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Churn Modeling
Overview, Learnings, and Best Practices

October, 2017

Agenda

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Introduction

- Why churn modeling?

Churn Modeling

- Overview

Case Study

- Test, Measure, Adjust, Repeat

Reporting Insights

- Aggregated report findings

Best Practices & Next Steps

Holistic Approach to the Audience Model

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Acquire:

Maximize start value/volume

Retain

Minimize churn

Renew:

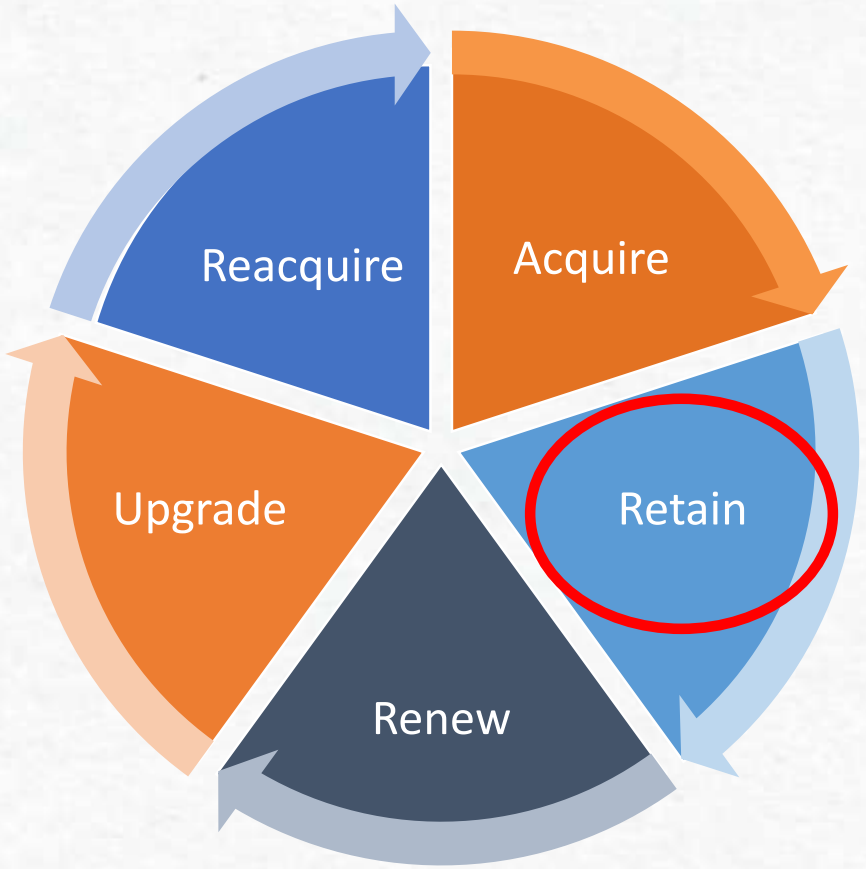
Leverage willingness-to-pay

Upgrade:

Grow customer engagement

Reacquire:

Target offers based on history



Churn Modeling

Why Churn Modeling?

Mather historically focused on renewal pricing

- Data-driven method of optimizing renewal rates at the subscriber level
- Has effect of reducing pricing-related churn vs. traditional flat increases, however:

There still exists a churn problem

- Stops analyses showed majority of churn not related to price
- Validated through A/B testing

How can Mather help our clients reduce non-pricing related churn?

- Develop a model using existing subscriber data to estimate churn propensities at the subscriber level
- Markets can then segment market based on churn risk and take preemptive action to save at-risk subs

Art & Science of Churn Modeling and Application

Knowing who is likely to churn is the first step

What to do about it? This is the key question for management

Several case studies will be shared today

Common characteristics of successful initiatives driven by churn scores:

- Targeted to individual subscribers
- Measured accurately (A/B tests, metrics reporting)
- Earlier intervention than typical

Churn Model Objective & Specification

Objective

- The objective of churn modeling is to apply churn probabilities to individual print subscribers by identifying characteristics and attributes associated with a specific stoppage event

Specification

- To estimate the churn probabilities, we use a logit model, which is a discrete choice model used to predict a binary outcome
- A logit model gives us the ability to estimate the probability of a certain event occurring given a set of explanatory variables

Data Included

- Transactional (billing events, stops, etc.)
- Complaint (complaint date, type, description)
- Digital engagement (page views, sections, visits, etc.)
- Newsletter (newsletter counts, newsletter category, start date)

Churn Model Inputs

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Variables Included

- Subscriber Characteristics (FOD, rate, term length, EZpay, channel)
- Complaint History (complaint type)
- Digital Engagement (page views, section breadth, etc.)
- Deviation Metrics (tracks changes in behavior over time)
  - Examples include:
    - Deviating from historical complaint patterns
    - Upgrading or downgrading FOD
    - Switching to or from autopay (EZpay)
    - Increasing or decreasing term length
- Newsletter Information
- Stops in trailing 28 days
- Starts in trailing quarter
- Number of complaints vs. zip average

Full Feature List

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Autopay Switch

Term Switch

FOD Switch

Newsletter Count

Digital Engagement Score

Newsletter Type

Online Section

Stops in trailing 28 days

Starts in trailing quarter

Individual complaint rate vs. zip average

Sub Region

Weekly Price

Increase Amount

EZpay

Term Length

Frequency of Delivery

Start Source

Tenure Days (squared & cubed)

Income

Age

Education

Complaint Type

Complaint Rate Deviation

Selected Churn Output

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Positive coefficient indicates contribution to higher churn risk

Negative coefficient indicates contribution to lower churn risk

Base Variable	Variable Description	Variable	failure	Restricted failure	Unrestricted failure
	Weekly Price	wp	wp	-0.0235***	-0.0281***
	Increase Amount	wpsp	wpsp	0.000469	0.00695***
nonEZpay	Ezpay	_IEZpay_1	EZpay==1	-0.454***	-0.386***
Vol	DM	_Isource_2	source==DM	0.591***	0.502***
	EVENTS	_Isource_3	source==EVENTS	0.629***	0.565***
	FSI	_Isource_4	source==FSI	0.551***	0.465***
	OTM	_Isource_5	source==OTM	0.472***	0.368***
	OTHER	_Isource_6	source==Other	0.968***	0.817***
	TV	_Isource_7	source==TV	0.782***	0.706***
	WEB	_Isource_8	source==WEB	0.441***	0.436***
	WEB_N	_Isource_9	source==WEB_	2.308***	1.943***
	WEB_Other	_Isource_10	source==WEB_	1.313***	1.281***
	WEB_PI	_Isource_11	source==WEB_	2.024***	1.730***
	WEB_RI	_Isource_12	source==WEB_	2.051***	1.639***
	WEB_SOCIAL	_Isource_13	source==WEB_	2.680***	2.408***
	Failures in the trailing 28	fail_last_28_1	fail_last_28_1		-0.000621***
	Starts in the trailing quarter	starts_last_q	starts_last_q		0.0000110***
	Individual avg Comps versus Zip avg	sub_zip_comp_28_2	sub_zip_comp_28_2		0.000481***
Dig Eng. Score = 1	Dig Eng. Score = 2	use_bucket==2	use_bucket==2	0.0435*	-0.264***
	Dig Eng. Score = 3	use_bucket==3	use_bucket==3	-0.254***	-0.316***
	Dig Eng. Score = 4	use_bucket==4	use_bucket==4	-0.302***	-0.382***
	Dig Eng. Score = 5	use_bucket==5	use_bucket==5	-0.324***	-0.408***
	Dig Eng. Score = 6	use_bucket==6	use_bucket==6	-0.382***	-0.415***

Churn risk decreases with increased subscription rates

WEB start sources show highest churn risk, voluntary lowest

Greater number of starts in trailing quarter increases churn risk

Churn risk decreases with higher levels of digital engagement

*Unrestricted model includes full feature set

*Restricted model excludes largely insignificant variables from unrestricted model

Selected Churn Output

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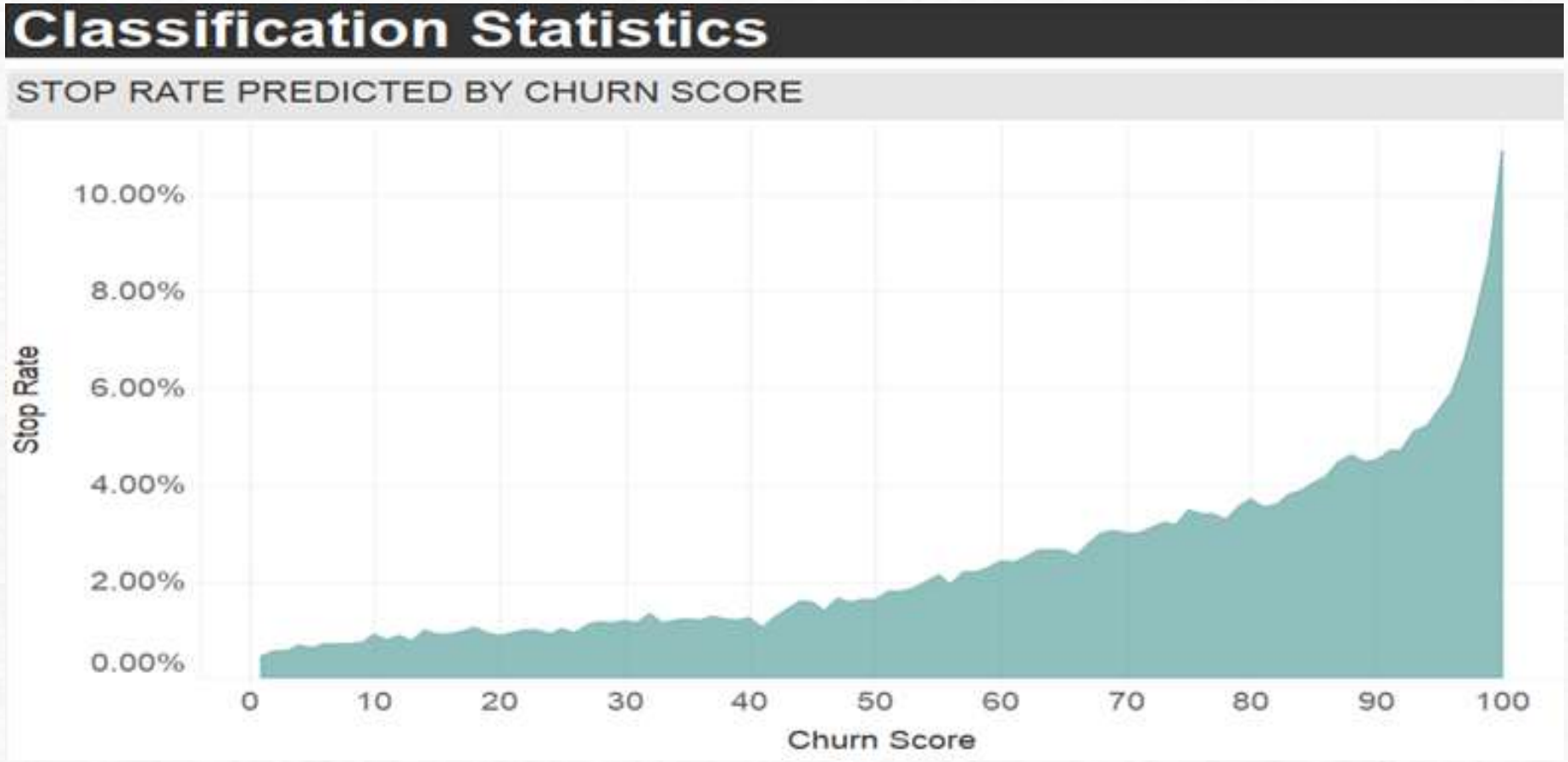
Actual stop rates are tracked along with predicted risk to validate model



Case Study

Learnings from Application

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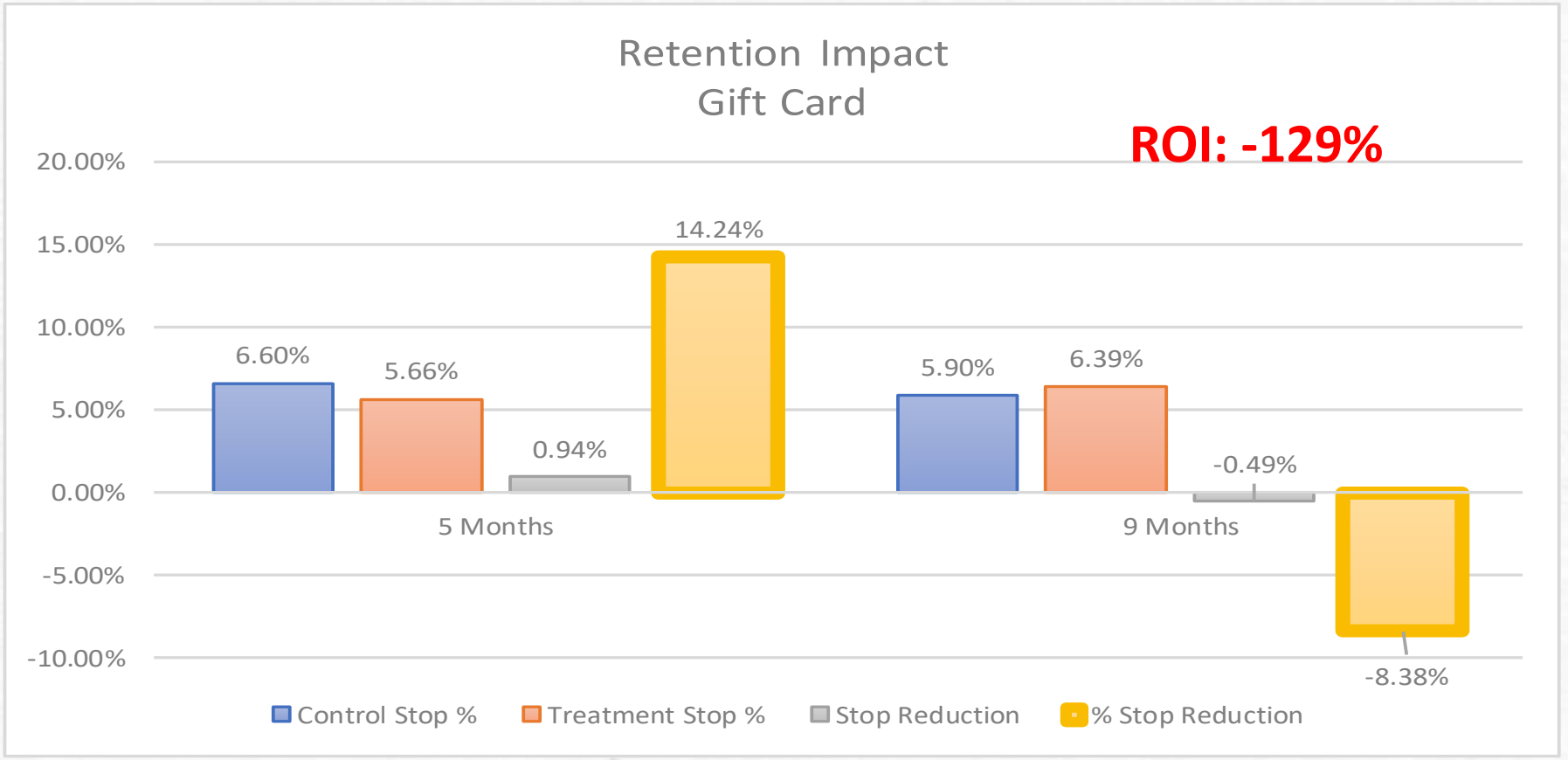
Test: $10 gift card issued upon receipt of payment (high churn/high CLV, $10.50/wk)

Result: Short lived positive impact on retention that disappears over several renewals

Insight: Gifts do little to reinforce brand value on core subscribers



Learnings from Application

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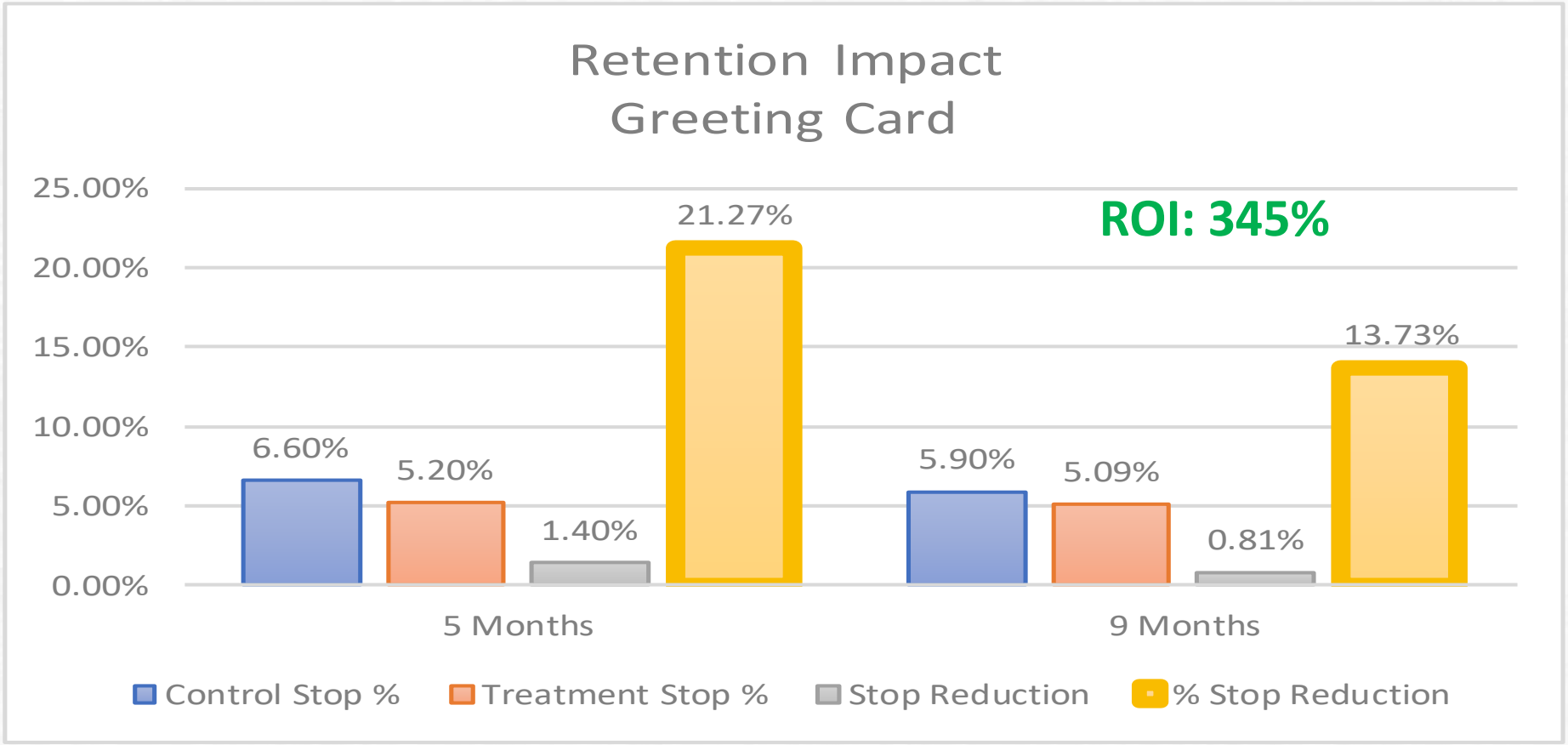
Test: Greeting card sent at time of expiration (high churn/high CLV - $10.50/wk)

Result: Short *and* long term positive retention impact

Insight: Messages that reinforce brand value have positive effects on core subs



Learnings from Application

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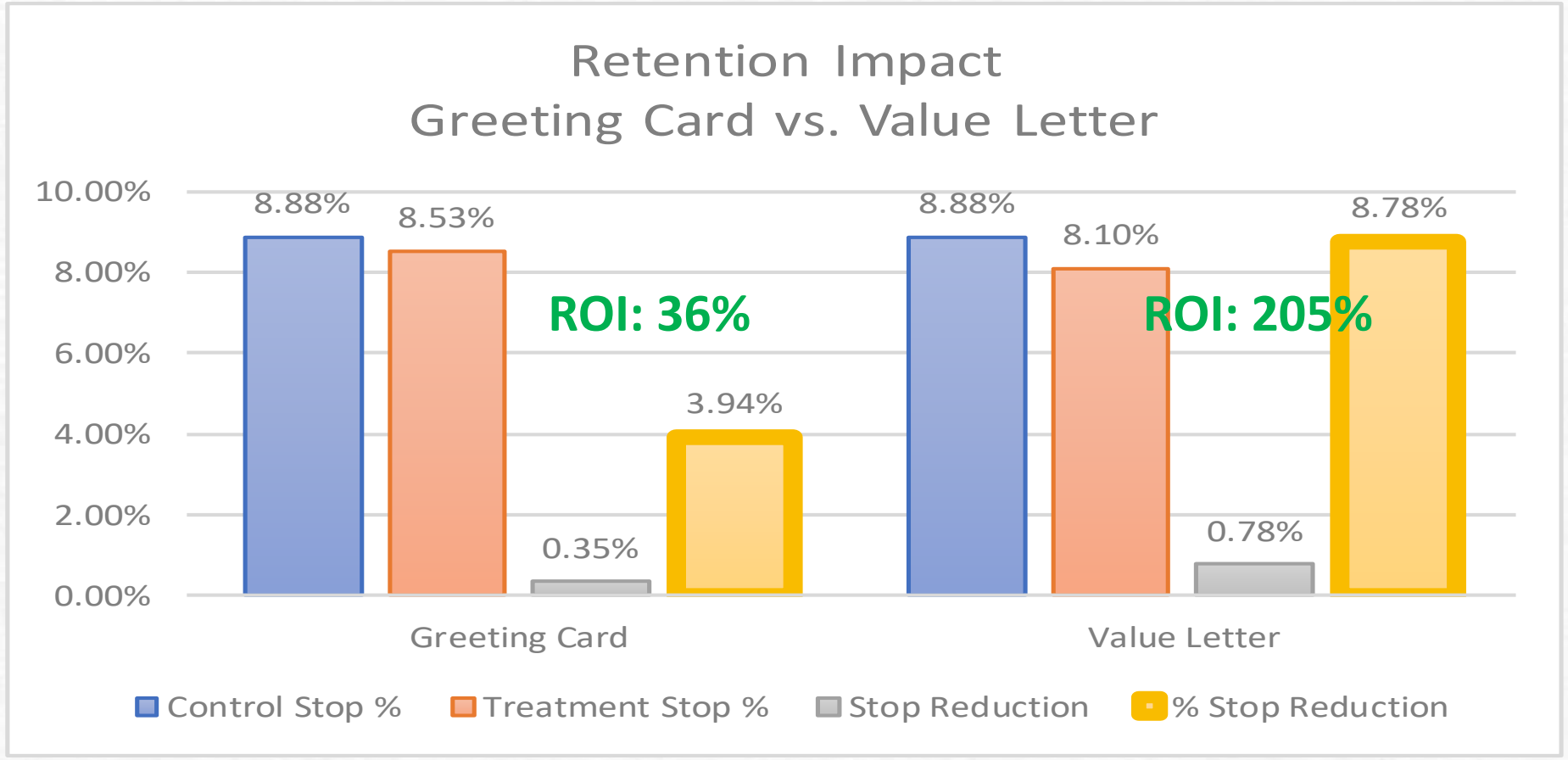
Test: Greeting card or value letter sent at expire (high churn/mid CLV - $3.75/wk)

Result: Both messages had positive retention impacts, value letter outperforms

Insight: Highlighting importance of journalism reinforces value to subscriber



Reporting Insights

Learnings from Application

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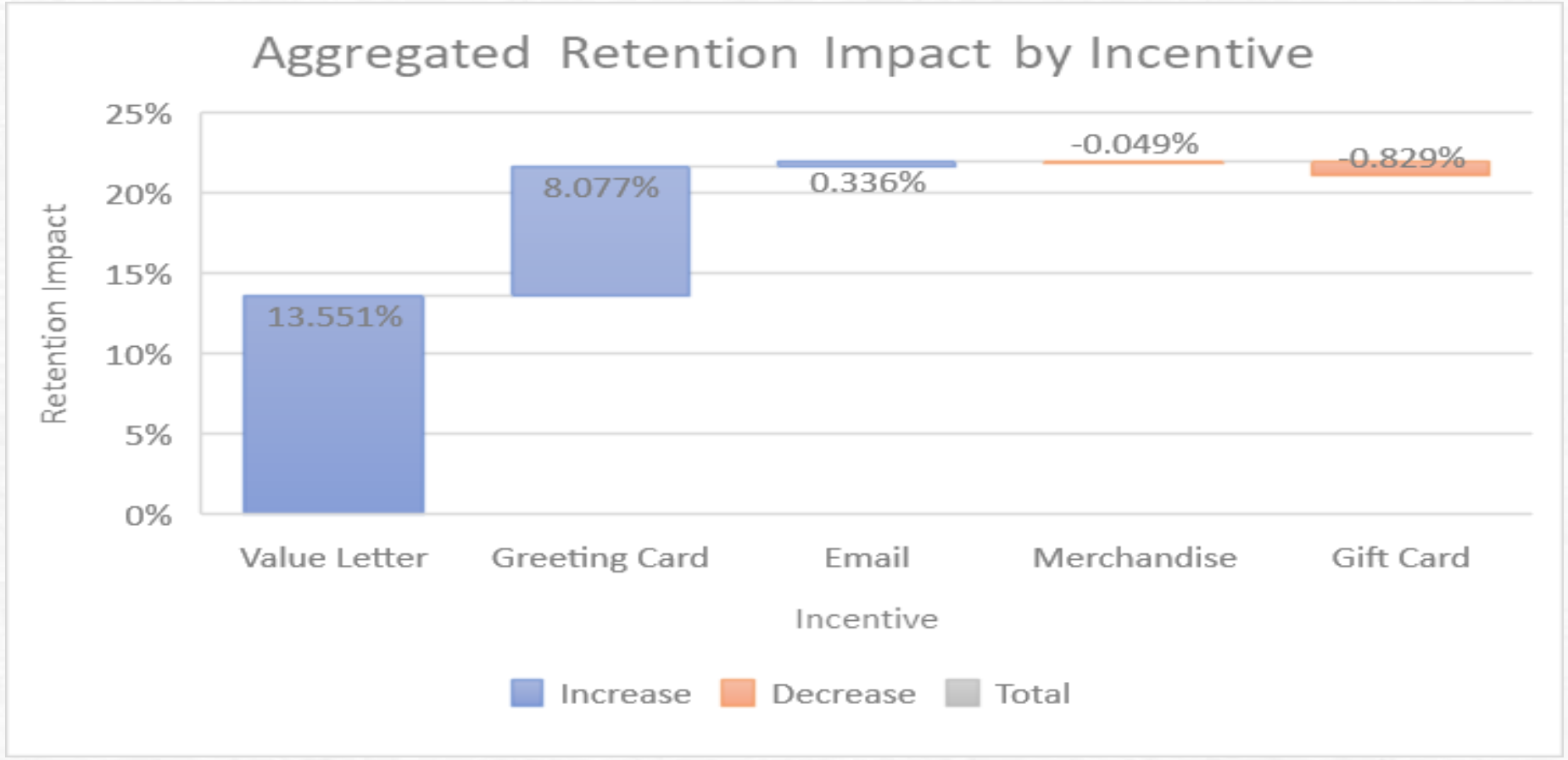
Results: Value letter and greeting cards showed the largest positive retention impact

Merchandise and gift cards did not improve retention

Insight: High Cost Incentives are not necessarily the most productive



Learnings from Application

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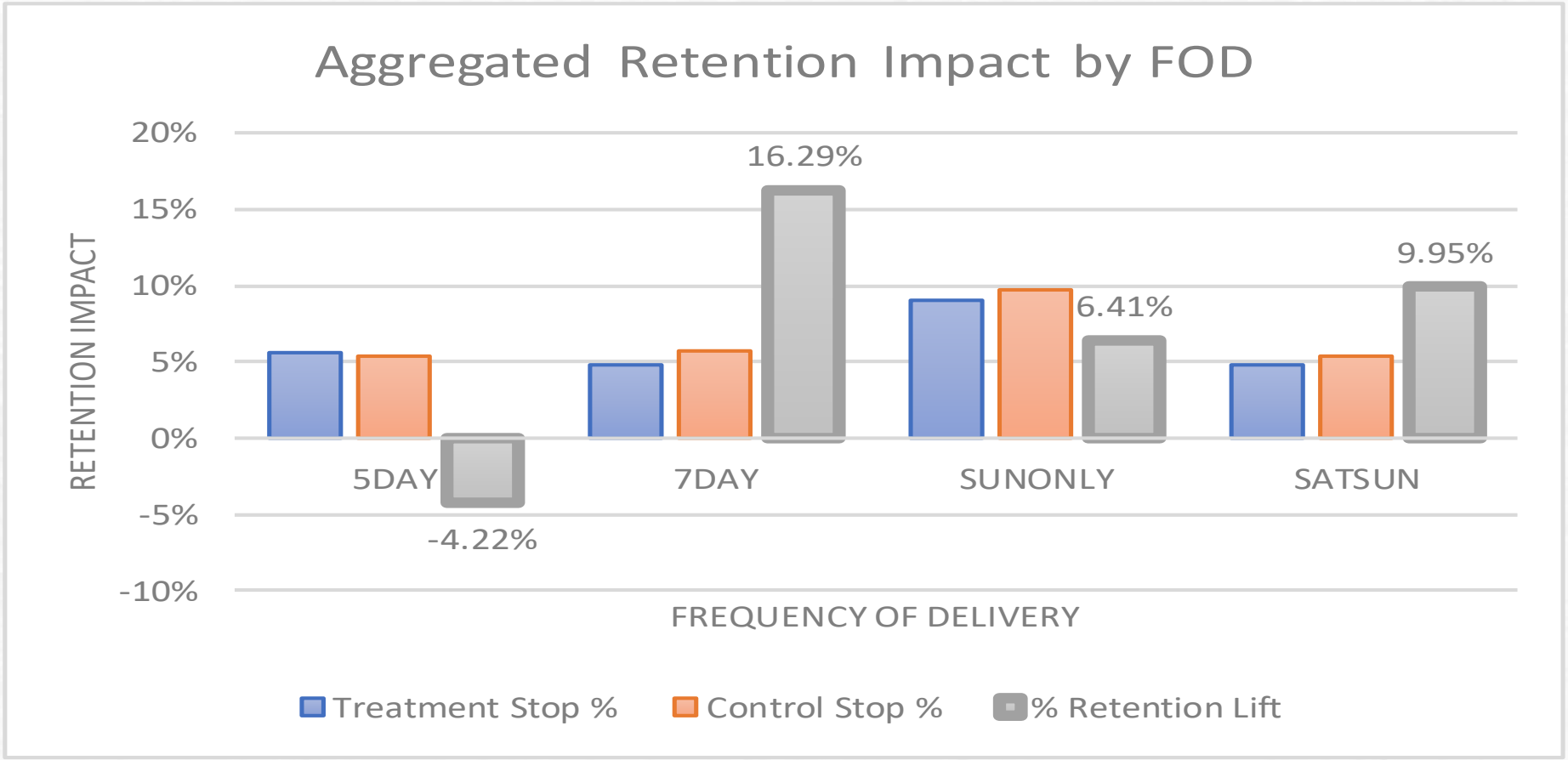
Results: 7DAY subscribers showed largest improvement in retention

Insight:Core subscribers respond well to treatment, business subscriptions do not



Learnings from Application

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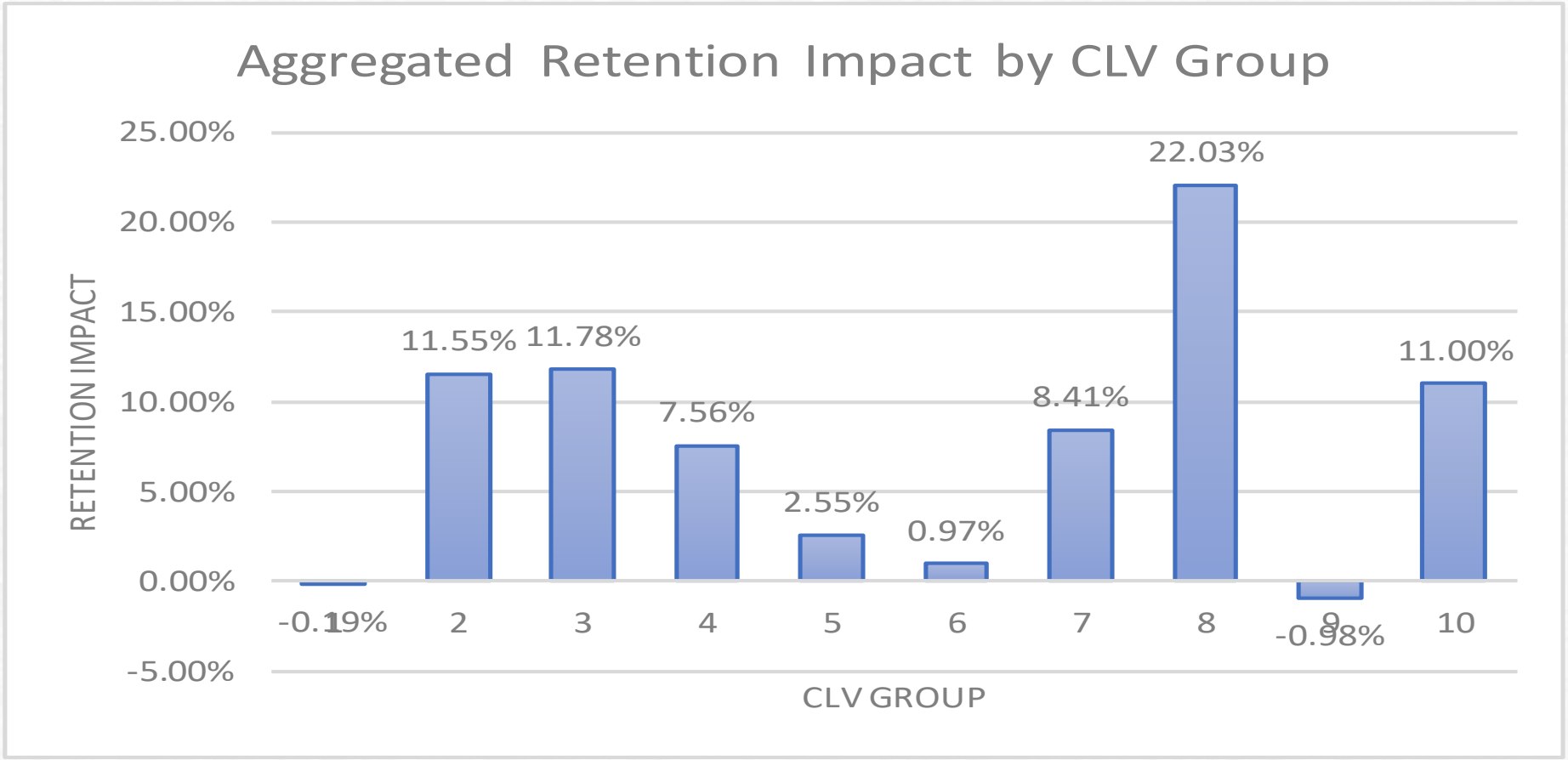
Results: Retention improvements observed over entire customer value spectrum

Insight: Worthwhile targeting entire value range, but avoid unprofitable subs



Learnings from Application

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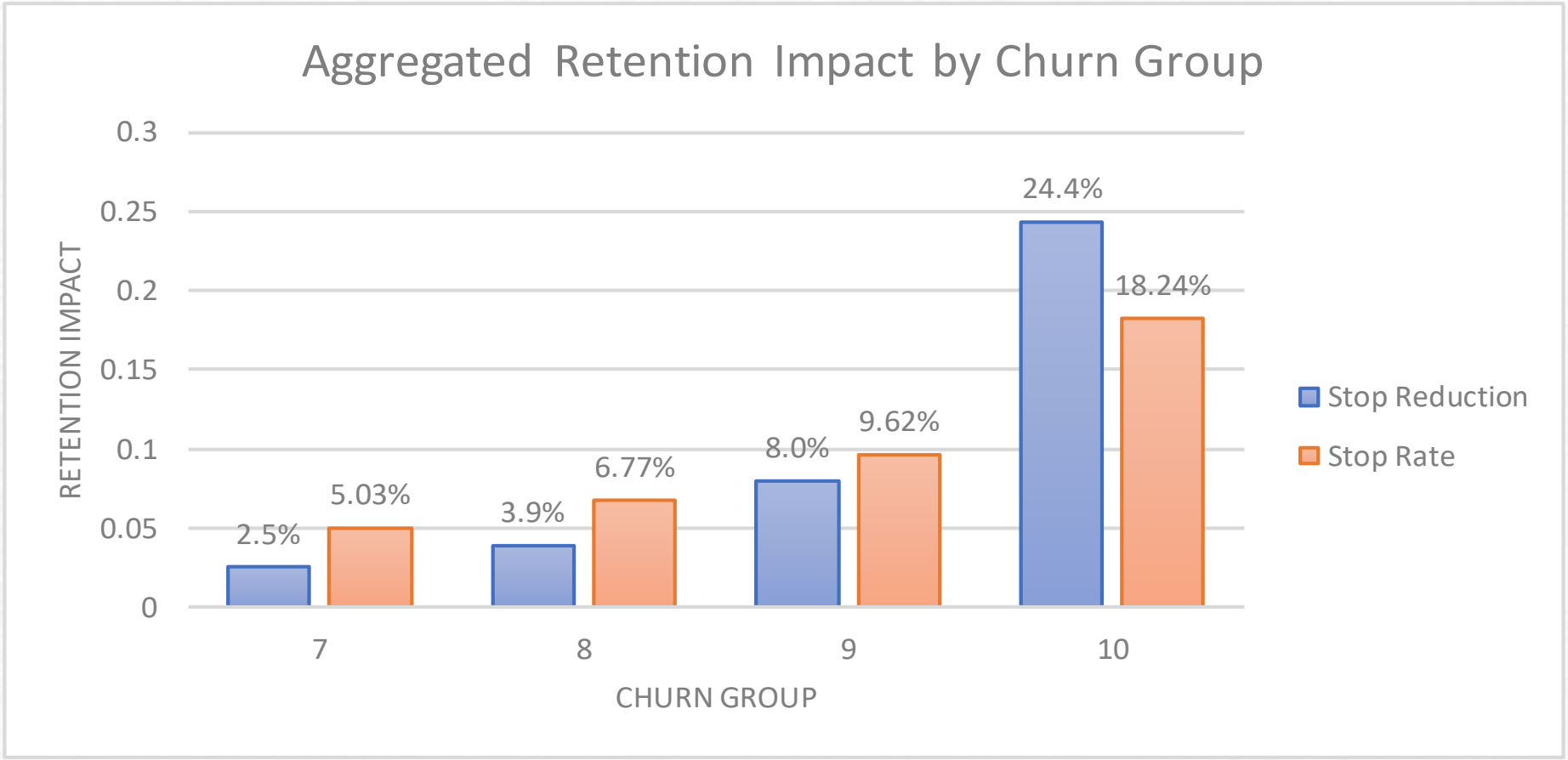
Results: Retention improvements positively correlated with churn risk

Insight: Highest ROIs observed on subs with highest estimated churn risk



Key Takeaways and Best Practices

Key Takeaways

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- Time and effort spent on creative pay dividends
- Consider CLV in churn decisions, if possible (ensure targets are profitable)
  - No point in spending resources to save unprofitable subscribers
- Work closely with advertisers to procure free or low cost incentives
- Leverage digital data (Listener) to more closely match communication with interests
  - E.g. heavy Atlanta Braves content consumer receives Braves tickets as incentive for renewal
- Emails are most cost effective options, so worth testing (mixed results)
  - Must be careful of oversaturation of emails
- Timing is crucial
  - Largest retention improvements with intervention around expiration
  - Studying impact of late grace intervention

Best Practices

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Greeting Card & Value Letter

- Highlight your competitive advantages (hyperlocal, award winning journalism, etc.)
- Spend time and effort on the creative (get input from editor/publisher, graphic design)

Merchandise

- Find ways to reduce cost per unit (working with advertisers, local businesses, etc.)
- Most effective on marginal (non-core) accounts, but rarely produce positive ROI

Email

- Cost effective option, but retention impacts have been mixed
- Must be mindful of oversaturation

Questions?