

Data Driven Targeted Campaigns

evariant  
MOVING HEALTHCARE AHEAD



Propensity Modeling:  
What is it and what does it look like?

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HEALTHCARE STRATEGY & MARKET DEVELOPMENT  
OF THE AMERICAN STRATEGY ASSOCIATION

## Questions and Propensity Models

1. How **efficient or inefficient** are your targeted marketing strategies?
2. Which targeted marketing campaign targets are **overvalued**? Which are **undervalued**?
3. How is value defined? (e.g., ROI, traffic, short or long term?)

## Overview of Propensity Models

- The primary goal of Evariant's predictive modeling is to **identify and target patients and non-patients who are likely candidates for health services**
- Patients and non-patients in healthcare markets have differential levels of response propensity for different disease-states and health screening programs
- Predictive modeling is evolving with the healthcare industry to not only capture traditional volume based targeted marketing, but to also incorporate the rapid move to value based marketing initiatives

## The Healthcare Industry in Transition

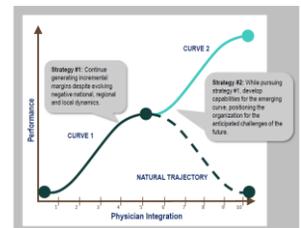
Why incorporate both volume and value based modeling and analytics?

### Curve 1: Volume Based/Static

- Example: Mammography Screenings
- Current state
- Standard for most healthcare marketers
- All about volume
- Little incentive for real integration

### Curve 2: Value Based/Dynamic

- Example: Traffic in Women's Health Center
- Current + Future State
- Few healthcare marketers taking advantage
- Shared savings program
- Bundled/global payments
- Value-based reimbursement
- Rewards integration, quality, outcomes, and efficiency



Optimal modeling can incorporate volume and value based targeted marketing initiatives.

"One and Done" versus "Building the Program"

### Top Requested Predictive Models

Service Line	Subservice Line	Model Name
CANCER	Cancer - Mammography Screening	Mammography Screening Model
CANCER	Cancer - Breast	Breast Cancer Model
CARDIOLOGY	Stroke	Cardiology - Stroke Model
CARDIOLOGY	General Cardiology	General Cardiology Model
CARDIOLOGY	Sleep Medicine	Cardiology - Sleep Medicine Model
CARDIOLOGY	AFB	Atrial Fibrillation Model
CARDIOLOGY	CAD	CAD Model
CANCER	Cancer - Digestive	Colonoscopy Screening Model
CANCER	Prostate	Prostate Cancer Screening Model
CANCER	General Dermatology	Skin Cancer Screening Model
CANCER	Cancer - Female Reproductive	Ovarian Cancer Model
CANCER	Cancer - Male Reproductive	Testicular Cancer Model
CANCER	Pulmonary Vascular Disease	Lung Cancer Model
ORTHOPAEDICS	Joint Replacement	Joint Replacement Model
ORTHOPAEDICS	Spine - Surgical	Back & Spine Model
ORTHOPAEDICS	Sports Medicine	Sports Medicine Model
PLASTIC SURGERY	Oral and Maxillofacial Surgery	Facial Plastic Model
PLASTIC SURGERY	Other plastics	Non Facial Plastic Surgery Model
GASTROINTESTINAL	General GI - Surgical	Bariatric Surgery Model
UROLOGY	Erectile Dysfunction	Erectile Dysfunction Model
OBSTETRICS - NON DELIVERY	Antepartum Care/High Risk Pregnancies	Antepartum Model

### Types of Models

**Patient Model** - Which patients are likely to respond to a disease-specific marketing campaign (**cross-sell, upsell, retention**)

**Non-Patient Model** - Which non-patients in the market are most likely to respond to a disease-specific marketing campaigns (**acquisition, re-acquisition**)

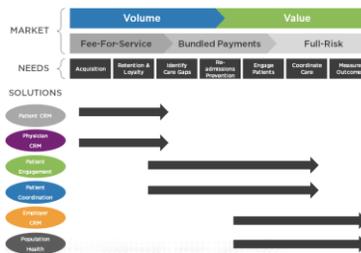
- ❖ Certain individual patients and non-patients in a healthcare market have a higher likelihood of benefitting from different health screening and treatment programs
- ❖ Multivariate statistical analyses (predictive scores) can optimize the precision in which these patients and non-patients are identified and targeted for marketing purposes
- ❖ If your recipe for targeted marketing include traditional volume based approaches, limitations include only relying on preselect criteria against "prospect lists" that include sociodemographic, lifestyle, response, transactional or other elements
- ❖ Propensity models assign propensity scores to patients and non-patients that represent their likelihood to respond to a given campaign, based on a broader set of predictive elements

*We have a core set of approximately 130+ disease and health screening models available for your patient population and consumers in your market*

### Sample Full Model List

Service Line	Subservice Line	Model Name
OBSTETRICS - NON DELIVERY	Antepartum Care/High Risk Pregnancies	Antepartum Model
UROLOGY	Erectile Dysfunction	Erectile Dysfunction Model
GASTROINTESTINAL	General GI - Surgical	Bariatric Surgery Model
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CARDIOLOGY	Stroke	Cardiology - Stroke Model
CANCER	Cancer - Breast	Breast Cancer Model
CANCER	Cancer - Mammography Screening	Mammography Screening Model

### Evolving Solutions



*Multivariate predictive modeling is employed along the Needs continuum, and incorporates both volume and value based initiatives.*

## Developing Models - Process

*When building multivariate statistical models, there are several steps and best practices that are followed:*

- ❖ Domain knowledge (empirical)
- ❖ Front-end descriptive analytics - univariate and multivariate analyses
  - ❖ cleaning, missing value and outlier assessment, pattern identification, inferential analyses, and other validation procedures
- ❖ Most **parsimonious** set of variables
  - ❖ development of new derived variables with significant predictive attributes (for each model)
- ❖ Multiple predictive model algorithms (e.g., logistic regression, decision trees, cluster analyses, others)

**STEPS: Build Algorithm > Validate > Score Patient and Non-Patient Files > Decile Scored Files > Pull Targeted Marketing Prospect Lists Top Down by Decile and Score**

## Model Inputs/Parameters

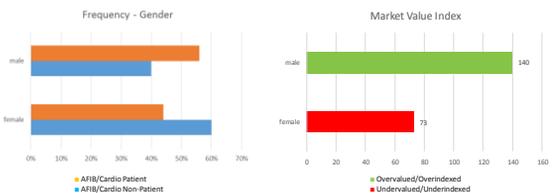
### Multivariate Comprehensive Datasets Include:

- ❖ Patient demographics
- ❖ Patient visit data history
- ❖ Appended Consumer Data
  - Personal Information
    - o Lifestyle
    - o Sociodemographic/socioeconomic
    - o Health behavior
    - o Reported prescription data
  - Household Information
    - o Ailments
    - o Family size/children
    - o Income/lifestyle variables (mortgage, dwelling size, location)
- ❖ Derived and proprietary variables such as behavior profile and comorbidity index

## AFIB/Cardiology Patient Model Summary Statistics and Scoring Validation

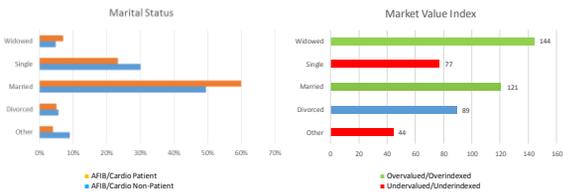
## Gender – AFIB/Cardiology

- *Males traditionally best patients*
- *Females have HUGE market potential*



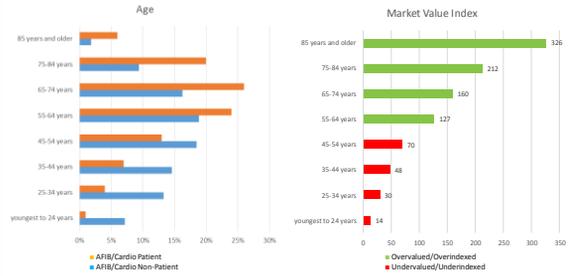
### Marital Status – AFIB/Cardiology

- Married and widow/widowers are best patients
- Singles have HUGE market potential
- Significant other OFTEN drives health behaviors



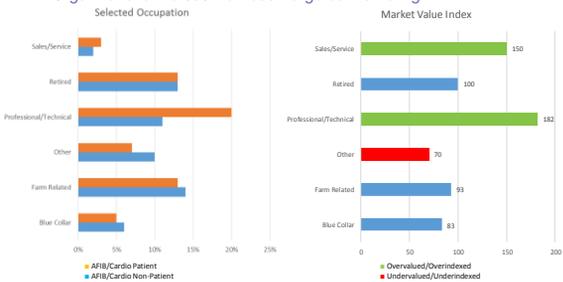
### Age – AFIB/Cardiology

- 65 and older are the best traditional patients
- 35-54 have HUGE market potential for prevention



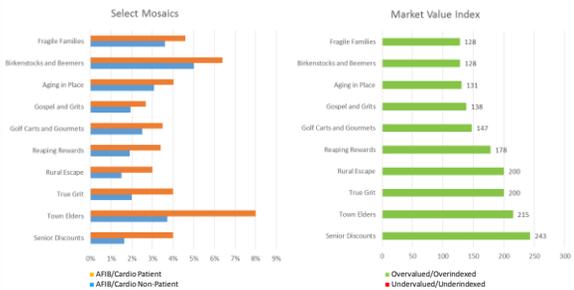
### Occupation – AFIB/Cardiology

- High stress + affluence = best patient potential
- Insurance coverage and marketing channel
- Organizational versus individual targeted marketing



### Top Mosaics – AFIB/Cardiology

- Targeted marketing by sociodemographic clusters



Sample – Top Predictive Drivers  
AFIB/Cardiology Patient Model

Rank	Variable	Story Line
1	Comorbidity – AFIB/Cardio	Increased with top comorbid factors
2	Age	Older folks
3	Mosaic	More Mosaics that include older folks
4	Family History	Increased Family Hx
5	Ethnicity	Increased for African American, Latino
6	Awareness of Health	Lower pro-health behaviors
7	Donating Behavior	Higher donating behavior
8	Multiple Mail Responders	More multiple responders
9	Reading Behavior	More general reading behavior
10	Occupation	Higher for Sales/Service, Professional/Technical
11	Gender	Males overvalued/indexed compared with females

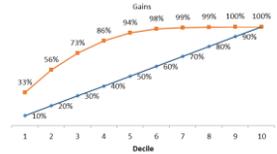
SAMPLE: Lift – AFIB/Cardio



Best prospects from a scored list...

Non-patient AFIB/Cardio prospects in the top decile have are 3.3x more likely to look like a current AFIB/Cardio patient than chance...

86% of the best non-patient AFIB/Cardio prospects are found in the top 4 deciles...



Best Practices

Model Maintenance

- Models are updated regularly – new patients/non-patients added to database, run through model and assigned a score/decile
- Models should be refreshed when there is a significant change in population parameters:
  - Large number of people moved in/out
  - Organization acquired/sold service location

Modeling Best Practices

- Evariant will review the need to refresh models
- Evariant will assist in synching marketing and modeling calendars
- Models can be merged to maximize campaign impact
- Consider testing + advanced reporting
  - Built-in test-controls can be leveraged to assess the efficacy of propensity models, including refining when necessary



Using a Model for Targeted Marketing Campaign:  
Breast Cancer Screening

Objective: Target Patients for Breast Cancer Screening

- Step 1: Select Breast Cancer model from a list of your subscribed model.
- Step 2: Select only those individual IDs where model type is "Patient."
- Step 3: Decide how many patients you would like to send a marketing communication to.
- Step 4: Select that many number of patients starting from Decile 1 until that number is reached; typically individuals in the top three deciles (Lift needs to be above 1.0) are good candidates for any given campaign.
- Step 5: (recommended) Select 5-10% of IDs where the Test/Control column shows "Control"; these individuals are randomly selected and are typically in the lower deciles and are least likely to respond. But include them in your campaign anyway for evaluating the real world performance of the model.
- Step 6: Send out your marketing communication to identified test and control IDs.
- Step 7: Evaluate - When responses come back you would find much higher percentage of responses from the top deciles or your "Test" group and much lower percentage of responses from "Control" group.
- Step 8: Feedback - based on your campaign experience and model performance, you can improve the model further for next campaign.

Note: All patient and consumer IDs you have access to come from your own facilities and markets.

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Are you overlooking the value of testing?

Many healthcare marketers do not leverage testing, usually due to a lack of knowledge about testing in general and resource constraints.

Many forms of testing do not require additional resources.

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**Q & A  
DISCUSSION**

