The AI Playbook: How to Capitalize on Machine Learning

GiveCampus Partners Conference
August 2025

Eric Siegel, Ph.D.
Founder, Machine Learning Week
Founder & CEO, Gooder AI
Author, *The AI Playbook*

To continue your learning beyond this keynote:

Machine Learning Leadership and Practice – End-to-End Mastery

This end-to-end, three-course series will empower you to launch machine learning. Accessible to business-level learners and yet vital to techies as well, it covers both the state-of-the-art techniques and the business-side best practices.

http://www.MachineLearning.courses

Also, for more information/citations regarding the examples in this presentation, see the Notes, freely-accessible online, for the book "Predictive Analytics" by Eric Siegel (http://www.thepredictionbook.com). Most of the various examples shown are covered in the book (some only briefly, within the book's Central Tables of 182 mini-case studies, so not necessarily with more detail there than in this presentation). So, for greater detail about each case study named, see its reference/citation - search by organization name within the book's Notes PDF, available online at http://www.PredictiveNotes.com.

business

data

prediction

machine learning

predictive AI
predictive analytics

boost sales

cut costs

combat risk

prevent fraud

fortify healthcare

streamline logistics

supercharge fundraising

win elections

Prediction as a capability -- calculating probabilities -- is the Holy Grail for improving large-scale operations.

Quote from the foreword of *The AI Playbook*, by Eric Siegel (MIT Press, 2024).

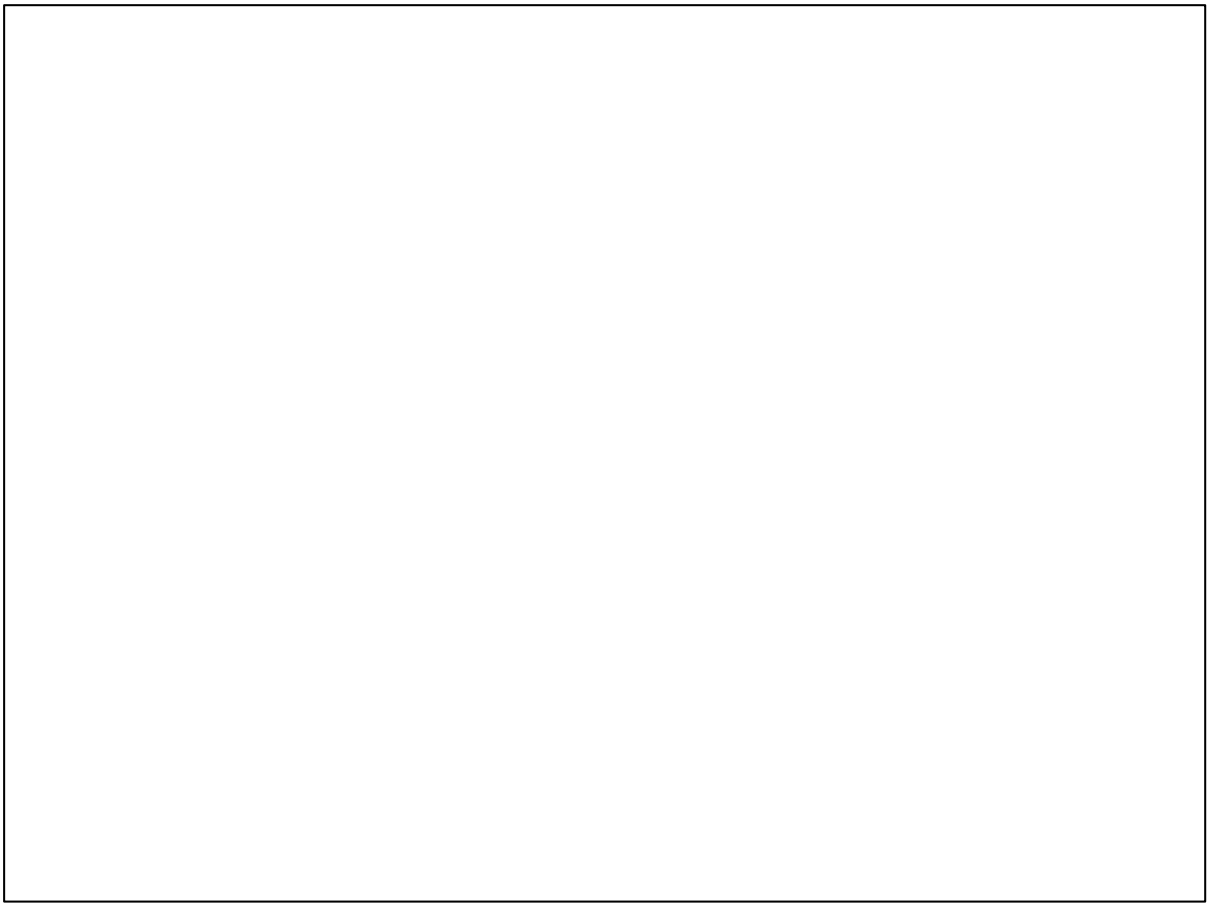
https://www.predictiveanalyticsworld.com/machinelearningtimes/three-best-practices-for-unilevers-global-analytics-initiatives/13457/

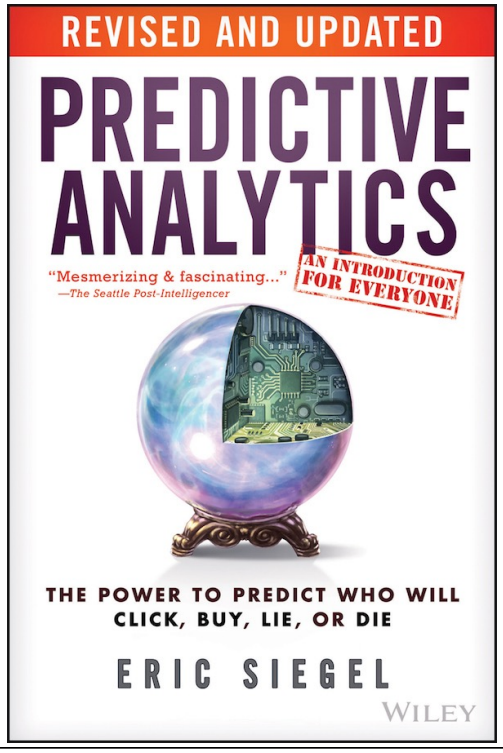
Isn't prediction impossible?

predictive AI

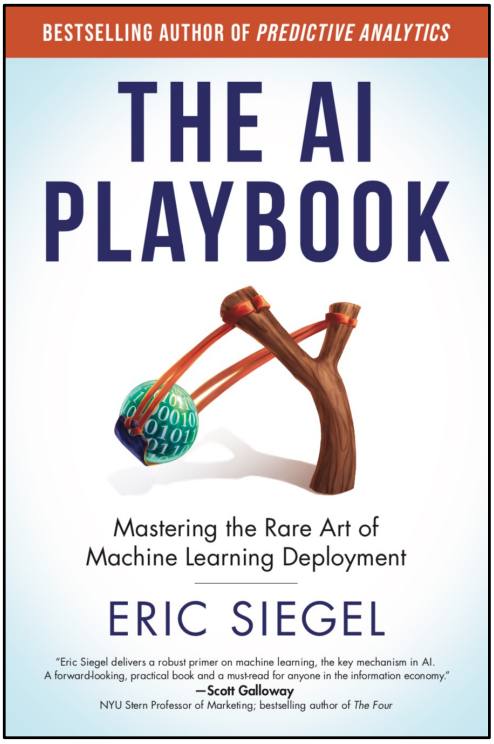
Agenda

1) What is predictive AI
2) How it compares to generative AI
3) How it works
   - The Prediction Effect
   - The Data Effect
4) How it supercharges fundraising
5) How to get it deployed





http://www.ThePredictionBook.com

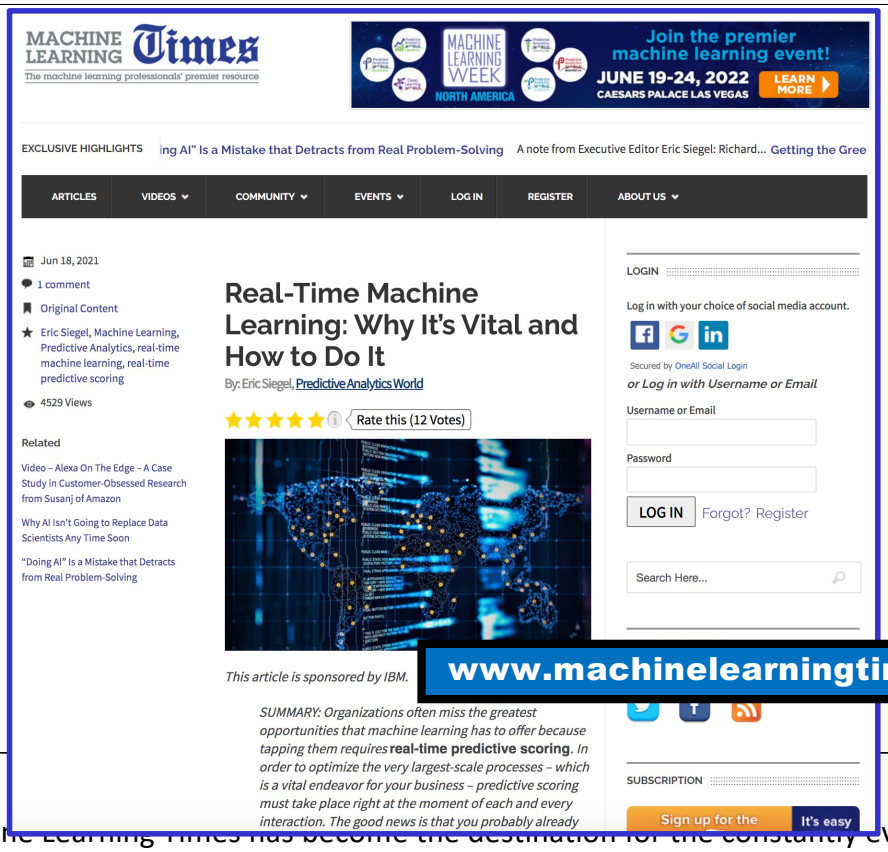


http://www.bizML.com

https://machinelearningweek.com

https://machinelearningweek.eu

https://machinelearningweek.pl



The Machine Learning Times has become the destination for the constantly evolving machine learning community.

http://www.machinelearningtimes.com

This site is the machine learning professionals' premier resource, delivering timely, relevant industry-leading content: articles, videos, events, white papers, and community. The only full-scale content portal devoted exclusively to predictive analytics and its commercial deployment, the Predictive Analytics Times has become a standard must-read.

For the article shown above, see:

https://www.predictiveanalyticsworld.com/machinelearningtimes/real-time-machine-learning-why-its-vital-and-how-to-do-it/12166/

https://www.gooder.ai/

Today's model development is missing the ability to test and visualize the business performance – so it doesn't maximize for business objectives.

Gooder AI addresses a fundamental flaw with the typical model development process: It evaluates models in terms of business metrics like profit/ROI/savings, rather than only technical metrics like AUC/precision/recall.

Product overview document:
https://docs.google.com/document/d/1AVzEH9vo1pMExZ7V1Uwyf-pnnvX6kga9vEzhuwCQzkg/edit?usp=sharing

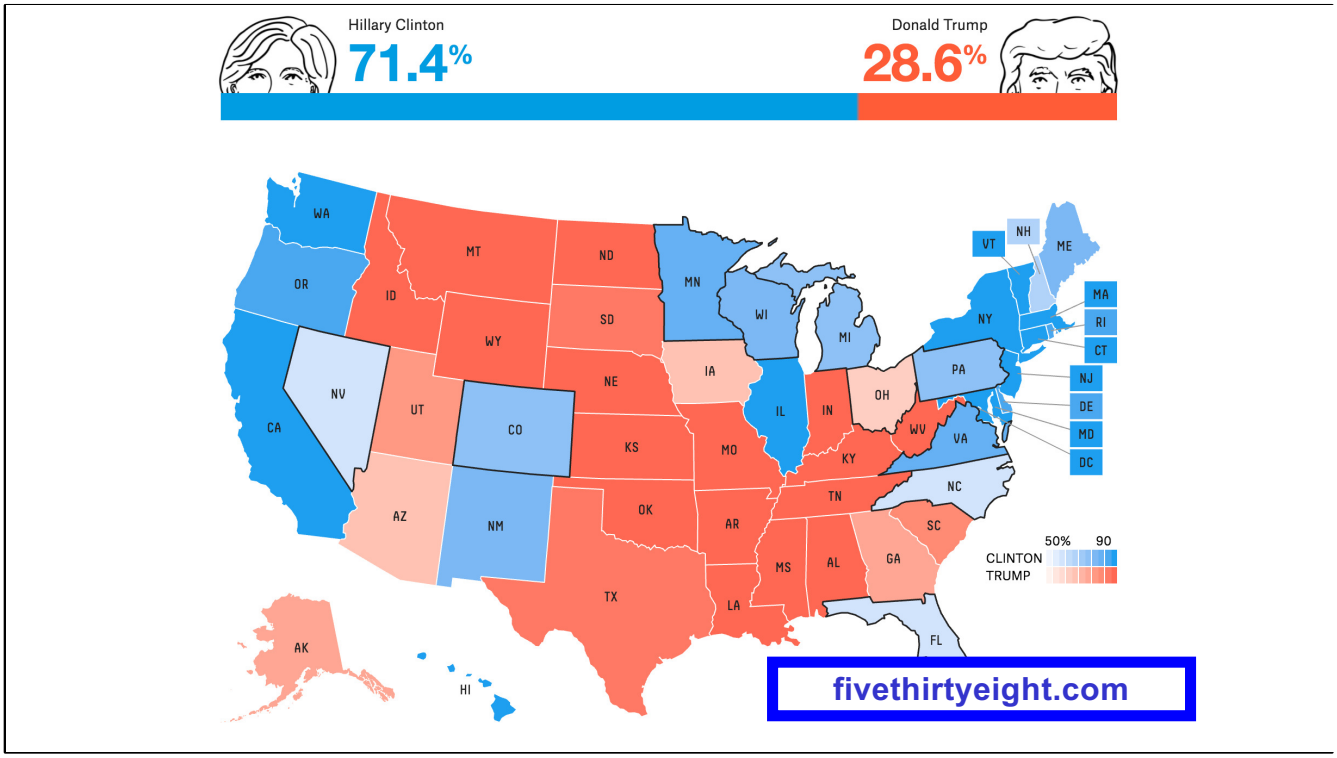
Gooder AI maximizes the value of machine learning by testing and visualizing its business performance.

Validate any ML model for max value.

Universal ML validation to maximize value capture.

Empowers data scientists and orgs to optimize for the business objective.


nate silver
fivethirtyeight.com


Hillary Clinton
71.4%
Donald Trump
28.6%
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KS
OK
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MN
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fivethirtyeight.com


Hillary Clinton
35.4%
Donald Trump
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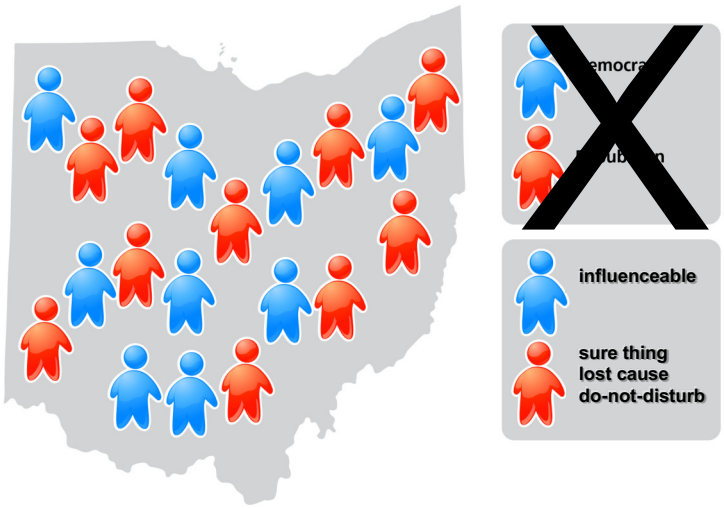
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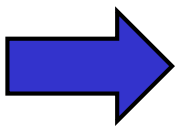


The US's Democratic National Committee keeps a database of registered voters, including how they responded to prior interaction with campaign volunteers.

This project varied from the norm since it uses persuasion modeling (aka, uplift modeling), a less common and more advanced form of predictive modeling. Most predictive modeling endeavors predict something recording in the past (did the individual buy, for example), so the organization need not collect additional data for the project - the data already collected simply in the course of doing business provides enough material to work with. But, for persuasion modeling, you need a control set of individuals *not* exposed to the marketing treatment (in this case, no volunteer knocking on the door or calling). Also, since it is about voting behavior rather than buying behavior, no organization actually has each voter choice/outcome merged in with the voter's identity. Therefore, polling is the only approximate way to get that. To collect data for this project, over several weeks in 2012 the Obama campaign conducted special polls, which were coordinated with applying (and not applying) the marketing treatment (campaign volunteer interaction) on samples of voters.

Two articles I wrote provide more details on the Obama campaign's use of predictive analytics (one a reprint of the pertinent section in my book):

> http://www.thefiscaltimes.com/Articles/2013/01/21/The-Real-Story-Behind-Obamas-Election-Victory

http://bigthink.com/experts-corner/team-obama-mastered-the-science-of-mass-persuasion-and-won

Then check out this video of a Predictive Analytics World presentation by one of the hands-on leads on this Obama project, which gets more technical: http://www.predictiveanalyticsworld.com/patimes/video-pinpointing-persuadables-convincing-right-customers-right-voters/


Machine Learning!
Machine Learning!
for Babies & Toddlers
Dr. Dhoot

Machine learning:

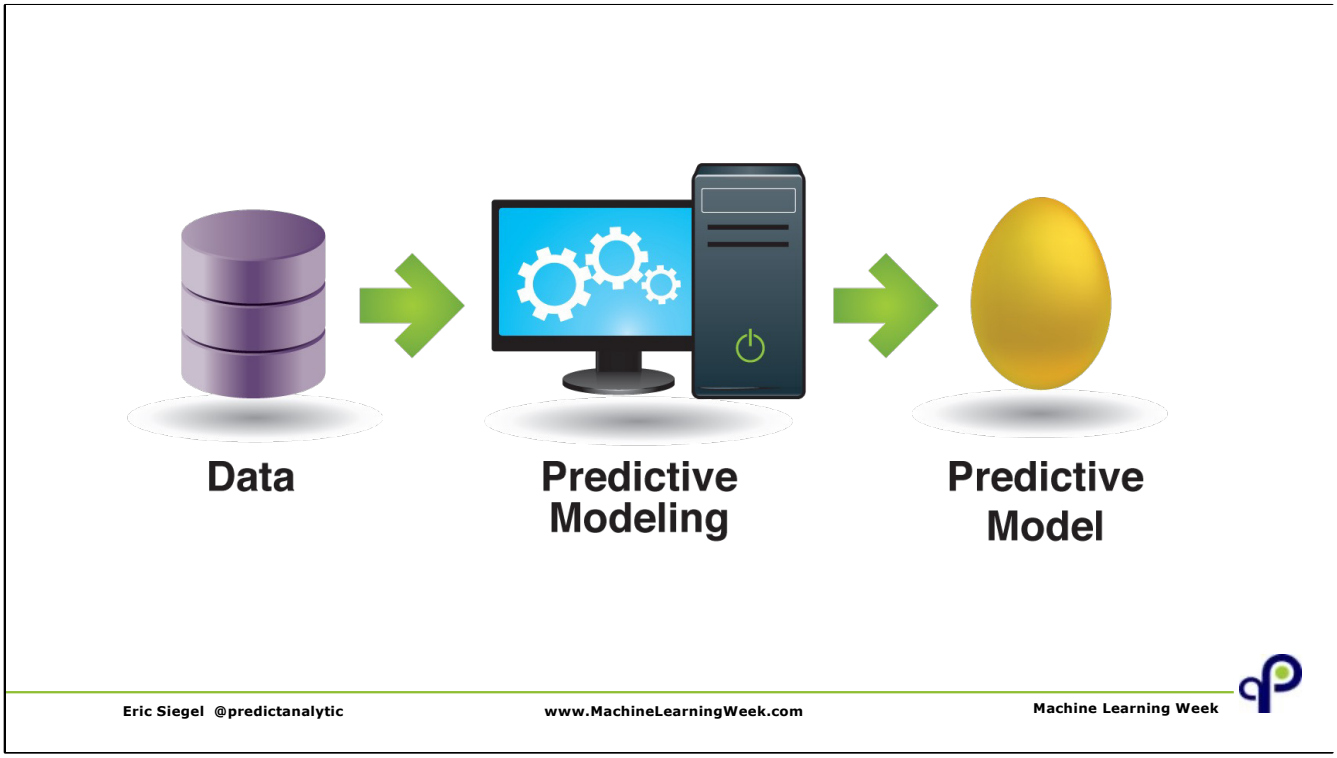
(data)

Technology that learns from experience to predict the outcome or behavior of each customer, patient, business, vehicle, image, piece of equipment, or other individual unit

… in order to drive better decisions.

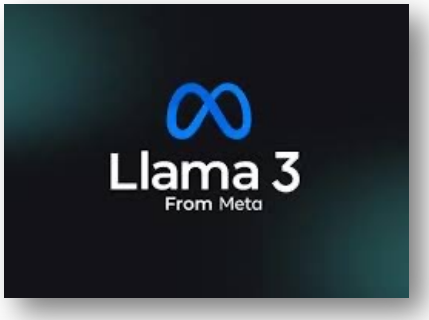
This talk is about machine learning in the above practical, applied sense.

A.k.a. *predictive analytics, predictive AI*



Predictive modeling learns from data in order to generate a predictive model. For details on how this works, see Chapter 4 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).

Generative AI



Predictive AI	Generative AI
Uses ML	Uses ML
Harder to use	Easier to use
Generate predictions	Generate content / reports / summaries
Sometimes autonomous	Usually needs a human in the loop
Dog	Cat
Harder to use	Harder to use *well*
Older	Newer
Small footprint	Huge footprint
Apples	Oranges

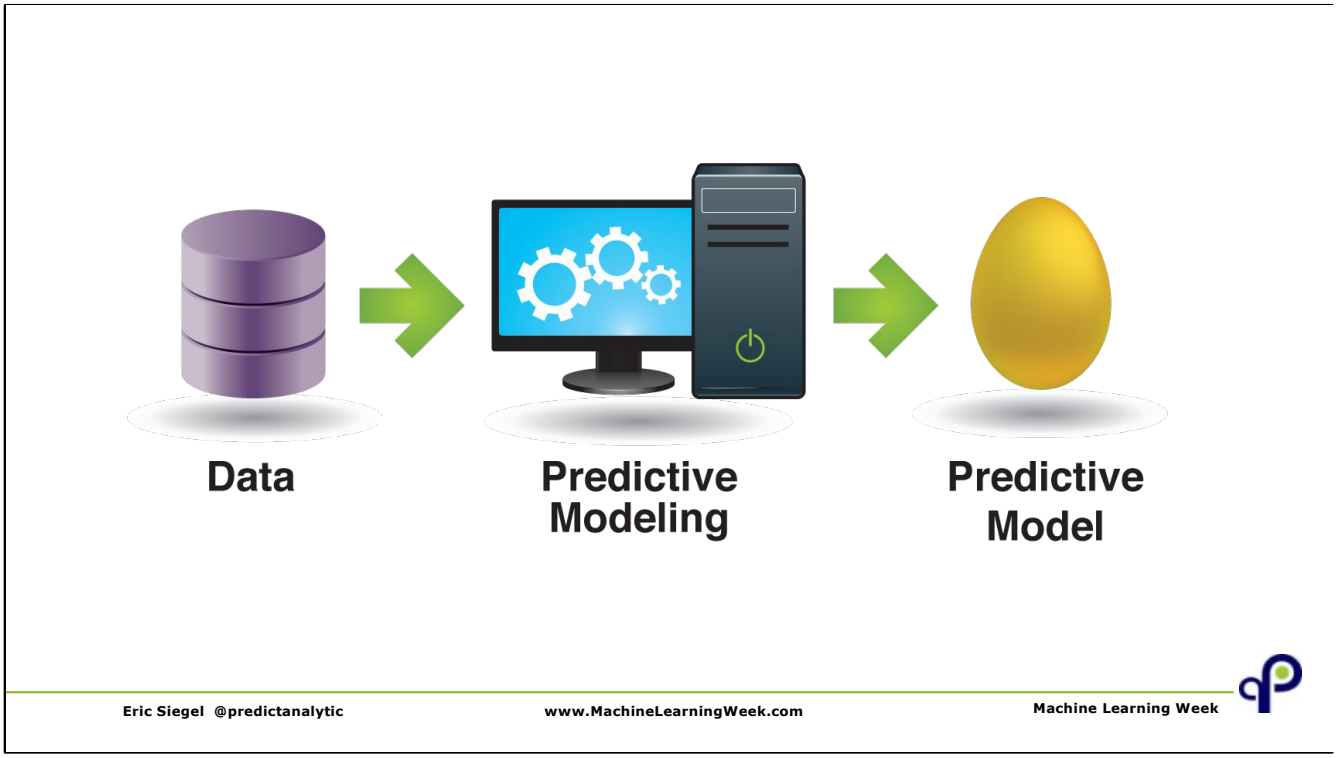
https://www.forbes.com/sites/ericsiegel/2024/03/04/3-ways-predictive-ai-delivers-more-value-than-generative-ai/?sh=7c028f584e84

1) Predictive AI often delivers **higher returns** than generative

2) Predictive AI can operate **autonomously**, whereas generative AI usually cannot

3) Predictive AI is much **cheaper** and imposes a much smaller footprint than generative

https://www.forbes.com/sites/ericsiegel/2025/05/15/5-ways-to-hybridize-predictive-ai-and-generative-ai/



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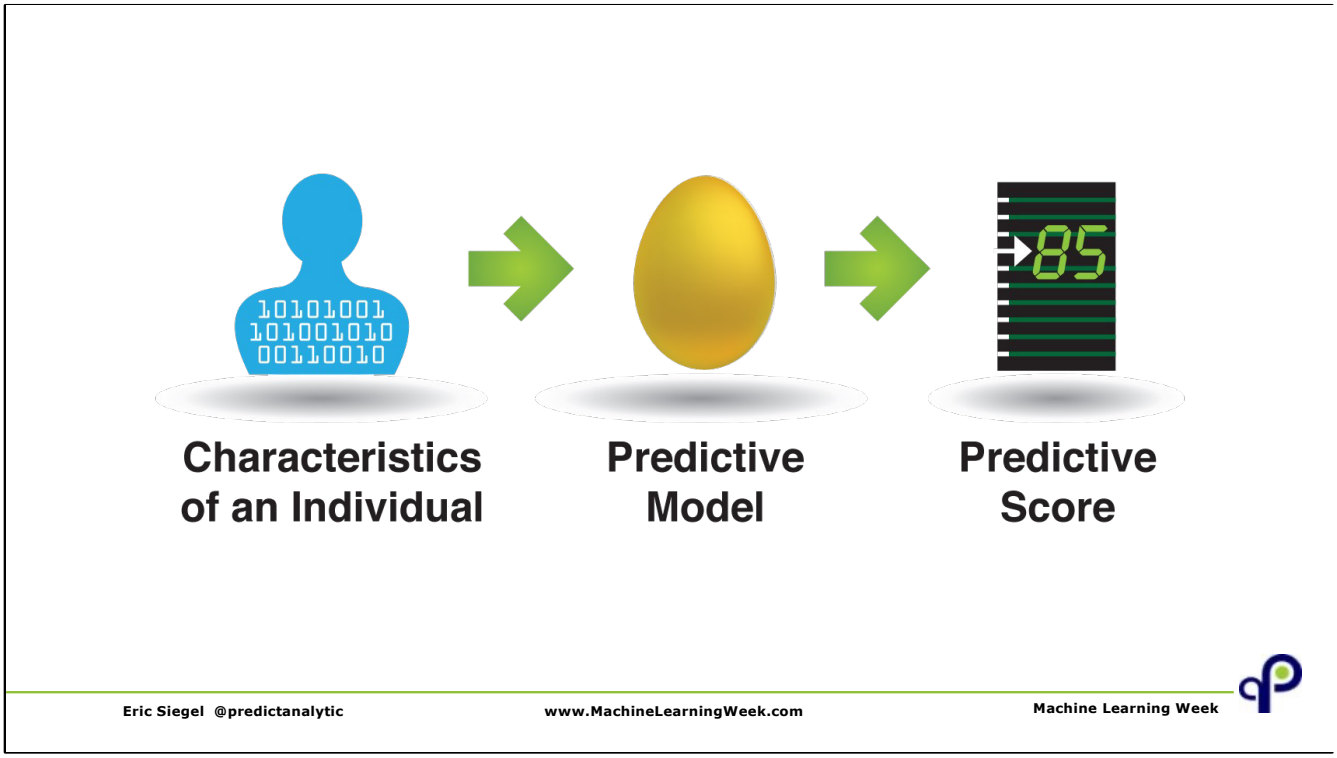
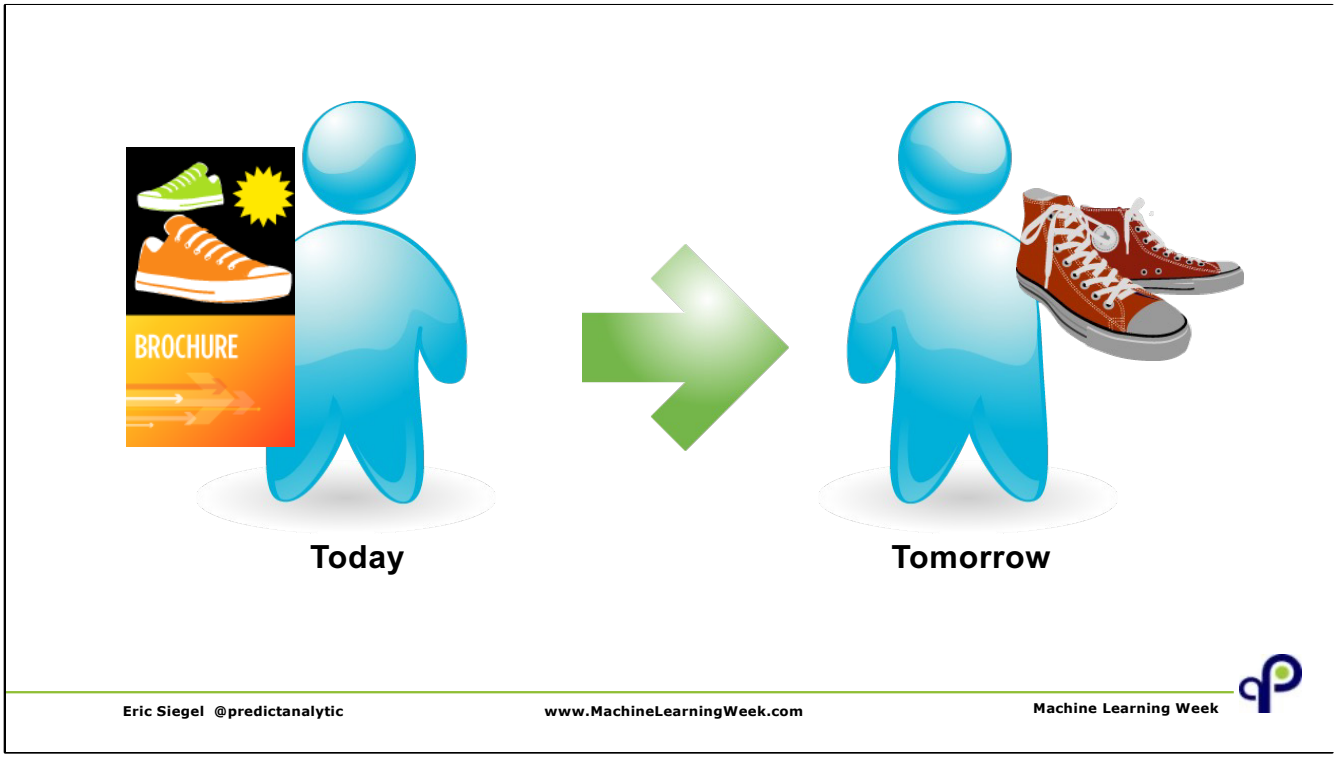


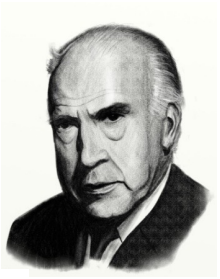
A predictive model generates a predictive score for an individual. For details on how this works, see Chapters 1 and 4 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).



Marketing targets an individual predicted as likely to buy. For details on how this works see the Introduction and Chapter 1 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).

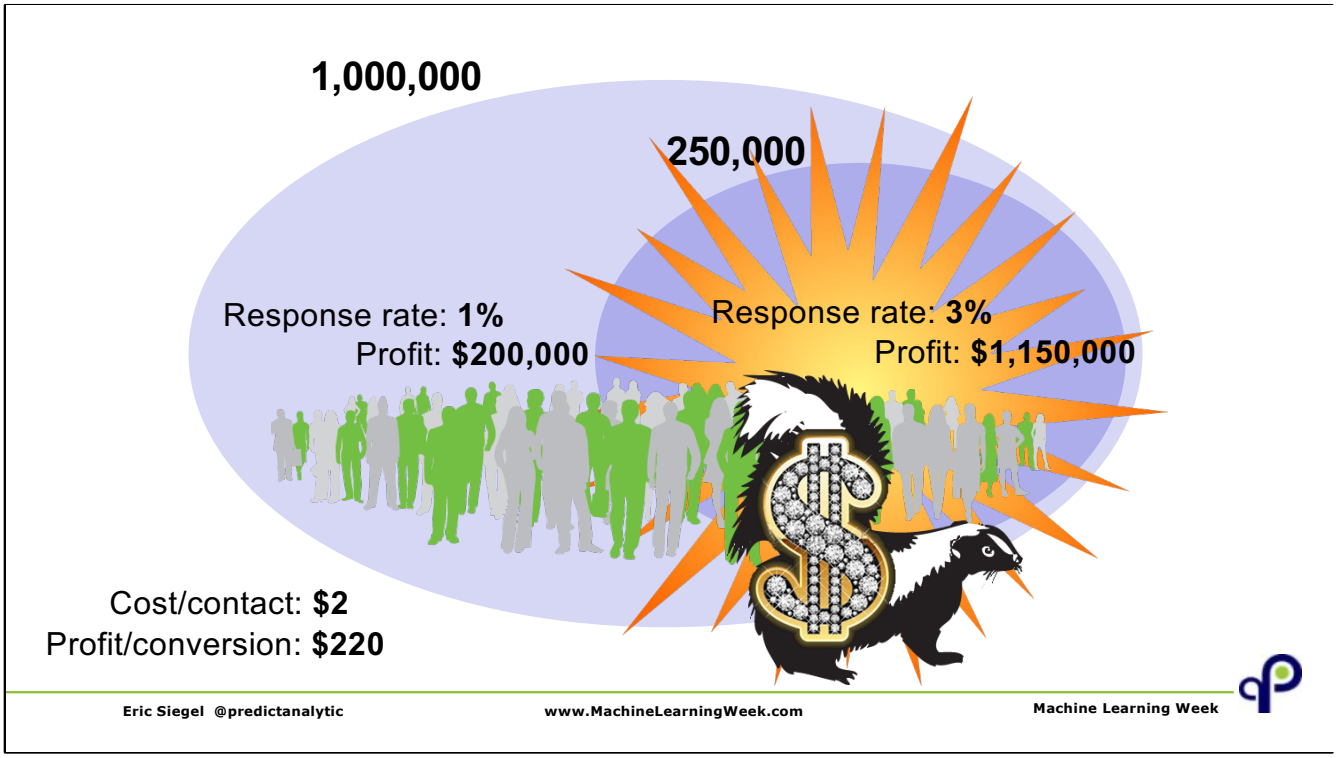
The Challenge of Prediction

Prediction is very difficult, especially if it's about the future.
- Niels Bohr



How come you never see a headline like "Psychic Wins Lottery"?
- Jay Leno

Is prediction an audacious goal? Isn't prediction impossible? For details on how why predictive analytics predicts well enough, see the Introduction and Chapter 1 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (free to access as a PDF on the "Excerpts" page of http://www.thepredictionbook.com).



A crummy predictive model delivers big value. It's like a skunk with bling.

here is a spreadsheet detailing the calculations, which you may copy and toy with at will.
https://docs.google.com/spreadsheets/d/1sLp2sGxTZKH0FW4x-ViukfZ-RsCYDrD9B-ReuMZus8M/edit?usp=sharing

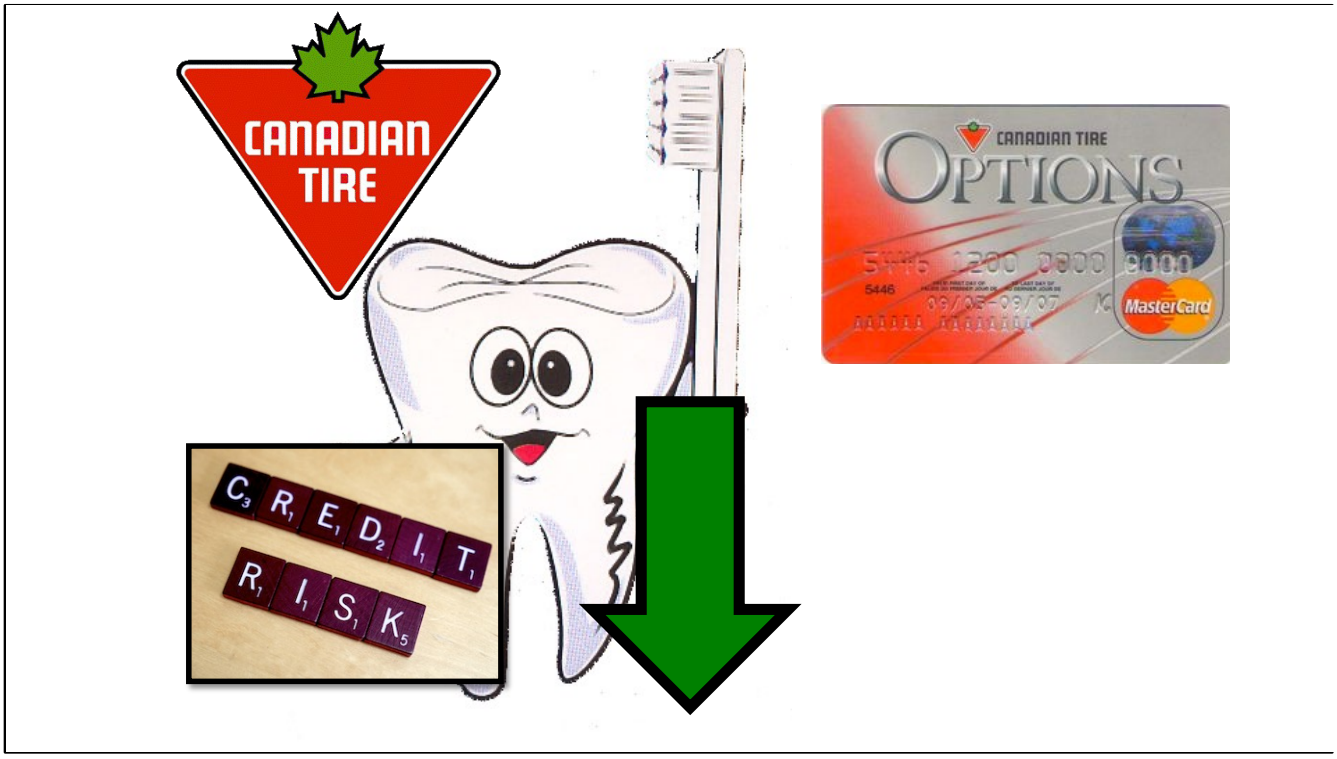
Simple arithmetic shows the bottom line profit of direct mail, both in general and then improved by predictively targeting (and only contacting 25% of the list). The less simple part is how the predictive scores are generated for each individual in order to determine exactly who belongs in that 25%. For details on how this works, see Chapter 1 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).

The Prediction Effect:

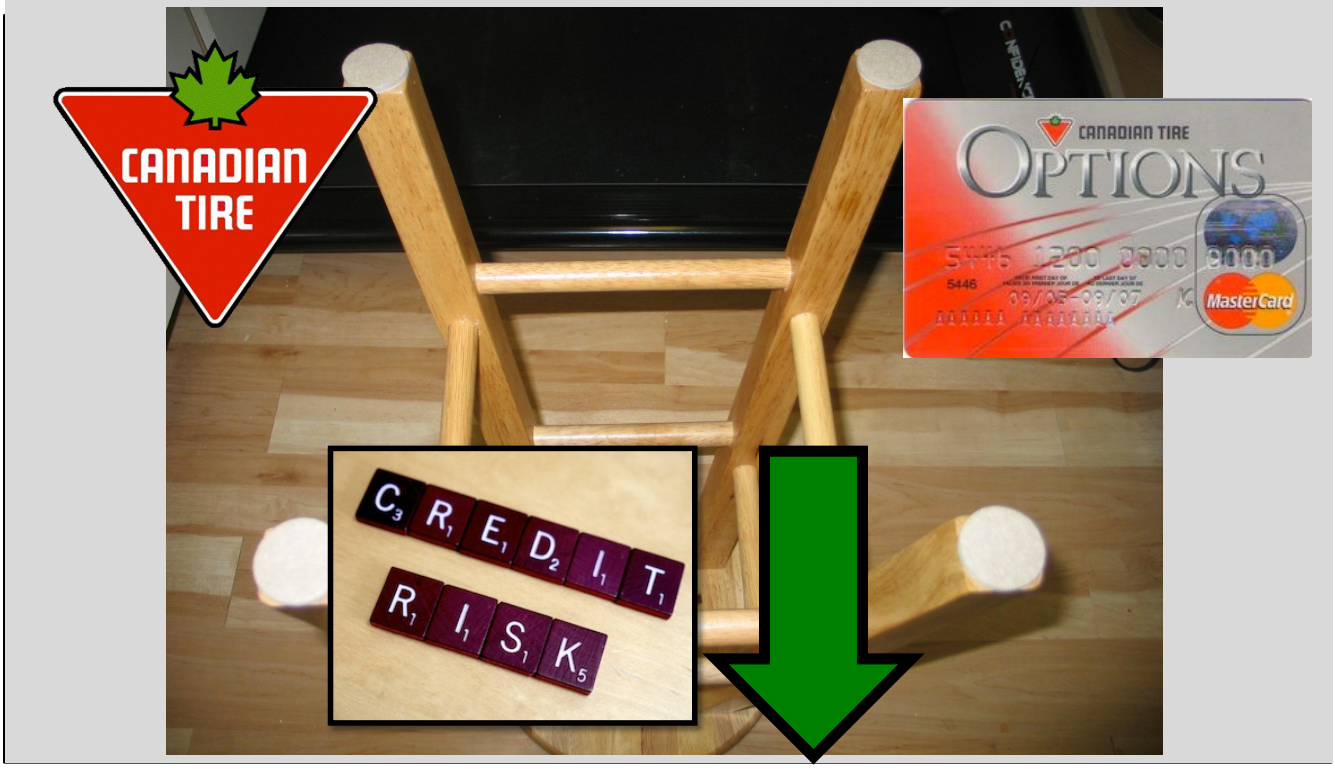
A little prediction goes a long way.

Put another way, predicting better than guessing is often sufficient to generate great value by rendering operations more efficient and effective. For details on how this works, see the Introduction and Chapter 1 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (available for free on the Excerpts page of http://www.thepredictionbook.com).

Canadian Tire examples, from "What Does Your Credit-Card Company Know About You?" New York Times, May 12, 2009.
http://www.nytimes.com/2009/05/17/magazine/17credit-t.html



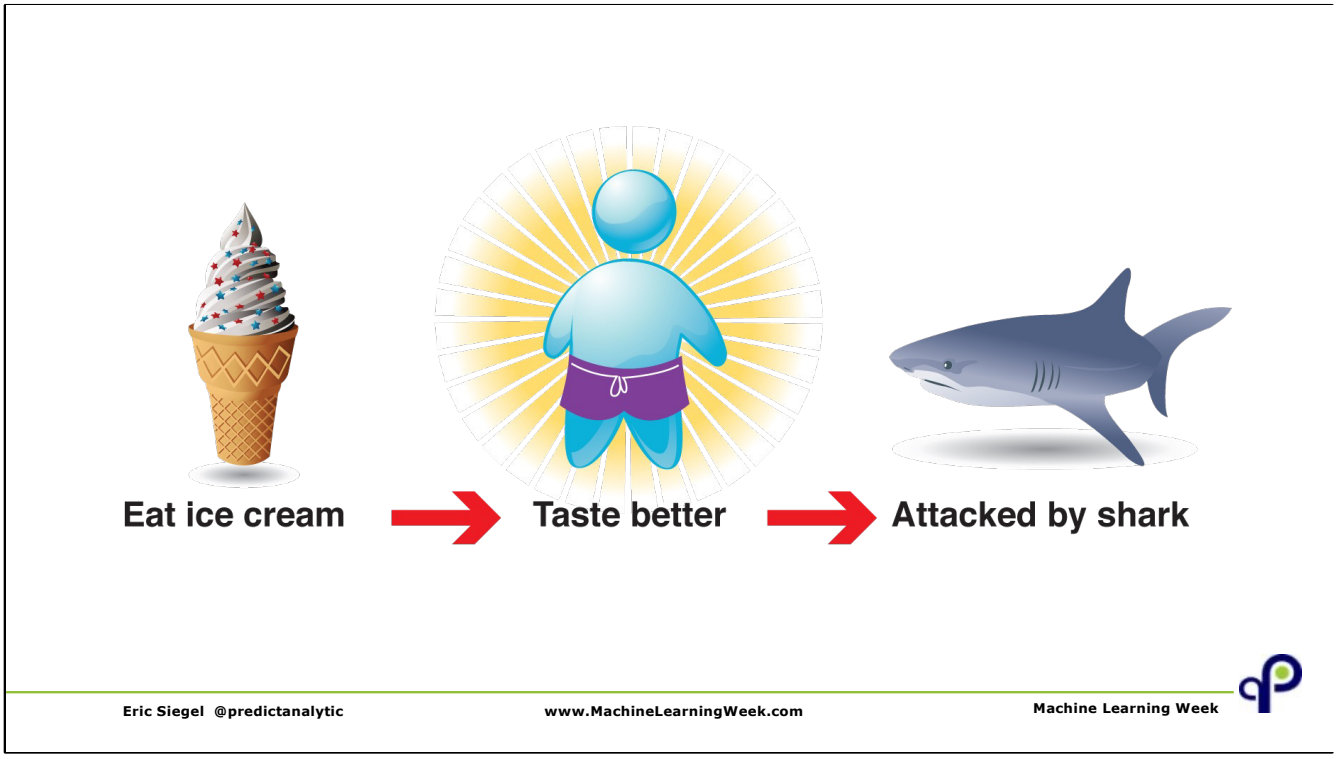
Canadian Tire examples, from "What Does Your Credit-Card Company Know About You?" New York Times, May 12, 2009.
http://www.nytimes.com/2009/05/17/magazine/17credit-t.html



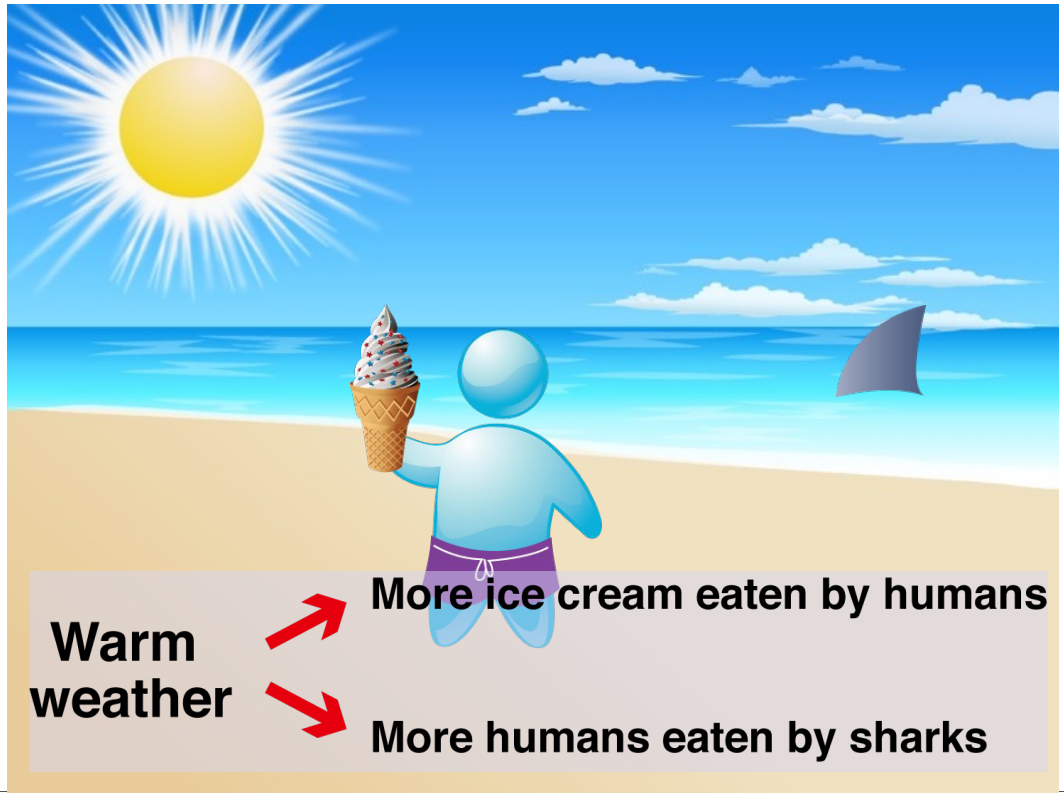
Canadian Tire examples, from "What Does Your Credit-Card Company Know About You?" New York Times, May 12, 2009.
http://www.nytimes.com/2009/05/17/magazine/17credit-t.html

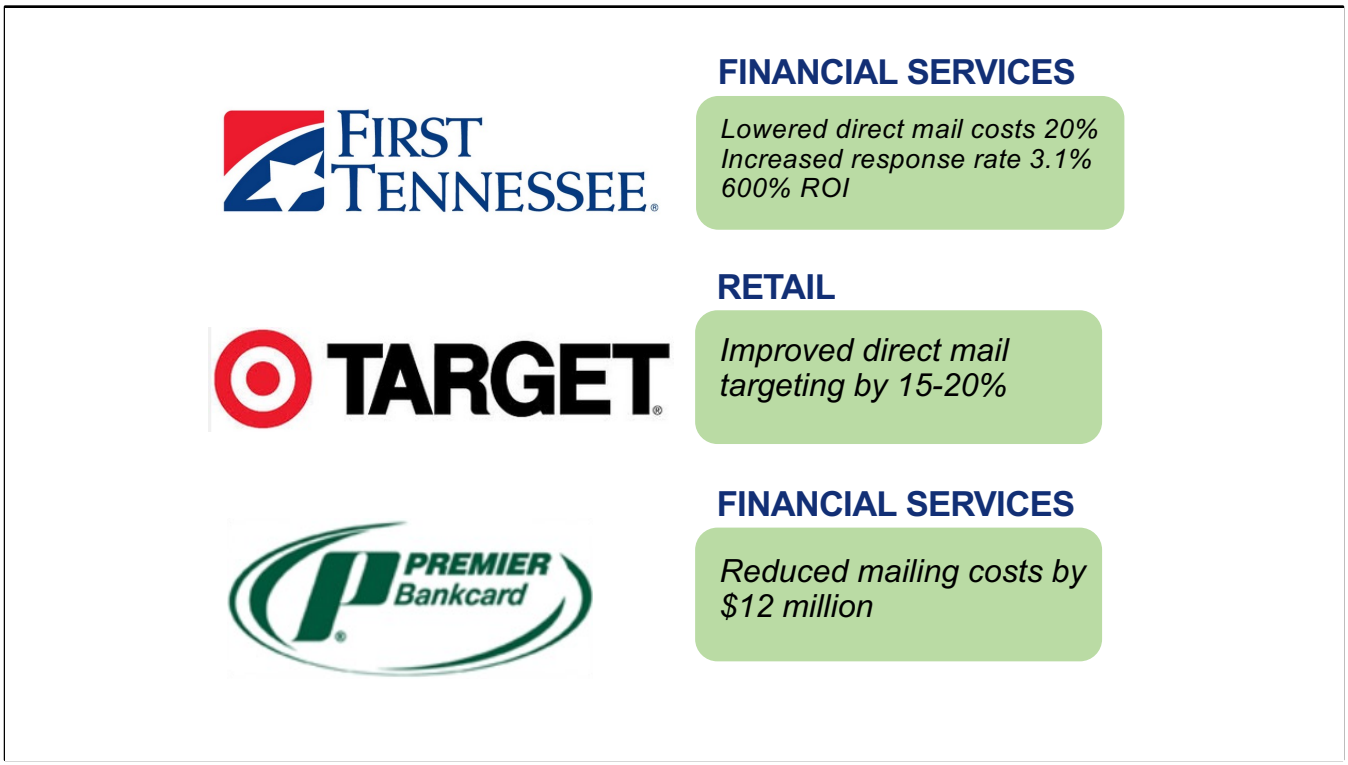
The Data Effect:

Data is always predictive.



Correlation does not entail causation. For more information, see Chapter 3 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).


Warm weather
More ice cream eaten by humans
More humans eaten by sharks



...and many more, such as Cox Communications, FedEx, Sprint, etc. - see the book "Predictive Analytics" (www.thepredictionbook) for many case studies, including a central compendium of 147 mini-case studies, of which 37 are examples in marketing applications of predictive analytics.

Reference for most examples/case studies in this presentation are in the Notes PDF for Eric Siegel's book, "Predictive Analytics." For each example's reference/citation, search by organization name within the book's Notes PDF, available at www.PredictiveNotes.com

PREMIER Bankcard also lowered delinquency to increase net by over $10 million

More information about First Tennessee Bank and other case studies are available at http://tinyurl.com/PAExamples

Dan Marks, First Tennessee Bank, "First Tennessee Bank: Analytics Drives Higher ROI from Marketing Programs," IBM.com, March 9, 2011. www.ibm.com/smarterplanet/us/en/leadership/firsttenbank/assets/pdf/IBM-firstTennBank.pdf

Predictive Fundraising

Charlotte Rescue Mission: Increased contributions in response to fund-raising campaigns by nearly 50 percent.

The Nature Conservancy: Discovered how to profit $669,000 by mailing to only the 10 percent of its donor list predicted to be most likely to contribute.

JustGiving: Credits predictive analytics as central in an expected increase in fund-raising of hundreds of millions of British pounds.

University of Utah's School of Business: Increased alumni donations 73 percent by predicting response to annual outreach.

"How Machine Learning Works for Social Good"
https://www.kdnuggets.com/2020/11/machine-learning-social-good.html

Also, for more information/citations regarding the examples in this presentation, see the Notes, freely-accessible online, for the book "Predictive Analytics" by Eric Siegel (http://www.thepredictionbook.com). Most of the various examples shown are covered in the book (some only briefly, within the book's Central Tables of 182 mini-case studies, so not necessarily with more detail there than in this presentation). So, for greater detail about each case study named, see its reference/citation - search by organization name within the book's Notes PDF, available online at http://www.PredictiveNotes.com.

Targeting those in need

Non-profit issuing college grants for low-income students: Direct mail soliciting applicants elicited a 13.4% higher award yield.

University of Melbourne: Sponsored a predictive modeling competition to predict which applications for research grants will be approved.

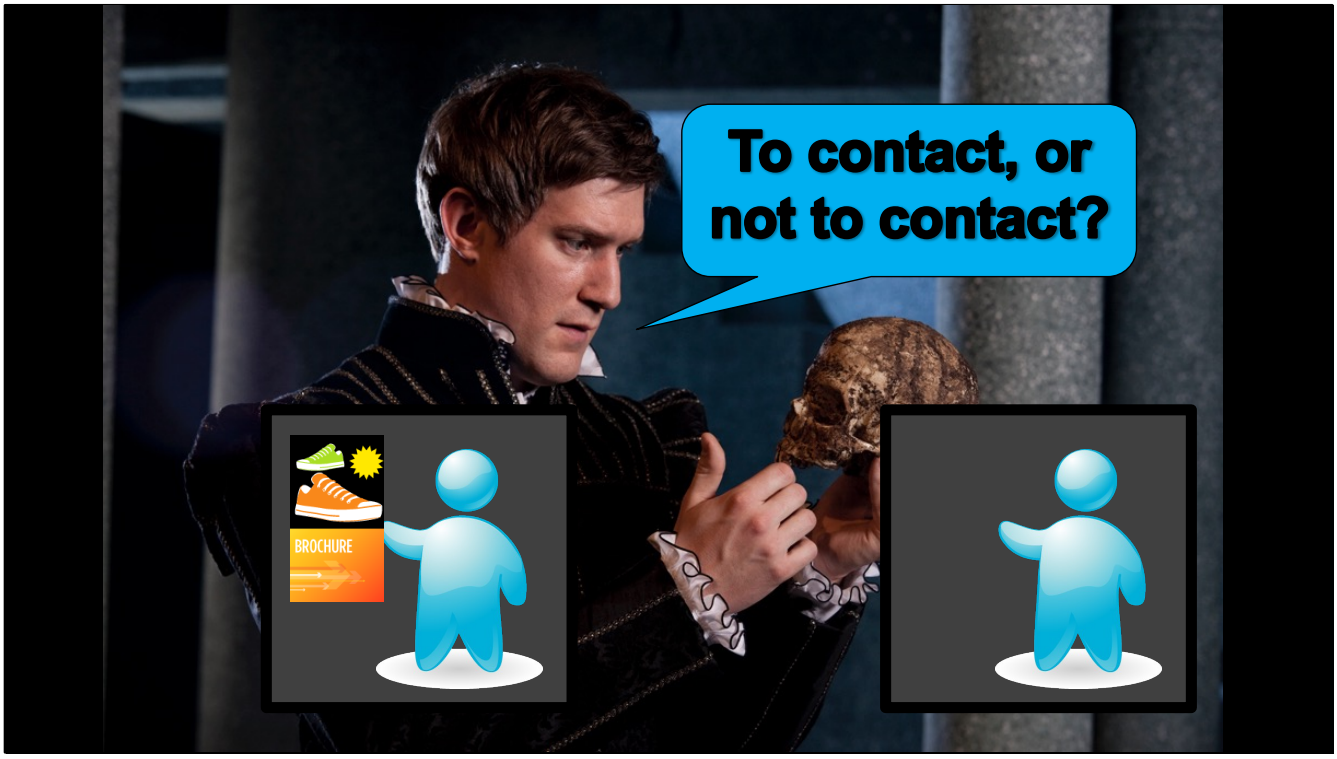
US Equal Employment Opportunity Commission: Predicts discrimination, flagging which groups of people in a specific industry are more susceptible.

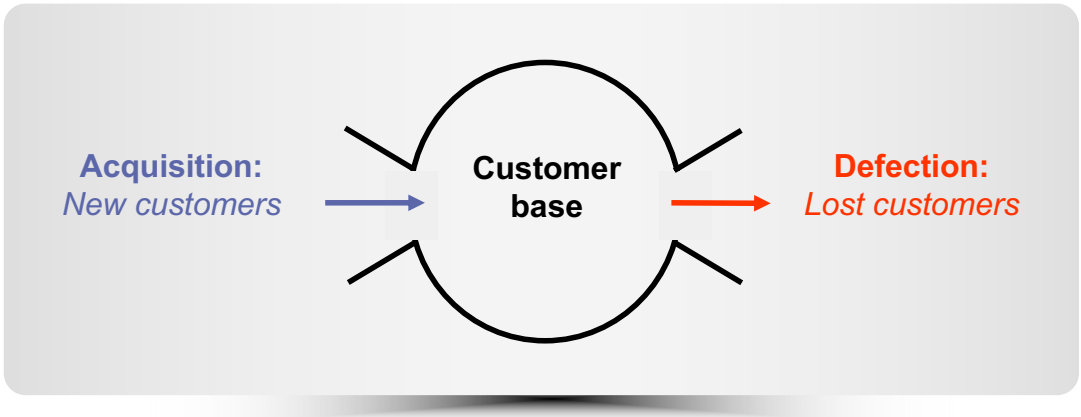
Predict Align Prevent: applies ML to identify children at risk for maltreatment. The organization's models improve early detection and intervention.

Targeting beneficiaries and those most in need of help

https://www.kdnuggets.com/2020/11/machine-learning-social-good.html

https://papreports.org/assets/documents/Capstone_PAPP.pdf

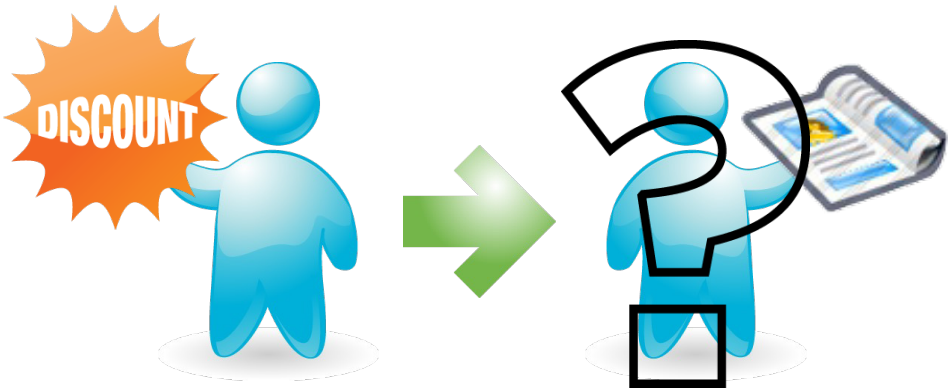

To contact, or not to contact?
BROCHURE



The only way to target a retention campaign precisely where it's needed is with predictive scores that earmark which customers are most likely to leave.

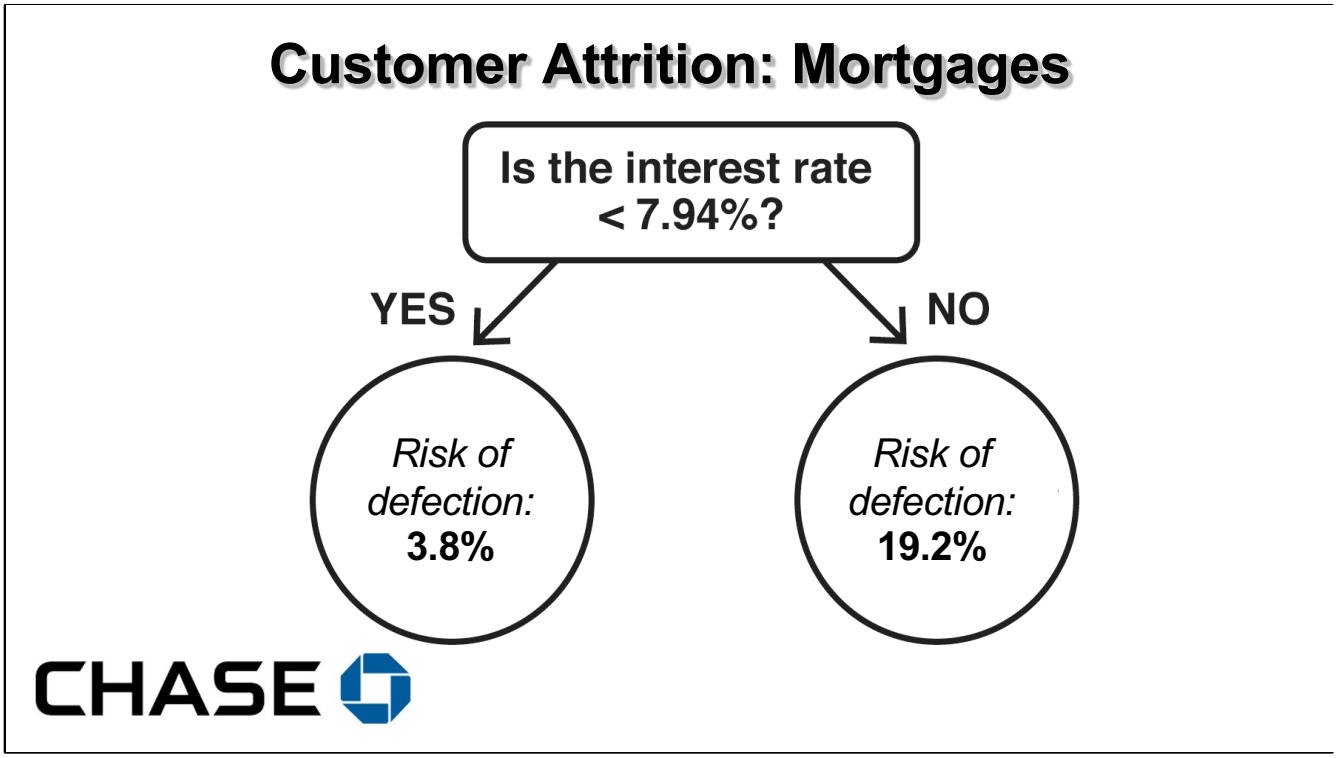
Targeted retention is often the lowest hanging fruit among prospective applications of predictive analytics at an organization.

For more information, see Chapter 7 of the book "Predictive Analytics: The Power to Predict Who Will Click, Buy, Lie, or Die" (http://www.thepredictionbook.com).



Today

Tomorrow



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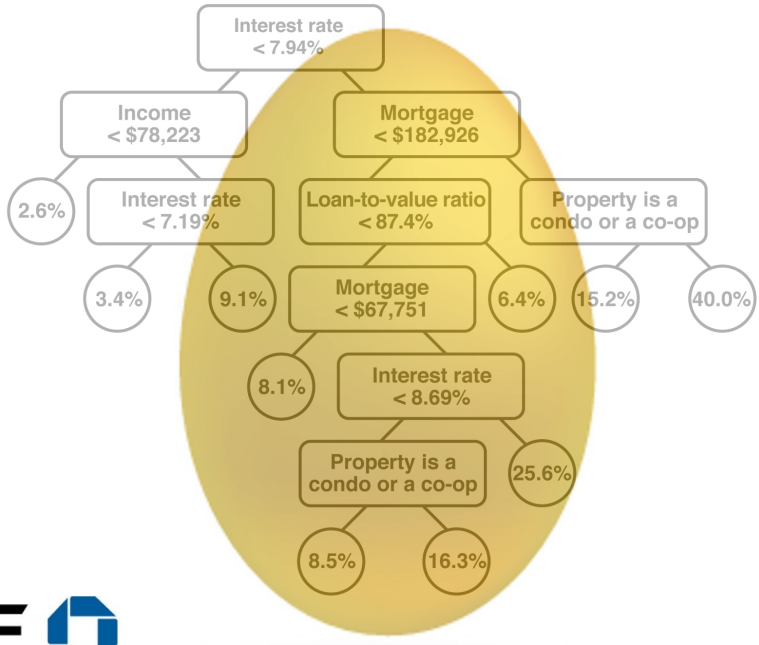
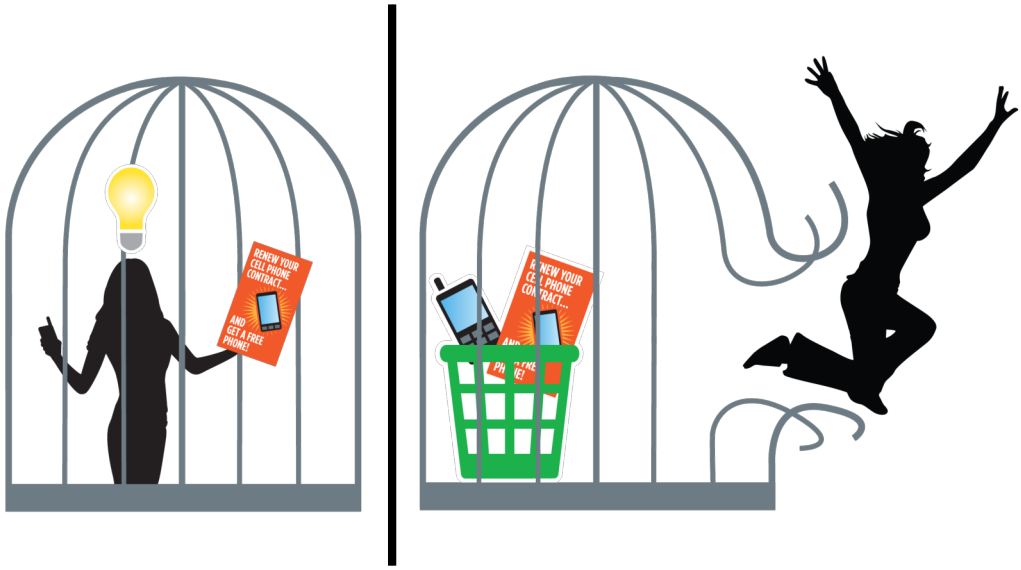

Interest rate
< 7.94%
Income
< $78,223
Mortgage
< $182,926
2.6%
Interest rate
< 7.19%
Loan-to-value ratio
< 87.4%
Property is a
condo or a co-op
3.4%
9.1%
Mortgage
< $67,751
6.4%
15.2%
40.0%
8.1%
Interest rate
< 8.69%
Property is a
condo or a co-op
25.6%
8.5%
16.3%

CHASE


RENEW YOUR
CELL PHONE
CONTRACT...
AND
GET A FREE
PHONE!


RENEW YOUR CELL PHONE CONTRACT...
AND GET A FREE PHONE!


VOTE

Dropout and Failure Prediction

American Public University System, Arizona State University, Iowa State University, Netherlands' Eindhoven University, Oklahoma State University, and University of Alabama: Predict which students are at risk of dropping out in order to intervene and assist in the hope of retaining them.

University of Phoenix: Predicts which students risk failing a course in order to target intervention measures such as adviser coaching.

Rio Salado Community College: Predicts after eight days of class whether students will attain a C or better with 70 percent accuracy, based in part on online behavior, in order to alert professors.

Also, for more information/citations regarding the examples in this presentation, see the Notes, freely-accessible online, for the book "Predictive Analytics" by Eric Siegel (http://www.thepredictionbook.com). Most of the various examples shown are covered in the book (some only briefly, within the book's Central Tables of 182 mini-case studies, so not necessarily with more detail there than in this presentation). So, for greater detail about each case study named, see its reference/citation - search by organization name within the book's Notes PDF, available online at http://www.PredictiveNotes.com.

Predictive AI Usually Fails to Launch

Only 22% of data scientists say their new initiatives usually deploy.
—Rexer Analytics

AI's average returns are lower than the cost of capital.
—IBM

"average ROI on enterprise-wide initiatives is just 5.9%,—well below the typical 10% cost of capital."
ibm.com/thought-leadership/institute-business-value/en-us/report/ai-capabilities

“Only 10% of companies obtain significant financial benefits from AI technologies.”
MIT Sloan & BCG
https://sloanreview.mit.edu/projects/expanding-ais-impact-with-organizational-learning/

Survey: Machine Learning Projects Still Routinely Fail to Deploy - by Eric Siegel
https://www.kdnuggets.com/survey-machine-learning-projects-still-routinely-fail-to-deploy

43% say that 80%+ fail

Only 22% of data scientists say “new capability” initiatives usually deploy
ie most fail
OLD: only 11 percent of data scientists say their models always deploy
https://www.rexeranalytics.com/data-science-survey

Only 11% of data scientists say their models always deploy.
—Rexer Analytics

"I predict we will see the third AI Winter within the next five years."
- Usama Fayyad, the world's fist CDO, June 2022

The greatest tool is the hardest to use. Machine learning is the world's most important general-purpose technology – but it's notoriously difficult to launch. Outside Big Tech and a handful of other leading companies, machine learning initiatives routinely fail to deploy, never realizing value.

McKinsey's AI Index reveals that the "divide between AI lead- ers and the majority of companies still struggling to capitalize on the technology" is only widening.

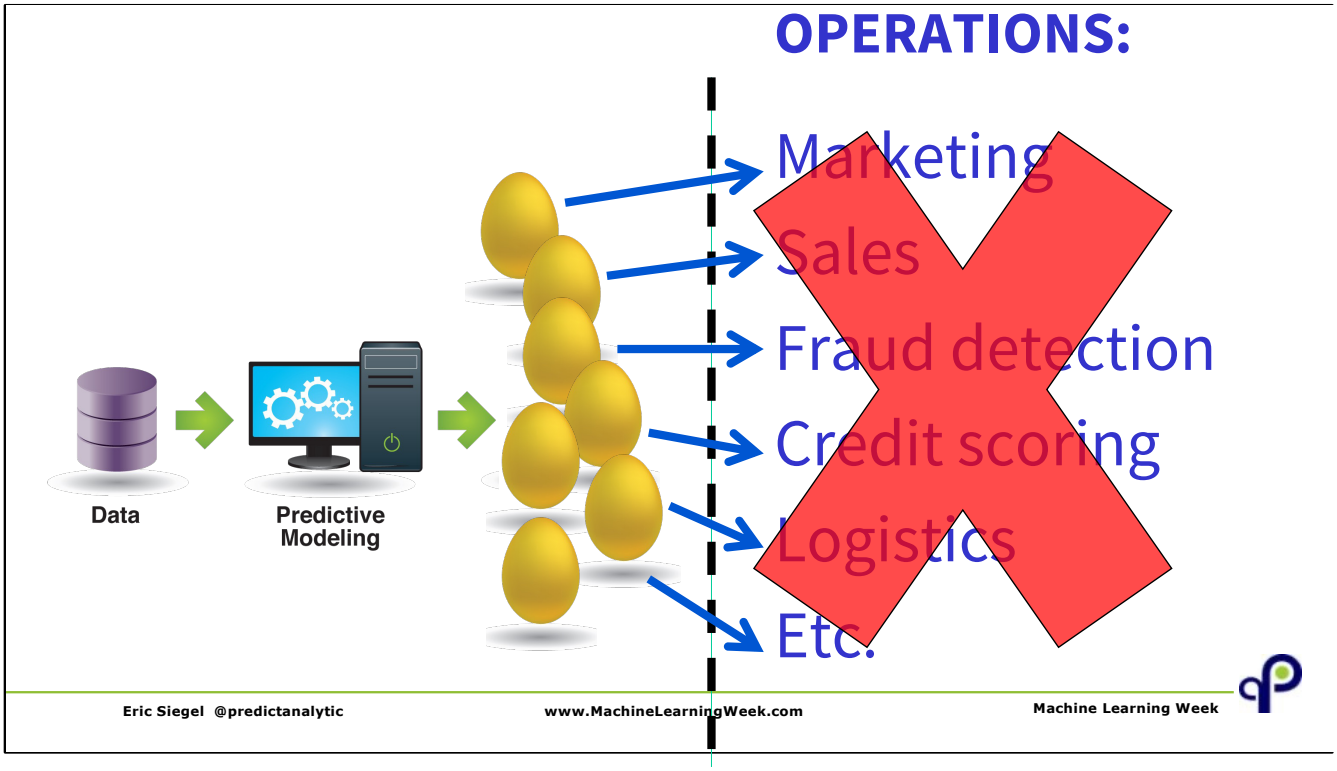
A report prepared by the AI Journal based on surveys by Sapio Research showed that the top pain point for data teams is "Delivering business impact now through AI." Ninety-six percent of those surveyed checked that box. That challenge beat out a long list of broader data issues outside the scope of AI per se, including data security, regulatory compliance, and various technical and infrastructure challenges.

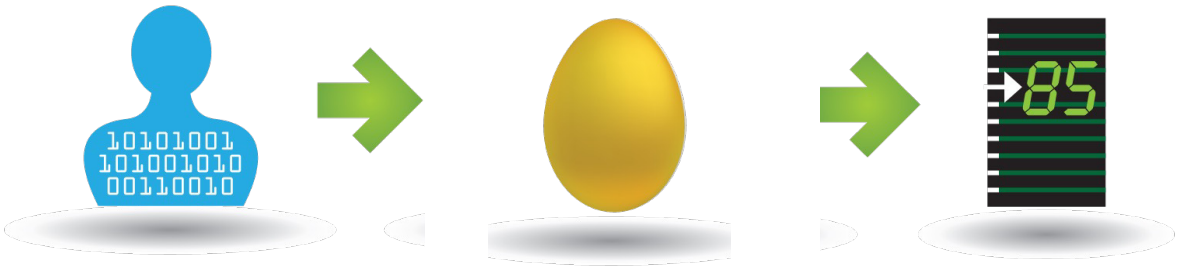
According to a survey of senior executives by ESI ThoughtLab, "the average return on all AI investments by company is only 1.3%" and "only 20% of AI projects are in widespread deployment."
From: Survey of senior executives by ESI ThoughtLab
https://resources.appen.com/wp-content/uploads/2020/09/ESITL_Driving-ROI-through-AI_FINAL_September-2020.pdf

"Many AI initiatives fail. Seven out of 10 companies surveyed report minimal or no impact from AI so far."
https://sloanreview.mit.edu/projects/winning-with-ai/

McKinsey: "out of the 3,073 respondents, only 20 percent said they had adopted one or more AI-related technology at scale or in a core part of their business."
https://www.mckinsey.com/~/media/mckinsey/industries/advanced%20electronics/our%20insights/how%20artificial%20intelligence%20can%20deliver%20real%20value%20to%20companies/mgi-artificial-intelligence-discussion-paper.ashx

For many more such factoids and sources, see "The AI Playbook"'s chapter 0 (zero) book notes:
https://www.machinelearningkeynote.com/the-ai-playbook-book-notes


OPERATIONS:
Marketing
Sales
Fraud detection
Credit scoring
Logistics
Etc.
Data
Predictive Modeling
Eric Siegel @predictanalytic
www.MachineLearningWeek.com
Machine Learning Week

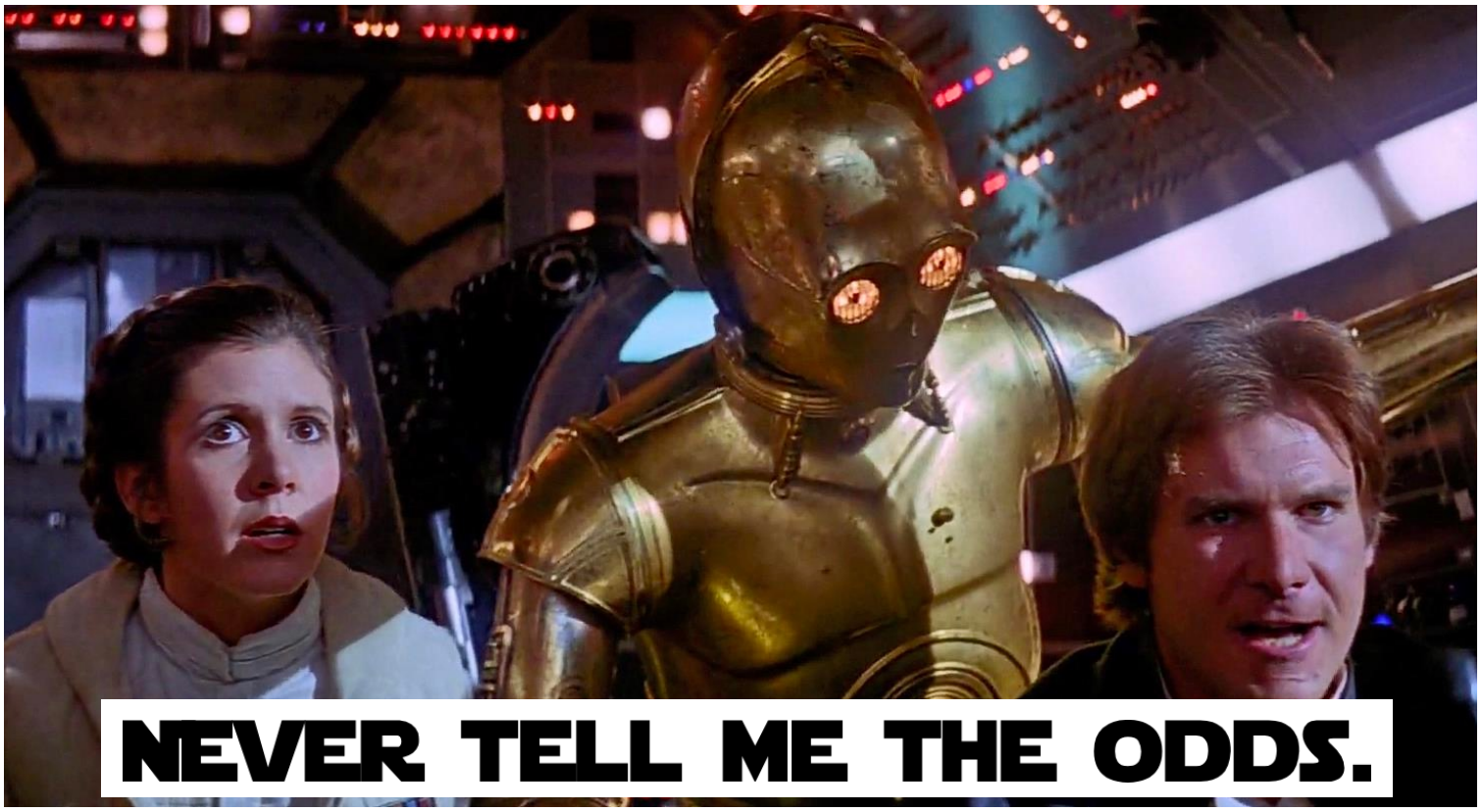


Characteristics of an Individual

Predictive Model

Probability

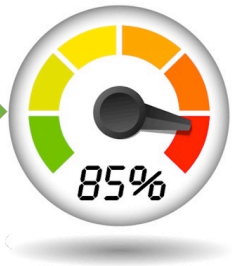
A probability calculator



C3P0: The possibility of successfully navigating... 3,720 to 1.

Han Solo: Never tell me the odds.

"Moneyball" celebrates math and yet epitomizes the glossing over of math.



1) What's predicted

2) How well

3) What's done about it

Eric Siegel @predictanalytic www.MachineLearningWeek.com Machine Learning Week

To transfer business expertise into to technical requirements is to get business professionals ramped up on:

- What's predicted, How well, What do about it

- What the model does, with what success, how use it

- Dependent variable, metrics, deployment: how predictive probabilities actively change business operations in order to improve them. Stakeholders must understand change in order to manage it.

Dependent variable: 1) What's predicted

Metrics: 2) How well

Deployment: 3) What's done about it

Application	What's predicted	What's done about it
Targeting fundraising *to increase returns*	*Will the donor contribute if contacted?*	Contact to those likely to donate.

Application	What's predicted	What's done about it
Targeting fundraising *to increase returns*	***Will the donor contribute if contacted?***	Contact to those likely to donate.

Application	What's predicted	What's done about it
Targeting fundraising *to increase returns*	*Will donors who have already donated this year, if contacted across three channels with messaging tactic 12B over the next month, donate a second time within three months with contributions that at least double their annual?*	Contact to those likely to donate.

Application	What's predicted	What's done about it
Targeting fundraising *to cultivate major donors*	*Will the prospect agree to an in-person meeting with a gift officer?*	Drive email, direct mail, and phone outreach to those more likely.

RESULT:

The non-profit identified 40% more high-value prospects willing to meet.

More on this project's results: In a retrospective evaluation of the model, the model identified 75% of major donors who'd already donated.

FICO Falcon: fraud detection

Screens all transactions for 2.6B payment cards

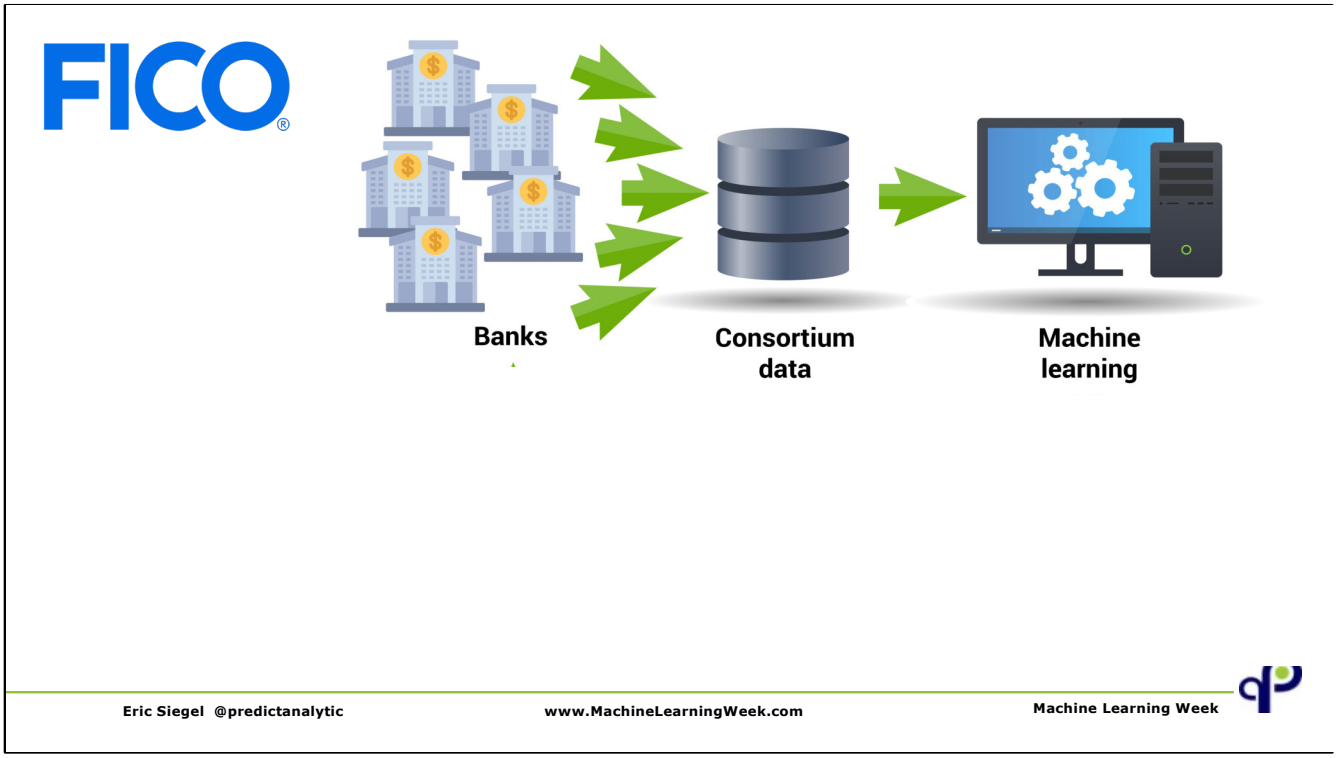
Has reduced fraud losses by 70%+ in the U.S.

Approximately $20B / year

66% of the world's cards

90% of those in the U.S. and U.K.

https://www.europeanbusinessreview.com/where-fico-gets-its-data-for-screening-two-thirds-of-all-card-transactions/



https://www.europeanbusinessreview.com/where-fico-gets-its-data-for-screening-two-thirds-of-all-card-transactions/

FICO's consortium has grown to more than 9,000 banks globally, all continually sending in anonymized card transaction details. FICO receives about 20 billion records, amounting to terabytes of raw data, each month, a petabyte every five years.

Dependent variable: 1) What's predicted

Metrics: 2) How well

Deployment: 3) What's done about it

Benchmarks for training and deployment

Technical performance and business performance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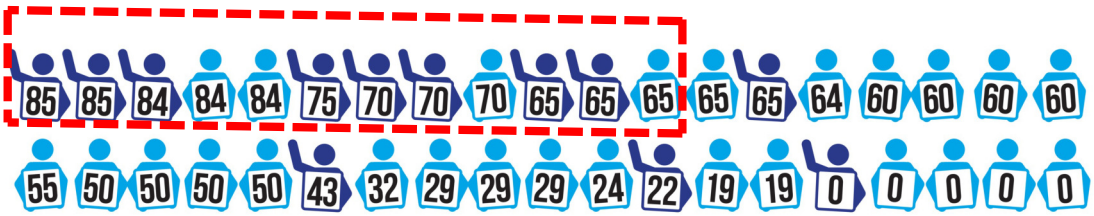
55 50 50 50 50 43 32 29 29 29 24 22 19 19 0 0 0 0 0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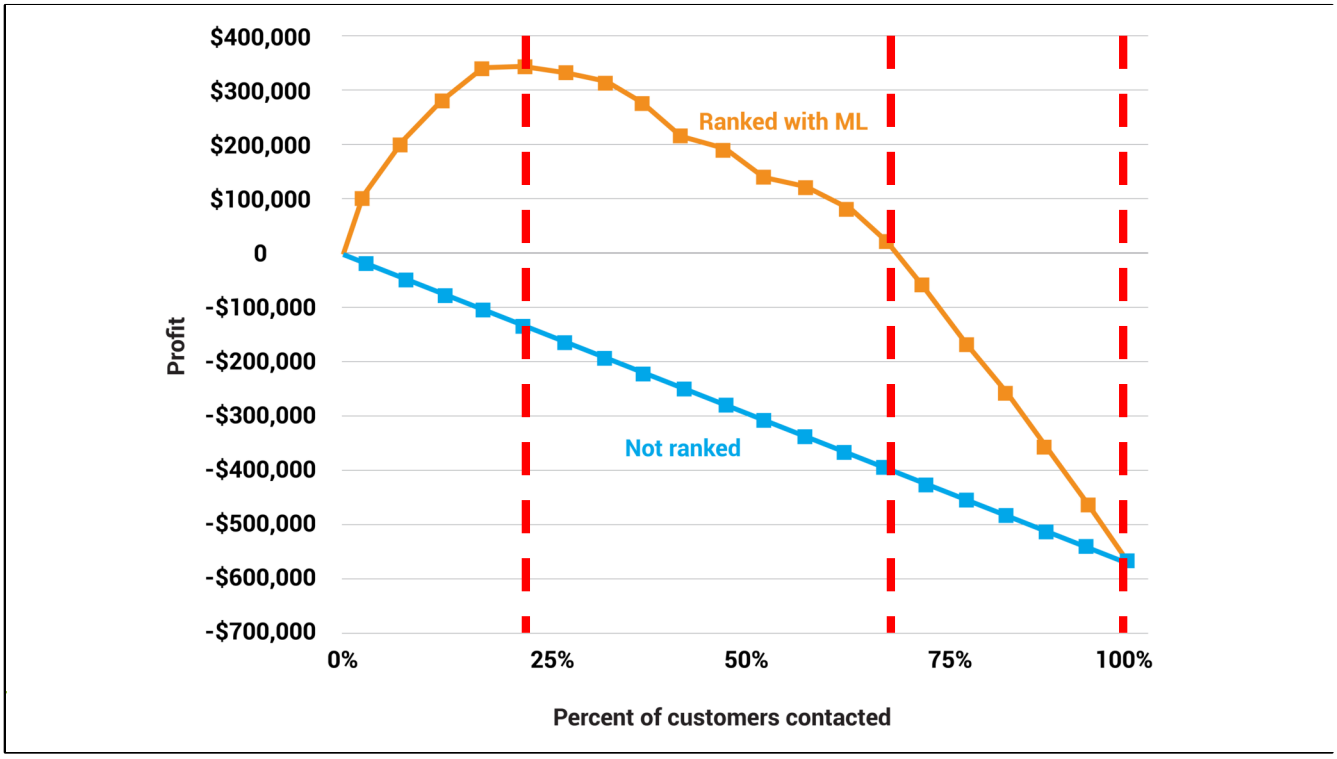
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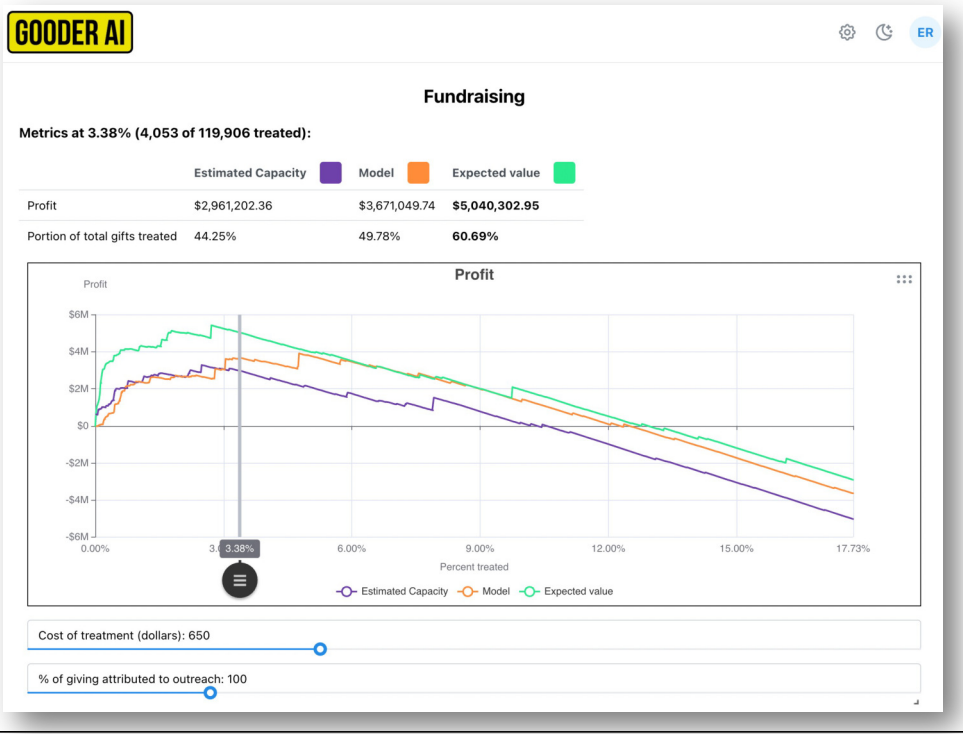
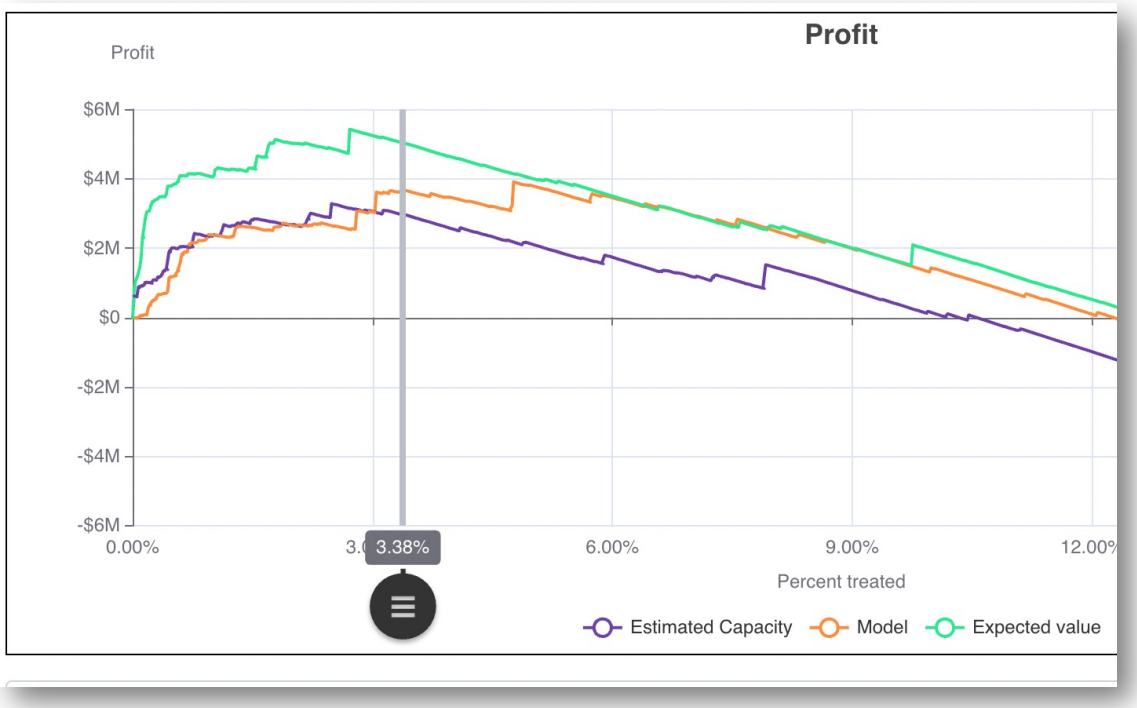
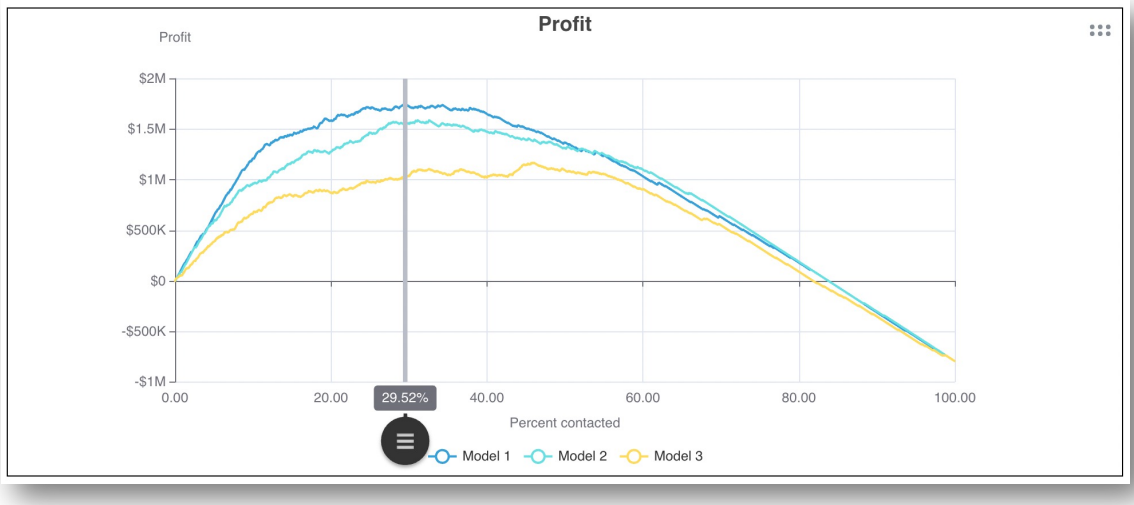
-$300,000
-$400,000
-$500,000
-$600,000
-$700,000
Profit
Ranked with ML
Not ranked
0%
25%
50%
75%
100%
Percent of customers contacted


GOODER AI
ER
Fundraising
Metrics at 3.38% (4,053 of 119,906 treated):
Estimated Capacity
Model
Expected value
Profit
$2,961,202.36
$3,671,049.74
$5,040,302.95
Portion of total gifts treated
44.25%
49.78%
60.69%
Profit
Profit
$6M
$4M
$2M
$0
-$2M
-$4M
-$6M
0.00%
3.38%
6.00%
9.00%
12.00%
15.00%
17.73%
Percent treated
Estimated Capacity
Model
Expected value
Cost of treatment (dollars): 650
% of giving attributed to outreach: 100


Profit
Profit
$6M
$4M
$2M
$0
-$2M
-$4M
-$6M
0.00%
3.38%
6.00%
9.00%
12.00%
Percent treated
Estimated Capacity
Model
Expected value

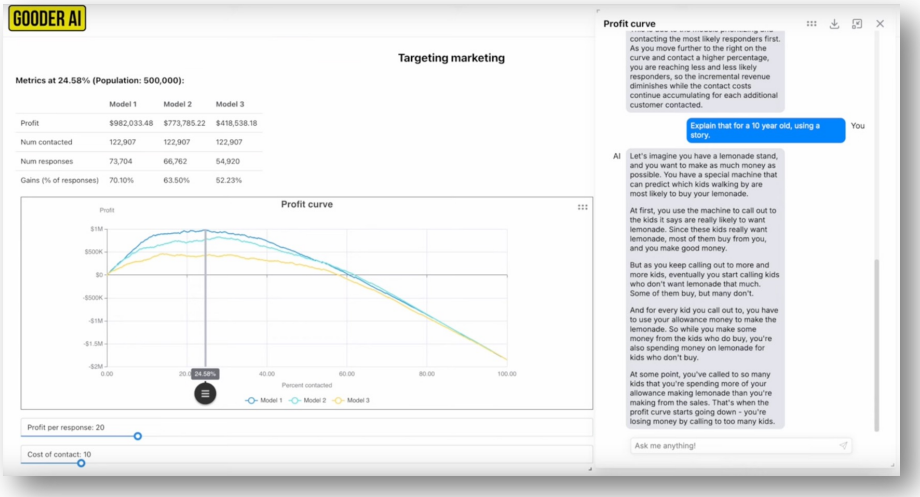
GOODER AI™

Targeting marketing



Gooder AI chatbot

- Thought partner & copilot
- Helps stakeholders understand



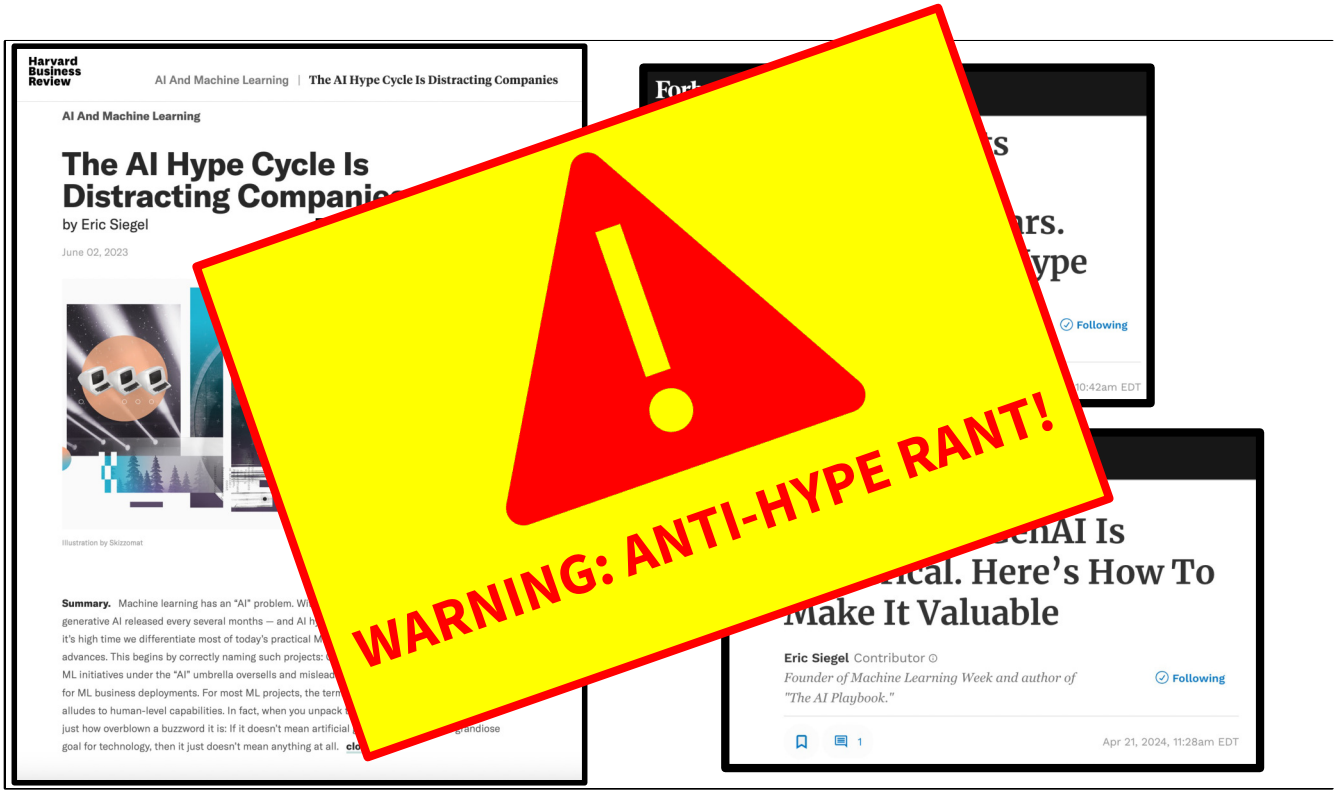
Anthropic's Claude Sonnet 3

Watch the demo video (the following link begins at this position within the demo video):
https://youtu.be/FP27JpdQsjI?si=ByJQeW-7iFVih-oJ&t=163

Almost 75% of lawyers plan to use genAI.

But their AI tools hallucinate 1/6th of the time.

https://hai.stanford.edu/news/ai-trial-legal-models-hallucinate-1-out-6-or-more-benchmarking-queries



BIG THINK: Generative AI is not the panacea we've been promised - video with 880,000 views
https://www.youtube.com/watch?v=B2zCWJBnfuE

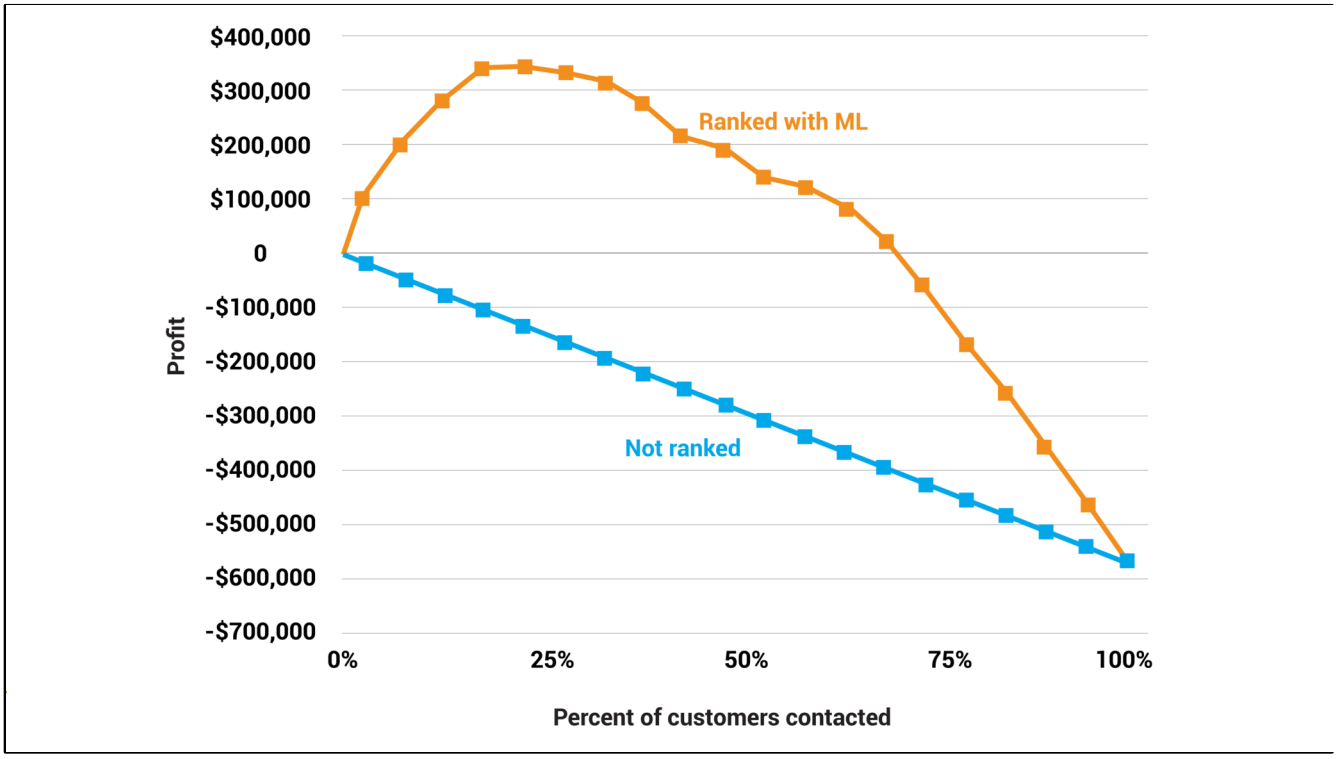
FORBES: Elon Musk Predicts Artificial General Intelligence In 2 Years. Here's Why That's Hype
https://www.forbes.com/sites/ericsiegel/2024/04/10/artificial-general-intelligence-is-pure-hype/

HARVARD BUSINESS REVIEW: The AI Hype Cycle Is Distracting Companies
https://hbr.org/2023/06/the-ai-hype-cycle-is-distracting-companies

FORBES: Agentic AI Is The New Vaporware
https://www.forbes.com/sites/ericsiegel/2025/07/14/agentic-ai-is-the-new-vaporware/

FORBES: The Great AI Myth: These 3 Misconceptions Fuel It
https://www.forbes.com/sites/ericsiegel/2024/07/29/the-great-ai-myth-these-3-misconceptions-fuel-it/

https://www.forbes.com/sites/ericsiegel/2024/04/21/metas-new-genai-is-theatrical-heres-how-to-make-it-valuable/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-$400,000
-$500,000
-$600,000
-$700,000
Profit
Ranked with ML
Not ranked
0%
25%
50%
75%
100%
Percent of customers contacted

The Accuracy Fallacy

NEWSWEEK: *AI Can Tell If You're Gay: Artificial Intelligence Predicts Sexuality from One Photo with Startling Accuracy*

THE SPECTATOR: *Linguistic Analysis Can Accurately Predict Psychosis*

THE DAILY MAIL: *AI-Powered Scans Can Identify People at Risk of a Fatal Heart Attack Almost a Decade in Advance*

THE NEXT WEB: *This Scary AI Has Learned How to Pick Out Criminals by Their Faces*

For more on the accuracy fallacy, see: "The Media's Coverage of AI is Bogus", by Eric Siegel, Scientific American, November 2019.
https://blogs.scientificamerican.com/observations/the-medias-coverage-of-ai-is-bogus/

Accuracy:

The proportion of cases a predictive model predicts correctly.

Accuracy: The proportion of cases a predictive model predicts correctly, that is, how often the model is correct. Accuracy does not differentiate between how often the model is correct for positive and negative examples. This means that, for example, a model with high accuracy could in fact get none of the positive cases correct, if positive examples are relatively rare.

Fallacy

: The
guish
negative cases
and usually be right about it.

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The Accuracy Fallacy

Claims that machine learning can predict sexuality, psychosis, and more are greatly overblown

By Eric Siegel on November 20, 2019

Credit: Valery Brozhinsky *Getty Images*

Headlines about machine learning promise godlike predictive power. Here are four examples:

- *Newsweek*: "AI Can Tell If You're Gay: Artificial Intelligence Predicts Sexuality from One Photo with Startling Accuracy"
- *The Spectator*: "Linguistic Analysis Can Accurately Predict Psychosis"

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https://www.predictiveanalyticsworld.com/machinelearningtimes/accuracy-fallacy-the-medias-coverage-of-ai-is-bogus/10652/

Original (shorter version and behind paywall):
https://blogs.scientificamerican.com/observations/the-medias-coverage-of-ai-is-bogus/

bizML

1) Establish the **deployment goal**
2) Establish the **prediction goal**
3) Establish the **metrics**
4) Prepare the data
5) Train the model
6) Deploy the model

BizML: The strategic playbook for machine learning deployment

1) Establish the deployment goal (value)

Define the business value proposition: how ML will affect operations in order to improve them.

2) Establish the prediction goal (target)

Define what the ML model will predict for each individual case.

3) Establish the evaluation metrics (performance)

Determine the salient benchmarks to track during both model training and model deployment and determine what performance level must be achieved for the project to be considered a success.

4) Prepare the data (fuel)

Define what the training data must look like and get it into that form.

5) Train the model (algorithm)

Generate a predictive model from the data.

6) Deploy the model (launch)

Use the model to render predictive scores and then use those scores to improve business operations.

After step 6: Maintain the model (upkeep)

Monitor and periodically refresh the model as an ongoing process.

Key execution strategy:

All steps require deep collaboration with business stakeholders.
Business stakeholders must hold a semi-technical understanding of ML.
The steps are not executed linearly – backtracking prevails.

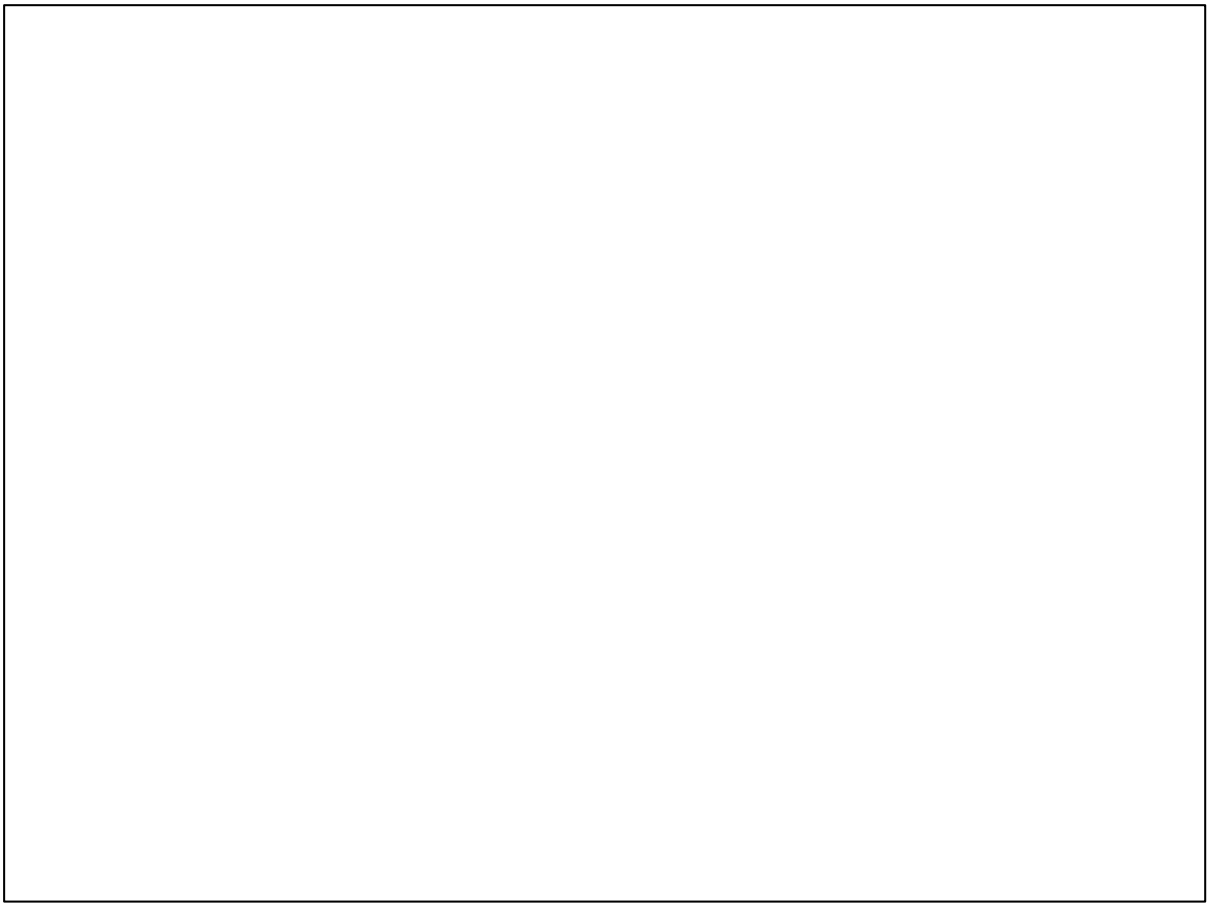
From *The AI Playbook* by Eric Siegel

Misconceptions about Predictive AI

1) If a model is technically good, it will deploy.

2) Predictive models are usually very accurate.

3) Predictive AI is hard to understand.



Predictive AI Take-Aways

- **Predict per *individual*** – actionable
- **The Data Effect:**

  Data is always predictive.
- **The Prediction Effect:**

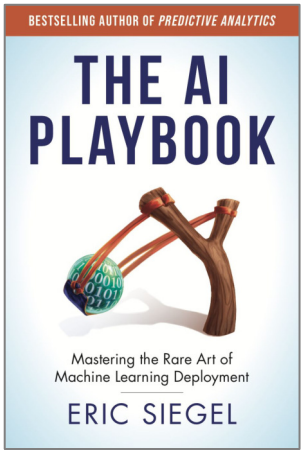
  A little prediction goes a long way.
- **Overcome the deployment challenge**

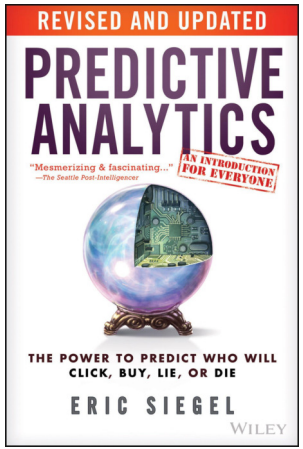
More content from Eric Siegel

MACHINE LEARNING WEEK

Talks at Google

MACHINE LEARNING Times
The machine learning professionals' premier resource





Forbes

Predictively Targeting Study Time

Jeopardy! winner: Analytics expert Roger Craig predicted which practice questions he'd get wrong in order to target his many hours of studying. He attained the highest one-day winning total ever and won the show's 2011 Tournament of Champions.

Facebook, Elsevier, IBM, and Pittsburgh Science of Learning Center: Predictively tailored instruction promises to save 250 million student hours per year.

Grockit: This test preparation company predicts which GMAT, SAT, and ACT questions a test taker will get wrong.

Predict which answers the student will get wrong in order to target personalized "harder" questions during study time.

Facebook, Elsevier, IBM, and Pittsburgh Science of Learning Center: Sponsored a predictive modeling competition to predict student performance on algebra problems. Predictively tailored instruction by Intelligent Tutoring Systems promises to save an estimated 250 million student hours per year.

Grockit: This test preparation company predicts which GMAT, SAT, and ACT questions a test taker will get wrong in order to target areas for which an individual needs more study.

Also, for more information/citations regarding the examples in this presentation, see the Notes, freely-accessible online, for the book "Predictive Analytics" by Eric Siegel (http://www.thepredictionbook.com). Most of the various examples shown are covered in the book (some only briefly, within the book's Central Tables of 182 mini-case studies, so not necessarily with more detail there than in this presentation). So, for greater detail about each case study named, see its reference/citation - search by organization name within the book's Notes PDF, available online at http://www.PredictiveNotes.com.