



Multi-touch Attribution Modeling and Customer Journey Analysis

Using Google Analytics 360 Data Via BigQuery



Project Introduction



Google
BigQuery



Google
Analytics

Attribution modeling is the process of tracking and valuing marketing touch points that lead to a desired outcome. Quantifies the contribution of our marketing tactics so that we can improve the efficiency of our time and resource investment.

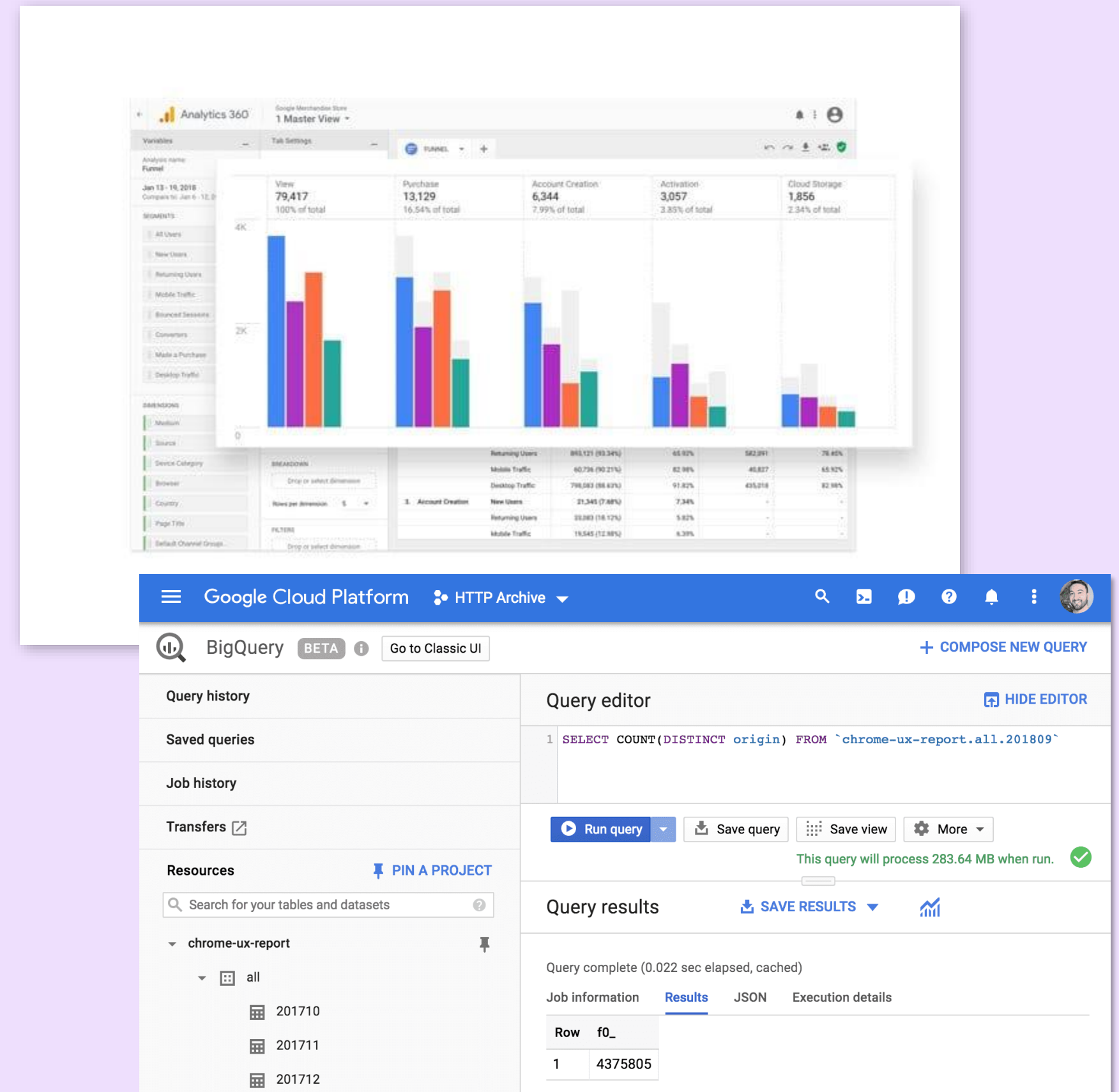
In this project, I took the sample data of Google Analytics 360 via BigQuery and applied different attribution modeling methods to analyze multi-channel attributions as well as customer journey from different channels.



Data Source

Google analytics data from Google Merchandise Store

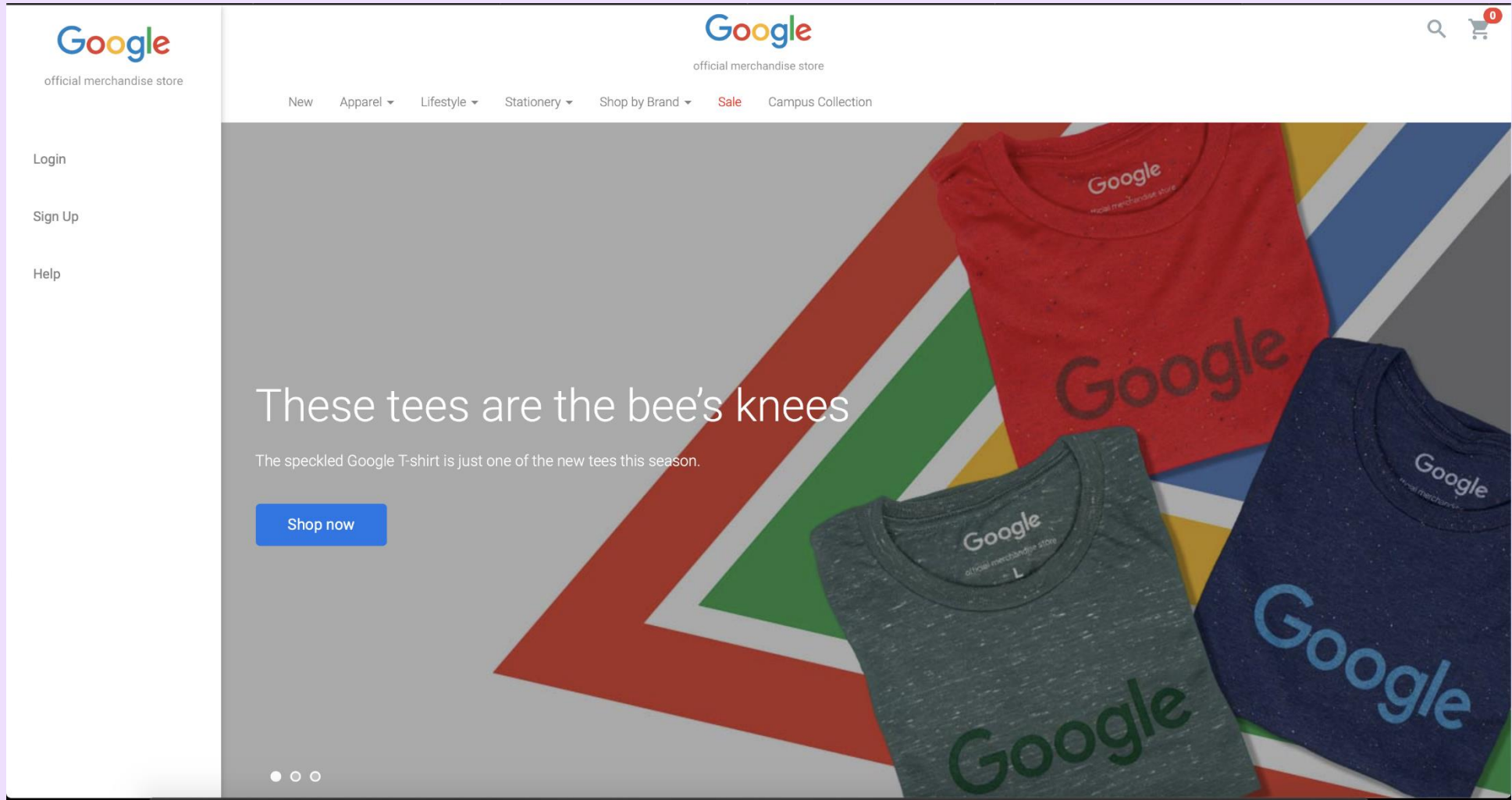
1. Google Analytics tracks every event on the website
2. BigQuery stores billions of GA Records
3. Super granular - Search Paths, Transactions, Hits... for every session
4. Goal: Analyze the channel attribution



Google Analytics Data from Google Merchandise Store

For the purpose of this analysis, I extracted the following information using SQL:

- ☑ Visitor ID
- ☑ Channel & Traffic source
- ☑ Transaction data



850K
Rows

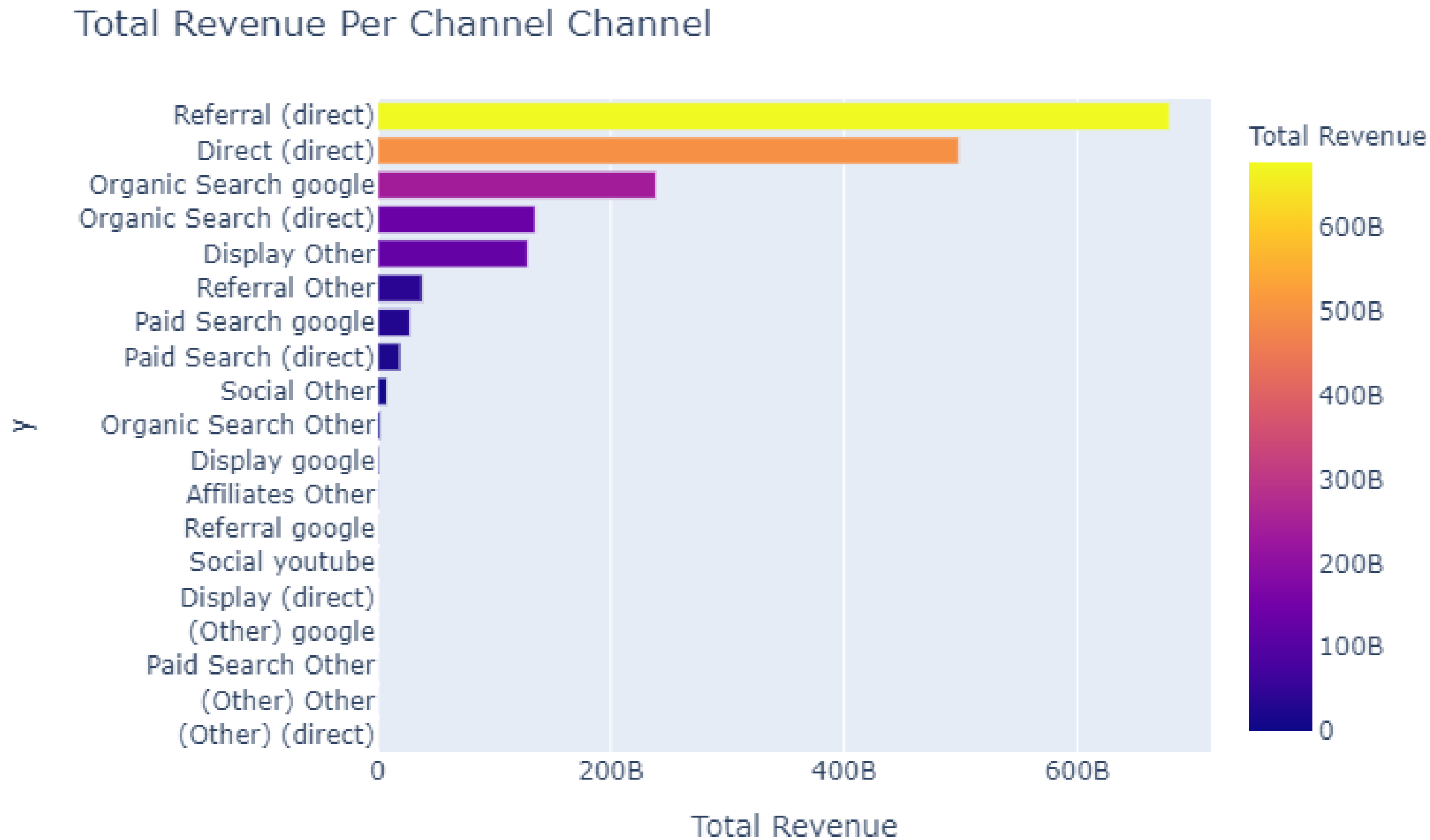
700K
Unique ID

19
Channel paths

Exploratory Data Analysis

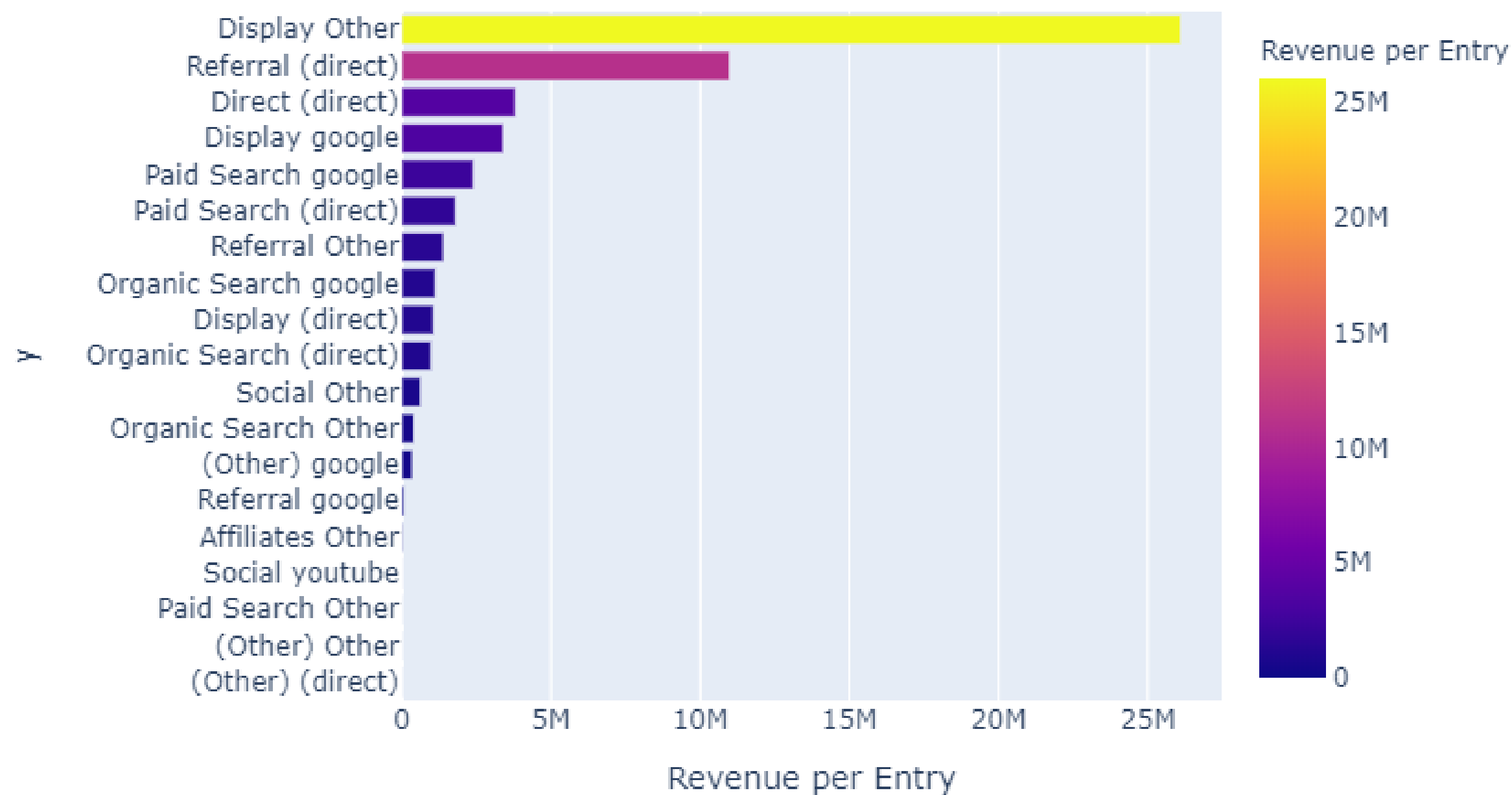
Key Points:

- ❑ Performed data cleaning
- ❑ Analyzed channel – traffic source combination
- ❑ Visualized initial findings



- ❑ Referral (direct) has the highest transaction revenue among all the channel-traffic grouping

Average Revenue Per Channel Channel



- ❑ Display Other has the highest revenue per entry among all the channel-traffic grouping

Channel - Path Analysis

Key Points:

- ❑ Grouped the dataset by customer IDs
- ❑ Compressed the Channel-path of every customer
- ❑ Calculated transaction data of every customer
- ❑ Prepared the dataset for Attribution Modeling

❑ Which customer has the longest channel path?

	fullVisitorId	channel_source	n_channel_path	conversion_total	conversion_value
139589	1957458976293878100	Display-Other > Display-Other > Display-Other ...	146	14	1.284125e+11
257343	3608475193341679870	Paid Search-google > Direct-(direct) > Direct-...	131	1	2.748000e+07
51304	0720311197761340948	Social-Other > Social-Other > Social-Other > S...	119	0	0.000000e+00
58716	0824839726118485274	Organic Search-google > Organic Search-(direct...	117	0	0.000000e+00
287807	4038076683036146727	Paid Search-(direct) > Paid Search-(direct) > ...	110	0	0.000000e+00

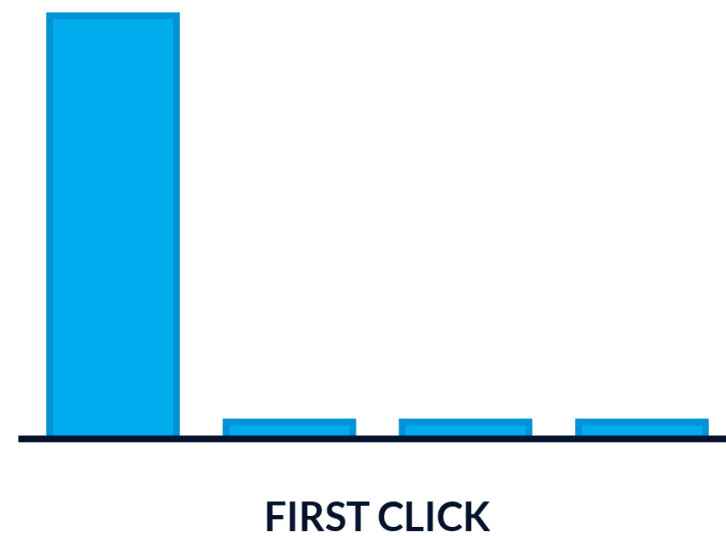
❑ Which customer has the most path conversions?

	fullVisitorId	channel_source	n_channel_path	conversion_total	conversion_value
557953	7813149961404844386	Direct-(direct) > Direct-(direct) > Direct-(di...	50	28	2.786510e+09
355406	4984366501121503466	Direct-(direct) > Direct-(direct) > Direct-(di...	21	16	9.649400e+09
171253	2402527199731150932	Direct-(direct) > Direct-(direct) > Direct-(di...	28	15	3.736810e+09
139589	1957458976293878100	Display-Other > Display-Other > Display-Other ...	146	14	1.284125e+11
482512	6760732402251466726	Referral-(direct) > Referral-(direct) > Referr...	29	14	6.495480e+09

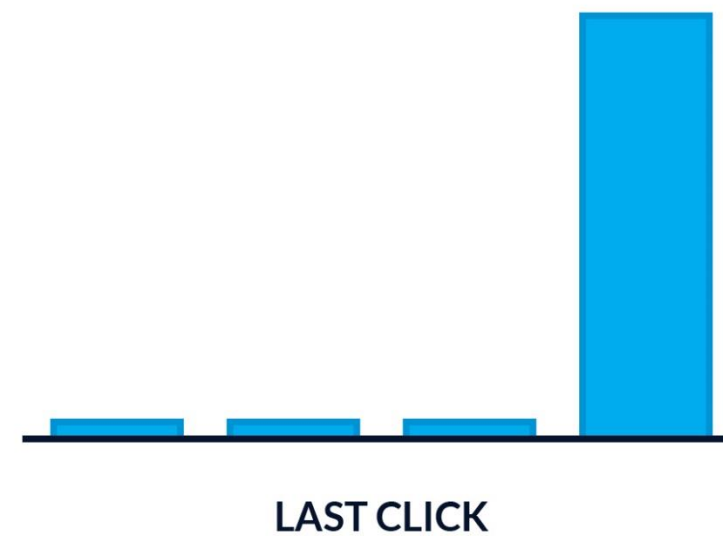


Attribution Modeling

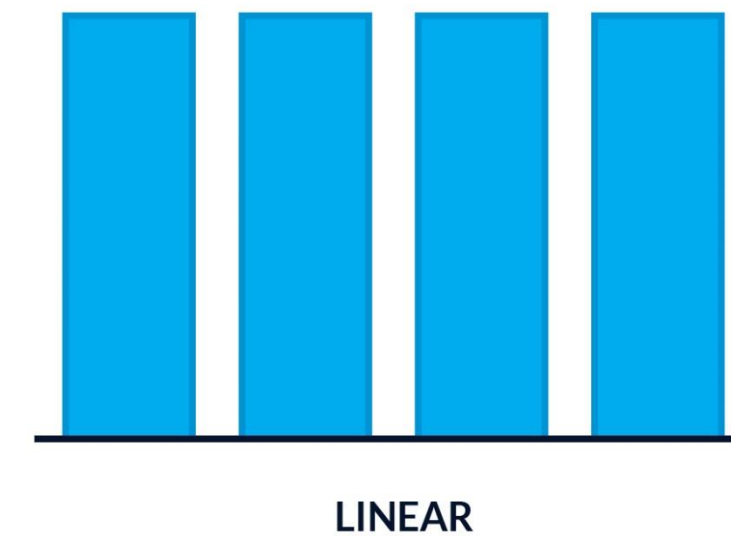
Heuristic Models



The first click (or first interaction) is assigned all credit for the conversion



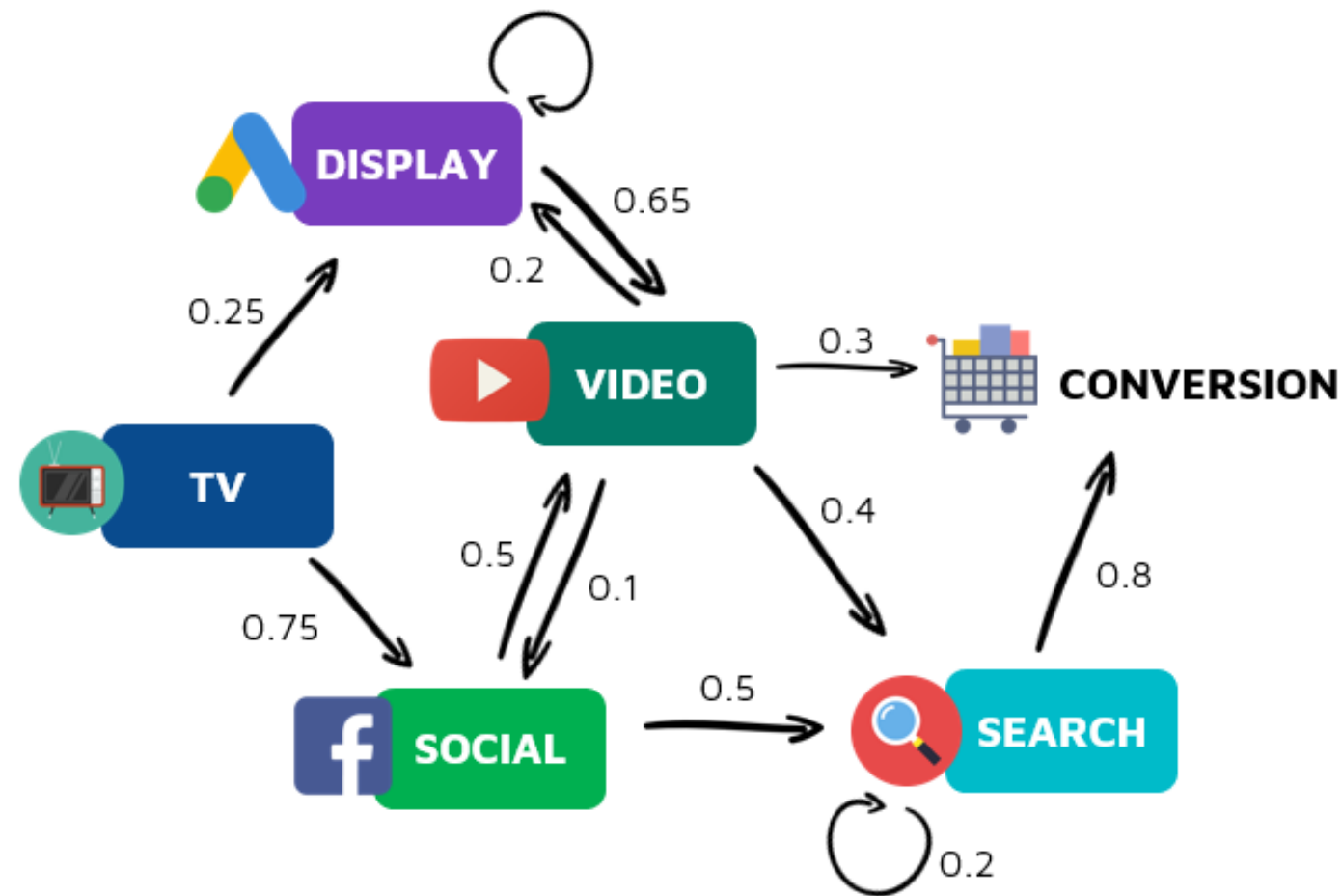
The last click (or last interaction) prior to the conversion receives all credit for the conversion



Each interaction leading up to the conversion receives an equal amount of credit for conversion

Attribution Modeling

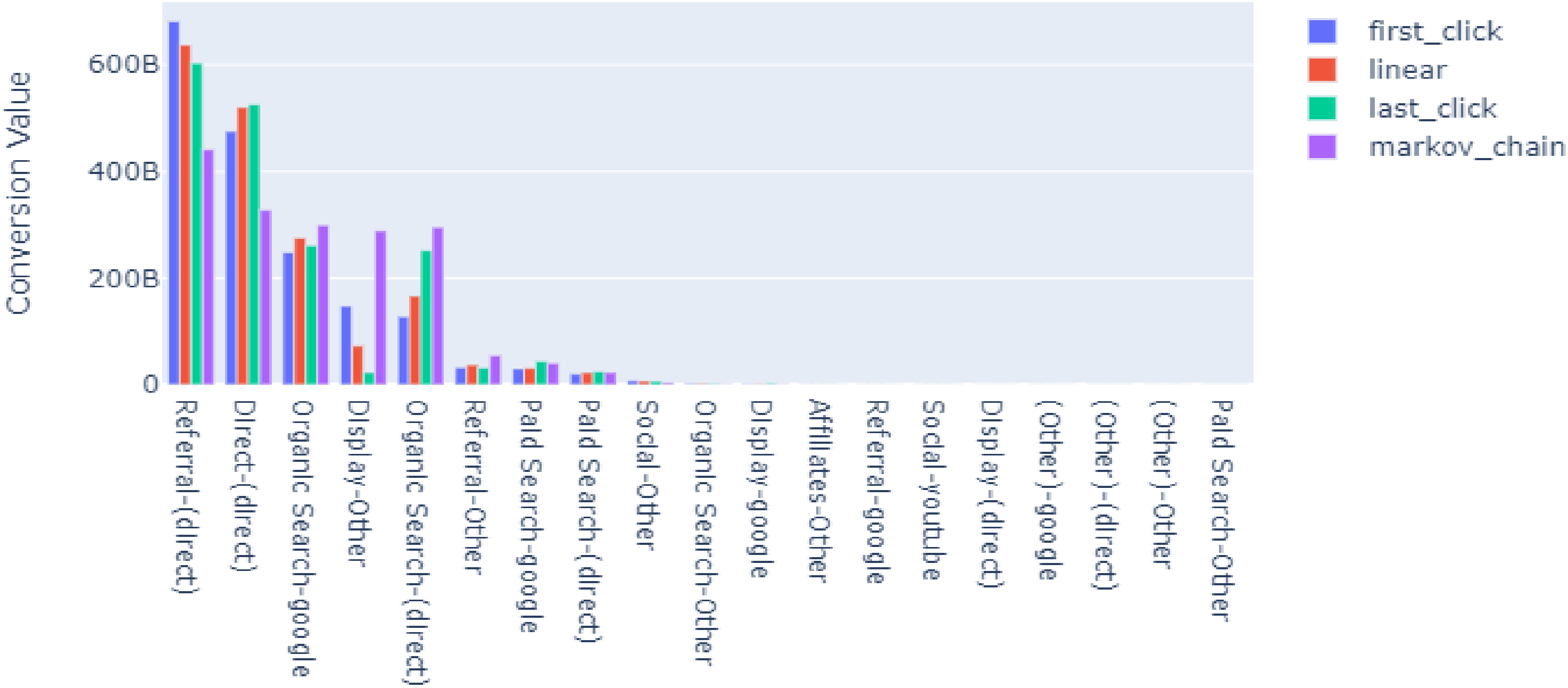
Algorithmic Model – Markov Chain



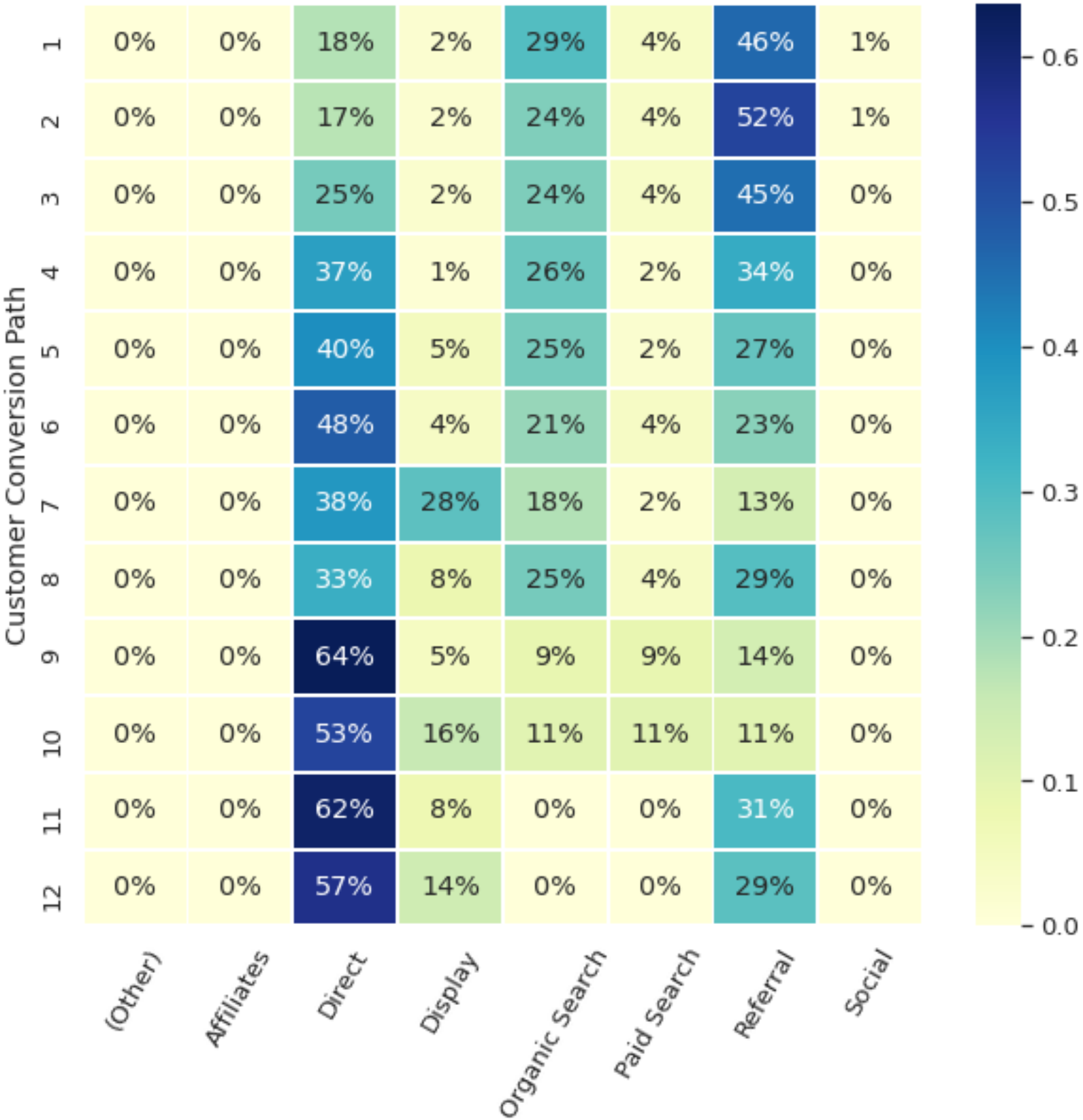
- ❑ the conversion probability distribution of the next state depends only on the current state and not on the sequence of events that preceded it.

Attribution Modeling

Models comparison



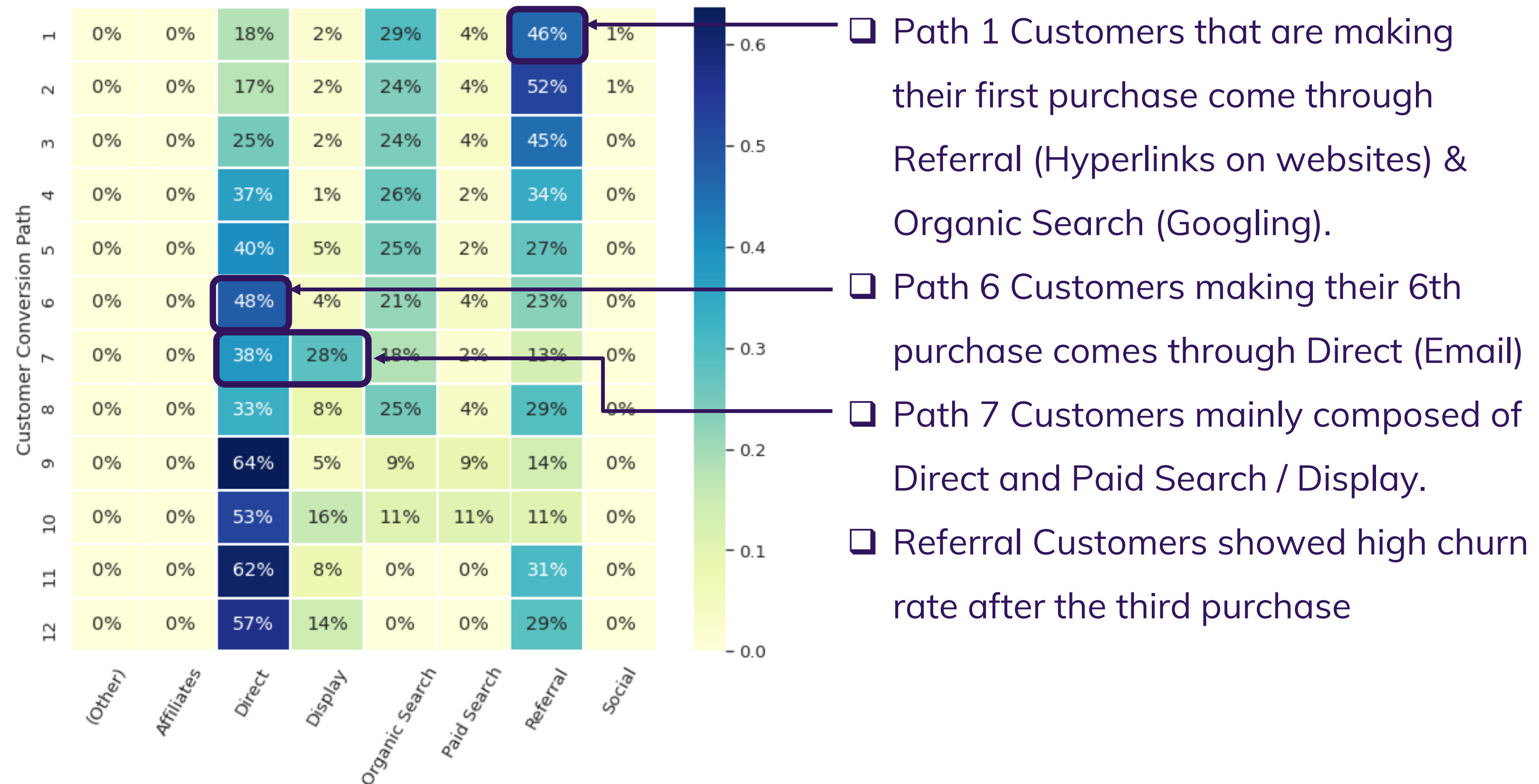
Customer Journey Analysis



- ❑ Each transaction is part of a path.
- ❑ New Customers have only one transaction path.
- ❑ Returning Customers have multiple transaction paths.
- ❑ Patterns for New vs Returning are different.

Customer Journey Analysis

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Summary

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01 Insights

- ❑ Display channel has the highest revenue per entry, referral channel has converted the highest revenue in total
- ❑ Referral, Direct and Organic Search are the three channels that given the most credit for conversion
- ❑ New customers are mostly come from Referral
- ❑ Referral Customers showed high churn rate after the 3rd purchase

02 Recommendations

- ❑ Increase customer volume in Display channel
- ❑ Actionable marketing plans for referral customers need to be take place after they made their 3rd purchase

