

Data Mining & Modeling

-- Mining Your Data To Maximize Your Fundraising Potential



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Introduction: My Background

- BS, UC Berkeley, Economics. '93
- MBA, USC, Marketing & Strategy, '99
- UC Berkeley – University Relations ('01-'08)
 - Director of Strategic & Direct Marketing, Annual Giving
 - Market Research
 - Data Mining & Modeling
 - Branding
 - Direct Response Marketing Services
- UC Berkeley – Haas School of Business ('08-Current)
 - Director of Annual Giving
- ASquaredConsulting
 - Annual Giving & Higher Ed Marketing
 - Data Mining & Modeling
 - Market Research
 - Branding

Strategic Marketing

-- Going Beyond Your Institutional Intuitions & Assumptions

Marketing Needs

- Targeting
- Segmentation
- (Re)Positioning
- Branding
- Program Development
- Evaluation & Planning

Marketing Tools

- Data Mining & Modeling
- Market Research
- Benchmarking & Secondary Research
- Market Tests
- Measuring & Reporting

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Data Mining & Modeling

-- Definitions

- What is data mining?



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Data mining: process by which you sift through data to identify correlations between characteristic and desired behavior



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Data mining: process by which you sift through data to identify correlations between characteristic and desired behavior

<u>Desired Behavior</u>	<u>Characteristic</u>	<u>Correlation</u>
Annual Giving	Association Membership	+/-
Major Giving	5+ Annual Gifts	+/-
App. Acceptance	Catholic/Private HS	+/-



Data Mining & Modeling

-- Definitions

- What are predictive models?



Data Mining & Modeling

-- Definitions

- What are predictive models?

Predictive models: mechanism to 'score' constituents according to the likelihood of a desired behavior (i.e. giving, giving amount, membership, attendance, offer acceptance, etc.)



Data Mining & Modeling

-- Business Objectives

- Why do you (we) want to develop donor models?



Data Mining & Modeling

-- Business Objectives

- Why do you (we) want to develop donor models?
 - Targeting & Prioritizing Resources
 - Determining 'Best' Strategies
 - Identifying New Target Markets



Data Mining & Modeling

-- Development Objectives

- Targeting & Prioritizing Resources
 - Marketing Strategies (Acquisition)
 - Data Acquisition (Screening Services)
 - Prospect Identification (Special Asks)
- Determining 'Best' Strategy
 - Hi Level Asks (Non-Donors)
 - Upgrade Strategies (Reunions)
- Identifying New Target Markets
 - New Prospects (Acquisition/Reunions)



Data Mining & Modeling

-- Process & Application

- Who here has purchased or developed predictive models for their institution, and how did you do so?



Data Mining & Modeling

-- Process & Application

- Who here has purchased or developed predictive models for their institution, and how did you do so?
 - Hire Consultant vs. Do-It-Yourself?
 - Acquire Third-Party Data vs. Your Data?
 - Budget, time, tools, training, etc.?



Data Mining & Modeling

-- Process & Application

- How have you utilized the model(s) to modify your programs or marketing strategies?
 - What was the outcome/result?



Data Mining & Modeling -- ABCs

- Cross Tabs to identify potential relationships and predictive vars (1/0)

Donor Status x Membership Status	Donors	Non-Donors	Totals
Members	70%	30%	100% (40%)
Non-Members	10%	90%	100% (60%)
Totals	35%	65%	100%

Data Mining & Modeling -- ABCs

- Cross Tabs to identify potential relationships and predictive vars (1/0)

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Data Mining & Modeling -- ABCs

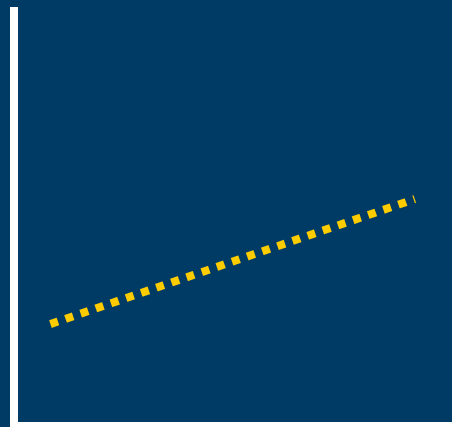
- Correlation Matrices or Linear Regressions to identify correlations and statistical significance

Giving (1/0)



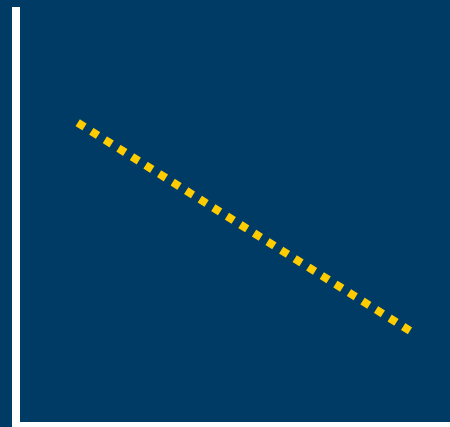
Membership (1/0)

Giving (1/0)



Gender=Male (1/0)

Giving (1/0)



Proximity <50 miles (1/0)

Data Mining & Modeling -- ABCs

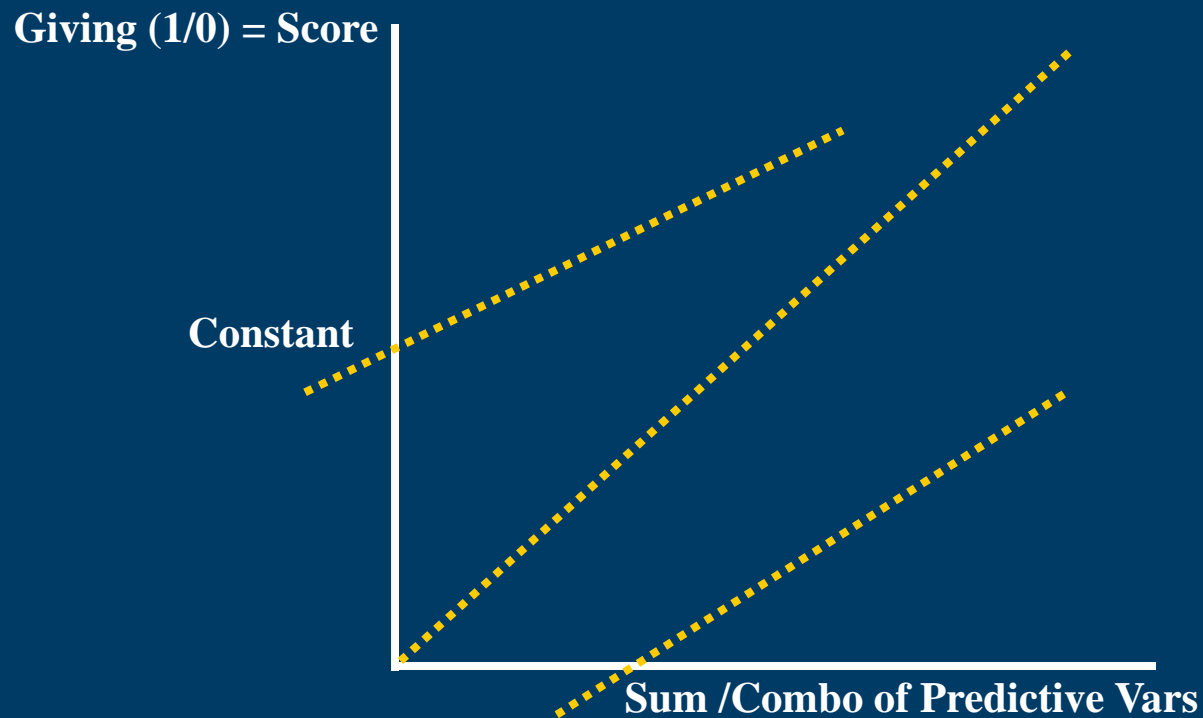
- Correlation Matrices or Linear Regressions to identify correlations and statistical significance

<u>Desired Behavior</u>	<u>Characteristic</u>	<u>Correlation</u>	<u>T-Stat</u>
Annual Giving	Association Membership	+/-	>1.67
	Gender: M	+/-	>1.67
	Proximity <50 Miles	+/-	>1.67

Correlation Coefficient (or Beta): Weight of relationship or score
T-Stat: Statistical significance of variable to help predict

Data Mining & Modeling -- ABCs

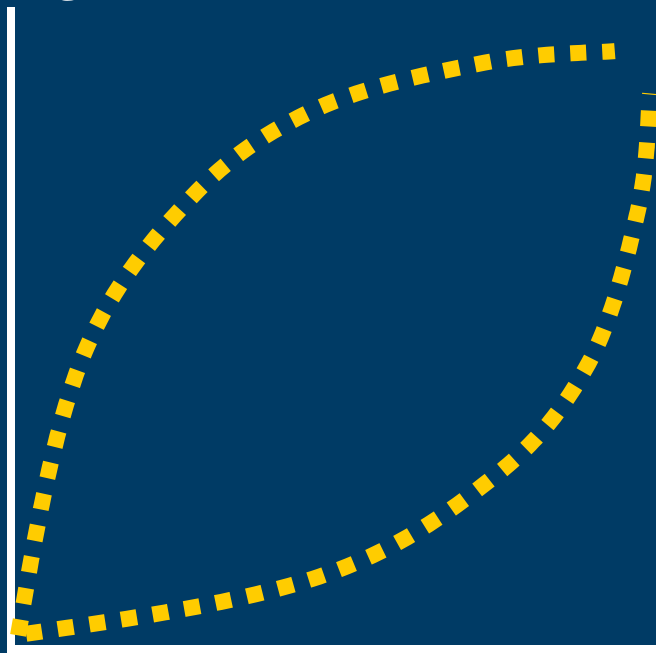
- Linear Multi-Variable Regression



Data Mining & Modeling -- ABCs

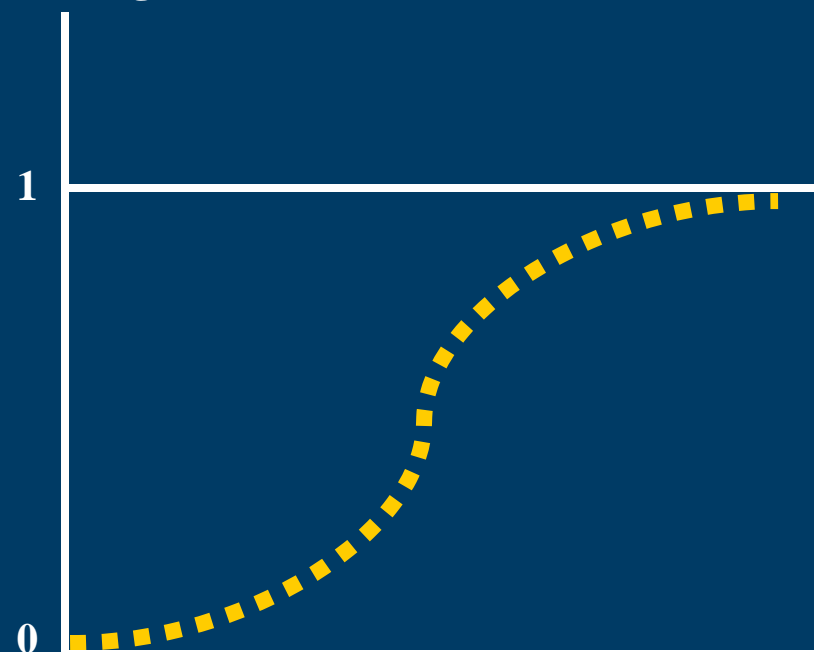
- Logarithmic Regressions or Binary Logit Regressions

Giving (1/0) = Score



Sum /Combo of Predictive Vars

Giving (1/0) = Score



Sum /Combo of Predictive Vars

Data Mining & Modeling -- ABCs

Model: Scoring Mechanism

+5 Association Membership

+3 Student Activities

+3 Event Attendance

+2 Family Relations

+2 Zip Codes

+2 Marital Status

+1 E-Mail Address Presence

+1 Degrees

(Min 0; Max 19)



Data Mining & Modeling -- ABCs

Constituents

ID#

ID#

ID#

ID#

ID#

ID#

ID#

ID#

Model: Scoring Mechanism

+5 Association Membership

+3 Student Activities

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Model: Scoring Mechanism

+5 Association Membership

+3 Student Activities

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+2 Marital Status

+1 E-Mail Address Presence

+1 Degrees

(Min 0; Max 19)

Scores

0

0

1

8

8

10

15

19



Data Mining & Modeling -- ABCs

Constituents

ID#

ID#

ID#

ID#

ID#

ID#

ID#

ID#

Model: Scoring Mechanism

+5 Association Membership

+3 Student Activities

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+2 Marital Status

+1 E-Mail Address Presence

+1 Degrees

(Min 0; Max 19)

Scores

0

0

1

8

8

10

15

19



Data Mining & Modeling

-- Examples

- University of Melbourne
 - Annual Giving Model
 - Special Giving Model
- University of California, Berkeley
 - Annual Giving Model
 - Targeting Acquisition Efforts
 - Major (Special) Giving Model
 - Prioritizing Data Screening Resources
 - Identifying Prospects (Beyond WOM)



University of Melbourne

-- Annual Giving Model

+5 * 'Memb Affil 1/0'

+3 * 'AI Act 1/0'

+3 * 'AI Int 1/0'

+3 * 'Res College 1/0'

+3 * 'Affil 1/0'

+2 * 'Male 1/0'

+2 * 'Deg Stat B 1/0'

+2 * 'Mar Status
F-M-P-W 1/0'

+2 * 'B E-Mail 1/0'

+2 * 'H E-Mail 1/0'

+2 * 'Sports 1/0'

+1 * 'Family Rel 1/0'

+1 * 'Atnd AI Dnr 1/0'

+1 * 'Atnd Tg 1/0'

+1 * 'Other Event 1/0'

+3 * 'U Deg Med 1/0'

+2 * 'U Deg Vet 1/0'

+1 * 'U Deg Eng 1/0'

+1 * 'G Deg Eng 1/0'

+1 * 'G Deg Med 1/0'

+1 * 'G Deg Sci 1/0'

+1 * 'G Deg Vet 1/0'

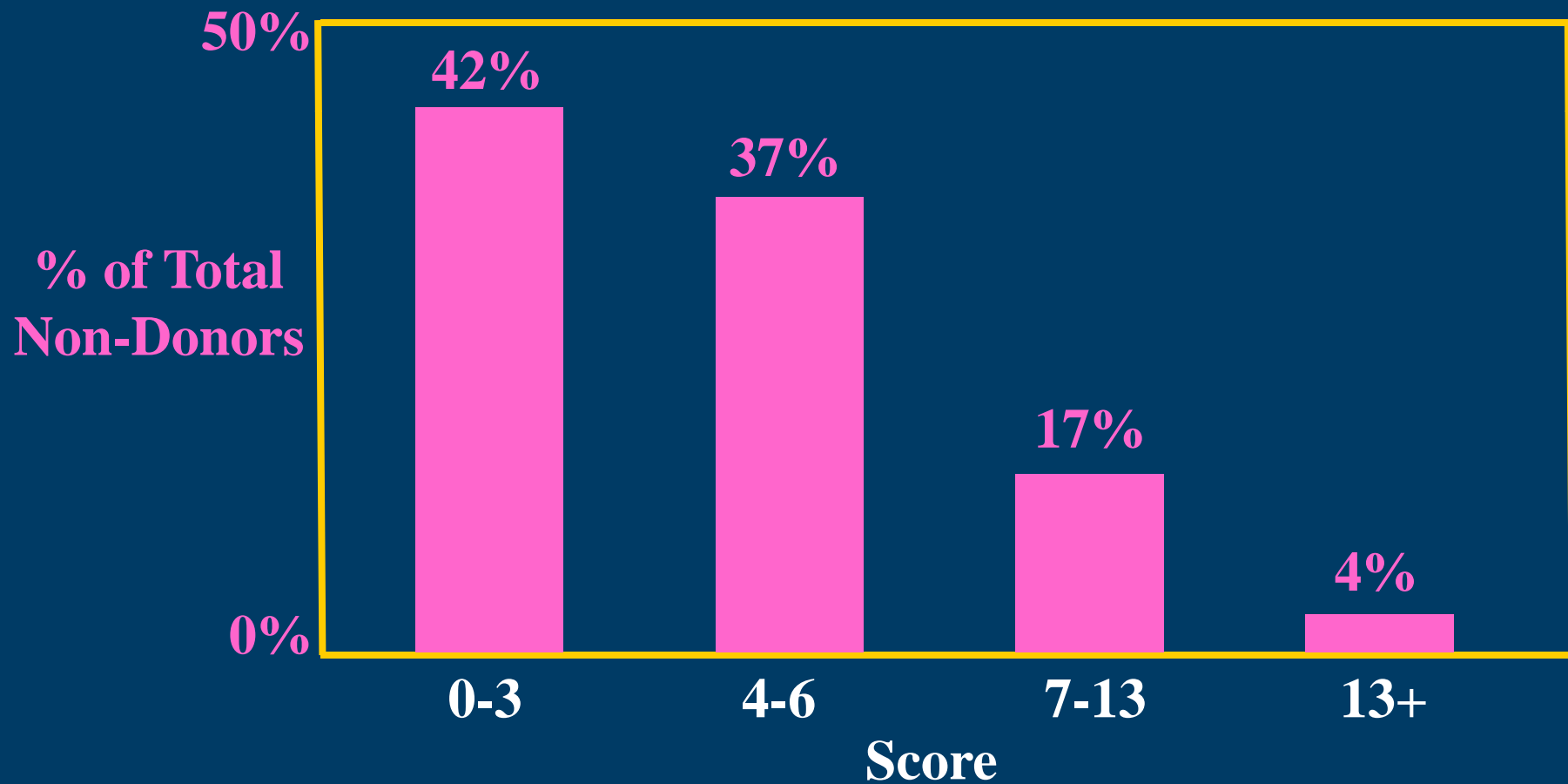
[Min 0 / Max 43 (Act 0-33)]

University of Melbourne -- Annual Giving Model

Score	Count	%Tot	%Donors	%Nons	Mean	Median
0-3	4,724	23%	5%	42%	\$20	\$0
4-6	5,292	26%	16%	37%	\$85	\$0
7-13	5,436	27%	37%	17%	\$252	\$25
13+	4,753	24%	42%	4%	\$1,795	\$98
Total	20,205	100%	100%	100%		

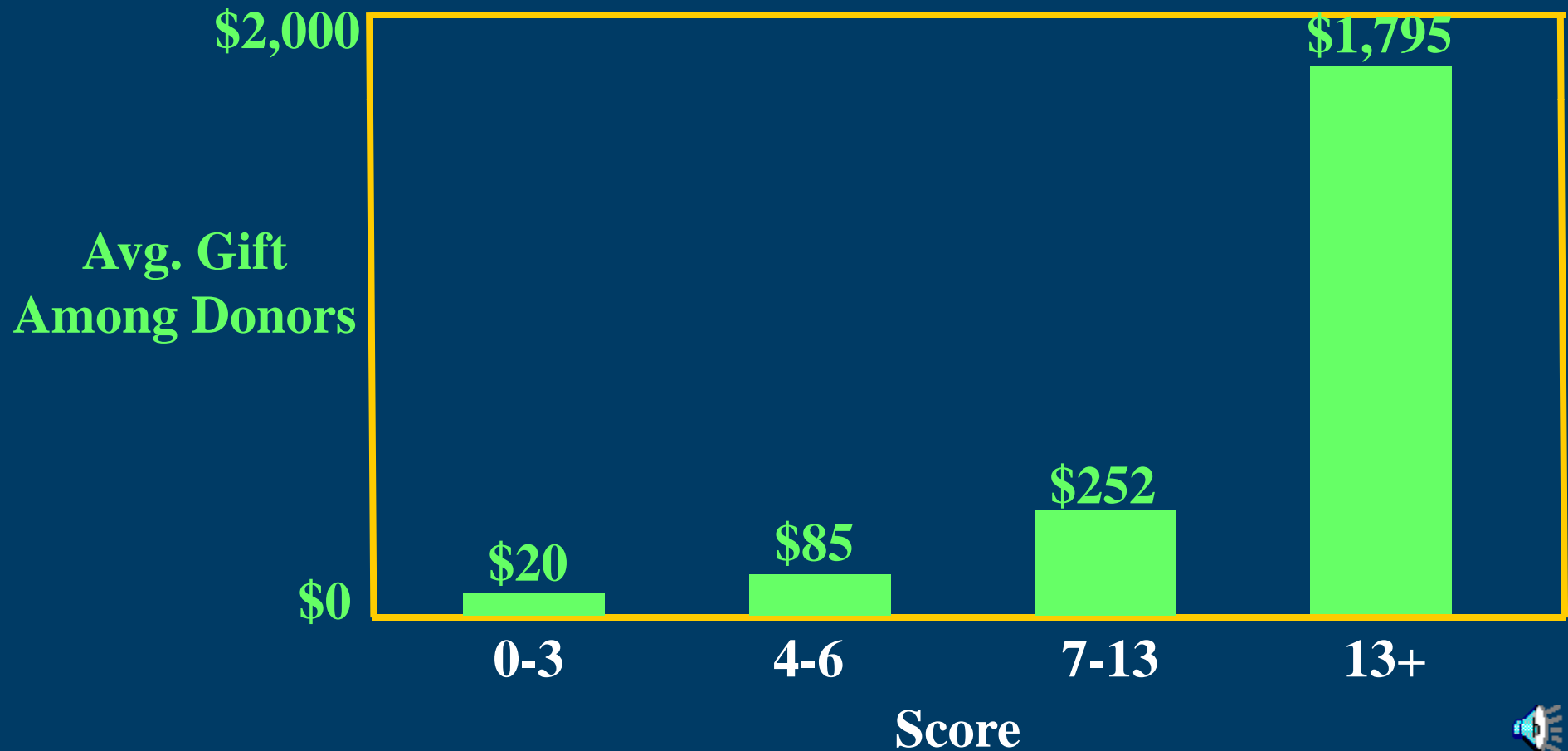
Data Mining & Modeling

-- Business Objectives



Data Mining & Modeling

-- Business Objectives



University of Melbourne

-- Special Giving Model (\$500+)

- +5 * \$50+ First Gift
- +4 * Affiliations
- +3 * Atnd Tg
- +2 * 3+ Num Sum Gifts
- +2 * 50+ Years Old
- +2 * Alumni Activity
- +2 * Family Relations
- +2 * Business E-Mail
- +2 * Sports
- +2 * Resident College
- +2 * Marital Status
- +2 * Male
- +2 * Atnd AI Donor Event
- +2 * Other Events
- +2 * U-Faculty Law/Arch
- +1 * G-Faculty MBS, Law & Arch
- +2 * Country MY
- +1 * Country HK, SG & TH
- +1 * State NSW & MSL
- +2 * Zip 3000 & 3141-3147
- +1 * Zips (8)

University of Melbourne

-- Special Giving Model (\$500+)

Score	Count	%Tot	'%\$500+	%<\$500	Mean	Median
0-4	2,304	23%	1%	24%	\$137	\$20
5-7	2,088	22%	8%	21%	\$186	\$51
8-10	2,279	20%	15%	23%	\$296	\$100
11-13	1,903	19%	26%	18%	\$637	\$200
14+	1,631	16%	50%	14%	\$4,815	\$375
Total	10,205	100%	6%	94%		

Data Mining & Modeling

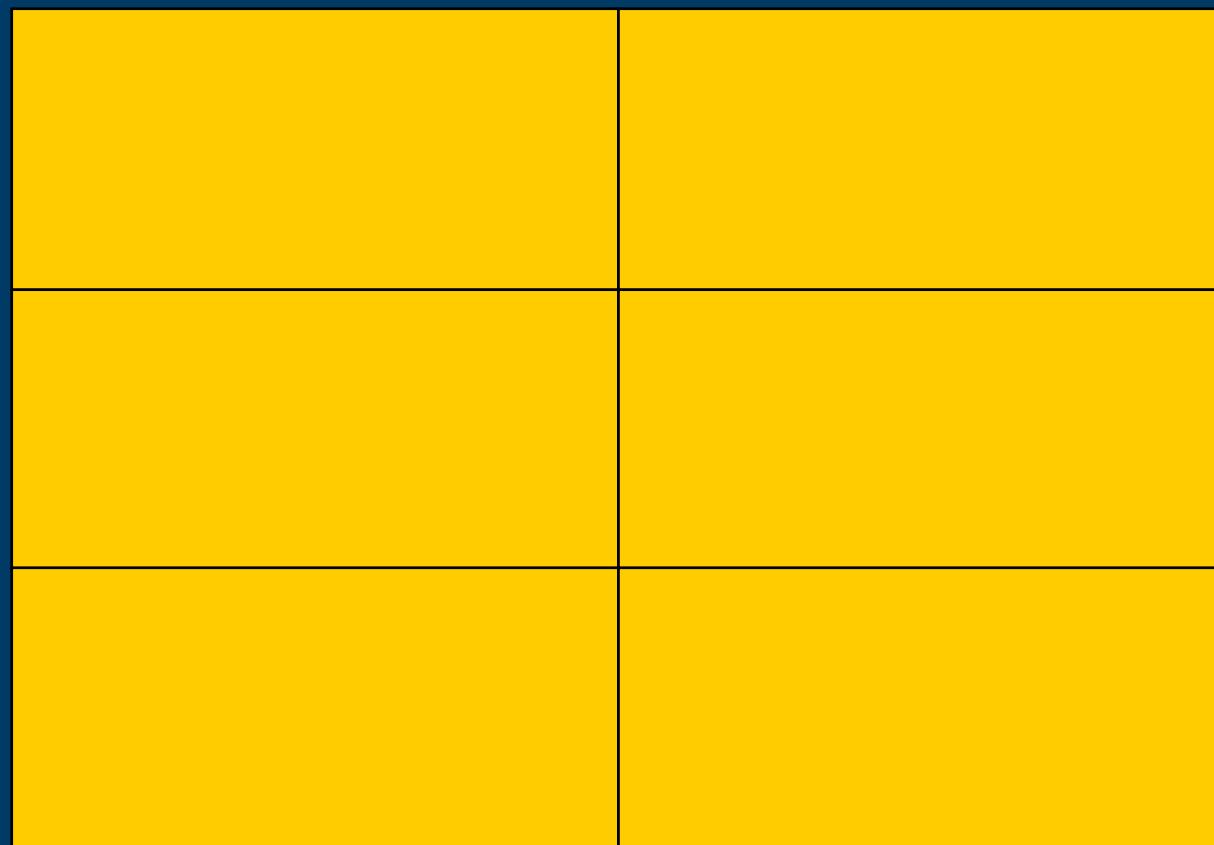
-- Process & Application

Annual
Gift (\$)

High Level
Donors

Low Level
Donors

Non-Donors



Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual
Giving (\$)

High Level
Donors

Low Level
Donors

Non-Donors

	Cash Cows (Special Prospect)

Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual Giving (\$)

High Level Donors

Low Level Donors

Non-Donors

	Cash Cows (Special Prospect)
	Retain & Upgrade (Giving Society)

Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual
Giving (\$)

High Level
Donors

Low Level
Donors

Non-Donors

	Cash Cows (Special Prospect)
	Retain & Upgrade (Giving Society)
	Targeted Strategy (Higher Ask)

Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual
Giving (\$)

High Level
Donors

Low Level
Donors

Non-Donors

Cash Cows (Underserved?)	Cash Cows (Special Prospect)
	Retain & Upgrade (Giving Society)
	Targeted Strategy (Higher Ask)

Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual
Giving (\$)

High Level
Donors

Low Level
Donors

Non-Donors

Cash Cows (Underserved?)	Cash Cows (Special Prospect)
Cut Down and/or Retention Program (Sustainer/EFT)	Retain & Upgrade (Giving Society)
	Targeted Strategy (Higher Ask)

Low

Score

High



Data Mining & Modeling

-- Process & Application

Annual
Giving (\$)

High Level
Donors

Low Level
Donors

Non-Donors

Cash Cows (Underserved?)	Cash Cows (Special Prospect)
Cut Down and/or Retention Program (Sustainer/EFT)	Retain & Upgrade (Giving Society)
Eliminate and/or Targeted Strategy (Acquisition)	Targeted Strategy (Higher Ask)

Low

Score

High



UC Berkeley -- Examples

- Annual Giving Model: The Cal Fund
 - Prioritizing acquisition efforts
- Major Gift Model
 - Prioritizing screening investments
 - Prioritizing personal-volunteer solicitation efforts



UC Berkeley

-- Annual Giving Model

- Business need: Target limited resources to increase ROI of mass marketing programs
- Analyzed a random sample of 10,000 donors to Cal Fund (our annual fund) in previous fiscal year
- Determined variables that predict giving to Cal Fund & developed scoring model



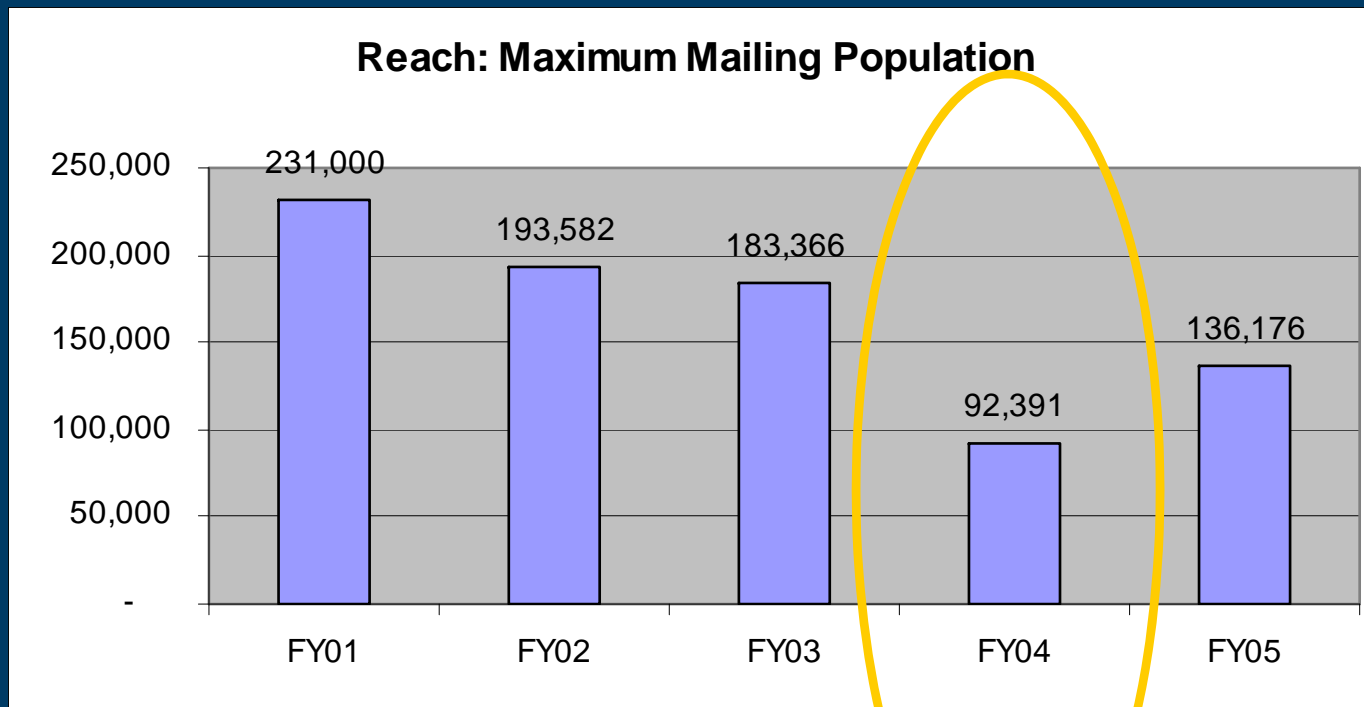
UC Berkeley

-- Annual Giving Model

- +3 for alumni who are lifetime members of the CAA
- +2 for alumni with both undergraduate & graduate degrees from Cal
- +2 for alumni with Cal activities listed
- +2 for alumni with Cal children
- +2 for alumni with Cal spouse
- +2 for alumni with current annual membership of CAA
- +2 for alumni who have given to campus, excluding Cal Fund
- +1 for alumni with lapsed membership of the CAA
- +1 for alumni with undergrad degree only
- +1 for alumni with bus. phone in database
- +1 for alumni with an e-mail in database
- +1 for alumni with Mrs. stated as a prefix
- +1 for alumni with Dr. stated as a prefix
- +1 for alumni with an interest listed in db
- +1 for alumni in San Mateo & Santa Clara
- +1 for alumni from Col. of Letters & Science
- +1 for alumni with marital status married
- +1 for alumni with marital status divorced
- +1 for alumni with marital status widowed
- +1 for alumni with Cal parents

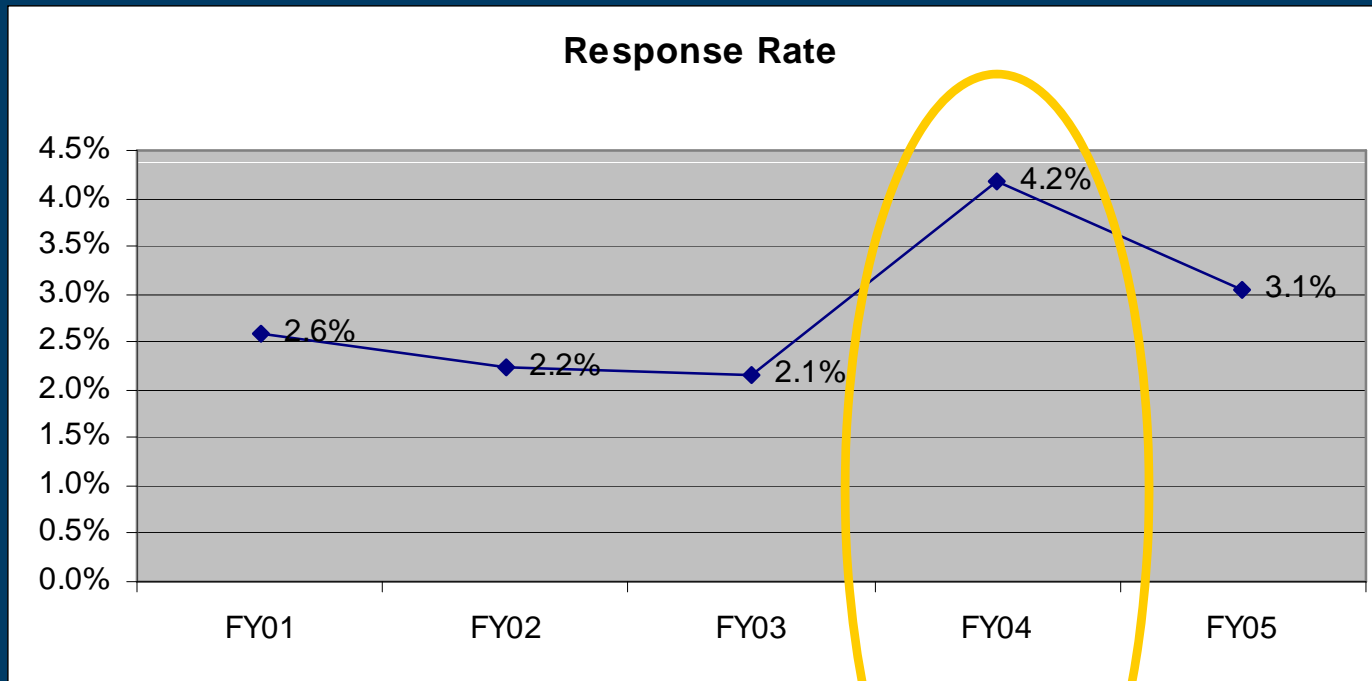
UC Berkeley

-- Annual Giving Model



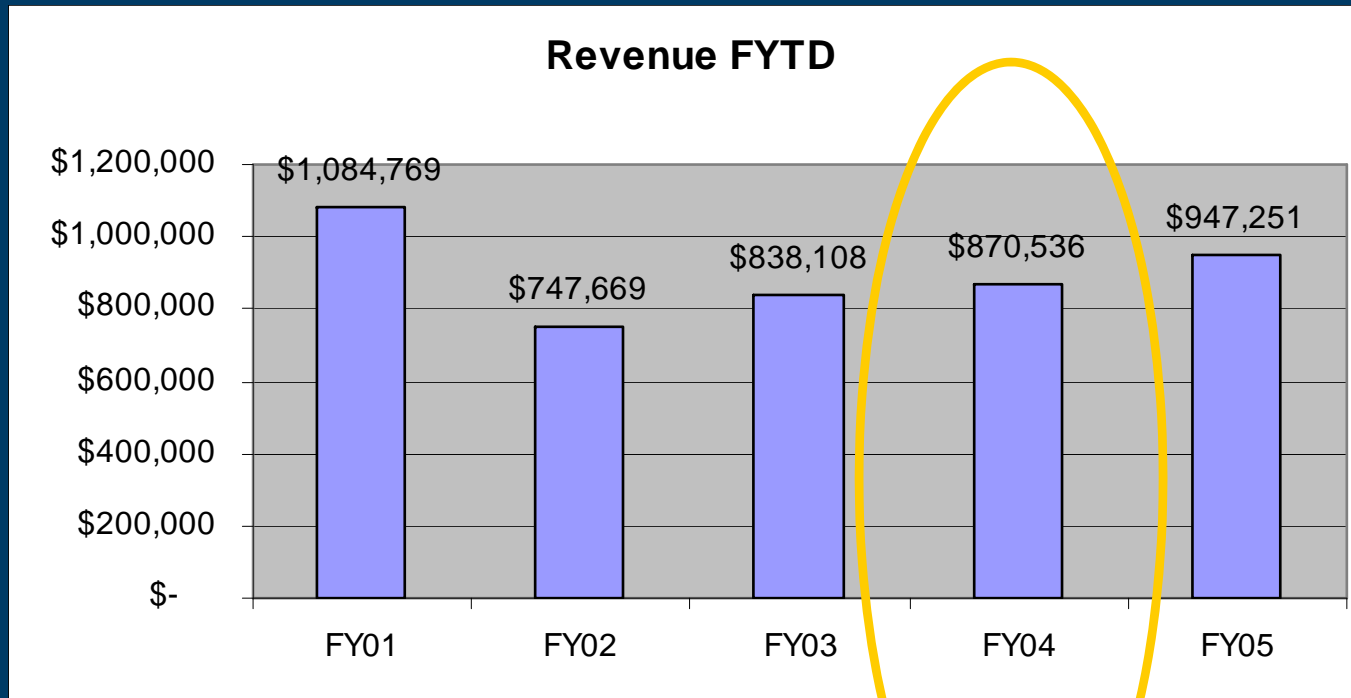
UC Berkeley

-- Annual Giving Model



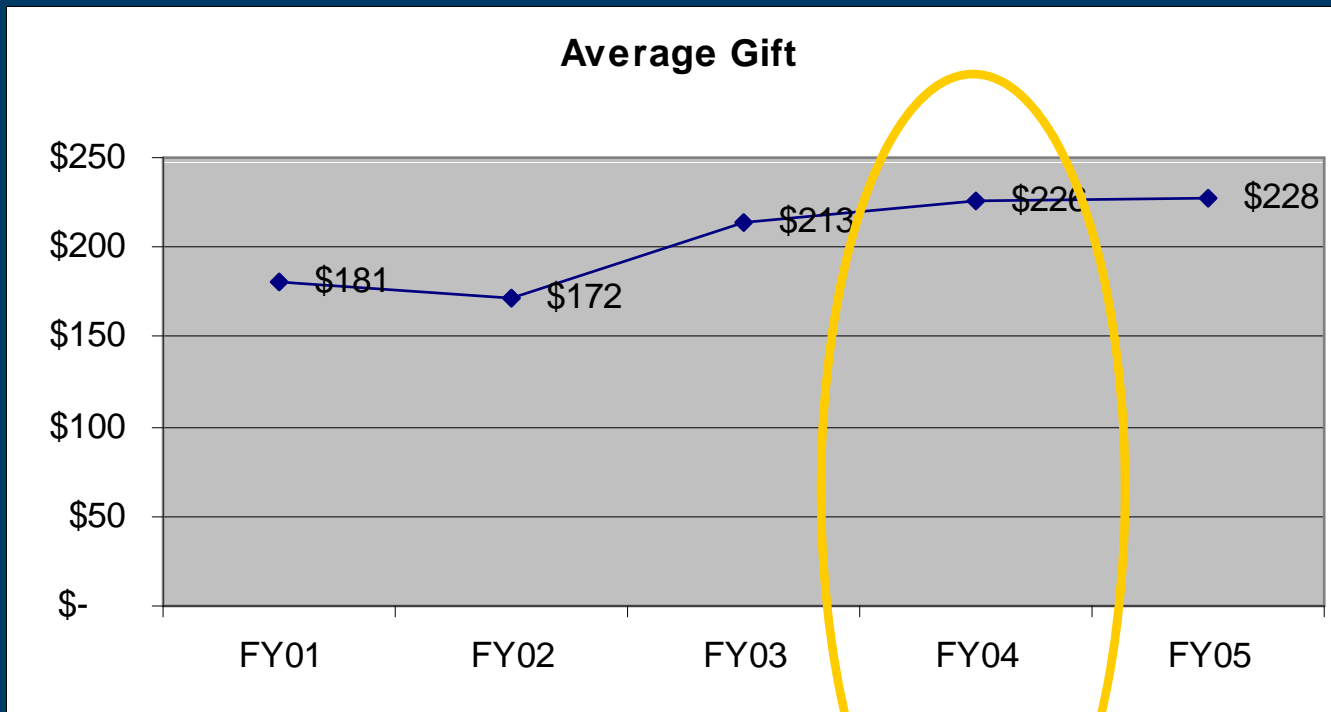
UC Berkeley

-- Annual Giving Model



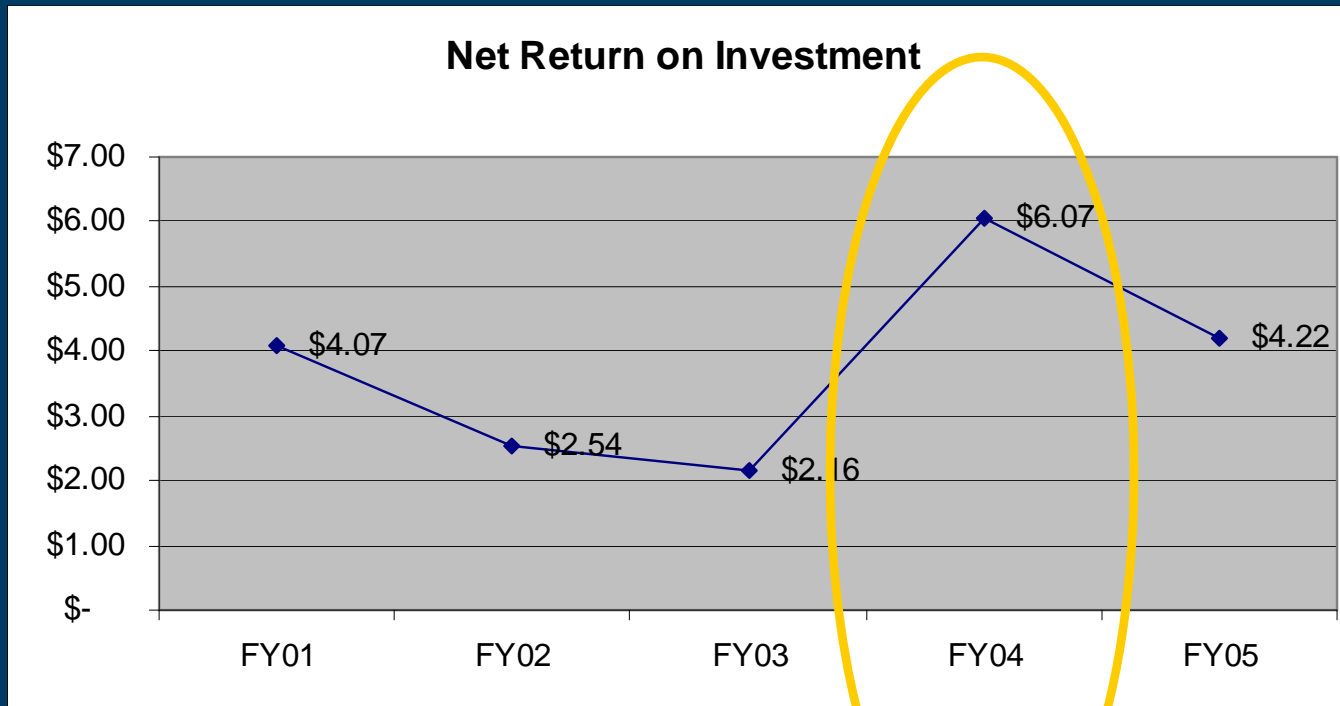
UC Berkeley

-- Annual Giving Model



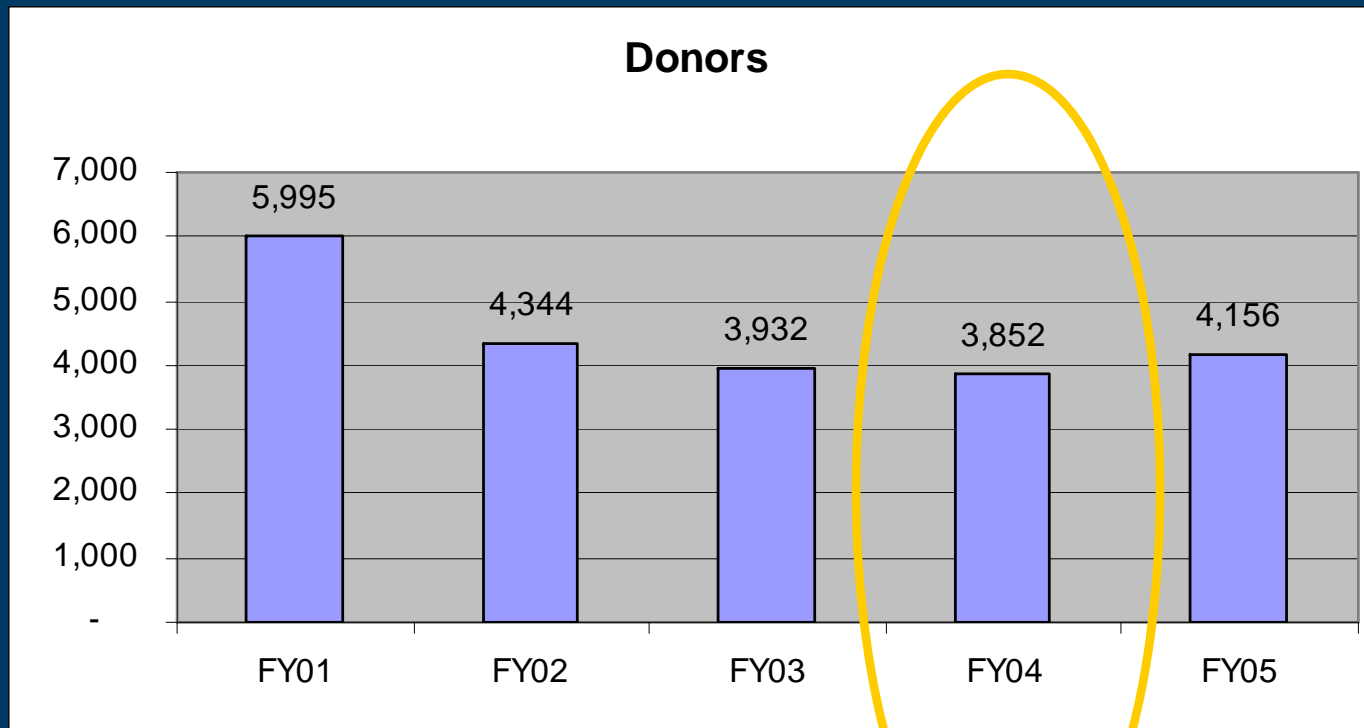
UC Berkeley

-- Annual Giving Model



UC Berkeley

-- Annual Giving Model



UC Berkeley

-- Special-Major Giving Model

- Business need: Prioritize special-major gift efforts – personal-volunteer prospect pool during reunion years -- to maximize staff time & ROI
- Also: rank unqualified prospects
 - Prospecting
 - Cold call lists
 - Database screenings

UC Berkeley

-- Special-Major Giving Model

- 2662 \$50K+ donors
- 10,000 random sample – donors < \$50K (5,140) and non-donors (4,860)
- 242 data points downloaded from donor database (for prospect and spouse)
- Split into Test and Control samples
- Used statistical package (Data Desk) to analyze variables that predict major giving

UC Berkeley

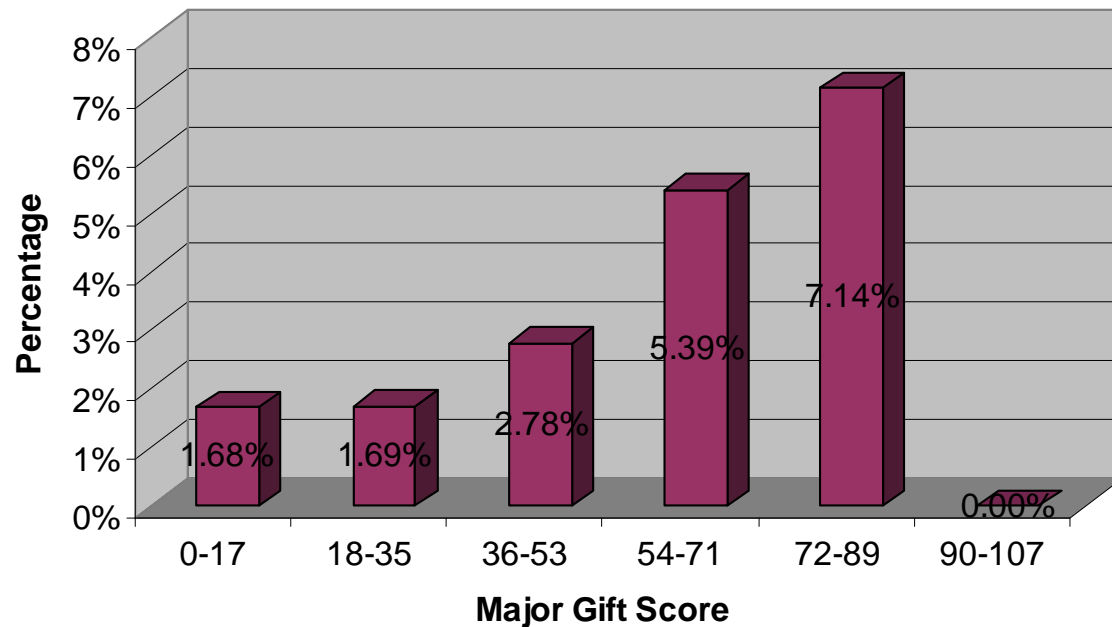
-- Special-Major Giving Model

- Prospect has given 10 or more gifts
- Prospect or spouse has at least one contact recorded in database
- Prospect or spouse has attended at least one event
- Prospect or spouse has been rated
- Prospect or spouse's first gift amount was greater than \$100
- Prospect's employer is listed in database
- Prospect's business zip code is listed in database
- Prospect's business telephone is listed in database
- Prospect or spouse has at least one affiliation listed in database
- Prospect is aged 50 years or more
- Spouse's birth date is listed in database
- Prospect made their first gift to Cal 25 years or more ago, or their spouse made their first gift to Cal five or more years ago
- Prospect is/was a member of a campaign committee or volunteer

UC Berkeley

-- Special-Major Giving Model

Percentage of Class Reunion alumni accepting kick-off event invitation by Major Gift Score



Data Mining & Modeling

-- Innovations

- External Data Sources
 - Wealth indicator/screening
 - Assets
 - Investments
 - Length of time as current address
 - Philanthropic giving

Data Mining & Modeling

-- Innovations

- Event Attendance
- Online Alumni Community
 - Membership & Usage
- Electronic Newsletter
 - Readership
- Facebook/LinkedIn???

Data Mining & Modeling

-- Warnings!!!

- Understand Your Business Objectives (And Their Inherent Tradeoffs)
 - Targeting resources (ROI) vs. investing in growth (donor base)
- Know (How To Apply) Your Model
 - Predicting the future using the past
 - New Markets
 - Market Saturation
 - Don't eliminate your younger alumni even though they have low scores!

Data Mining & Modeling

-- Mining Your Data To Maximize Your Fundraising Potential



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