Quarterly Multi-Touch Attribution Sample Deck

Carat Analytics

Agenda

- Executive Summary
- Attribution Overview
- MTA Results
- Appendix
    - Technical Details
    - Definitions, Assumptions & Business Rules
    - Cost Calculations

Attribution Overview

Attribution Overview

Attribution:
A collection of techniques to assign credit to marketing stimulus for a particular customer activity (e.g. conversion)

In general, there are two approaches:

- MMM: Marketing Mix Models
  - "Top down" approach relying on aggregated data
  - Suitable for non-addressable advertising

- MTA: Multi-Touch Attribution
  - "Bottom up" which relies on individual marketing interactions
  - Suitable for addressable channels

This project focuses on MTA – Attribution of Credit Card booked account Conversions to Addressable Media Channels

Current Situation: Companies are often frustrated with Multi-Touch Attribution (MTA) solutions

Why is there so much confusion around *what it is* and *how it's performed*?

Not all MTA solutions can measure *offline* and *online* media, it may be single channel, or for a channel type; some *can't measure channel interactions*

Many are *not resolved at a person-level across channels* and *devices*, e.g., *cookie-based* with *no identity graph*, or they have *poor match rates*

Some say they are "models" but are *rules-based*. If an algorithm is used, *it's black box* and too difficult to understand results and how to *optimize marketing spend*

Due to focus on speed and lack of linked data, *some solutions focus on clicks* or *applications* rather than actual *sales conversions*

Some agencies have *acquired measurement companies*; they have a vested interest and are essentially *grading their own homework*

The Importance of Unified Measurement

"Marketers must use insights from performance data to better connect with customers, applying analytics to delve into segment differences, channel preferences, message resonance, and product offer interest. "

As this evolution accelerates, marketers look to analytically based measurement tools to:

Support data-driven decisions

Pivot from looking backward to forward planning

Bridge channel silos

Source: Forrester Wave™ : Q2 Marketing Measurement and Optimization Solutions; Q2 2018

Multi-Touch Attribution Comparison

Rules-Based Techniques

Last Interaction

All credit is given to the final touchpoint in the journey to conversion

First Interaction

All credit is given to the first touchpoint in the journey to conversion

Linear

Credit is assigned evenly to all touchpoints during the customers' journey to conversion

Time Decay

The percentage of credit given increases in amount as you trace the customer journey and near customer conversion

Position-Based

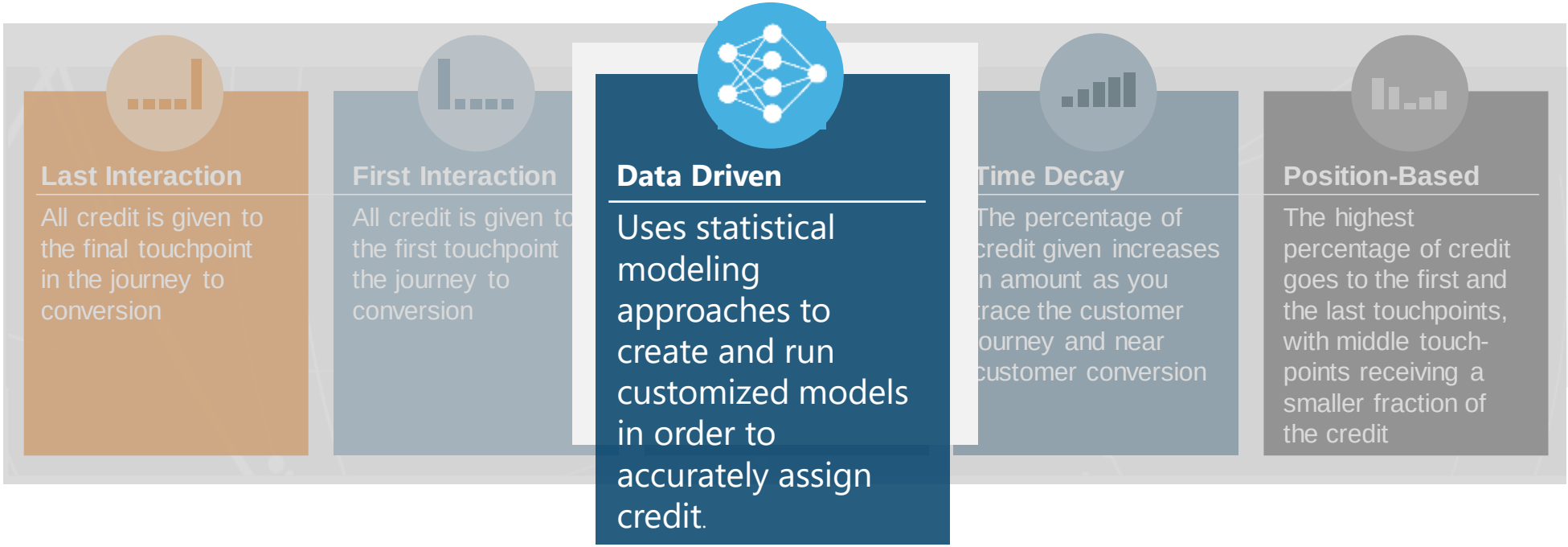
The highest percentage of credit goes to the first and the last touchpoints, with middle touch-points receiving a smaller fraction of the credit

Rules-based attribution approaches are in common use today, but are little more than a guess as these approaches can be easily gamed by marketers looking to take credit

http://www.mediaocean.com/digital-marketing-guide/attribution-models

Multi-Touch Attribution Comparison

Multi-Touch Attribution Models

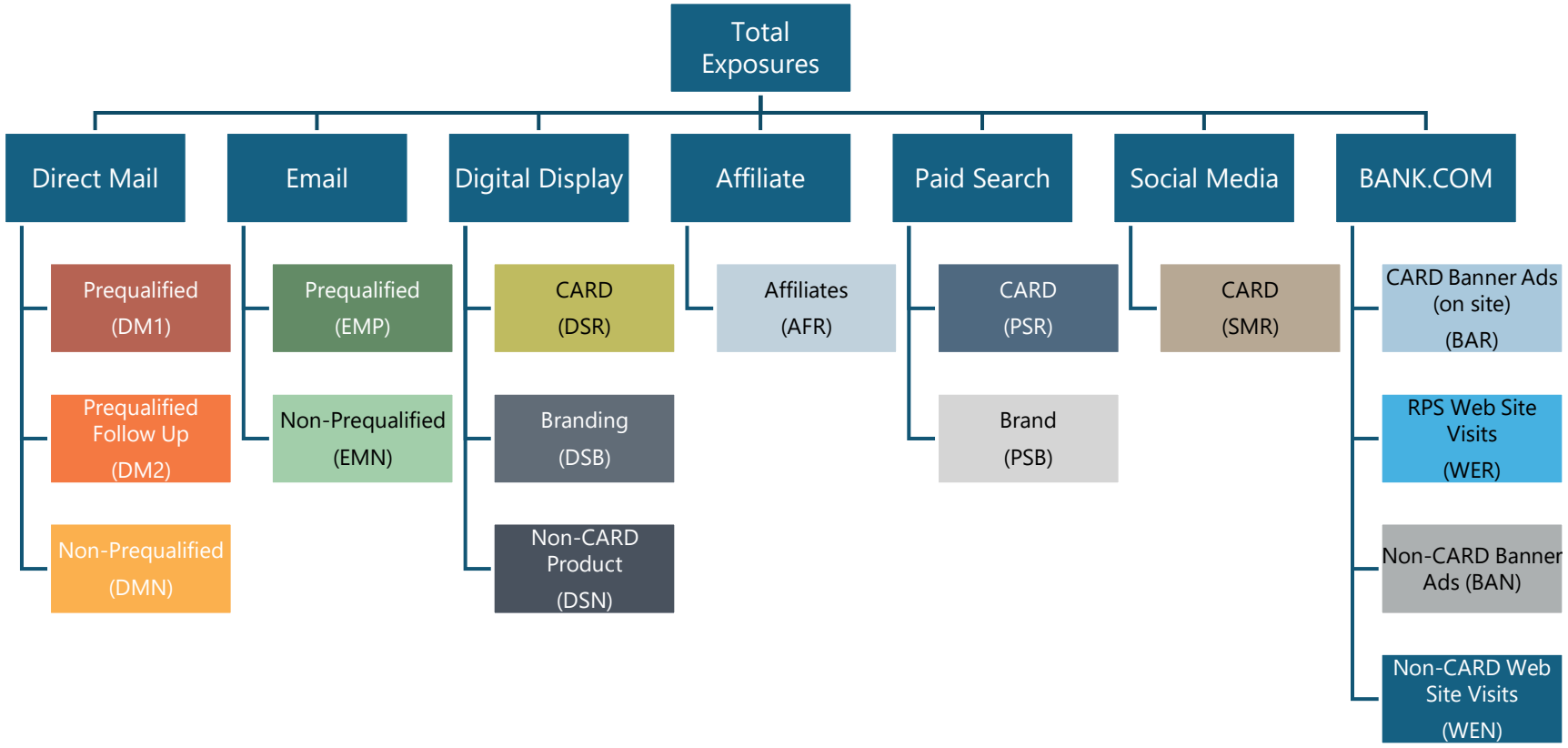


Data Driven Attribution Models go beyond rules-based attribution. They are based in statistical modeling procedures which, using optimization routines, assess the true contribution of each channels' impact in driving conversions and channel effectiveness

http://www.mediaocean.com/digital-marketing-guide/attribution-models

Technical Details

MTA Channel Decomposition



Total Exposures decomposed into seven channels and 16 sub-channels used in MTA model

Executive Summary

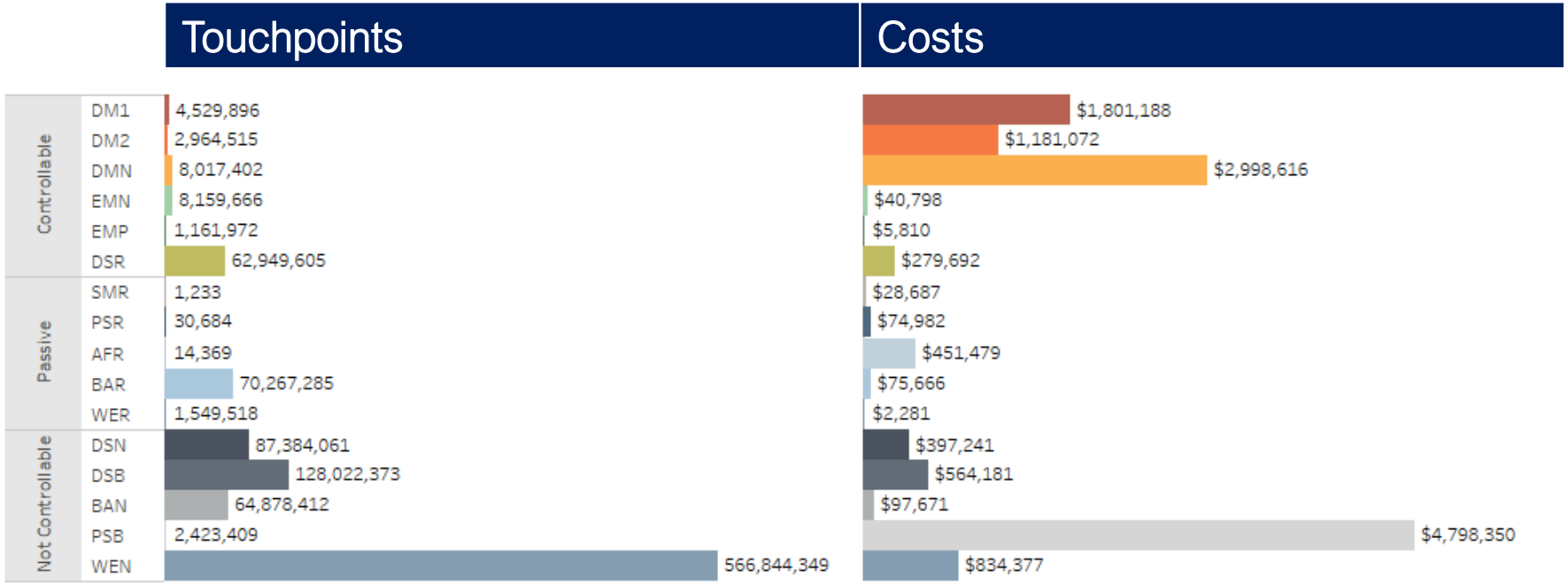
Key Findings

- The Q1 2021 update captured the period starting with the Q2 2020 acquisition marketing pause, and the following acquisition ramp up. This update captured more conversions compared to the prior update, reflecting a higher number of accounts acquired following marketing touchpoints during Q1 2021 compared to Q1 2020.
- The MTA Optimization again identified a solution that involved cutting back controllable marketing touchpoints to substantially reduce the total cost per conversion ($94 vs. $84), with costs per account decreasing compared to the prior cycle.
    - The optimal solution saves 15% of total media spend (29.5% of controllable & passive media) at the expense of 2.4% of new accounts (4.8% accounts generated by controllable & passive media)

Recent Updates

Model Inputs

- This model update included all MTA-eligible touchpoints for Q2 2020 – Q1 2021.



- 142,023 account conversions were made by individuals receiving MTA-eligible touchpoints and were included in the model.

Model Results

- By pulling back PreQual and Non-PreQual contact, the MTA model projects that 15% of investment can be saved at a cost of 2.4% of conversions.

Impact Analysis

	Touches	Investment	Conversions	CPC
BAU	1,009,198,749	$13,632,092	142,023	$96
Selected DoF	1,003,873,770	$11,587,278	138,657	$84
Pct Diff	-0.5%	-15.0%	-2.4%	-12.9%

Controllable and Passive Channel Summary

With the current DoF selections, your marketing spend for Controllable and Passive channels is $4,895,457 (a reduction of 29.5%) at the expense of 3,366 conversions (4.8%).

The CPC for this scenario is $74, while the CPC for lost conversions is estimated to be $607.

Optimization Recommendations

- Compared to last cycle, this cycle's optimal solution preserves a higher overall proportion of PreQual DM, while the recommended proportion of Non-PreQual DM is similar.
- The optimization recommends pulling back on Non-PreQual DM in all addressable Segments, and PreQual DM in three of five segments. No cutbacks are recommended in display or email this cycle, due to the relatively low costs per acquisition associated with these channels.
- These recommendations are for informational purposes only, since we are rebuilding the models and will employ the OATS targeting schema moving forward.

Segments 1 and 4 are cut back minimally, suppressing just the bottom quintile (4) or two quintiles (1) from Non-PreQual DM.

Segment 2 recommendation is to cut back moderately, mailing to the top 80% for initial and follow-up PreQual DM and 60% for Non-PreQual DM.

	Segment											
	0		1		2		3		4		5	
	Sel.	Opt.	Sel.	Opt.	Sel.	Opt.	Sel.	Opt.	Sel.	Opt.	Sel.	Opt.
DM1	100	100	100	100	100	80	100	60	100	100	100	40
DM2	100	100	100	100	100	80	100	60	100	100	100	60
DMN	100	100	100	60	100	60	100	40	100	80	100	0
DSR	100	100	100	100	100	100	100	100	100	100	100	100
EMN	100	100	100	100	100	100	100	100	100	100	100	100
EMP	100	100	100	100	100	100	100	100	100	100	100	100

Segment 3 recommendation cuts back further compared to Segment 2, mailing to the top 60% for initial and follow-up PreQual DM and 40% for Non-PreQual DM.

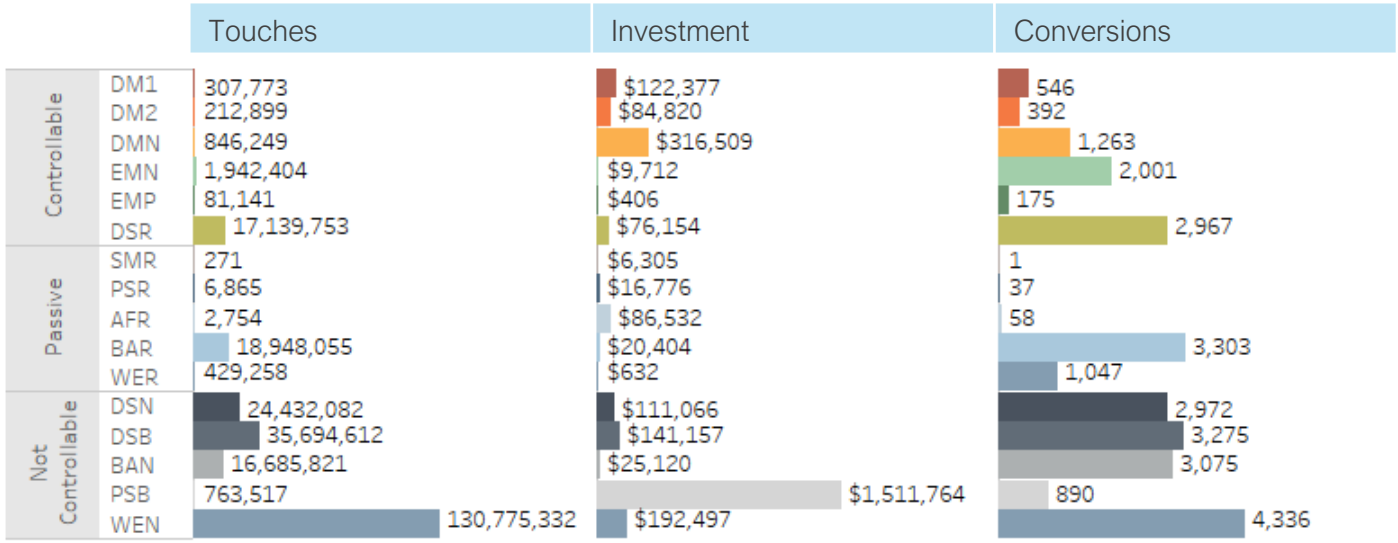
Segment 5 is cut back the most, with 40% of the audience recommended to send for initial PreQual DM, 60% for PreQual follow-up. The optimal solution recommends cutting Non-PreQual DM entirely.

Segment-Level Results

Segment 1: Digital Savvy

Recommended Actions	Reduce **Non-PreQual** to 60% Depth of File.
Impact of Actions on Controllable Investment	Reduce Controllable Investment **23.8%** annually ($801K to $610K)
	Reduce Conversions Attributable to Controllable Channels by **3.5%** (7,612 to 7,344)
	Reduce Cost per Conversion from Controllable Channels by **21.0%** ($105 to $83)

Annualized Optimal Outcome



Under the optimal solution, the plurality of conversions from Segment 1 are generated by digital channels.

Among RPS-driven channels, Display drives the largest number of conversions (2,967 accounts).

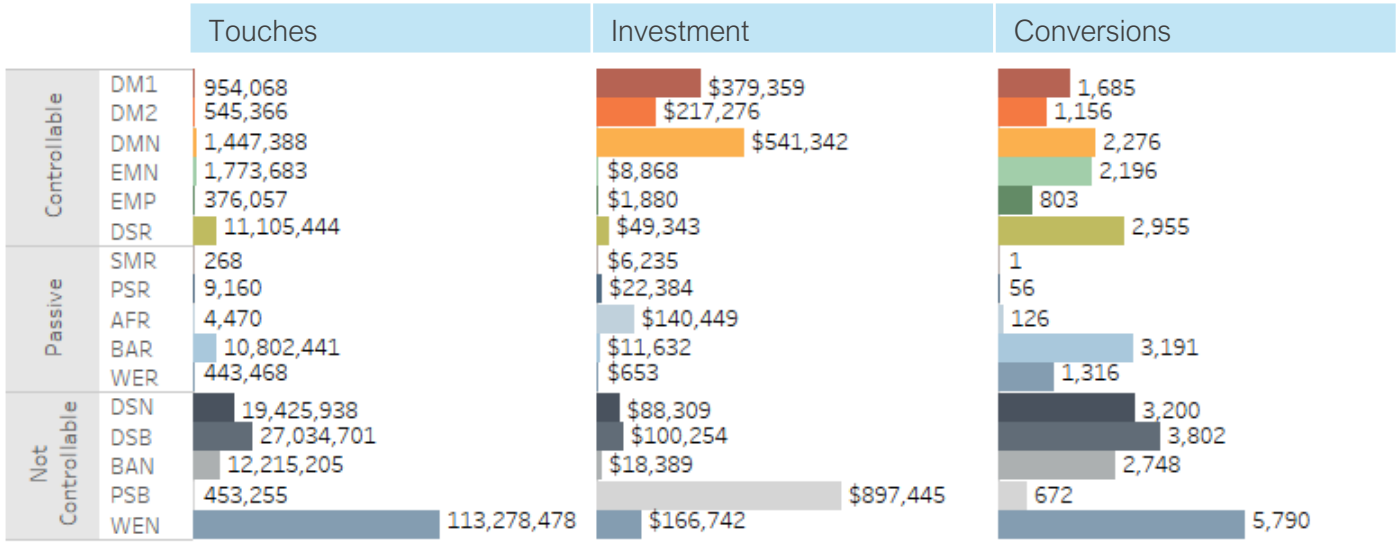
Non-PreQual Email generates 2,001 accounts, while Non-PreQual DM generates 1,263 after optimization.

Segment-Level Results

Segment 2: Easy Acquisition

Recommended Actions	Reduce **PreQual Initial and Follow-Up DM** to 80% Depth of File. Reduce **Non-PreQual DM** to 60% Depth of File.
Impact of Actions on Controllable Investment	Reduce Controllable Investment **20.4%** annually ($1.50MM to $1.20MM)
	Reduce Conversions Attributable to Controllable Channels by **4.6%** (11,608 to 11,072)
	Reduce Cost per Conversion from Controllable Channels by **16.5%** ($130 to $108)

Annualized Optimal Outcome



For Segment 2, conversions are shared among digital and offline channels.

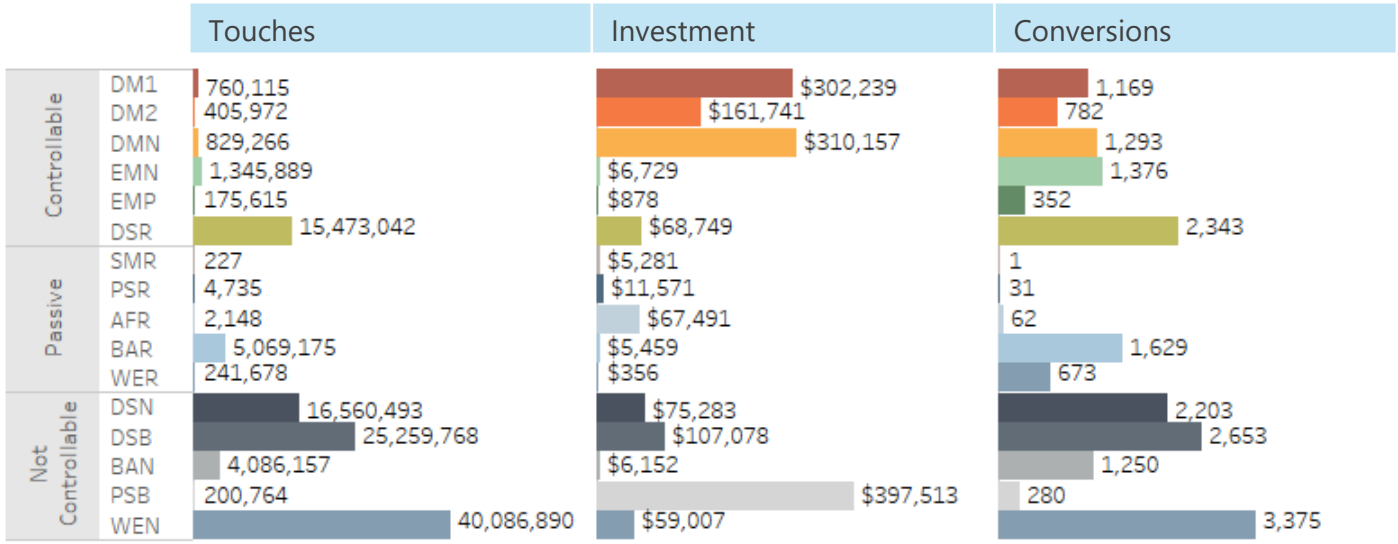
Among RPS-driven channels, the top three channels are Onsite Banner (3,191 accounts), Display (2,995 accounts), Non-PreQual DM (2,276), and Non-PreQual Email (2,196).

Segment-Level Results

Segment 3: Must Mail

Recommended Actions	Reduce **PreQual Initial and Follow-Up DM** to 60% Depth of File. Reduce **Non-PreQual DM** to 40% Depth of File
Impact of Actions on Controllable Investment	Reduce Controllable Investment **50.7%** annually ($1.73MM to $850K)
	Reduce Conversions Attributable to Controllable Channels by **17.8%** (8,893 to 7,315)
	Reduce Cost per Conversion from Controllable Channels by **40.1%** ($194 to $116)

Annualized Optimal Outcome



For Segment 3, RPS Display generates the highest number of accounts among RPS-driven channels (2,343).

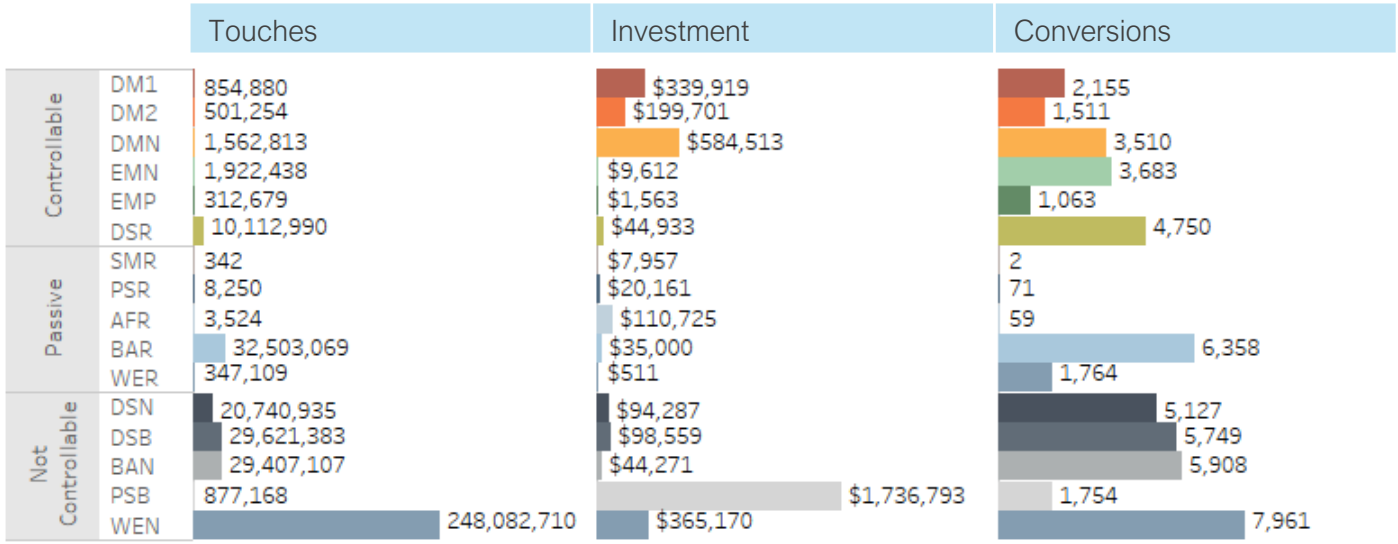
RPS onsite banners generated 1,629 accounts, followed by Non-PreQual Email (1,376), Non-PreQual DM (1,293), and PreQual Initial DM (1,169).

Segment-Level Results

Segment 4: MultiMedia

Recommended Actions	Reduce **Non-PreQual** to 80% Depth of File.
Impact of Actions on Controllable Investment	Reduce Controllable Investment **5.8%** annually ($1.25MM to $1.18MM)
	Reduce Conversions Attributable to Controllable Channels by **1.0%** (16,833 to 16,672)
	Reduce Cost per Conversion from Controllable Channels by **4.9%** ($74 to $71)

Annualized Optimal Outcome



Segment 4 generates the greatest number of conversions at the most efficient CPC, with the only optimization a 20% cut back in Non-PreQual DM.

Both offline and online channels generate substantial proportions of accounts in this segment.

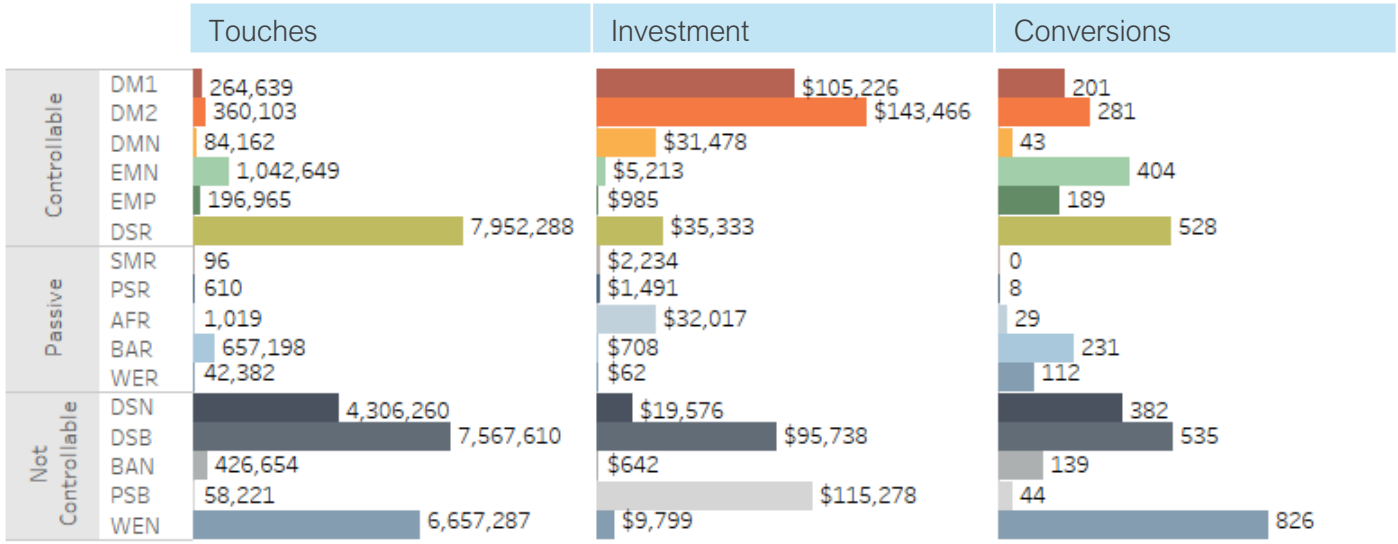
Segment 4 has high proportions of non-RPS media touchpoints, likely due to their multi-service relationships.

Segment-Level Results

Segment 5: Old School Media

Recommended Actions	Reduce **PreQual Initial DM** to 40% Depth of File. Reduce **PreQual Follow-Up DM** to 60% Depth of File. Mail minimum **Non-PreQual DM** quantiles required for testing.
Impact of Actions on Controllable Investment	Reduce Controllable Investment 65.1% annually ($921K to $322K)
	Reduce Conversions Attributable to Controllable Channels by 33.3% (2,468 to 1,646)
	Reduce Cost per Conversion from Controllable Channels by 47.6% ($373 to $195)

Annualized Optimal Outcome



The optimal solution for Segment 5 involves substantial cuts to DM contact, however this only drives a loss of 822 conversions since Segment 5 is small and has low conversion rates.

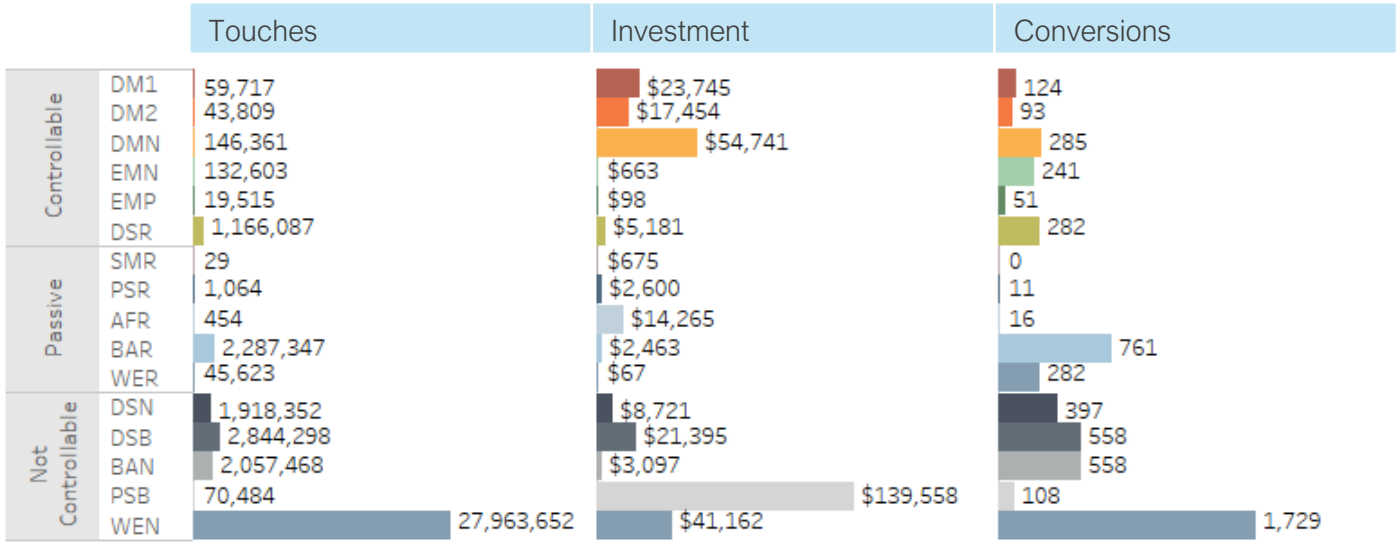
Among RPS-driven channels, Display and Non-PreQual Email play generate the most conversions under the optimal solution (528, 404), given the budget moved from DM.

Segment-Level Results

Segment 0: Data Delayed

Recommended Actions	No changes applicable, since these customers were not on the base at the time of analysis
Impact of Actions on Controllable Investment	No change from $101.9K Investment
	No change from 1,077 Conversions
	No change from $95 Cost per Conversion

Annualized Optimal Outcome



No optimizations are recommended for Segment 0 since these customers were not on the MCIF at the time of analysis. This segment generates a lower number of account compared to all other segments, except for Segment 5.

Appendix

Dictionary of Terms / Abbreviations

Key Terms / Definitions Used in MTA

1P / 1P Audience: First Party selections made from within Bank Brand Customer file.

Controllable Media: Media under control of RPS group where 1P Audience selections can be made at an individual level. Example: Pre-qualified Direct Mail

Passive Media: Media under control of RPS group where 1P Audience selections can not be made at an individual level. Example: Paid Search, Affiliate

Non-Controllable Media: Media NOT under control of RPS group. While not under control of RPS, these channels have an impact on individual conversions across channels under an overall branding effect. These channels should NOT be considered as having "responsibility" for driving RPS conversions as they are designed to serve other purposes. Example: Branded Display

ML / Machine Learning: An application of Artificial Intelligence which provides a system with the ability to learn and improve with experience. In this application, ML is used in lieu of statistical models for optimizing 1P selections to maximize conversion rates

Markov Chain: A stochastic model describing a sequence of events and the probability of each sequence of events. A Markov Chain is the underlying model for the MTA Solution

MTA Optimization

Side Constraints set the boundaries for optimization

Side Constraints for Controllable Media set at multiple levels

- **Channel Level Investments – Allow channels maximum adjustment**
  - Minimum investment: 10% of BAU
  - Maximum investment: 100% of BAU
- **Segment Level Investments – Set a floor on segment spend at 50%**
  - Minimum investment: 50% of BAU
  - Maximum investment: 100% of BAU
- **Total Investment – Set a ceiling on spend at 85% of Controllable Channels***
  - Minimum investment: 50% of BAU
  - Maximum investment: 85% of BAU

Definitions:

- Controllable Channels – Channels where RPS has budget responsibility and has full control of 1P Audiences
- Passive Channels – Channels where RPS has budget responsibility, but no control over individuals who interact with the channel
- Non-Controllable Channels – Channels where RPS has no budget responsibility nor control over individuals who interact with a channel

*Example Scenario based on multiple runs. Has good balance between savings and minimizing lost conversions.

Inform: Marketing/ Media Costs

Touchpoint Type	Costs
Direct Mail	$0.40 per piece for DM1; $.40 for DM2; $.37 for DMN
Email	$0.005 per lead
DCM – RPS Display Impressions	$0.004 per impression*
DCM – Non-RPS Product Display Impressions	$0.005 per impression*
DCM – Brand Display Impressions	$0.004 per impression*
Adobe – RPS Affiliate	$31.42 per click*
Adobe – RPS Paid Search	$2.44 per click*
Adobe – Bank Paid Search	$1.98 per click*
Adobe – RPS Social Media Click	$23.27 per click*
Web (RPS and Non-RPS)	$0.001 per visit**
Banner – RPS Internal Banner	$0.001 per impression**
Banner – Non-RPS Internal Banner	$0.002 per impression**

*Costs applied to all impressions/clicks, but only impressions/clicks to eligible population included in analysis, so total costs reflected in analysis will be lower than total channel spend

**No media costs given => use matched count-weighted average cost of other touchpoints, based on Q2 2019 – Q1 2020 total costs
Matched count-weighted average cost = SUM(matched counts * Cost per piece)/ SUM(matched counts)
Where cost per piece is based on all touchpoints (matched and unmatched)