What’s the Opportunity?

Buzz about Big Data and Analytics

From 2013 to 2020, the digital universe will grow by a factor of 10—from 4.4 trillion gigabytes to 44 trillion. It more than doubles every two years.

—"The Digital Universe of Opportunities," IDC report, April 2014

Buzz about Big Data and Analytics

- Companies in the top third of their industry in the use of data-driven decision making are on average
  - 5% more productive
  - 6% more profitable

  than their competitors.

—"The Big Data Management Revolution," *Harvard Business Review*, 2012

Buzz about Big Data and Analytics

"McKinsey & Co. analysts . . . showed a typical range of 15% to 20% of marketing budgets could be reinvested in other activities or returned to the bottom line without losing marketing ROI . . . ***$200 billion*** *of marketing spent annually could be put to better use."*

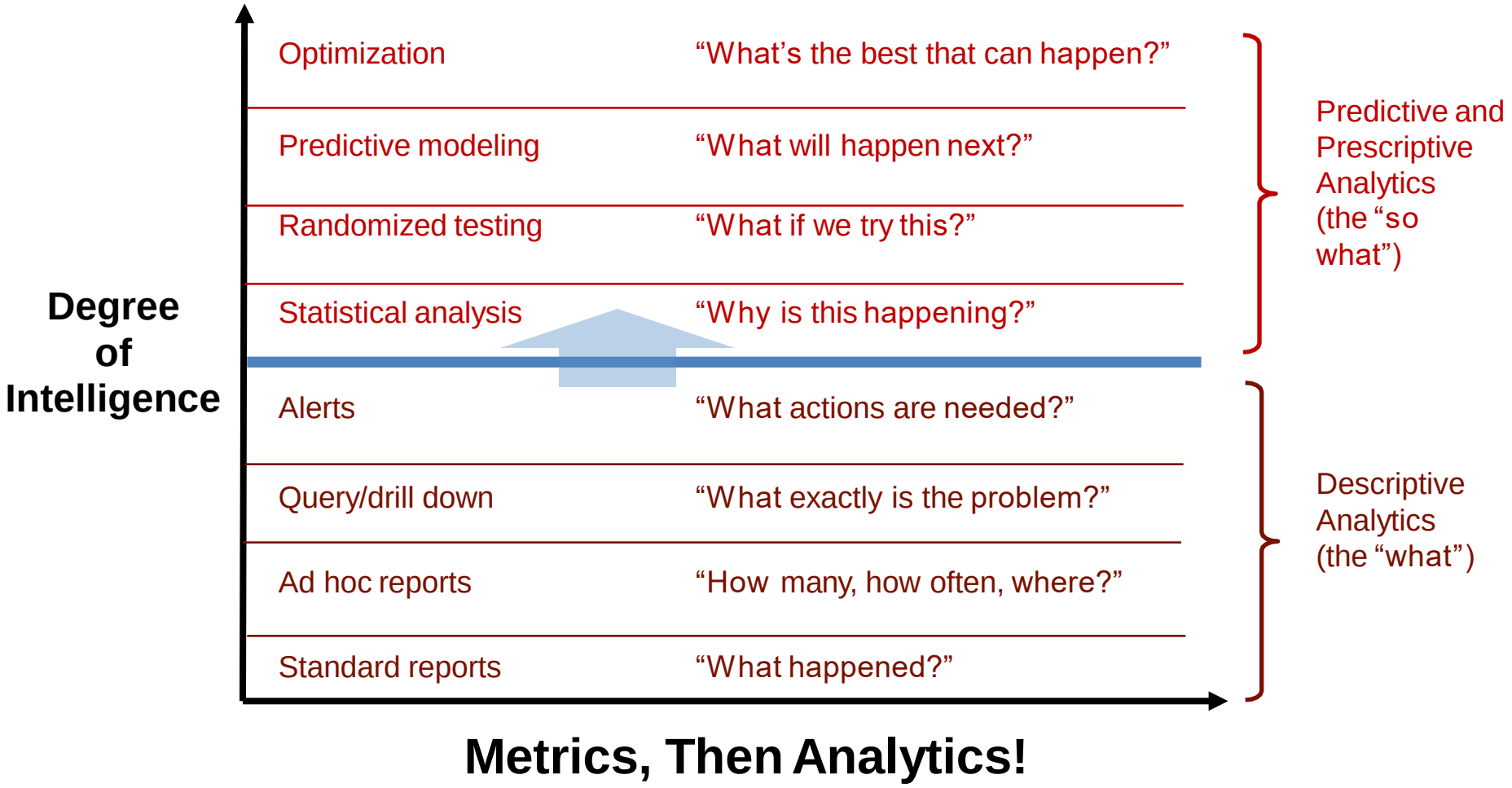
Source: "Smart Analytics can tap up to 20% of lost ROI," article on mckinsey.com, Nov. 2013

Buzz about Big Data and Analytics

High Performers		Low Performers
65%	have significant decision-support/analytical capabilities	23%
36%	value analytical insights to a very large extent	8%
77%	have above-average analytical capability within industry	33%
73%	make decisions based on data and analysis	51%
40%	use analytics across their entire organization	23%

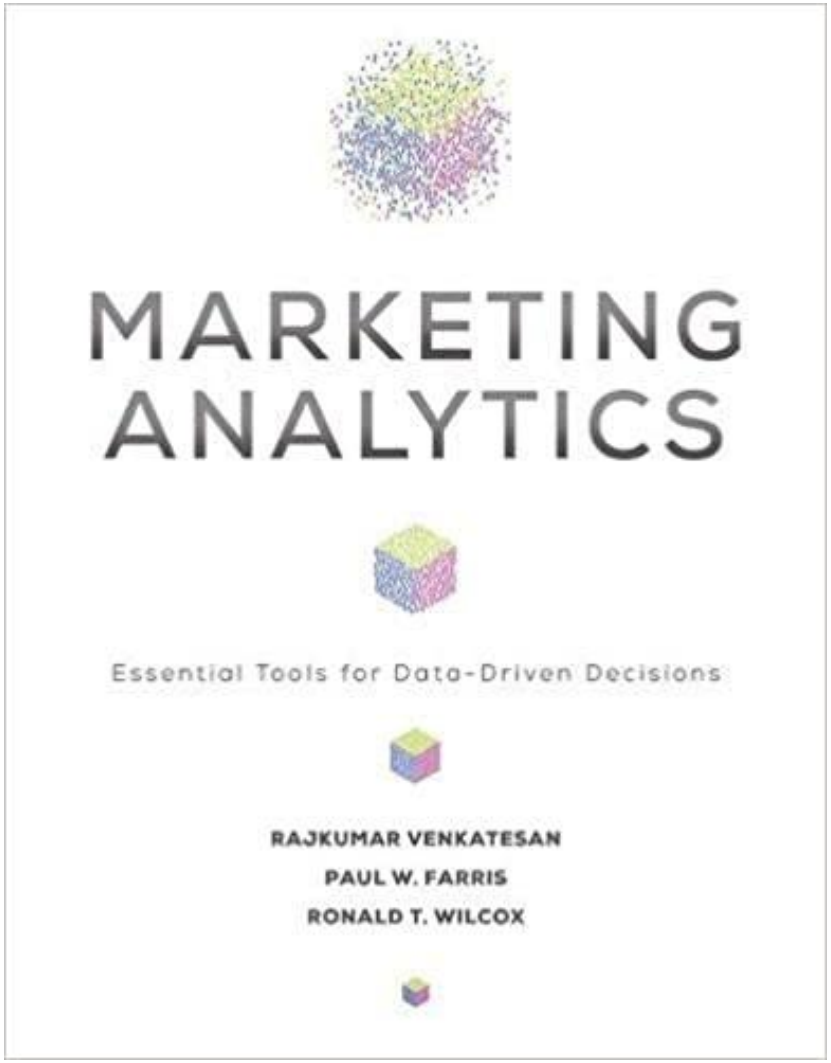
Source: Davenport, Thomas. “Competing on Analytics.” *Harvard Business Review,* 2006 (January).

Marketing Analytics?



Source: Davenport, Thomas. "Competing on Analytics." *Harvard Business Review,* 2006 (January).

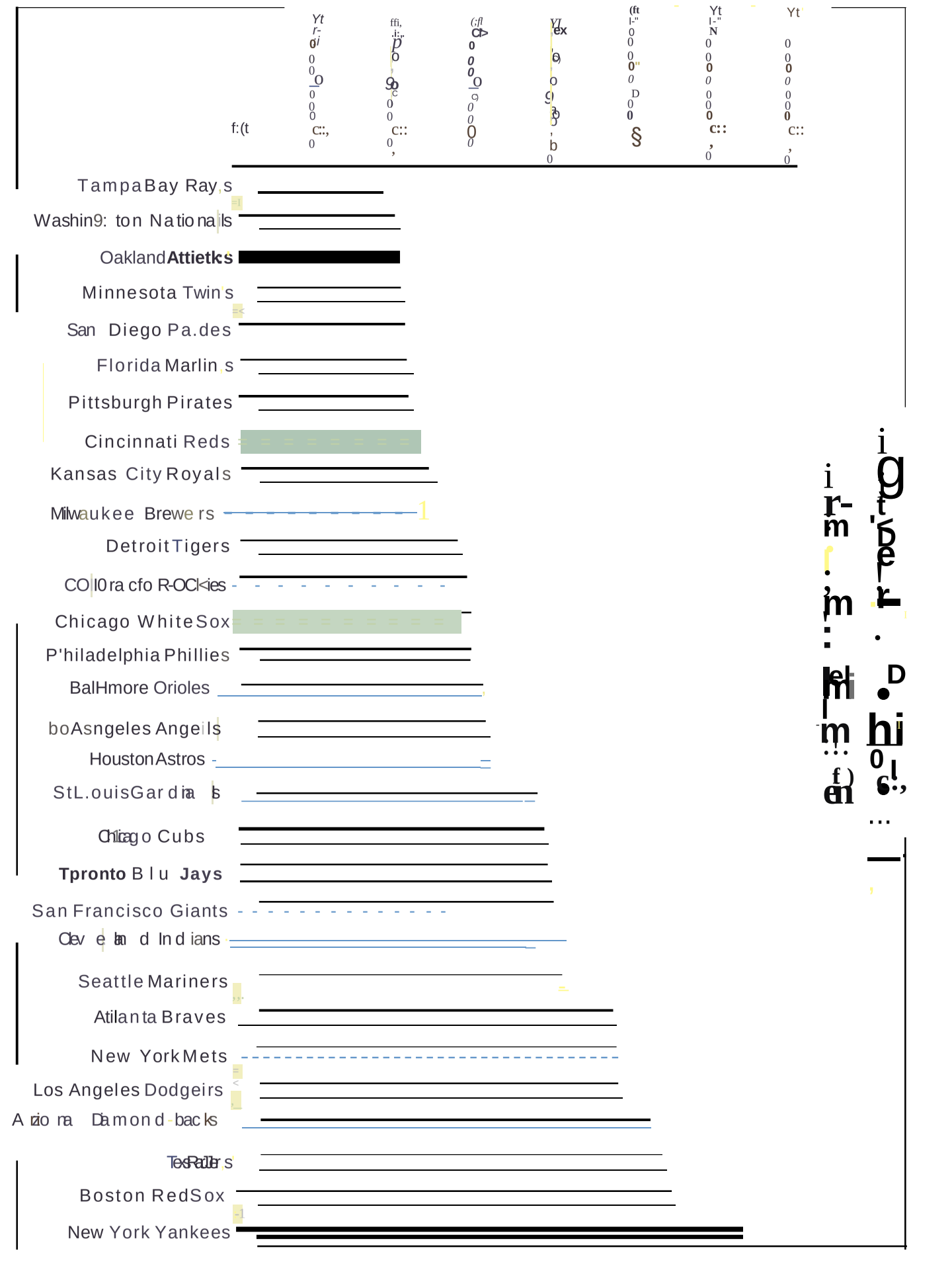
Resources on Marketing Analytics



Moneyball Example

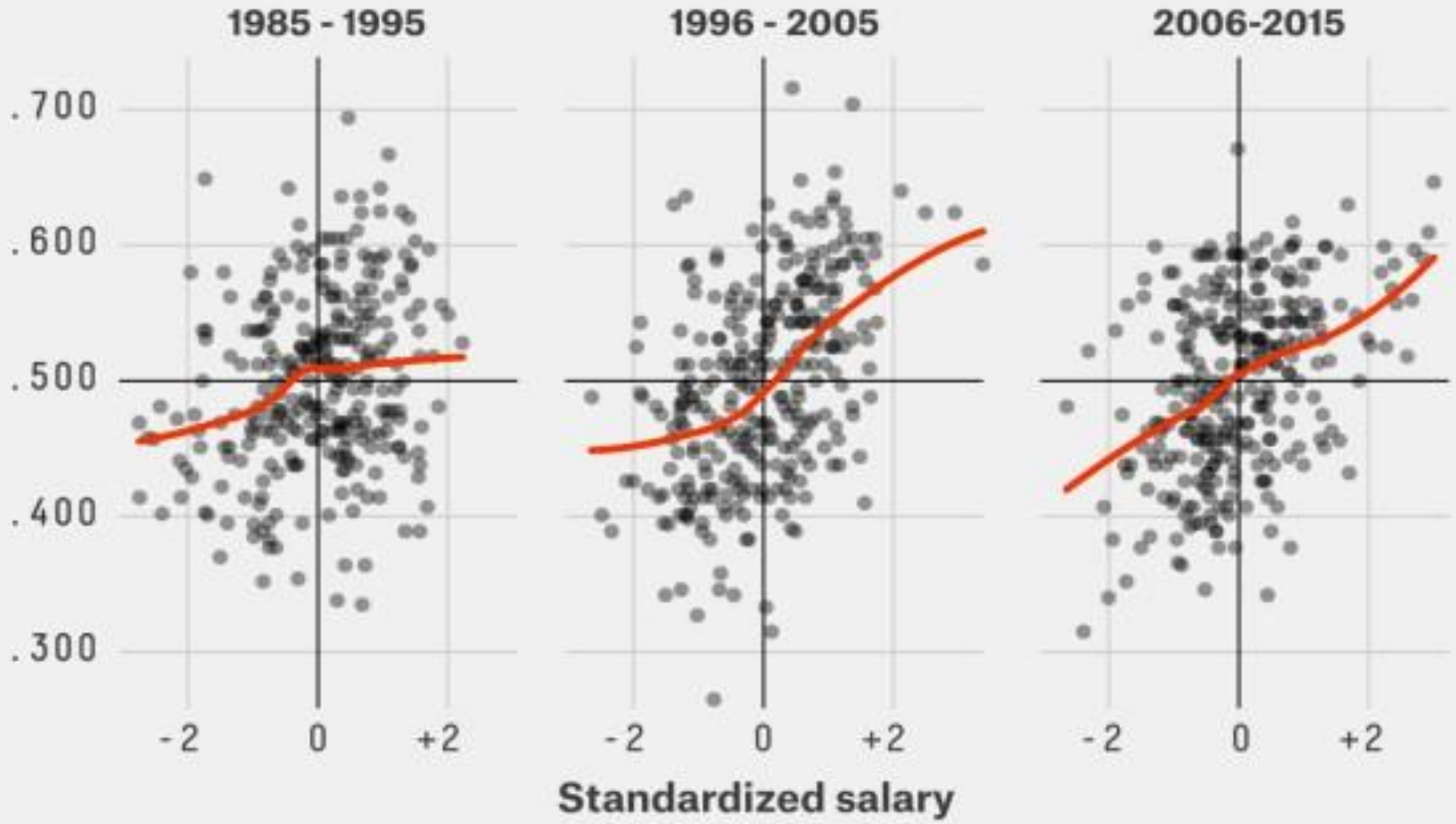

Billy Bean
Oakland A's General Manager, 2002

Paul DePodesta
Assistant to General Manager, Oakland A's, 2002


Tampa Bay Rays
Washington Nationals
Oakland Athletics
Minnesota Twins
San Diego Padres
Florida Marlins
Pittsburgh Pirates
Cincinnati Reds
Kansas City Royals
Milwaukee Brewers
Detroit Tigers
Colorado Rockies
Chicago White Sox
Philadelphia Phillies
Baltimore Orioles
Los Angeles Angels
Houston Astros
St. Louis Cardinals
Chicago Cubs
Toronto Blue Jays
San Francisco Giants
Cleveland Indians
Seattle Mariners
Atlanta Braves
New York Mets
Los Angeles Dodgers
Arizona Diamondbacks
Texas Rangers
Boston Red Sox
New York Yankees

Cash Still Buys Wins

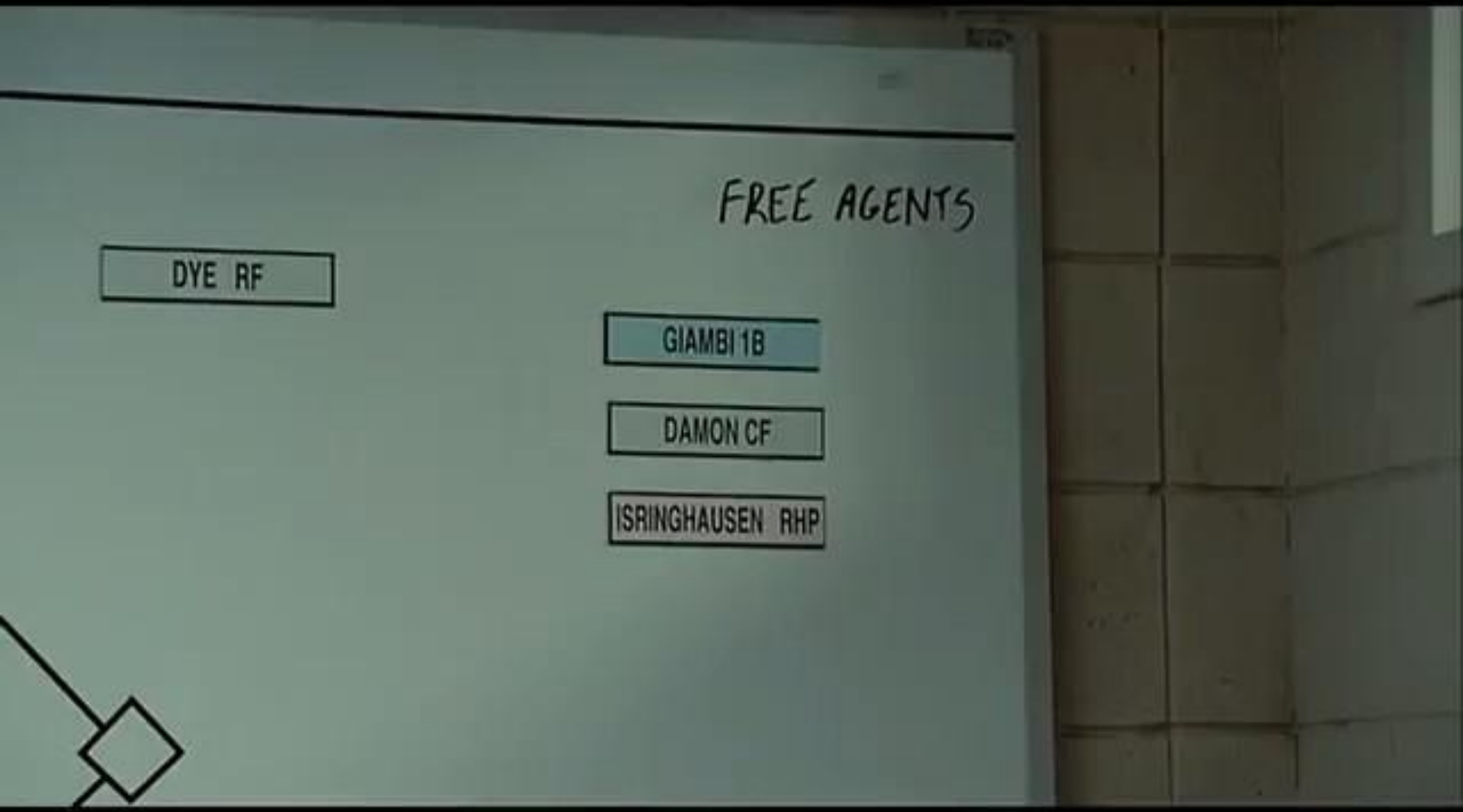
Win percentage vs. standard deviations from average salary, through July 1, 2015



SOURCE: BASEBALL-REFERENCE.COM

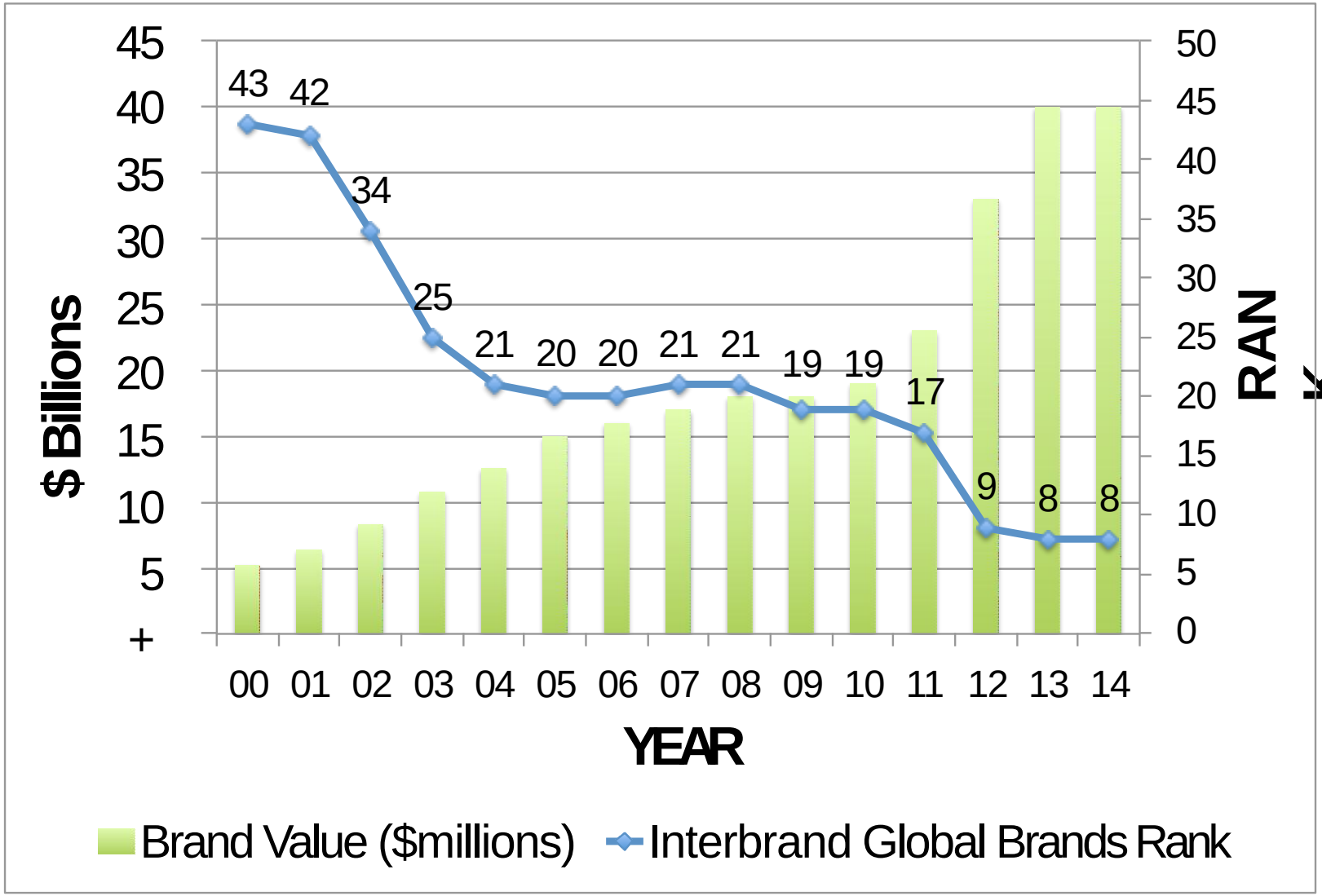
2002 MLB Playoff Teams

- New York Yankees
- Anaheim
- **Oakland**
- Minnesota
- Atlanta
- San Francisco
- Arizona
- St. Louis

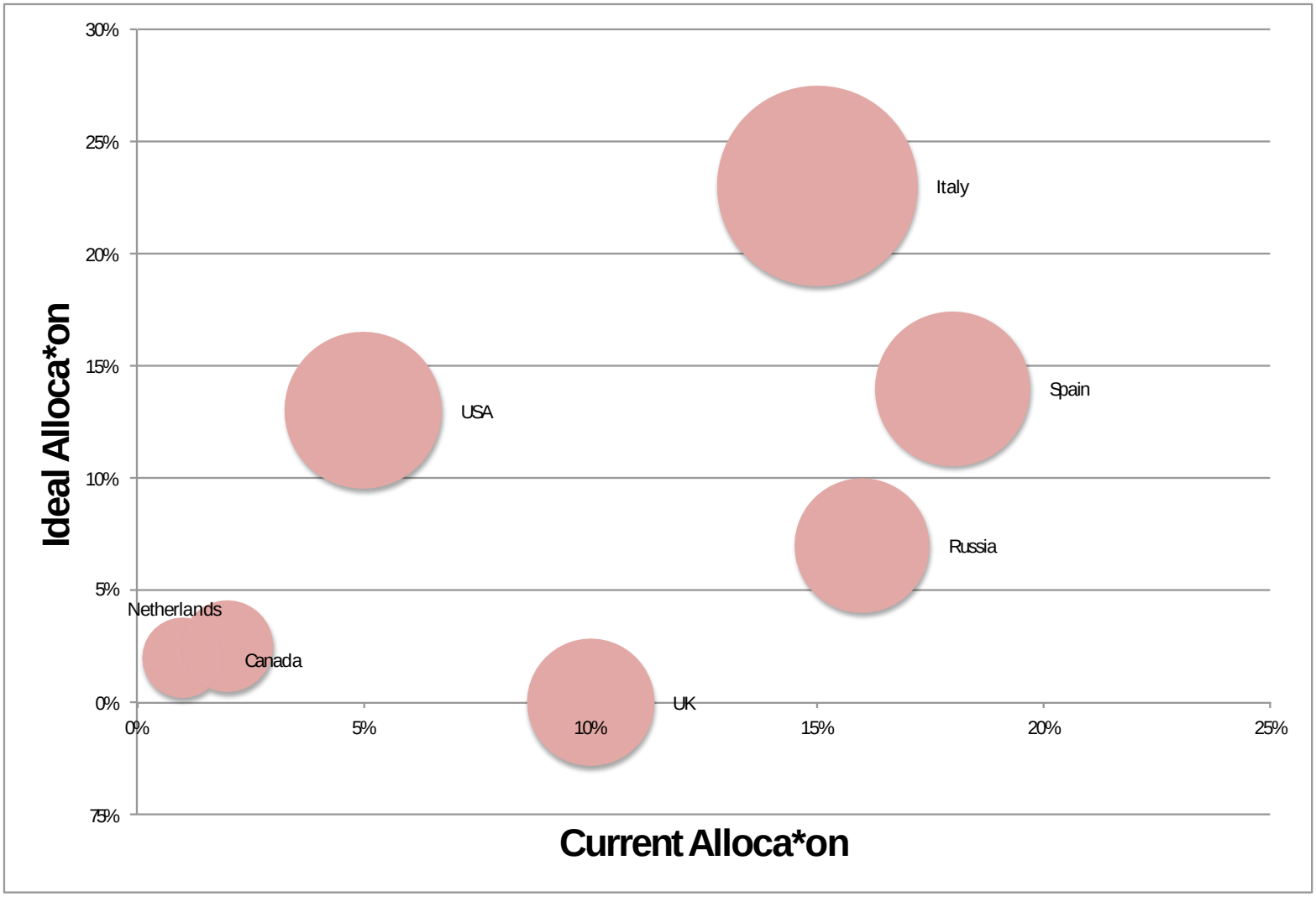

FREE AGENTS
DYE RF
GIAMBI 1B
DAMON CF
ISRINGHAUSEN RHP

Samsung Example

The Samsung Brand Value Growth



Optimal Marketing: Misallocations Revealed



Source: Adapted from Quelch, John A., and Anna Harrington. "Samsung Electronics Company: Global Marketing

Resource Allocation Process

Resource Allocation Process

- Determine the performance metric?
  - Market share, profits, customer lifetime value, etc.
- Map a system of metrics framework connecting marketing inputs to the performance metric
- Build a econometric (regression) model for the unknown values in the system of metrics framework
  - The regression model will be a function of marketing inputs of interest, e.g., price, advertising, sales calls, etc.

Resource Allocation Process

- Once the regression model is obtained, predict the performance metric using the regression function
- Identify the optimal value of the marketing input that maximizes the performance metric
  - Hint: Solver
  - Hint: Regression function connects marketing inputs to the components of the performance metric

System of Metrics for Net Profit

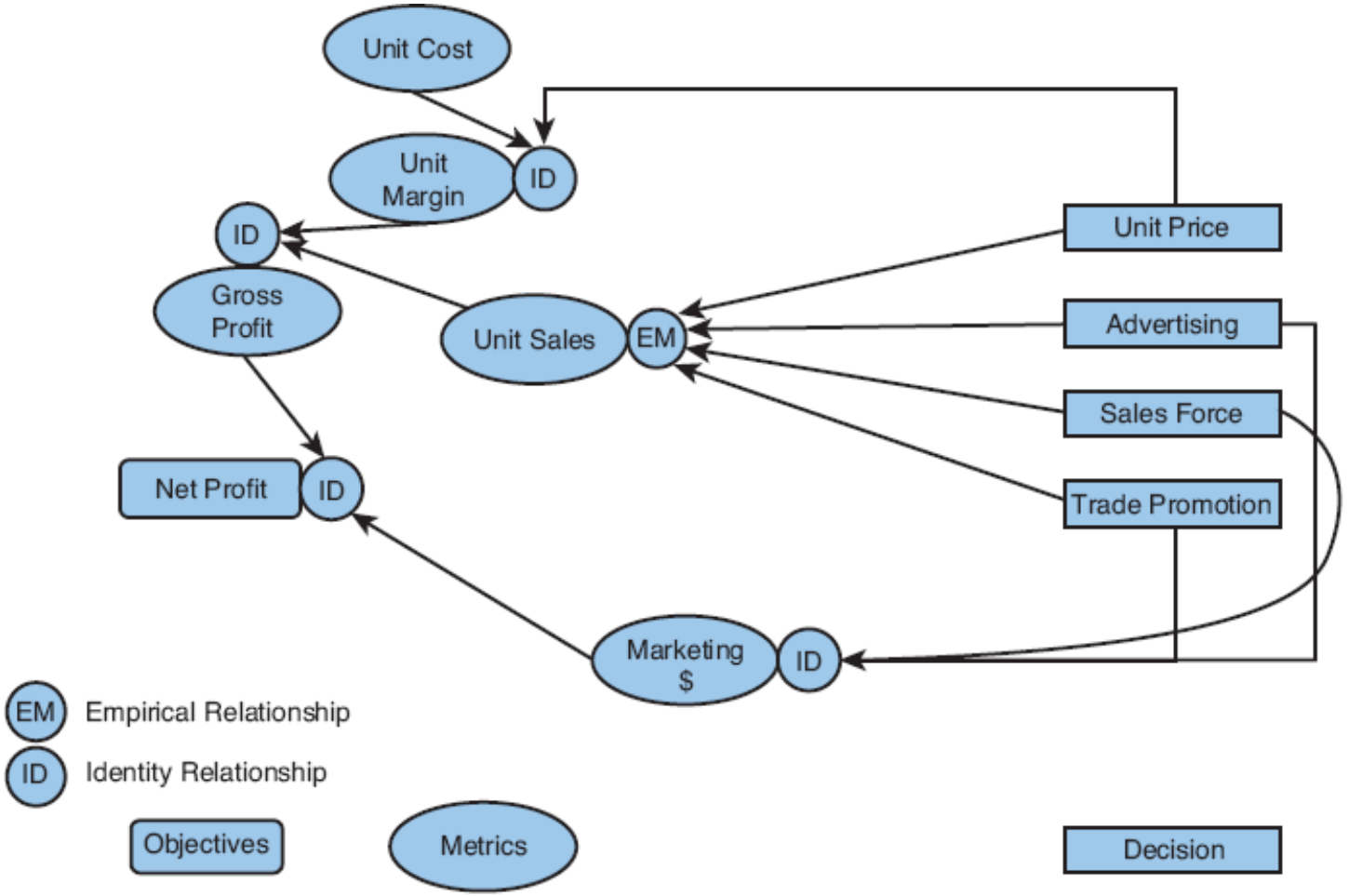
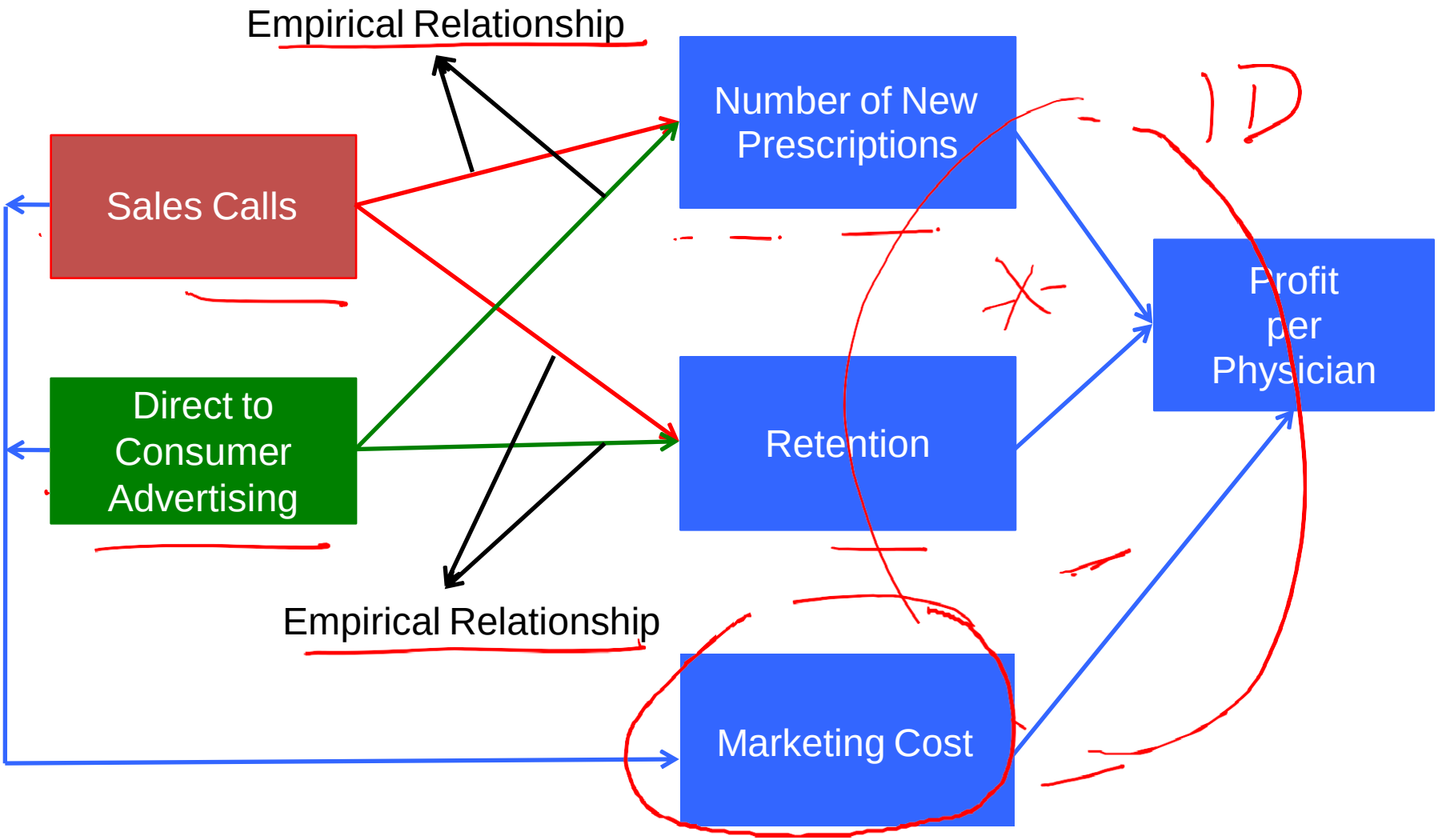


Figure 12.4 Empirical Relationship with Components of Marketing Outcomes

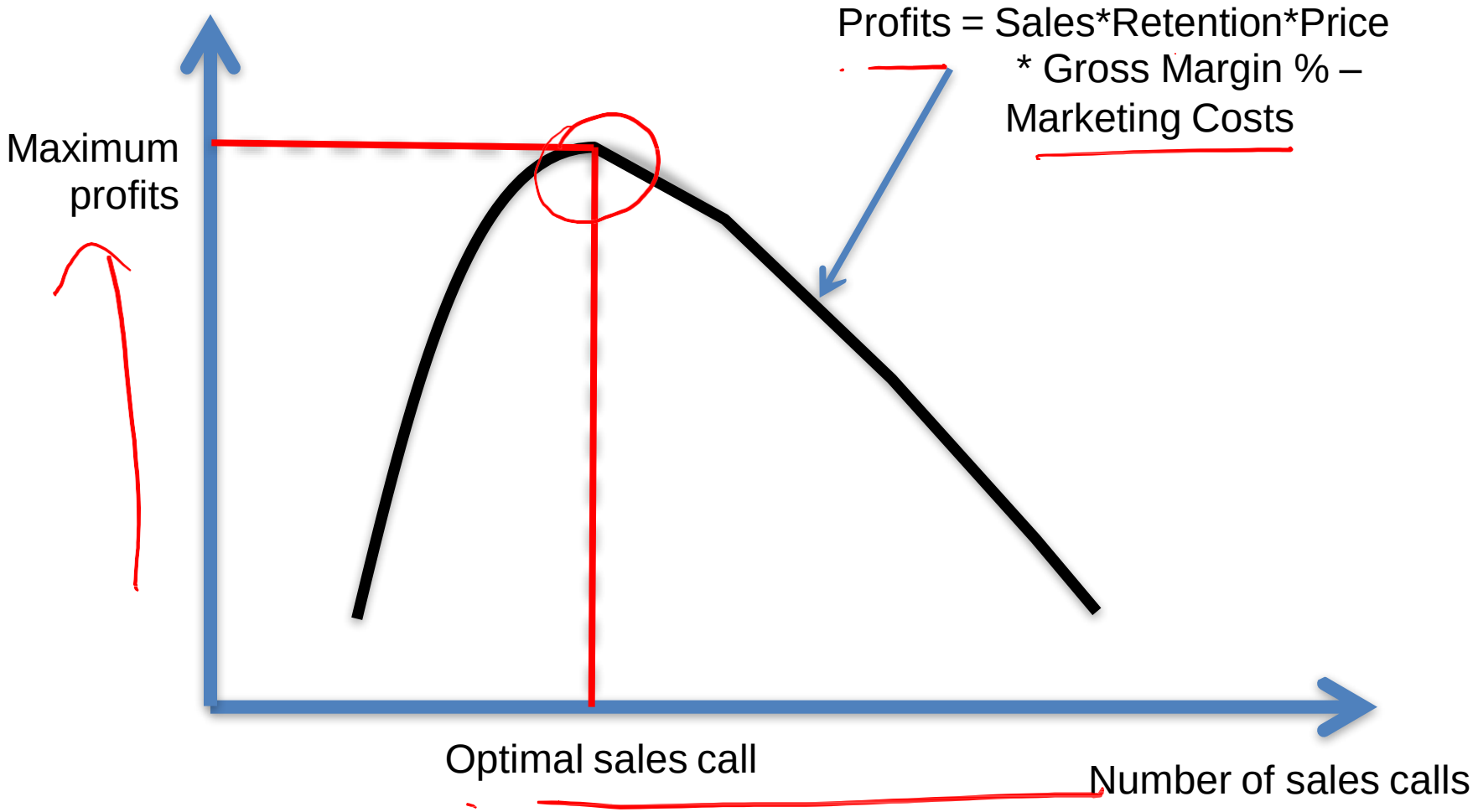
What is an empirical relationship?

Pfizer

Resource Allocation Process—Pfizer



Maximizing Profits and Optimizing Marketing—Pfizer



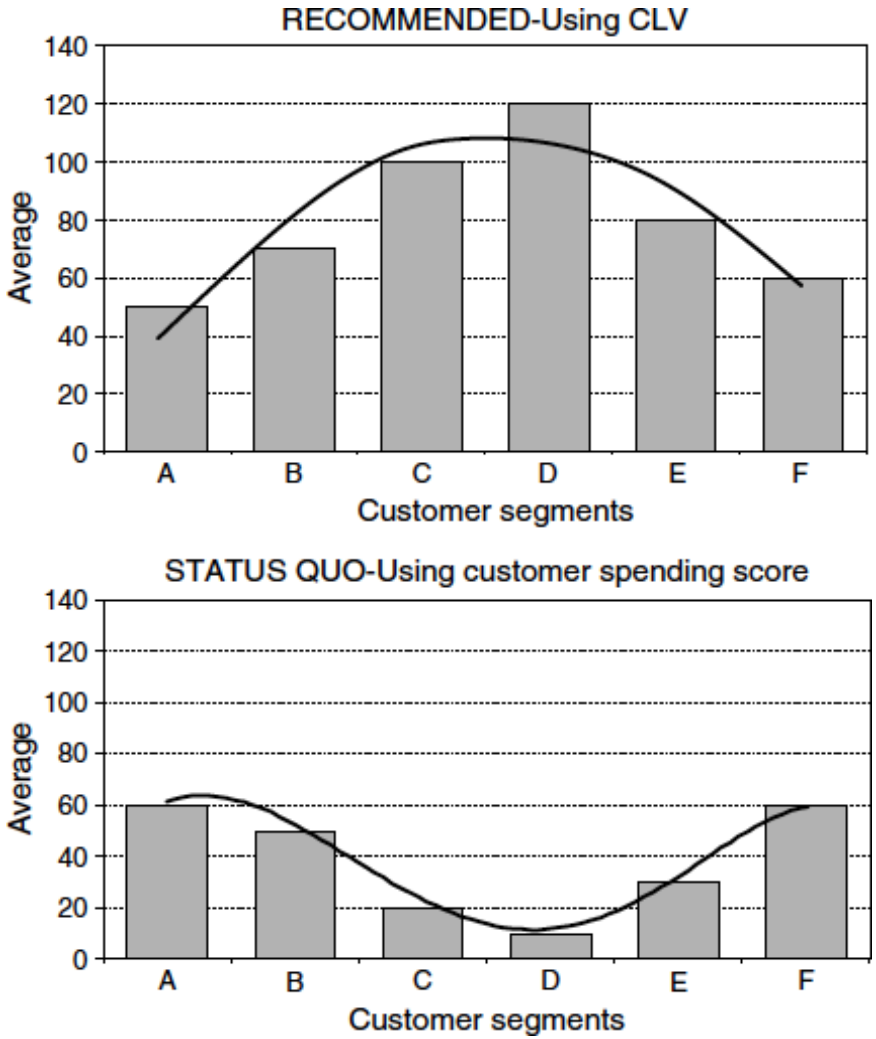
Maximizing Sales and Optimizing Sales Calls—Pfizer

Estimated Weights					
Number of prescriptions		Retention			
Intercept	Sales Calls	Intercept	Sales Calls	Price	Cost of Sales Calls
0.05	1.5	0.006	1.2	300	50

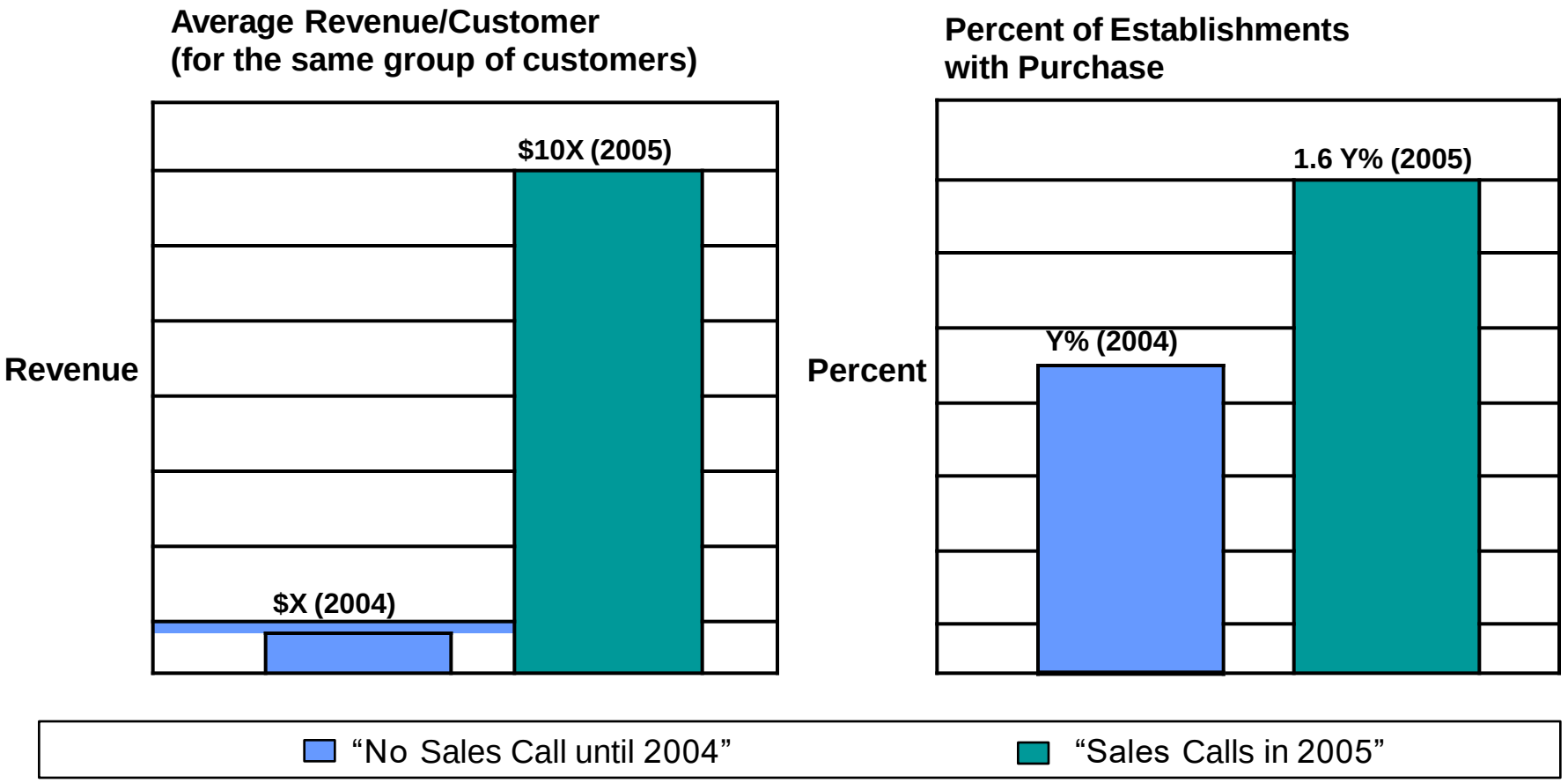
Sales Calls	Sales	Retention	Profit	
1	1.09	0.70	109.73	
2	1.70	0.79	181.65	Current
3	2.13	0.84	226.31	
4	2.46	0.87	252.30	
5	2.74	0.90	265.25	
6	2.97	0.91	268.74	Optimal
7	3.17	0.92	265.10	
8	3.35	0.93	255.94	
9	3.50	0.94	242.39	
10	3.65	0.95	225.27	

Optimizing Sales

Optimizing Sales Force at IBM



Outcomes of Optimizing Sales Force at IBM



Incremental revenue attributed to net new accounts targeted by sales force using customer profit model recommendations = $19.2 million

Marketing ROI

“Half the money I spend on advertising is wasted; the trouble is I don’t know which half.”

John Wanamaker

Father of Modern Advertising

ROI

$$\text{Financial ROI} = \frac{\text{Profit}}{\text{Value of Investment}}$$

$$\text{Return on Marketing Investment (MROI)} = \frac{\text{Incremental Gross Margin f/Mktg} - \text{Marketing}}{\text{Marketing Investment}}$$

Marketing ROI (or ROMI)

- The arithmetic is easy
- The estimation and definition of effects are not
- The same term (ROI) can be used to describe a multitude of methods

Common Scenarios for ROI

- Nine West shoes customized product listing ads on Google to individual products and devices (especially mobile) with the help of RKG Group
- Nine West product listing ads registered **ten times higher conversion rates** than nonbranded keywords on Google AdWords

Source: Google Shopping case study, RKG Group

Common Scenarios for ROI Calculations

- A chief marketing officer (CMO) wishes to convince the chief financial officer (CFO) that long-term returns to customer acquisition spending will be justified.
  - Customer lifetime value-based ROI will be useful but may not tell the full story of marketing productivity and costs

Return on Investment

Return on Investment (ROI)

Powerful Power Tools spends $2 million for search engine marketing in 2012, generates $10 million in incremental sales in 2012 with contribution margins of 50%.

ROI = ($10M * 50% − $2M) / $2M
= ($5M − $2M) / $2M
= $3M / $2M

= **<u>150%</u>**

As a marketing manager (or CFO), what questions might you ask?

What Questions Do You Ask?

Powerful Power Tools spends $2 million for search engine marketing in 2012, generates $10 million in incremental sales in 2012 with contribution margins of 50%. **ROI = 150%**

- Will the investment in 2012 pay dividends in 2013 also?
  - What is the **carryover** of marketing investments? Should some new customer acquisitions in 2013 be attributed to the investment in 2012?
- How was incremental gross margin determined? What is the **baseline** without the search engine marketing?

What Questions Do You Ask?

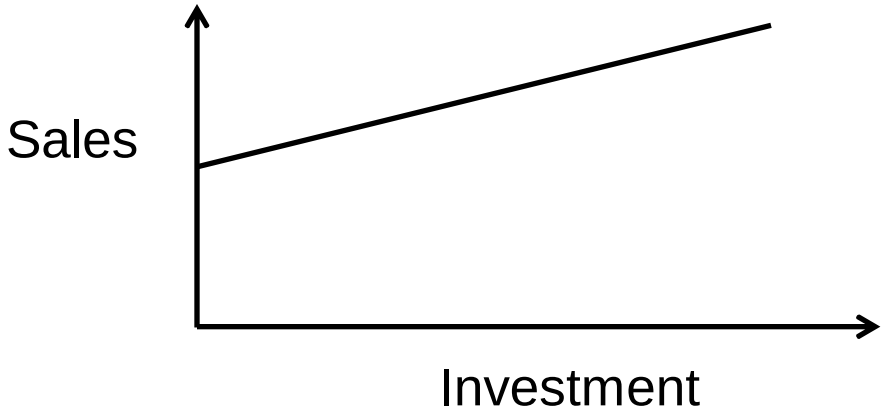
Powerful Power Tools spends $2 million for search engine marketing in 2012, generates $10 million in incremental sales in 2012 with contribution margins of 50%. **ROI = 150%**

- Will doubling the investment to $4 million double the returns to $20 million in incremental sales?
  - Are there **diminishing returns** to marketing?
- What are the longer-term effects?
  - How many new customers did this campaign acquire in 2012, and what is the lifetime value of these new customers?

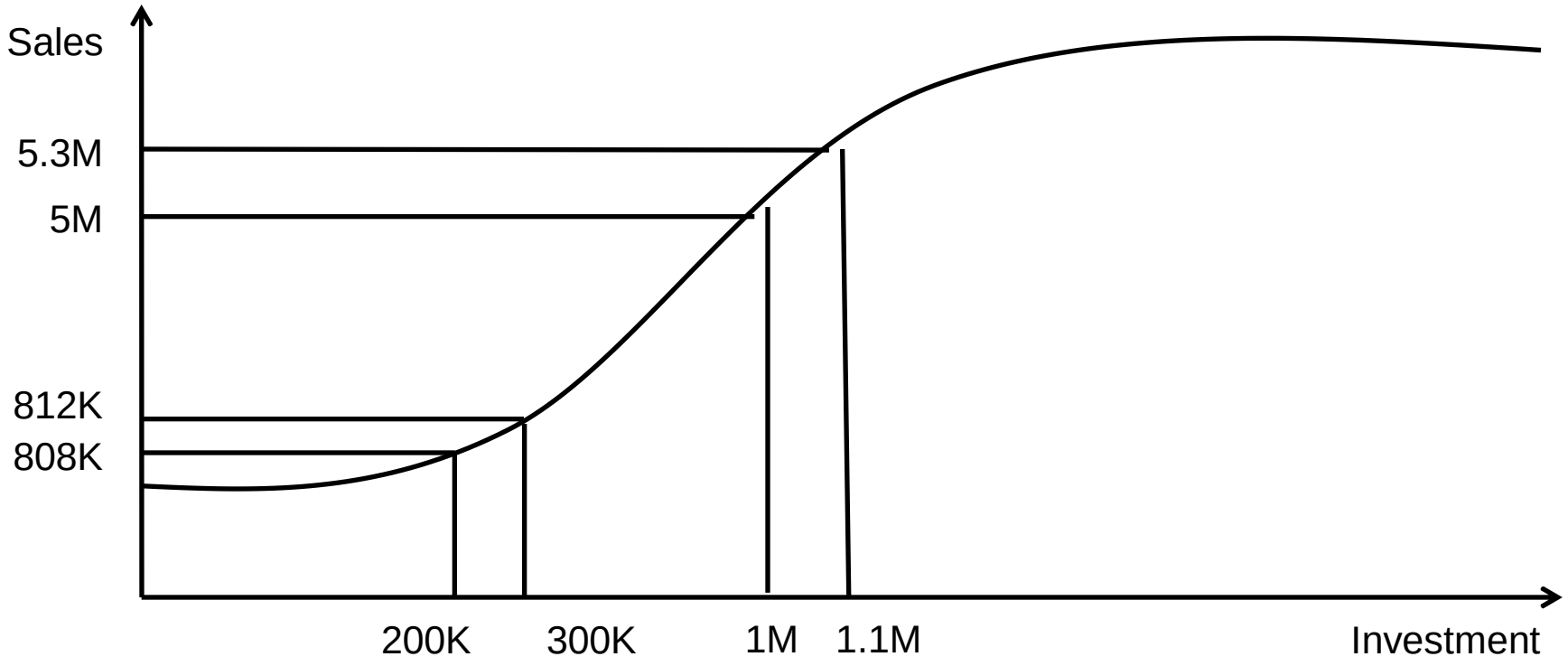
Are There Diminishing Returns to Marketing?

A CFO is interested in how the total returns to marketing spending have changed over the last two years since the new CMO was hired. Average ROI is the right measure to use.

For linear models, average and incremental returns are the same.



Are There Diminishing Returns to Marketing?



In the presence of diminishing returns, the current level of investment matters when calculating incremental returns.