians miss fewer flights?
08:29 This is a true phenomenon.
08:30 Airlines built the models to try to predict
08:33 who's most likely to miss their flights,
08:36 and they found that if you look at pre-ordered meals
08:40 those ordering the vegetarian option
08:42 were significantly less likely to miss their flight
08:45 than those pre-ordering a standard meal, right.
08:50 They didn't know why, so me and my students
08:52 we tried to tackle that very important issue.
08:56 My class has helped many students
08:59 win fantasy baseball leagues,
09:02 every semester we try to predict virality
09:04 of basically anything, whether it's a fashion trend,
09:08 or a mean, we try to predict, or we did predict
09:12 built a model to predict the quality of wine in 10 years.
09:16 So we build models that looked at weather patterns in France
09:19 trying to predict the quality
09:21 of a barrel of wine a decade later.
09:23 And believe it or not, there's a huge investment industry
09:25 around predicting the quality of wine
09:28 that is currently barrel.
09:30 So yeah, this one I'm actually lying about.
09:34 I read a ridiculous paper about this guy
09:39 that was doing a squirrel census in New York city.
09:43 And I was like, this sounds like the kind of nonsense
09:45 that we would do in my class.
09:47 I just threw it in the slide.
09:49 So yeah, in the 1950s
09:50 they were training students to become computers.
09:54 And that made sense in the 1950s,
09:57 because we didn't have computers.
10:00 I am not training my students to become computers,
10:03 we've got the computers to do the computing
10:06 I'm training my students to become influencers,
10:10 to become decision makers,
10:12 to become difference makers and problem solvers.
10:16 So that's a big difference between this application of math
10:20 and probably the maths that you are more familiar with
10:24 from your high school education.
10:27 All right reason number three,
10:29 statistics is the most fun math, right?
10:33 And the reason for this
10:35 is that it's all built on probabilities.
10:40 If I were like the zor of Suffolk university,
10:44 or if I were in charge of the world's math curriculum,
10:48 the first math that you will learn right after arithmetic
10:52 would probably be probabilities.
10:55 It's the foundation of a lot of data science.
10:58 And luckily learning probabilities is way more interesting

11:02 than learning most maths at least to most people.
11:05 So I wanna give you guys an example.
11:10 Basically probabilities involves or decision sciences,
11:16 involves making a prediction
11:19 under conditions of uncertainty, right?
11:21 So I make my students do this, I'm pretty evil in that way.
11:26 We, it's usually one of our first classes,
11:30 there's usually 25 or 30 of us in the room,
11:34 and most of us don't know each other.
11:36 And I ask all my students,
11:38 I give them bonus points to bet with.
11:41 And I ask them to predict whether or not two people
11:44 in that room have the same birthday,
11:47 and I let them do whatever math or just guesswork
11:50 they wanna do to make their prediction.
11:52 And I don't what the right answer is,
11:54 and presumably they don't know what the right answer is,
11:57 so there's conditions of uncertainty
12:00 and we're making a prediction
12:02 and then we're having to choose how much we're going
12:04 to invest in that prediction.
12:06 And because I'm evil, if you get the prediction wrong
12:09 you do lose the points, which surprises a lot of students
12:13 but that's the way the world works.
12:15 So I'm going to
12:16 it's kind of hard to do this in this format.
12:19 But I'm going to try to find a way
12:23 to replicate that activity for you guys.
12:26 So what else thinking today's April 1st,
12:29 that's opening day for major league baseball,
12:32 I'm a baseball fan.
12:34 So I just figured one way that we could do this,
12:37 a baseball roster is about the size of a classroom.
12:42 So what I would like for you to do right now,
12:44 is just think about any baseball team, right?
12:47 It be your favorite baseball team, or, you know
12:49 if you don't know any baseball teams,
12:51 because your generation really doesn't like baseball
12:53 very much, you just choose our local team, the Red Sox
12:56 but just pick a team.
12:58 The active roster is 25 players,
13:01 the expanded roster is 40 players.
13:04 So just make a prediction in your mind.
13:07 Do you think any two players on that team
13:10 has the same birthday?
13:13 And obviously there's nothing on the line for you guys.
13:15 I am curious though what your prediction is.
13:18 So I'm going to quickly launch a poll and yeah,
13:23 I just want you to go ahead and first think of the team
13:27 and then we're ignoring the years.
13:28 So it's just month and day, right?
13:31 I want you to predict yes or no.
13:33 Do two players have the same birthday month and day?
13:38 And go ahead and launch the poll now.

13:57 All right, everybody responded,
14:00 wow I have a lot of faith in this generation as students,
14:03 you guys are way better at this
14:06 than my current students are.
14:08 So you predicted yes right.
14:10 And now again, we don't know what the right answer is.
14:13 We just know what the best answer is, the best prediction.
14:18 And so the odds are on your side,
14:21 if you predicted yes, the odds are on your side.
14:25 Now I, with 30 students usually we have like two
14:28 or three out of 30 that predict yes.
14:31 So I'm very impressed.
14:33 So let me show you guys,
14:35 just so that you don't think I'm making this stuff up,
14:38 let me kind of show you guys
14:41 whether or not that's a good prediction.
14:43 So I obviously have no way of knowing what team you chose.
14:46 So I picked the seven most popular teams,
14:50 just in terms of like size of overall fan base.
14:53 I sorted them by birthday, right?
14:55 From the earliest birthdays in the year
14:57 to the latest birthdays in the year.
14:59 And then I highlighted it once there was a match, right?
15:02 So for the Red Sox,
15:05 I chose the Red Sox first because they're a local team.
15:08 There was a match by the time we got to 13 players.
15:12 For the Yankees we only got first four players,
15:15 there's already two players that have a match.
15:18 My favorite team, the Cubs, Nico Hoerner, Wilson Contrarez,
15:23 there's a metric there, we only got 16 players deep.
15:27 Astros we got a little further,
15:30 we had to go 26 players.
15:31 So if we were operating on a 25 man roster,
15:35 this might've been the wrong prediction.
15:40 Dodgers 25 players was the last pair on a 25 man roster.
15:46 The Cardinal's only seven players before there was a match.
15:50 The Giants, the very first two players were a match.
15:54 When I saw that, I thought that was ridiculous.
15:58 Oh wait, yeah that was it.
16:00 So yeah, you could see and then this first tab,
16:03 kind of breaks down the numbers and I already know
16:06 that I'm going to have trouble hitting my time.
16:08 So I won't go into this too much.
16:10 But the break even point is or the tipping points
16:14 when you get to a sample size of 23 people, right.
16:16 Once you're at 23 now your best money
16:19 is to predict that there would not be
16:22 or that there will be a match, right?
16:24 Once you get to 50, it's almost guaranteed,
16:27 at 40 all the way up or 40 man roster, you're at 89%.
16:32 So this is known as the birthday paradox.
16:35 And it's basically this idea that,
16:41 it's kind of counterintuitive.
16:43 You wouldn't assume that if you're sitting

16:45 in a classroom with 22 people, 23 people would not think
16:49 that two people have the same birthday.
16:51 So it's just kinda fun when we start working this out
16:56 where we calculate it, and I start to explain,
16:59 some of the cognitive biases that lead us to have this,
17:03 false notion that the likelihood,
17:06 but seems like I don't need to explain that to you guys
17:08 because you were on track.
17:11 Another activity we do called the money hall game.
17:15 And I won't force you guys to go
17:18 through the whole game with me.
17:19 But basically you predict where you think a prize might be
17:24 which door.
17:25 So I have my students pick a door,
17:28 let's just say you picked door number two.
17:33 And then I tell them, okay, all right
17:36 you got door number two.
17:38 You might be right,
17:39 but I'm gonna help you out, give you this one-time offer.
17:42 I'm going to let you know it's not behind door number three.
17:46 So then I give my students an option,
17:49 do you want to keep your door, door number two?
17:54 Or do you wanna change to door number one?
17:58 Now, almost all students stay
18:01 with the door they originally chose.
18:04 And again, there's a lot of cognitive biases
18:07 and the endowment effect,
18:09 these things that make us kind of overvalue
18:12 what we already have,
18:13 fear of making a bad decision by switching.
18:16 But if you think about the probabilities, right?
18:20 When you picked door number two,
18:22 hypothetically let's say you picked door number two,
18:24 you had a one in three chance
18:26 at making the right prediction, right.
18:29 When I told you that door three was wrong,
18:33 and then offered you a choice,
18:35 again by choosing to switch
18:38 you're now taking one in two odds, right?
18:41 You're improving your probability from one in three,
18:45 to one and two.
18:46 By staying you're keeping your original odds
18:49 of one in three.
18:51 So the right decision is to just always switch.
18:54 If you always switch,
18:55 you've got a one in two chance of being right.
18:59 And if you always stay, you are at a one in three chance.
19:04 And then obviously this made up example
19:07 the correct answer was door number one.
19:09 All right so the takeaway here is that the central math
19:15 that we talk about in marketing analytics is probabilities.
19:19 It's based on these little games like this
19:21 and obviously they get more complex from here.
19:24 But if you were learning math this way in elementary school

19:29 and junior high and high school,
19:31 I think more Americans would find math
19:35 to be an interesting topic, right?
19:38 So it is the most fun math, in my opinion.
19:41 All right, reason number four,
19:44 data science is visual, right?
19:47 So this is important because 65% of all students
19:52 are visual learners,
19:53 and most maths are the opposite of visual, right?
19:58 I think if kids first or children's first interaction
20:02 with math was something visual, stimulating, engaging
20:06 dynamic, I think more would find an interest in this field.
20:10 Data science is incredibly visual.
20:14 You know, the main skill that I work on these days
20:18 is building up my ability to communicate my findings
20:23 with data through data visualizations.
20:26 So here's a visualization that kind of shows
20:30 where energy is produced and where it's spent.
20:33 And I think this tells a story that a lot of textbooks
20:40 are trying to tell, right?
20:41 You can kind of sum up a lot of information
20:45 into one visualization that most people
20:49 from any background can follow.
20:53 All right, here is a heat wave map that shows temperatures
20:58 across the globe during the time in which Texas
21:01 was experiencing their temperature crisis.
21:04 And you could see that the temperatures in Texas
21:07 and the temperatures in Alaska were the same at that time.
21:11 This is showing how Super Bowl ads
21:13 have changed over the years.
21:16 So this is around when I graduated from high school,
21:19 you could see that things were a bit more wild back then
21:22 and they've turned off.
21:25 This is showing the aging of our population
21:29 and gives you a nice visualization,
21:31 on why we call a generation baby boomers.
21:36 And there are all sorts of economic implications
21:40 from looking at this data.
21:42 Some of our visualizations matter, right?
21:45 Some of them don't matter at all,
21:47 especially the ones that me and my students practice with.
21:50 So we built a program that scraped millions of words
21:55 from the English language,
21:57 and then plotted where the letters most like
22:01 so first the popularity of letters in these words,
22:04 and then where they were most likely to occur
22:07 in the word made and why we did this,
22:10 I have no idea just to basically show that we knew how to.
22:15 So yeah, some of visualizations don't matter,
22:17 but some of them matter quite a bit, right?
22:20 Data science being visual is important
22:24 beyond the reasons that it's the preferred learning style
22:28 of most people, visualizations have the power
22:31 to break down communication barriers

22:34 that have plagued the science in journalism.
22:38 Like if you think about it,
22:40 we can with a good visualization,
22:44 we can transcend language barriers, socioeconomic barriers,
22:49 identity barriers, cultural barriers, class barriers.
22:52 We can communicate with people in ways
22:55 that scientists I put myself in that group of people,
22:58 have really failed to do, right?
23:01 So this is how we have traditionally
23:04 communicated climate change, right?
23:08 And this is terrible because we are failing to communicate
23:15 with the very people that blunder science
23:17 about topics that are incredibly important, right?
23:21 So with the good visualization you can change that, right?
23:26 It doesn't matter what your educational background is.
23:29 It doesn't matter what your socioeconomic background is.
23:32 It doesn't matter what language you speak.
23:34 It doesn't matter where you're from.
23:36 Most people can look at the graph
23:38 that's on your screen right now, and follow.
23:41 I mean, most people can connect with this message.
23:51 So marketing has always been about storytelling.
23:56 It's just data can tell an amazing story.
24:00 So here is something that you would need entire
24:05 books to learn, right?
24:06 This is the relationship between the wealth and health
24:10 or GDP and life expectancy over 220 years, right?
24:17 You can see that the size of the bubble
24:20 represents the proportion of the world's population
24:25 that is made up by the country.
24:29 You could see the continent breakdown.
24:34 You can see the slope of this relationship
24:36 this positive slope here,
24:39 you can see how countries are changing over the decades.
24:43 You could see the relationship weakening,
24:46 you can see China rising, right.
24:50 There are entire books written on this topic
24:53 and we can communicate this like that.
24:59 Bring it back to marketing,
25:00 here's an evolution of brands over time.
25:05 We're only looking at 20 years here,
25:07 but if you watch the whole video
25:09 it tells a very compelling story.
25:24 So I'm going to try to not talk too much during this one,
25:27 because I think that the visualization can speak for itself.
25:49 It really doesn't matter where you're from.
25:53 It doesn't matter what your educational background is.
25:57 I think anybody can follow the story being told
25:59 by good visualization.
26:03 So I believe data visualization is just
26:06 this under-appreciated underutilized skill
26:12 that we're finally starting to come around
26:15 and really integrate into college curriculums.
26:18 Okay that was reason number four, data science is visual.

26:21 Reason, number five
26:23 and this whole appeal to some of you and not others.
26:26 This is where the jobs are.
26:29 I am going to take a hard stand on this.
26:33 All right so let me put this into historical context.
26:36 First, we had the industrial revolution, right?
26:39 And then it took a little while,
26:41 but then we had the digital,
26:43 and the internet revolution and the mobile revolution.
26:47 And my contention is right now we are smack dead
26:51 in the middle of the data revolution.
26:53 Now, when I first started teaching
26:55 where I know what the next revolution is, right?
26:57 Machine learning and automation.
26:59 When I first started teaching at Suffolk university,
27:04 I had to kind of sell this point.
27:06 I had to convince my students that we were in the middle
27:10 of a true revolution that history books would write about.
27:15 I don't think that your generation will need
27:18 to be sold on this.
27:19 I think that you guys have been hearing this
27:21 for a long time, but just in case,
27:23 let me talk about it a little bit.
27:25 Every time you walk down the road with your smartphone
27:28 or you open a website or an app
27:30 or you swipe your credit card, you scan a bar code,
27:33 or you sleep with your smart watch on,
27:35 or you talk in front of Alexa, data is being harvested.
27:40 But I feel like we don't appreciate the sheer volume
27:45 of data that we're talking about.
27:48 The amount of data in the world
27:50 has more than doubled every single year since 1986.
27:55 Now, when you say that, well humans have a lot
27:59 of trouble visualizing compound growth, right?
28:02 So let's try to actually look at what I'm talking about.
28:06 I kind of came up with my own weird way of showing this.
28:09 I don't know if it'll work we'll see.
28:11 Let's say it's 1986 and you've got a penny, right?
28:15 Not a dollar, but a single penny.
28:18 And we're going to double it every year,
28:20 like that statistic shows.
28:23 All right 1987 you have two pennies, analytics,
28:28 1988 you'd have 4 cents, and 89 you had eight cents,
28:32 90 16, 91, 32, 92, 64, Whoa.
28:36 In 1993 you are over a dollar.
28:38 It's like, all right, professor Smith
28:40 this is kind of stupid.
28:42 Not very impressive, let's keep going.
28:44 Let's see what happens.
28:50 Over a thousand dollars, 10,000, 100,000,
28:54 were in the millions.
28:57 Oh boy.
28:58 Oh man so \$343 million by today,
29:05 and we started with a single penny right?

29:09 You would be a millionaire by the time you were 27
29:12 a billionaire at the time you were 34,
29:15 but you see even this really undersells it
29:19 because it's not like in 1986, we had a single floppy disc
29:23 with one data point on it, right?
29:25 In 1986, we had billions and billions of data, right.
29:30 Data points.
29:31 And if you started this number in the billions
29:35 and doubled it every single year,
29:37 more than billions back then,
29:39 and doubled it every single year
29:41 I don't even know the number that you would call it in 2021.
29:45 That's how much data we're talking about.
29:49 We just sequence the genome, the human genome.
29:52 If you stacked each letter of one person's DNA
29:55 one millimeter apart, it would be 7,000 times taller
29:59 than the tallest building on earth.
30:03 If you look at this in a business context
30:05 you could really see the evolution.
30:07 This data is a couple of years old now,
30:10 but in 2018 it's not that 60% of companies
30:15 these are fortune 1000 companies.
30:17 It's not that 60% of companies said
30:20 they really care about data.
30:22 It's not that they said that they invest in data,
30:25 it's that they said that data is the core function
30:28 of their business, right?
30:30 It is the central function of those businesses.
30:34 So right now, you know, one really interesting statistic
30:38 that I often think about
30:39 is that two thirds of analyst positions simply go unfilled
30:46 because of a lack of talent.
30:48 There is so much data being harvested, being curated,
30:53 and there's just not enough human beings out there
30:56 to analyze it.
30:58 So that creates a ton of job security, right?
31:01 And I know that there are a lot of reasons to go to college
31:06 that have nothing to do with maximizing earnings potential.
31:10 I met my wife in college.
31:13 I met some of my best friends, I peaked in college, right?
31:16 Those were amazing years for me that,
31:18 and I wouldn't sell them for anything.
31:21 But the reason why I went to college,
31:25 and I came from a very poor background
31:26 nobody in my family had ever graduated from high school
31:29 let alone gone to college.
31:31 And it was very difficult for me to go
31:34 and I made a big sacrifice to go to college.
31:37 And the primary reason I went to school
31:41 was to use my education as a vehicle
31:44 to pull my family out of that situation,
31:47 to change the stars for my future children.
31:50 I went to college to invest in myself and in my career.
31:55 And I really wish that when I was 17 years old,

32:00 some professor had explained labor markets to me, right.
32:04 And talked about salaries
32:06 because that conversation never happened,
32:09 and if it had happened for me personally, not for everybody
32:13 but I would've made a lot of decisions differently based
32:16 on the information that I have now.
32:18 So if you're a student in that situation,
32:21 the next two minutes of this presentation is for you.
32:27 I recommend thinking about the skills
32:30 that you are looking to acquire in college
32:32 and thinking about the demand for those skills.
32:35 And I think I showed that data science is in high demand
32:40 the scarcity of those skills, right?
32:44 You wanna get good at something that's not just in demand
32:48 but that not too many people are good at.
32:50 And then the verifiability of those skills.
32:52 You wanna get good at something,
32:54 you want to build skills that you could show people, right?
32:57 So I'm going to talk very briefly
33:00 about the Boston market for marketers, right?
33:05 And this data that I'm going to show you,
33:08 I pulled from the Bureau of Labor Statistics
33:11 the New York Federal Reserve, Indeed and Glassdoor.
33:16 So the entry-level position in Boston
33:19 for a marketing associate starting average salary
33:23 is 45,000 a year 44,745.
33:26 So let's plot that on a graph
33:29 and let's break that down by specialization, right?
33:33 So these are, I really want to emphasize this,
33:36 I did not cherry pick these specializations,
33:38 I pulled these light from Indeed.
33:41 And I just ranked, I just, this bar graph
33:44 you're about to see it goes from the lowest paid job
33:47 in marketing to the highest paid job in marketing, right?
33:51 So public relations, 40,000, 41,000,
33:56 social media 42,000 sales 42,
33:59 product coordinator almost 50,
34:02 content curation 51 ad specialist 58,966.
34:10 Alright, then you have market researcher, marketing analyst.
34:14 These are starting jobs, research consultant,
34:18 product analyst, digital analyst,
34:21 user experience researcher, and a data scientist, right?
34:26 There is a very clear natural divide
34:30 between what I will refer to as the soft marketing careers
34:34 and the more data oriented careers, right?
34:38 These skills they're in higher demand, right?
34:42 They are more rare in marketing
34:44 or less people in marketing go out and get these skills.
34:46 And they're very easy to verify on your resume.
34:50 It's very difficult to show on your resume
34:53 that you are good at some of the more soft skills, right?
34:59 But showing that you have hard skills
35:01 to something like if you,
35:03 with a data visualization class,

35:06 you could build a portfolio of visualizations
35:08 that you have done in class.
35:09 You could bring that to your interviews, it's tangible.
35:13 We can look at job growth across the six different areas
35:17 and you can see that the projected job growth
35:19 over the next 10 years in market research
35:21 is through the roof.
35:23 All right so I'll stop talking about jobs
35:25 because you know usually high school years,
35:29 freshmen, sophomores they're not really thinking
35:31 along those lines quite yet, which is understandable.
35:34 Reason number six, surviving creative destruction.
35:38 Okay I'm gonna talk a little bit more about jobs.
35:40 All right so let's talk about creative destruction is.
35:44 Industries have a lifecycle, a very predictable one.
35:48 Creative destruction is this idea that along the way,
35:52 innovations take place,
35:54 that completely disrupt industries, right?
35:57 And it can be very difficult to predict
35:59 when those innovations occur, but suddenly skills
36:02 that are in high demand, fall out of favor
36:06 and a new demand per skills comes into place.
36:10 Now, the reason why I wanna really quickly talk about this
36:14 is that there's this myth around automation
36:18 and I kinda hinted that it's kind of obvious
36:20 what the next revolution is.
36:23 And you can argue we're already smack dead
36:25 in the middle of it.
36:28 There's this myth that automation
36:30 is affecting blue collar labor more than white collar labor.
36:35 And I just wanna say
36:37 that I very strongly disagree with this sentiment.
36:42 So as somebody that started off at the bottom
36:45 of the pyramid, let me tell you the one good thing
36:47 about being at the bottom of the pyramid
36:49 is if some robot comes along and takes my job here,
36:53 while I'm at the bottom of the pyramid
36:54 there's a lot of room for lateral movement.
36:57 You know, now I'm over here,
36:58 they take this job and I'm over here, right?
37:00 You have a lot of room to move laterally.
37:03 When you were up at the top of the pyramid,
37:07 or the middle top of the pyramid,
37:09 and your position becomes automated,
37:12 there's usually not a whole lot of room to the left
37:14 or the right, and you have to go down the pyramid a bit
37:17 which can be very difficult.
37:19 And right now I think there are a lot of industries
37:22 that are under serious threat of automation, right?
37:27 So I won't go into too many specifics there,
37:30 but we've got applications that are reviewing contracts.
37:34 We literally have automation of journalism going on,
37:40 surgery and radiology is being automated.
37:43 There is a clear man versus machine situation,

37:47 and a lot of people talk about.
37:49 So they first, they beat us at checkers and that wasn't fun.
37:57 And then the robots beat us at chess.
38:00 And I was like, okay, slow down robots.
38:02 But it was when they beat us at jeopardy
38:05 they were really started to take note.
38:08 And now they're driving cars.
38:10 And as I alluded to, they are diagnosing cancer.
38:15 So this an example of Lena
38:17 which is Google's AI for detecting breast cancer,
38:21 and 90% of breast cancer deaths
38:25 are due to failure to detect metastasis.
38:28 And now I've read a lot of different estimates on this.
38:32 So I'm picking, I wanna be very clear
38:34 I'm picking the most extreme estimate
38:37 but there are estimates that come in that say,
38:39 that human doctors are as low as 30% effective
38:44 at detecting metastases for breast cancer
38:47 when they're under time pressure in that one study.
38:51 So Google claims that it's AI and is 99% effective.
38:57 Now we're getting that information from Google,
38:59 but yeah 99% effective mean it was shown to be faster
39:04 than a team of six doctors.
39:06 So automation is coming and you wanna be
39:11 in a position to where you are communicating with computers
39:15 not fighting with them.
39:17 All right.
39:18 Reason number seven, I'm almost done.
39:21 Statistics has something for everyone, right?
39:25 So it really doesn't matter
39:27 what your particular interests are or your career ambitions.
39:31 There is a way of applying statistics
39:34 to kind of get your foot in the door in that industry.
39:38 So marketing department recently had a speaker Oak Gotay
39:43 who's the global director of Nike Jordan brand.
39:46 And, you know, he kind of, I mean, you know, it's Nike
39:54 and you speaking to a bunch of students
39:57 from your generation, they're all sneaker heads.
39:59 They all want to get their foot
40:02 in the door of a company like Nike.
40:03 And we've got relationships with Adidas in Boston.
40:06 So like, you know, sneakers are very in
40:09 and this place was packed for his talk.
40:13 We had like 150 people there.
40:16 All these students that are their dream job
40:19 is to work for Nike.
40:20 So a lot of them during the Q&A they started asking him,
40:23 they were like, Hey, you know
40:25 it's my dream to work at Nike, I'm a big sneaker head.
40:29 How could I, right now, I'm a sophomore,
40:33 what can I do to kind of, you know
40:36 steer my career in that direction?
40:39 And his response was amazing.
40:42 He was just like, look, man, I'm gonna be real with you,

40:44 we know a lot about shoes, right?
40:47 We don't necessarily need somebody
40:48 who has an expertise in shoes, that's kind of our thing.
40:52 We know a lot about marketing, we're Nike.
40:55 But what we really need is that digital piece,
40:59 digital analytics, he just kept emphasizing that.
41:03 Bring the skill to the industry,
41:06 don't bring the industry to the industry.
41:08 And so if your interest is social media,
41:13 well here's Facebook analytics,
41:15 Instagram analytics, Google analytics, E-commerce.
41:21 And if you like music you've Spotify data's interactive.
41:28 Economic development, you got something going there,
41:32 trends, right.
41:35 Sort of Google Trends broken down by day and by state,
41:40 and I won't make you guys watch this whole thing
41:43 but it is actually pretty entertaining.
41:46 One of the major partnerships that we had
41:50 for a long time at Suffolk was with the Boston Red Sox.
41:53 And I had a team of students coming
41:56 into the ballpark twice a week
41:59 for the entire summer to collect data for them.
42:02 They did not care about the extent to which we knew
42:06 about sports marketing, right.
42:08 They were interested in us
42:10 because of what we could do for them
42:12 on the statistical side.
42:14 So a common reframe that I get back from students
42:17 I'll give one of my very obvious sales pitches
42:20 for my career to them, and then when I get back is often,
42:24 Hey man I just suck at math,
42:27 I don't know what to tell you.
42:28 And I take such exception to this, right?
42:31 For two reasons, reason, number one,
42:35 no you probably don't like everybody says that to me.
42:39 So if everybody thinks they're bad at math,
42:40 but first lesson that I'll teach you in math
42:44 is if everybody's bad at it then your average.
42:47 But the second thing is,
42:50 you don't need to be a natural at math, right?
42:56 Because most likely what you're thinking of
42:59 when you talk about your relationship with math
43:01 is most likely built on the beginning of this lecture,
43:05 where we're looking at algebra and geometry
43:09 and trigonometry and calculus.
43:11 But we've got the computers to do that for us now.
43:14 Most likely you're not bad at math,
43:16 you are intimidated or disinterested in math.
43:20 Okay so I know that I'm just about out of time,
43:23 so I'm going to skip these next two very strange slides.
43:27 And the very last reason
43:29 is that your generation is desperately needed, right?
43:34 So I'll be the first to admit
43:36 that data has been used to distort, to mislead and to lie.

43:41 Big data has been used for sketchy policing practices,
43:46 sketchy lending practices, government overreach, right?
43:50 And honestly, I think that's why your generation
43:53 is needed in this area.
43:56 A generation that's already proving itself
43:58 to care about representation, class issues, the climate,
44:02 social progress.
44:04 That's why I wanna be part of this movement,
44:06 so that I can be involved to make sure
44:08 that data science is being used for good.
44:11 So if any of this interested you,
44:14 the best way to get in touch with me
44:17 would be my email address.
44:18 I can talk your ear off about this stuff obviously
44:21 and yeah good luck in your journey.
44:24 And I wish you the best.
44:27 Feel free to send any questions you have into the chat.
44:32 - Thank you so much Professor Smith,
44:33 that was fascinating.
44:35 And actually I have one question that came up
44:38 and that maybe you've kind of already addressed it,
44:40 but it was what type of internships do your students get?
44:44 Can you maybe give us a few examples
44:45 of things that they were working on?
44:47 - Yeah, totally.
44:49 So good thing about like a data area
44:52 is that there's so many internships
44:56 surrounding data analytics, right?
44:59 So we've had internships, like I mentioned before
45:01 where we've had partnerships with the Red Sox
45:04 we've got a partnership with Grub Hub right now,
45:07 with Pandora.
45:10 We've got a designated faculty member
45:13 in the marketing department
45:14 who is the coordinator of internships.
45:17 So I would say to this area,
45:19 of course again I'm credibly biased,
45:23 but analytics and statistics is the area
45:26 that kind of sets you up best for landing internships.
45:30 And that's honestly
45:31 that's kind of a focus at Suffolk university.
45:33 We really try to leverage the fact
45:34 that we're right in downtown Boston.
45:37 And I guess I'll just speak for the marketing department
45:40 all the faculty go out and make partnerships
45:42 with the local industry
45:44 and try to get students as many internships as possible.
45:51 - Wonderful, thank you so much.
45:53 Everyone if you have any outstanding questions
45:55 please feel free to send them in the next few minutes,
45:59 I'm actually gonna now bring back my presentation
46:03 to kinda wrap things up.
46:05 Let me just give it another minute to so see
46:08 if we have any other questions.

46:11 Okey dokey well.
46:12 Okay well, you know, again, if you are interested
46:15 in all of these things are of interest to you,
46:18 please make sure that, you know your next step,
46:21 to attend Suffolk would be making your deposit,
46:24 which is we still will honor obviously the May 1st deadline.
46:27 So there's plenty of time
46:28 for you to still make that decision.
46:30 But I just wanted to make a quick reminder of that.
46:32 You you've all probably already received a lot
46:34 of different information on this,
46:36 but we have multiple opportunities
46:38 for you to be able to visit us virtually.
46:41 And if you are in the state of Massachusetts and close by,
46:44 we actually do have some opportunities
46:47 for you to come in and visit us on campus.
46:49 So please take advantage of those opportunities.
46:51 We'll still have them through the remainder of the month.
46:55 Okay I wanna be respectful of everyone's time.
46:57 I also wanna go ahead and thank professor Smith very much
47:00 for this wonderful presentation.
47:03 It is being recorded so we will be able to share this
47:05 at the end though, you know, later on
47:07 we'll be posting a lot of this on our website.
47:09 Thank you all of you for attending
47:11 this mock class today this evening.
47:13 I know that for some of you is quite late.
47:15 I know we have people from Brazil, from India,
47:18 but then also a lot of people from the US from Boston,
47:20 from New Jersey and other locations.
47:22 So this has been a wonderfully diverse audience
47:25 to be presenting to.
47:27 Thank you very much.
47:27 And this is the end of the mock class.
47:29 Than you, I guess.