



The Problem(s).

Brand

Blue Cross
Blue Shield

Project

Highly advanced
Machine Learning

Issues

Two large regional Blue Cross Blue Shield organizations were having difficulties “digesting” new members who came in through the ACA exchanges.

Organization 1

One organization decided to sue the federal government for missing Risk Corridor funds.

Results Needed

Accurate data to support its claims of loss.

Organization 2

Sought to alleviate the problem by driving high- risk new members into remediation programs (to reduce loss).

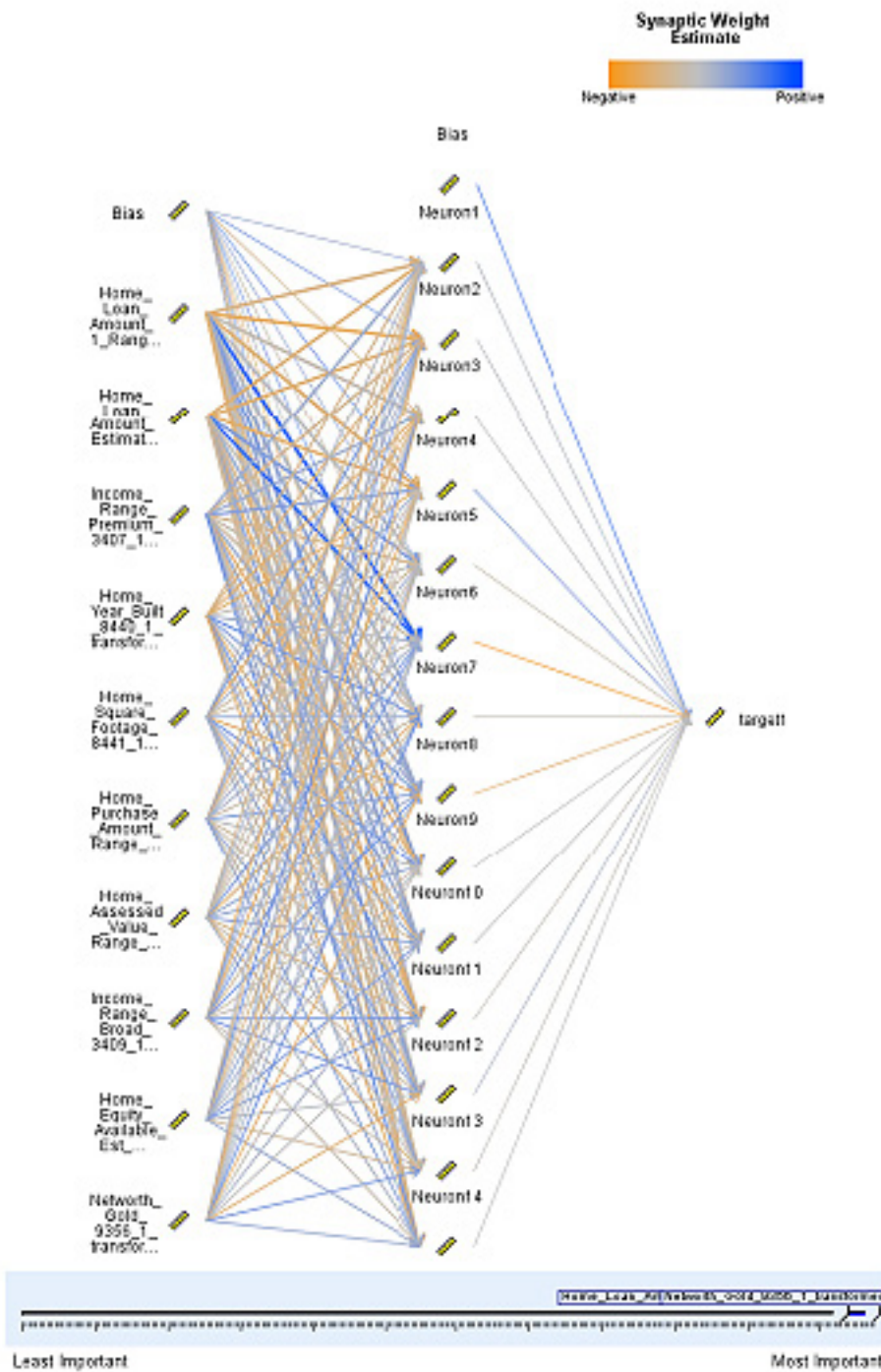
Results Needed

Highly accurate predictions of members most likely to stem the loss

The Solutions.

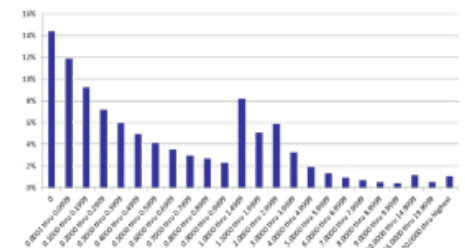
Overview

Developed a highly advanced Machine Learning solution for each Blue organization.



Replicable, competitive, predictive ensemble framework in each case.

- In laymen's terms, that's like saying "let your best models compete dynamically for the prediction, and let the best model produce each prediction case by case."
- The previous internal teams and contractors did not quite understand how to do this at a high level of precision using Machine Learning.
- The competitive ensemble framework produced a remarkable insight in each case. (See the next page.)



Partition	KNN Algorithm	Neural Net	Linear Regression
1	0.572	0.187	0.043
2	0.555	0.471	0.194
3	0.627	0.525	0.152
4	0.452	0.609	0.182
5	0.851	0.457	0.206
6	0.470	0.147	0.004
7	0.464	0.450	0.142
8	0.171	0.600	0.065
9	0.668	0.107	0.036
10	0.798	0.020	0.159
11	0.879	0.431	0.117
12	0.958	0.013	0.104

Replicable, competitive, predictive ensemble frameworks

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What does that mean?

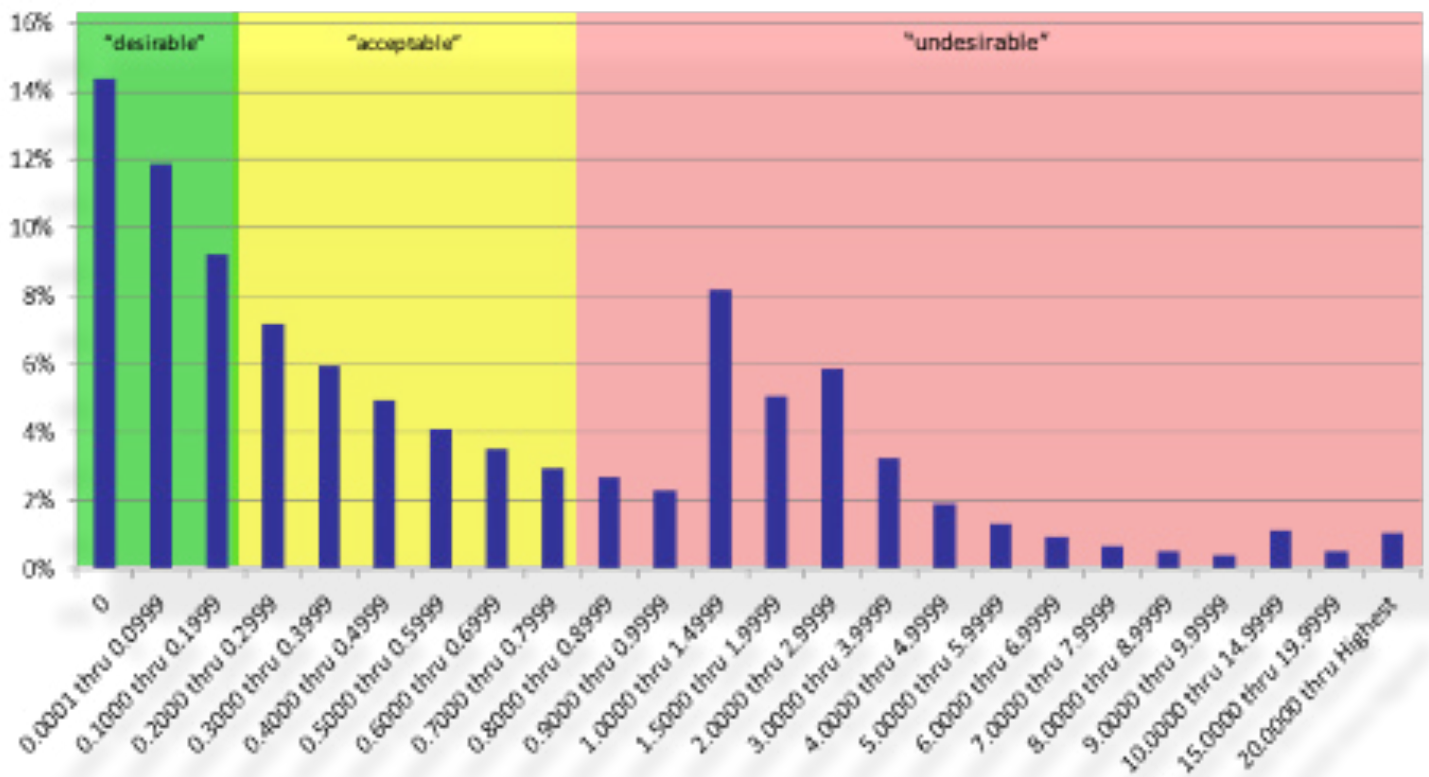
In laymen's terms: "Let your best models compete dynamically for the prediction, and let the best model produce each prediction case by case."

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Why did we need to do this?

The previous internal teams and contractors did not understand how to do a high level of precision using **Machine Learning**.

The competitive ensemble framework produced a remarkable insight in each case



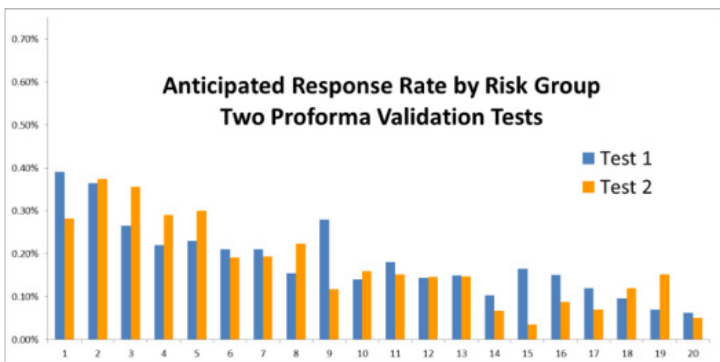
Solution 1: Estimate of Risk Corridor Loss

Model performance is close enough to the validation tests to confirm our general expectations. We observed a general relationship trend between McKinsey Priority Segments and the Cascade RLR Tiers, and it's not certain whether one approach would have performed better than the other in the actual campaign. The Cascade RLR scores increase as the McKinsey Priority segments decrease. The two models appear to take different variables into consideration and thus are not identical in their prediction of "Good" vs. "Bad" risk/fit; but they do generally point in the same direction.

Our concerns that the home market value and property ownership variables represent bias in the prediction and thus might affect performance of the deployed model were not necessarily realized, although such bias might still be present in some degree. In the coming year we recommend such variables be eliminated from the input set.

- Emily Bayer
Interpublic Analytics

These data projections were used in federal lawsuits.



Provided accurate projectable data to estimate the organization's Risk Corridor losses.



Solution 2: Predict members who will need remediation

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Case Study

The solution “saw” what previous models couldn’t see about loss prevention

- First to be invited are those who combine the twin qualities of high net value and high engagement.

(Note: Therapeutic conditions were included in the model scoring, and scores varied significantly by therapeutic condition)

There’s a hierarchy of members that should be invited into the remediation programs in a specific order that minimizes loss



We're available for deeper description

We will be pleased to speak with you at your convenience about specific procedures and methods (proprietary data excluded).



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