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Retention Yields from Medicare Match. A Retrospective Cohort Study.

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Introduction

A small change in customer retention can have a significant impact on a pharmacy's profitability. The process of acquiring new patients through various marketing tactics is often more costly than the efforts needed to retain existing customers. In terms of profitability, it has been shown to take at least 4 purchases from a new patient in order to break even from the costs spent to acquire. Medicare patients are often considered the most valuable customers for a pharmacy to retain. They are the highest utilizers of prescription drug services and fill more than twice the number of prescriptions on average[1].

Reducing churn has a significant impact on the lifetime value of patients as customers[2]. Furthermore, studies have shown that cost is the foremost predictor in prescription abandonment. Thus, retaining patients due to a value-added service of reducing out-of-pocket costs would likely increase adherence and drive additional prescription transactions from those patients[3].

Medicare Match's Medicare Part D plan comparison platform is designed to help a pharmacy achieve four outcomes as follows:

1. Save patients money on their prescription drug costs
2. Win back patients who have left the pharmacy
3. Acquire new patients as customers
4. Increase the retention of existing customers

[1] Edwards, T. (2014, June 01). Understanding Customer Attraction & Retention. Retrieved April 16, 2017, from http://h2o15.com//Attracting-RetainingCustomers-TheWaterGroup-0614.pdf
[2] Edwards, T.
[3] Bucham, Tabitha. (2016, October 7). A Data-Driven Approach to Customer Retention. Retrieved April 16, 2017, from http://www.drugstorenews.com/article/data-driven-approach-customer-retention

The last of these listed outcomes – retention – was speculated to be the most significant, but also the most challenging to measure. In this case, a study must predict how many patients would have otherwise been lost if they had not received a plan comparison via Medicare Match.

The primary endpoint for this study was to determine if Medicare Match has a statistically significant impact on increasing customer retention in a pharmacy chain using Medicare Match at 92 of their locations. The secondary endpoint was to measure the projected amount of additional revenue gained from the increased retention.

Methods

Study Design

Through the counsel of statisticians, it was determined that the best structure to quantify this impact would be a retrospective cohort study design.

Measurement Periods

The study examined 3 measurement periods as follows:

Pre-Open Enrollment Period:
April 1st, 2016 – October 14th, 2016 (5.5 months)

Open-Enrollment Period:
October 15th, 2016 – December 7th, 2016 (53 days)

Retention Period:
February 1st, 2017 – April 1st (3 months)

The **Pre-Open Enrollment** was the 5.5 month measurement period used to identify patients who were already filling prescriptions at their pharmacy prior to Open Enrollment. Patients who filled at least 1 prescription were presumed to be active. Medicare Match utilized a database that was populated by prescription data feeds received from the customer's Pharmacy System.

The **Open-Enrollment Period** was the measurement timeframe used to identify which patients had a plan comparison event. This period was significant for plan comparisons, since it is when the vast majority of Medicare patients are allowed to change Medicare plans. Medicare Match utilized a database cluster dedicated to storing historical data on events that occurred while using the Medicare Match platform. This included records that indicated which patients received a plan comparison.

The **Retention Period** was the measurement time frame used to identify whether the patient remained at the pharmacy into the next year (2017). Prescription dispensing events that occurred in January were excluded as evidence of retention, since it was speculated that most patients would become aware of their plan's pharmacy-network changes during the first month of the year. Pharmacy network changes can have a considerable impact on patients' decision to stay with a pharmacy. As a result of these assumptions, the starting date of this measurement period was chosen to be February 1st.

Inclusion Criteria for both groups were as follows:

1. Medicare Insured and at 65 years of age during Open Enrollment Period
2. At least 1 prescription event during the Pre-Open Enrollment Period

Exclusion criteria for both groups were as follows:

1. **Age under 65 years of age**
   This was to ensure non-Medicare patients were not included in either study group
2. **No prescription events during the Pre-Open Enrollment Period**
   These patients would have been already considered as non-active customers
3. **New patients**
   These were patients who were new to the pharmacy during the Open Enrollment period.

It was essential to stratify patients into the control group that matched characteristics of the intervention group (those who received plan comparisons). Otherwise, selection bias could have favored a particular outcome.

The following characteristics were chosen to identify similar patients for the control group:

1. Age
2. Gender
3. Unique number of dates visited during the Pre-Open Enrollment Period

Patients who met the inclusion and exclusion criteria from the Intervention Group were paired with similar patients from the same store who did not receive a plan comparison to construct the control group. The acceptable variances are listed in Table 1.

Parameter	Characteristic	Allowed variance
Matching Variance	Age	± 2 years
	Gender	None
	Number of Dates Visited	± 2

Tabel 1

For each patient in the intervention group, a random patient was selected to match the patient's characteristics. Available control candidates were randomly selected by a computer program using the **Mersenne Twister** algorithm. Intervention patients were excluded if they did not have a viable match for a control.

3357 (n) Intervention Group	3677 (n) Seniors with Intervention
3357 (n) Control Group	320 intervention patients with no control group candidate

A Chi Square test was used to ensure the two groups did not have statistically significant variations in gender. An independent **two-sample t-test** was used for the same purpose in respect to the number of visits and age variances.

The primary endpoint was determined by proportion of patients still filling prescriptions during the Retention Measurement period. A Chi Square analysis was used to assess the statistically significance in these results.

The secondary endpoint, estimated additional revenue, was determined with the average year-to-date[4] revenue of each retained patient from the intervention group. This average revenue-per-patient was multiplied by the total number of additional retained patients as compared to the control group (see Figure 1).

$$x \approx \overline{R} \cdot [\, i - c \,]$$

Let R = Patient revenues array
Let i = (n) intervention group retained
Let c = (n) control group retained
Let x = Extra Retention Revenue

Figure 1

[4]January 1st to end of Retention measurement period

The revenue per dispensed prescription was determined by fields within the pharmacy system's data feed, in which copay and insurance pay amounts were combined to produce a full price (see Figure 2). If the copay and insurance amounts were not provided, the full price of each prescription was designated by an estimated MAC (Maximum Allowable Cost) price based on each patients' current plan. If there was insufficient data to determine a patient's specific plan, the average MAC price was used for plans matching the same BIN and PCN number. Projected revenue was extrapolated for the rest of the plan year with the assumption of everything else held constant.

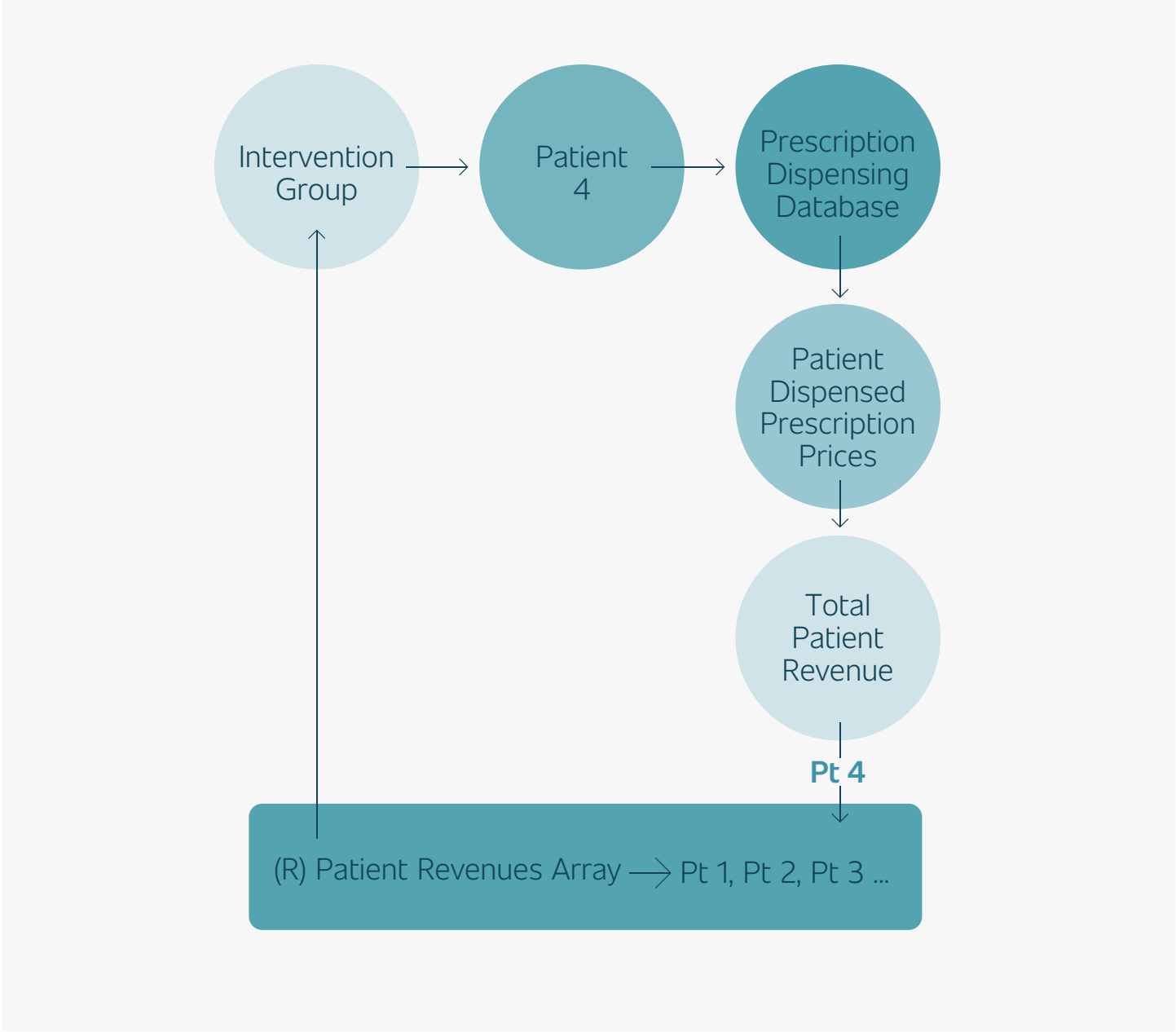

Figure 2

Results

Baseline Characteristics

Parameter	Statistic	Overall	Control Group	Intervention Group
Matching Variance	N	6714	3357	3357
	Mean		75.46	75.48
	Std		7.67	7.69
	T-value	0.06		
	P-value	0.96		
Visits	N	6714	3357	3357
	Mean		9.64	9.74
	Std		6.15	6.11
	T-value	0.66		
	P-value	0.51		
Gender	N		3357	3357
	N males		1389	1389
	N females		1968	1968
	DF	1		
	Chi-value	0		
	P-value	1		

Primary Endpoint: Increase Retention

Parameter	Statistic	Overall	Control Group	Intervention Group
Stores Retention	N	92		
	N	6714	3357	3357
	N Retained	5767	2704	3063
	Retention %		80.55%	91.24%
	Retention Inc.	10.69 percentage		
	N Additional	points		
	Retained	359		
	DF	1		
	Chi-value	158.44		
	P-value	$2.48x10^{-36}$		

Secondary Endpoint: Estimated Revenue from Additional Retention

Parameter	Statistic	Overall
Retention Revenue	N Additional Retained	359
	Q1 Avg Patient Revenue	$1,552
	Q1 Additional Retention Revenue	$557,048
	Extrapolated at 1-year	$2,228,190

Discussion

Age was identified as a confounding factor that could have influenced retention. Older patients are at a higher risk being transferred to a long term care facility or expiring. Whereas, younger patients tend to take less maintenance medications and can be misclassified as churned when non-maintenance prescriptions abate with no further refill activity. Furthermore, age is correlated with behavioral biases of various generations, such as the behavioral pattern to shop at multiple pharmacies in order to obtain the least expensive price. Similarly, gender was identified as a possible confounding factor.

The social dynamics of different genders could have impacted the level of trust to act upon advice received from a pharmacy staff member. Lastly, higher visitation frequency was a confounding factor that appeared highly correlated with retention. This may be explained by patients establishing better relationships with the pharmacy through the cadence of frequent visits. Overall, the patient groups were balanced with no statistically significant differences for these selected parameters.

The results for the primary endpoint of increasing retention proved to be both substantial and statistically significant ($p<0.0001$). The absolute-risk of churn was 19.45% in the control group and 8.76% in the intervention group. The absolute risk reduction of patient churn was 10.69 percentage points. This resulted in a number needed to treat of 9.35, indicating that 9 patients needed to be consulted with Medicare Match in order to prevent 1 from churning.

Other Limitations:

320 patients were excluded from the intervention group, due to the lack of a matching control group candidate. This likely lead to a reduction in estimated revenue, as the total number of patients retained were calculated from this adjusted intervention group.

It's likely that patients filling at one pharmacy chain location will circumstantially fill across multiple locations of the same chain, causing marginal differences in results surrounding average patient retention and refill frequency.

If pharmacy chain stores are located in Northern states prone to wintery climates throughout half of the year, extreme weather will yield a large Snowbird effect among seniors. Meaning, numerous seniors will leave for warmer climates for several months throughout the year, but will return as loyal customers thereafter. Data in this study does not specify the reasons behind patients' gaps in refill frequency at this time. This effect may cause average patient retention to artificially shrink.

Conclusion

4,170 patients received a Medicare Part D plan comparison by a pharmacy chain using Medicare Match in 92 of their locations. Retention in the intervention group increased by 10.69 percentage points (91.24% vs. 80.55%; $p<0.0001$) as compared to baseline with statistically significant results. With at least 359 additional patients retained, approximately $557,048 in additional revenue was yielded during the 1st quarter of the calendar year with an annual-run rate of $2,228,190.