



Must Love Data

Remaking your Annual Fund

Using Analytics and Predictive Modeling

Whitney Museum of American Art

- Opening a new building in the Meatpacking District in spring 2015
- Preparing for substantial growth in attendance and membership



The Art Institute of Chicago



- 1.4 million visitors annually
- 100,000 members
- TripAdvisor winner: #1 museum in the world

Annual Fund

- An unrestricted gift above and beyond a membership
- Fully tax deductible
- Not as large a revenue stream as membership, but still significant

Data Mining and Predictive Modeling

- **Data mining:** any activity that involves exploring large data sets for patterns or to answer specific questions (which may or may not have anything to do with predicting behavior)
- **Predictive modeling:** the creation of formulas that produce scores for each constituent in a dataset for the purpose of predicting that constituent's probability of engaging in a certain behavior (eg., giving to the Annual Fund).

Source: <http://cooldata.wordpress.com/2010/02/25/data-mining-and-predictive-modeling-whats-the-difference/>

Predictive Modeling: Possible Approaches



Predictive Modeling: Possible Approaches

<u>Approach</u>	<u>Strengths</u>	<u>PROS</u>	<u>CONS</u>
Send data out for scoring	<ul style="list-style-type: none"> • Time • Money 	<ul style="list-style-type: none"> • Quick –smallest time investment • Allows you to start testing/leveraging findings rapidly 	<ul style="list-style-type: none"> • Blackbox – can't replicate • Doesn't leverage internal knowledge base
Create models internally (software/consulting solution)	<ul style="list-style-type: none"> • Money • Quality 	<ul style="list-style-type: none"> • Build skills in-house • Software is multipurpose • Replicable for future models 	<ul style="list-style-type: none"> • Slow – largest time investment • Steepest learning curve
Hire a statistician	<ul style="list-style-type: none"> • Time • Quality 	<ul style="list-style-type: none"> • High degree of quality, reliability of results • Quicker than building 	<ul style="list-style-type: none"> • Potentially costly • Outside person must build institutional knowledge

Case Study: Whitney Museum

- How do we grow the annual fund when we are asking a lot of our most loyal supporters?
- Challenges:
 - Same approach for many years
 - Not identifying enough new donors
 - Not effectively renewing AF donors

Case Study: Whitney Museum

- Data Mining – Getting to know our audience
 - Challenge: Need to grow the AF when we have decreasing access to our best donors.
 - Ah ha moment!: 83% of our revenue coming from 17% of donors; less and less available for asks.
 - What to do: Start “renewing” donors as we would members; strategize with MGOs about timing and confirm at start of FY.
 - Results: Far less time spent reviewing this audience; improved consistency of giving YoY. Anticipated shortfalls that could be made up elsewhere when donors go offline.

Case Study: Whitney Museum

- Predictive Modeling
 - Goal: identify new donors as our access to existing donors decreases
 - Model: Likelihood to give
 - Results:
 - 56% of solicited revenue came from top decile
 - 62% of new donors were rated 1-3
 - Only 6% of revenue came from deciles 5-10; represented a more significant portion of mail file.
 - Actionable Next Steps: Stop mailing anyone rated 5+; reduce mail quantities. Ramp up mailing to top deciles. Identify lookalikes from other source lists.

Case Study: the Art Institute

- How can we increase net revenue?
- Challenges:
 - Revenue varied significantly each year
 - Costs were rising
 - Tactics had changed every year: no control

Case Study: the Art Institute

- Data Mining
 - Challenge: messy data
 - Timeline: eight months
 - Revelation: solicited revenue was remarkably consistent; variability came from unsolicited revenue
 - Actionable Conclusion: our greatest opportunity to increase net was controlling expenses

Case Study: the Art Institute

- Predictive Modeling
 - Goal: reduce mailing sizes
 - Two models:
 - Likelihood to give
 - Size of gift
 - Strong results:
 - 38.8% higher net revenue vs control
 - 11.8% increase in overall net Y/Y

Getting Started

- Data mining and building basic business intelligence
 - Examples of what you can do right now
- Deciding to try data mining
 - Low tech to high tech
 - Making the case

Step 1: Frame the Project

- What are you trying to achieve?
- What is the question you want to answer?
- What is your key metric and how are you measuring it?
- Who needs to be involved?
- What does success look like?
- What are your limitations?

Step 2: Clean Your Data

- Make sure your data is consistently labeled, formatted, etc.
- High tech: taskforce, global changes
- Low tech: manual corrections
- Not recommended: normalizing the data set but not the content of the database

Step 3: Brainstorm

- Generate a list of all possible variables that might influence your key metric and generate a data set
- High tech: connect directly into backend tables; build refreshable reports and bridge systems
- Low tech: basic query and excel work

Step 4: Identify Correlations - Data Mining

- Determine which factors from your brainstorm parallel your key metric
- High tech: invest in a tool that runs these analyses for you
- Low tech: filters, pivot tables

Step 4: Identify Correlations - Predictive Modeling

- Determine which factors from your data mining parallel your key metric
- High tech: statistical methods including multivariate regressions, principle component analyses, scoring
- Low tech: run regressions one by one in Excel

Step 5: Invoke Common Sense

- Do your conclusions make sense?
- Is it correlation or causation?
- Which factors are actionable?
- How do we test these conclusions?

Low Tech to High Tech

- Use low tech for some quick wins; let this make the case for investment in the high tech approach
- Set goals for what the high tech approach will actually achieve
- Internal vs. external assets and investment

Analytics Addiction

- Comparing your results to the model and making adjustments
- When do you stop?

Additional Resources

- Become conversant:
 - www.cooldata.wordpress.com
 - The Upshot (NYT)
 - Five Thirty Eight (formerly NYT now standalone)
 - *Data Science for Business* by Foster Provost and Tom Fawcett