PREDICT HEALTH CASE STUDY

Impact of Predictive Analytics and Tailored Outreach on Member Re-determination and Renewal Rates in a Payor Population

Executive Summary

It is by now widely accepted that several factors beyond purely clinical issues determine healthcare outcomes. Social, environmental, and behavioral factors – or determinants of health – such as income, financial situation, housing, mobility, diet, exercise, and access – often play a large role in identifying health risks, predicting the likelihood of successful treatments and controlling cost. Using such data, predictive analytics and timely outreach can help organizations reach and engage consumers at the right time and improve their consumer acquisition and retention results.
Working with Predict Health, Inc. our client – a Medicaid Plan in Massachusetts with about 100,000+ members – was able to improve their Medicaid redetermination or renewal rates from 69.8 percent to 82.5 percent over a three-month testing period, using Predict Health's member behavioral prediction analysis and targeting approaches. This case study describes and shows how Predict Health's predictive analytics and unique data is a valuable tool for managing and improving membership redetermination or renewal outcomes.

Background

Many Medicaid plans serve communities that are typically economically disadvantaged, often with transient and underserved minority populations. Serving these populations can be challenging for any organization that needs to reach and engage these customers from time to time. In many states, Medicaid plans have strict eligibility criteria for their members and require that their members must renew their eligibility for the program every year – a process called redetermination – to re-enroll and maintain coverage. Re-determination requirements vary by state and may include criteria beyond income eligibility. As Medicaid eligibility is based on household income, this must be verified each year. While this can be automatic in most cases where such data is readily available from taxes or other records, some states require participants to requalify if any data has changed or is missing. In Massachusetts, Medicaid plans are responsible for providing help and support their members through the redetermination process. This requires that plans reach out and engage members to obtain and file required eligibility documentation.

Many Medicaid members find the process of collecting and providing the necessary documentation cumbersome or difficult and often let their coverage to lapse. Therefore, Medicaid plans could unnecessarily lose thousands of patients annually. For Medicaid plans with already thin margins, such losses can jeopardize their viability. Additionally, overall health outcomes in the served community

suffer, as lapsed patients miss out on the benefits of continuity of care and seek treatment only when a serious health condition emerges.

This remainder of this document shows how our client – a managed care plan in Massachusetts – was able to improve their Medicaid re-determination or renewal rates by using Predict Health's analytics solution, predictive power, and engagement to target and engage patients most likely to have difficulty renewing their coverage.

The Challenges Faced

Our Client had partnered with 17 federally qualified health centers (FQHCs) geographically dispersed across Massachusetts, serving a diverse population with a high concentration of Medicaid patients. While all of our Client's FQHCs primarily serve low-income, underserved, and an increasingly diverse populations, each region of the state where these FQHCs are located has distinct demographic characteristics that have unique physical health, behavioral health, social and functional needs.
The Client noticed the problem of member retention, mainly losing Medicaid recipients unable to complete their annual redetermination. This translated into significant revenue loss each year as well as their inability to meet a corporate strategic goal of member growth. The figure below shows the redetermination rate for one measurement period, the second half of 2018, using ~18K members flagged for redetermination out of the ~100K total membership.

> *"To grow, we needed a way to improve our retention. Essentially we needed an effective way to prioritize, reach our members at the right time and support them in the right way."*

Prior to working with Predict Health, CLIENT FQHCs would typically contact those members who were found to require redetermination via a phone call, carried out in no particular order or schedule. This "one size fits all" approach did not account for differences in the level of support and help required across the population of members facing redetermination– some required minimal help while others needed extensive handholding throughout the process. Clearly, a more targeted approach was required if the Client were to improve on these retention rates using its limited member outreach resources.

The Opportunity

At Predict Health, we saw an opportunity to help the Client increase its member retention rate. In fact, our data and analytics (centered on Machine Learning models) driven member acquisition and retention platform is designed precisely for such tasks.

Our acquisition and retention platform is built on our Whole Person database, which contains several years of longitudinal data – scrubbed, refreshed and ready for analysis – on 260M+ identified US adults, containing over 1,300 non-clinical data points per person, many of which contribute to understanding their personas, their preferences, their social determinants for health, their health access and equity needs including their mobility/transportation constraints. When combined with basic member data including previous engagement information, we can identify/predict a variety of outcomes for an individual member such as

- **Business outcomes:** for example, the likelihood of re-enrollment, missing the enrollment window, changing providers, using in-network or out-of-network providers and many more

- **Clinical outcomes:** such as the likelihood of missing appointments, following through on treatment plans, social factors causing stress that affect treatment, re-admittance, etc.

Using this type of data-driven approach to delivering member care and support targeted to individuals, our customers increase acquisition and retention, and identify specific actions that can improve outcomes.

The Methodology

The Client turned to Predict Health for a data-driven approach to precisely identify those members who required high-touch support during the re-determination process.

As with every statistical study, the efficacy of a procedure or treatment can be measured by comparing the differences in outcome between a control (or untreated[4]) group and a treatment group. For our study, which involved a statistical comparison between a targeted outreach towards those members most likely to need help in the redetermination process and a baseline cohort subjected to the existing outreach, a natural control group arose from nine of the Client's FQHCs that chose not to participate.

These nine FQHCs continued their normal outreach practice. That is, the patients requiring redetermination in these nine FQHCs were "treated" exactly as before – a reminder call and no follow-up. The other eight FHQCs participated in the study.

The Client identified a cohort of 7,709 members spread across all 17 FQHCs eligible for redetermination during the period 9/10/2019 to 10/31/2019. Predict Health matched 91.7 percent of the 7,709 members to its proprietary database of member buying behaviors and profiles. Predict Health scored the matched members and imputed scores (using "look alike" analysis) for the unmatched members to score all 7,709 members across several factors – both individual and social – to identify a cohort that was most likely to benefit from outreach. This scored list was made available to all 17 FQHCs, with the understanding that the treatment group would be those belonging to the 8 FQHCs that chose to participate in the study with the rest in the control group.

Establishing Equivalence Between Control and Treatment Groups

The selection of treatment and control groups for this study were based on the decisions of individual health centers to opt in or out of the treatment group. Given that inclusion in the treatment or control groups was not randomly assigned, steps were taken at the outset of the study to determine if there were statistically significant differences between the groups in baseline redetermination rates, which might indicate selection bias in group assignments. Predict Health applied two approaches to test comparability of the two groups.

Quantitatively testing for comparability

The client provided aggregate data indicating that the two groups were, in fact, similar in pre-test/baseline rates. Table 1, below, shows the redetermination rates from December 2018 for each group. Despite the large sample sizes (n > 2000 for each group), chi-square test for equality of proportions indicated that these rates are not significantly different from each other (p >0.15).

Table 1

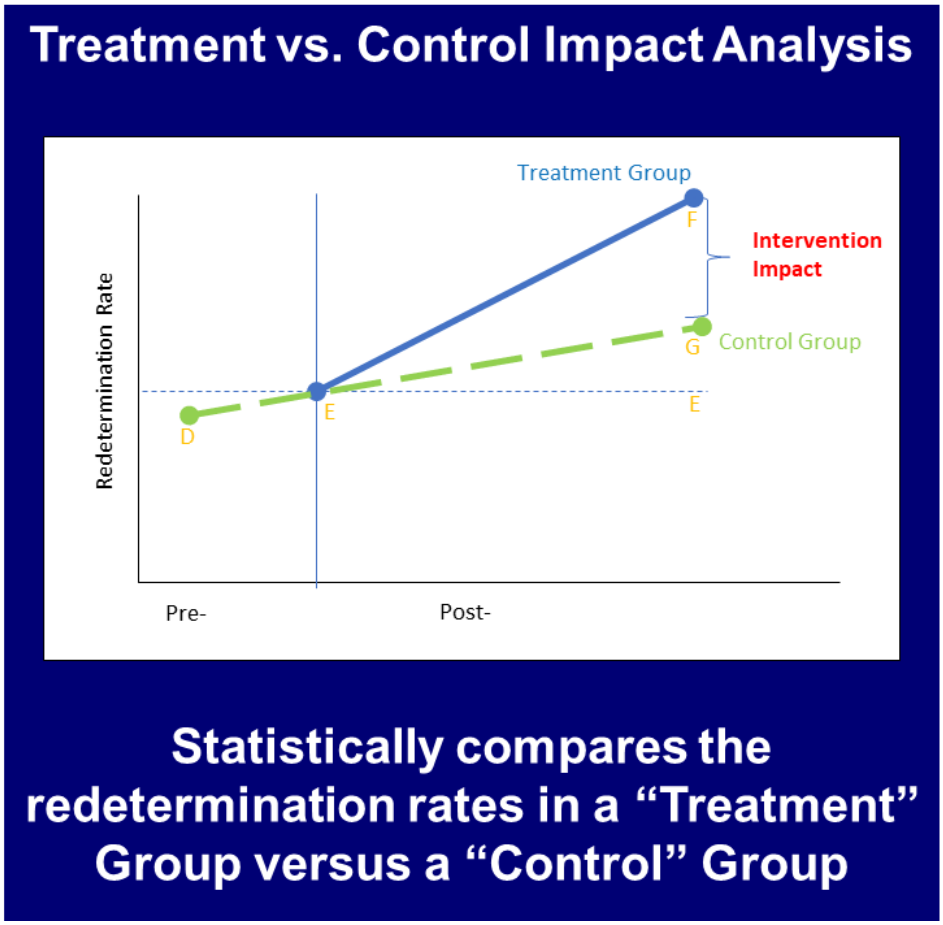
	All	Treatment Group (Health Centers that opted to participate in the text/SMS and Call Reminders interventions)	Control Group (Health Centers that opted to not participate in the text/SMS and Call Reminders interventions)
Redetermination Rate - Dec 2018	70.1%	69.4%	71.1%

Interestingly, although the baseline rates are not significantly different, it should be noted that the baseline redetermination rate for the control group was actually slightly higher than that of the treatment group.

Qualitatively testing for comparability

Furthermore, Predict Health sought to develop a qualitative understanding of the reasons health centers opted out of the test in order to determine whether there may have been a systematic bias in opting out of the treatment and control groups that was not reflected statistically in the redetermination rates. Based on its qualitative analysis, Predict Health determined that there was no selection bias, or relevant systematic or structural issues that led to a health center's choice to participate in the test. Specifically, three of the health centers that opted out, did so because the person in charge of making the decision regarding participation was on vacation during our opt-in window. Two other health centers who opted out, had a policy that required all such decisions about member outreach to be approved by their Member Board/Committee, and the upcoming Member Board/Committee meetings at those health centers were not scheduled in time for Predict's opt-in deadline. One health center was required to approve every message/text sent to their members but did not have the capacity or bandwidth to make the approvals in time and at our required frequency and as a result opted out. One health center opted out because of their relationship and governance structure with our client. We did not receive opt-out reasons from two small health centers. In total we felt that these reasons were not systematic and that they did not constitute selection bias in the creation and use of the treatment and control groups.

Based on these, Predict Health concluded that the pre- samples for the treatment and the control groups were comparable.



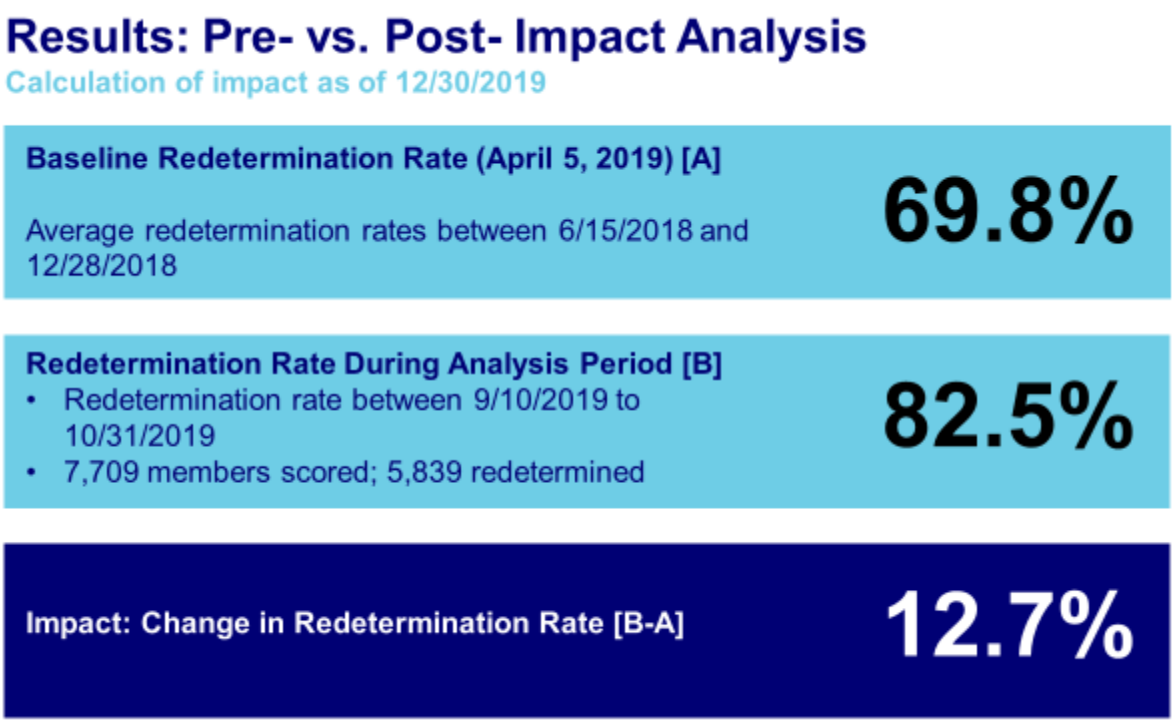
There were two further sub-studies using the scored cohort from the treatment group, to evaluate the **impact of different outreach channels** – text/SMS and voice calls – used to contact the members with a reminder for pursuing redetermination:

- The **impact of text/SMS**, obviously for those with mobile phones, evaluated the response of cases where the text/SMS was received versus those where the text/SMS was not delivered, or the mobile phone was unreachable.

- The **impact of voice calls**, to evaluate any differences between cases where the call completed versus those that didn't.

Results

The table below shows a 12.7 percent increase in member redetermination rates owing to the impact of prioritization, systematic reminders, and targeted outreach. This amounted to an 18.2 percent increase in the Client's redetermination rates.



Channel Impact

Predict Health analyzed the impact of individual outreach channels and estimated the impact on redetermination rate using text/SMS based reminders to be 3.7 percent (controlling for all other factors) Predict Health estimated the impact on the redetermination rate using voice calls/messages as reminders to be 6.5 percent (controlling for all other factors).

We note the higher impact of voice calls/mails versus text/SMS and attribute it to several soft factors, such as the ability of targets to better focus on the reminder when listening at a time of their choosing. Overall, the study clearly shows that the improvement of 12.7% in the redetermination rate was the result of targeted outreach to those members predicted by the Predict Health algorithms as most likely to respond positively to additional help and aligning the outreach resources to the needs of the member. This data driven targeting approach personalized to member needs and "buying" needs can easily be applied to other markets and populations nationwide.

Impact of Text/SMS Reminders

Calculation of impact as of 12/30/2019

Redetermination rate with Texting/SMS completed [F]
Treatment group was for members where messages were sent and received (Text Sent, Text RCVD, Cancel SMS, Confirm SMS and Resched SMS messages)
Treatment Group had 1,940 members

84.7%

Redetermination rate for same HCs with no Text/SMS [G]

Control group was where text messages were undelivered
Control Group had 506 members

81.0%

Impact: Change in Redetermination Rate due to Text/SMS [F-G]

3.7%

Assessing whether the Text/SMS lift is statistically significant

To test the statistical significance of the difference in the redetermination rates between treatment and control groups for the Text/SMS intervention, we employed the chi-square test for equality of proportions. Table 2 below shows the results:

Table 2

	Intervention: Text/SMS
Percent Difference	3.7%
Chi-square test p-value	0.046*

Note: * = significance at .05 alpha level

Based on these results, we concluded that the lift in redetermination rates as a result of the Text/SMS intervention was statistically significant ($p<.05$).

Impact of Call Reminders

Calculation of impact as of 12/30/2019

Redetermination rate with Voice Calls completed [F]
Treatment group was for members where calls were made and received (Ans Machine, Cancel, Hang Up, No Answer, Transfer, No Response)
Treatment Group had 140 members

88.6%

Redetermination rate for same HCs with no completed calls [G]
Control group was where calls did not reach member – calls were undelivered or we did not have contact information
Control Group had 535 members

82.1%

Impact: Change in Redetermination Rate due to Voice Calls [F-G]

6.5%

Assessing whether the Voice Call Reminders lift is statistically significant

To test the statistical significance of the difference in the redetermination rates between treatment and control groups for the Call Reminder intervention, we employed the chi-square test for equality of proportions and a z-test. Table 3 below shows the results:

Table 3

	Intervention: Call Reminders
Percent Difference	6.5%
Chi-square test p-value	0.065
z-test p-value	0.039*

Note: * = significance at .05 alpha level

These results show the effect of Call Reminders is close to significant at conventional levels using the chi-square test and was significant using a z-test with estimated standard errors ($p<.05$). Given the small sample size and low statistical power in this comparison, a p-value falling slightly short of significance at the .05 alpha level in the chi-squares test is not surprising.

Taken together, the analysis gives us confidence that the interventions produced significant and substantively meaningful effects on redetermination rates.

For more information, please contact:
Predict Health, Inc.
703-297-4587
info@predicthealth.com