Case Study

Predicting Philanthropic Propensity through Advanced Analytics

Elder Research developed a predictive model to score and rank patients for outreach by development officers, based on their likelihood to begin a philanthropic relationship with the health foundation. The model identified 20-30% more patients with a high likelihood of becoming a grateful donor.

INDUSTRY

- Healthcare Philanthropic Development

BUSINESS NEED

- Identifying prospects for grateful patient giving is costly and resource intensive
- More efficient use of diverse patient data to cultivate relationships

SOLUTION

- Deployed an advanced analytic algorithm integrating multiple data sources to predict patient likelihood of beginning a philanthropic relationship with the health system

BENEFIT

- Identifies 20–30% more patients with a high likelihood of beginning a philanthropic relationship
- Prioritizes development officer workload to maximize outreach success
- Expands data sources to improve identification of grateful patients

The Challenge

As with other relationship-driven work, philanthropic development is a manual art. It is highly individualized in practice, as it depends on the characteristics of the development officer and the prospective donor. This makes it very intensive to do well, in time and resources. Successful philanthropic development relies on finding a few major donors in the sea of prospects—a classic "needle-in-a-haystack" problem. In healthcare, grateful patient giving has become a key component of non-profit health system funding. Patients (or their relatives) may donate to a hospital, special care center, or specific doctor in response to the quality of care provided. Cultivating donations from grateful patients makes it possible to fund high-quality care for others in the future.

At the earliest stages of the cultivation process, development officers rely on imperfect, and often inaccurate, estimates of prospect giving capacity to select the most likely candidates. Provided by third-party companies, these estimates predict the capacity a prospect may have for donating. Since the estimates are known to be error prone, development officers must engage in lengthy secondary research on potential prospects using many additional data sources.

Health systems have access to an increasing volume and variety of patient data in the form of Electronic Medical Records, third-party demographic information, and philanthropic development databases. Since most data available for prospect cultivation are manually entered notes by development officers it can vary in form according to their individual practices. Also, patient data are governed by HIPAA regulations and subject to strict privacy regulations. Therefore, although these data present opportunities to identify prospects more efficiently than using only giving capacity estimates and manual research, they present significant challenges to modeling. An additional problem for predictive modeling is the lack of a clear outcome. While giving propensity seems like a natural target, the time between initial contact and receiving a donation can be lengthy and highly variable depending on the kind of treatment received.

The Solution

To address these challenges Elder Research started with a Data Discovery project to assess whether the data was sufficient to support predictive modeling. Specifically,

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we first identified cases where patients wanted to learn more about philanthropic opportunities with the foundation. These cases provide a chance for development officers to contact the prospect with more information about donating. We were able to show that, even with some variability in the definition of the target (whether a patient would like to build a philanthropic relationship), the available data was suitable for model building.

We created a model estimating the likelihood a patient will begin a philanthropic relationship with the health foundation. Figure 1 shows the relationship between a patient's estimated capacity and predicted likelihood of giving. Key to our solution was working collaboratively with development officers to understand their workflows, build credibility for analytics, and communicate model results effectively.

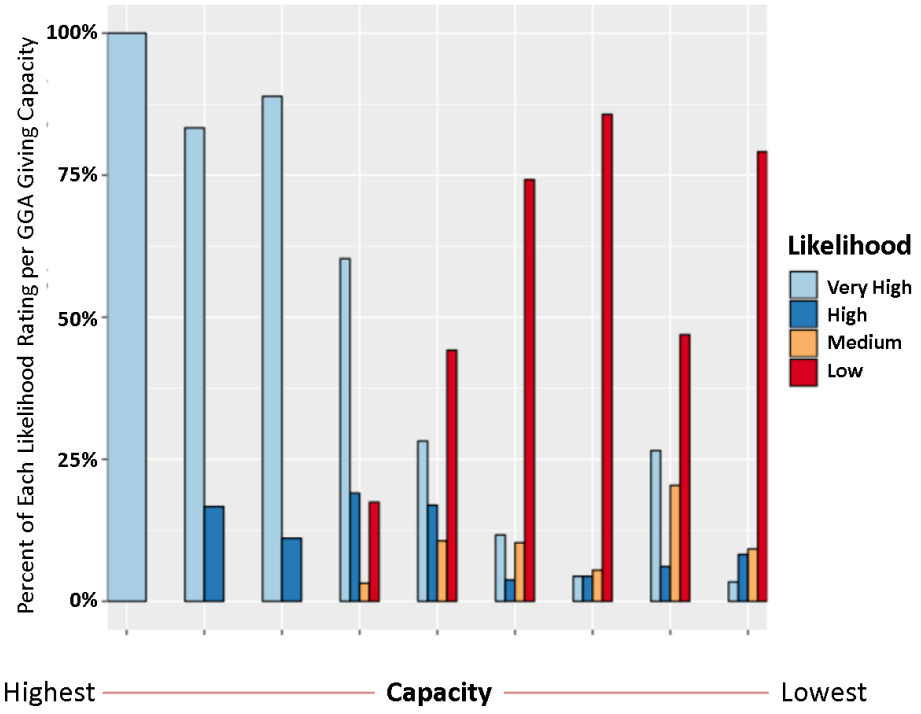

Figure 1. Prioritization of patients for development officers based on capacity and likelihood to donate.

Results

Compared to the baseline process of looking first at patients with the highest giving capacity, our model found 20-30% more patients with a high likelihood of beginning a relationship with the foundation. If a development officer looks at the same number of patients each week, our model prioritizes patients for review by identifying 20-30% more patients with a high likelihood of becoming a grateful patient donor.

As an independent validation, we tested the model on an out-of-sample subset of patients; they were known major donors to the foundation but had never been classified with our chosen target in the foundation's database. Our model gave high scores to 75% of these major donors (compared with their 5% presence in the overall patient population). In other words, if our model's accuracy was no different than random, only 5% of the known major donors would have received high scores. Instead, we provided a lift of 15 (=75/5) over random and, as mentioned just above, an improvement of 20-30% over their current approach. As a result, the foundation is confident that our model is correctly identifying patients who have an affinity for supporting their work.

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