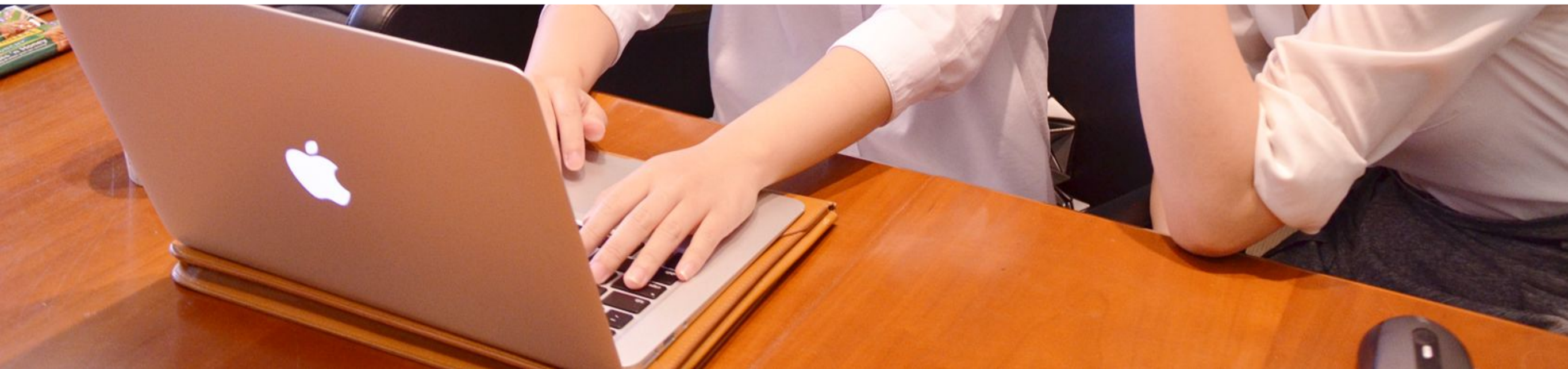


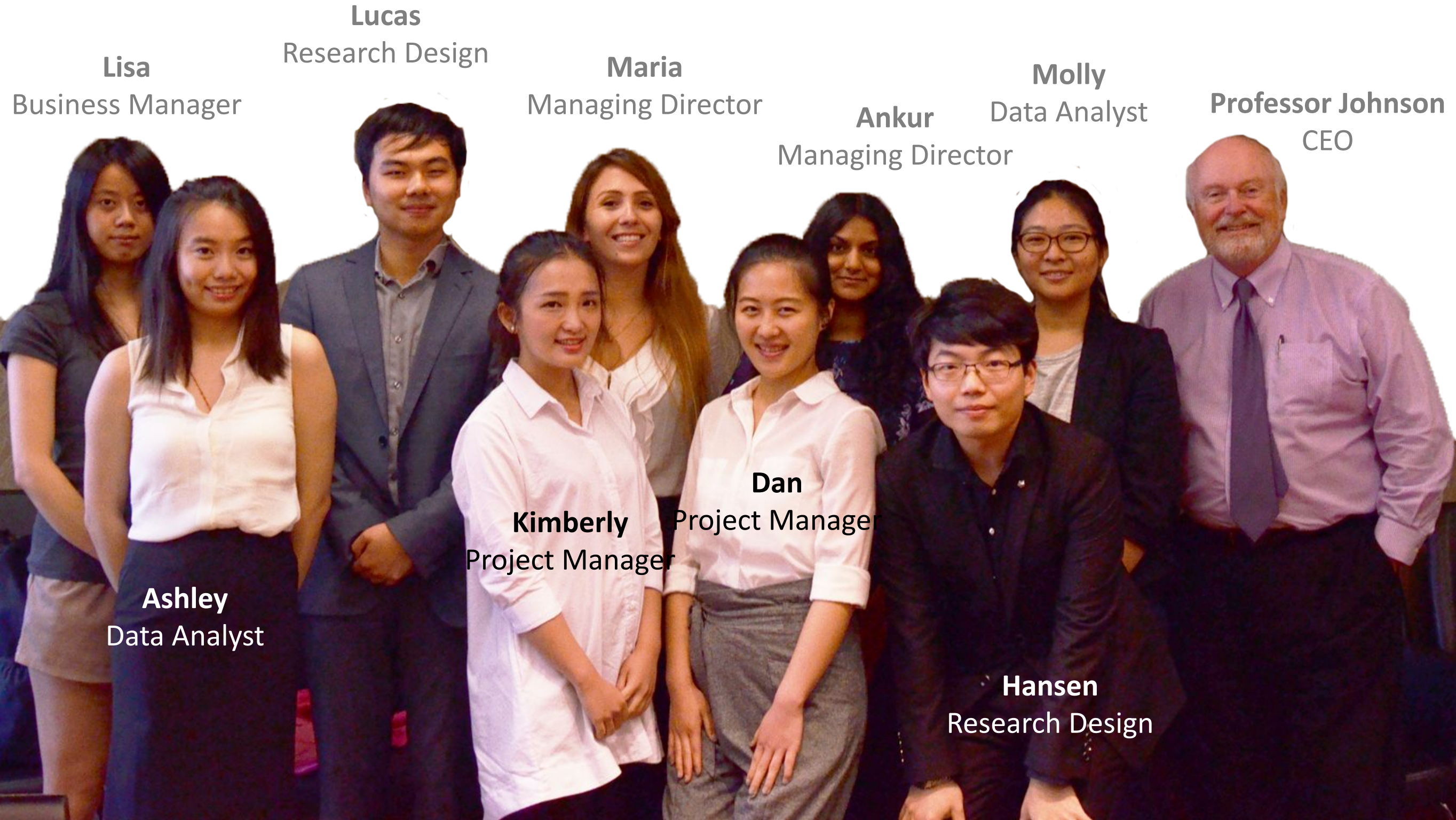


**Data Analysis**  
Loyal/Engaged clients





# Meet the Team



**Lisa**

Business Manager

**Lucas**

Research Design

**Maria**

Managing Director

**Molly**

Data Analyst

**Ankur**

Managing Director

**Professor Johnson**

CEO

**Dan**

Project Manager

**Kimberly**

Project Manager

**Ashley**

Data Analyst

**Hansen**

Research Design



# Agenda



- Loyalty Metrics ( 10 minutes)
- Loyalty Model ( 10 minutes)
- Engagement Funnel (10 minutes)
- Conclusion and Recommendations (5 minutes)
- Questions & Answers (20 minutes)

## Customer clusters Of QVC

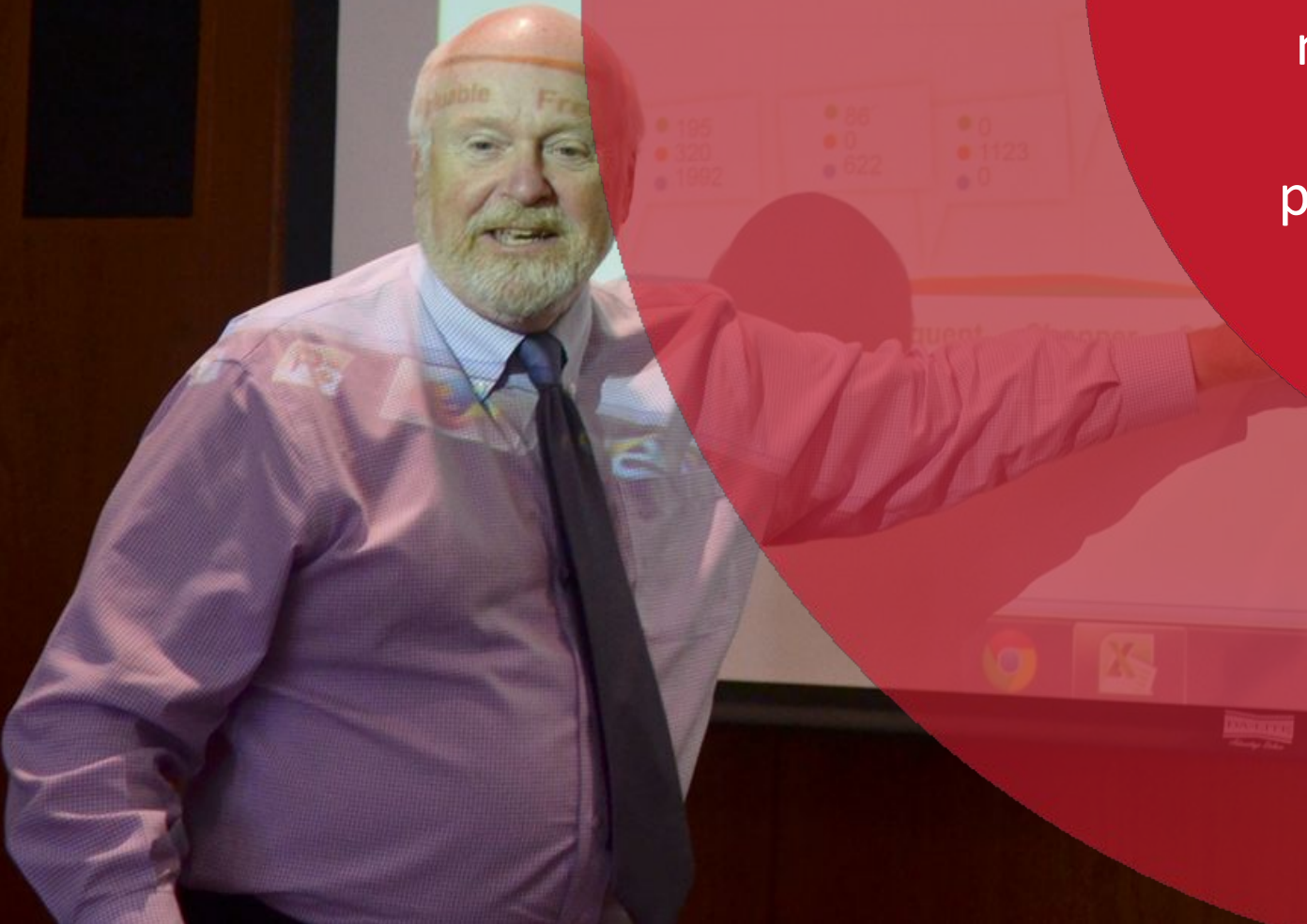
60,000  
50,000  
40,000

Lorem ipsum dolor sit amet, consectetur  
adipiscing  
incididunt



# THE INSPIRATION

QWASI brings to market enterprise protocols for monitoring every customer event and uses the QWASI platform to **pivot and trigger** customer communication





## MAIN OBJECTIVE

---

Discovering insights and methods that enable QWASI to provide value to its clients



### Loyalty Metrics

Identifying variables that have the most significant effect on customer loyalty



### Loyalty Model

Developing a predictive model to determine loyalty



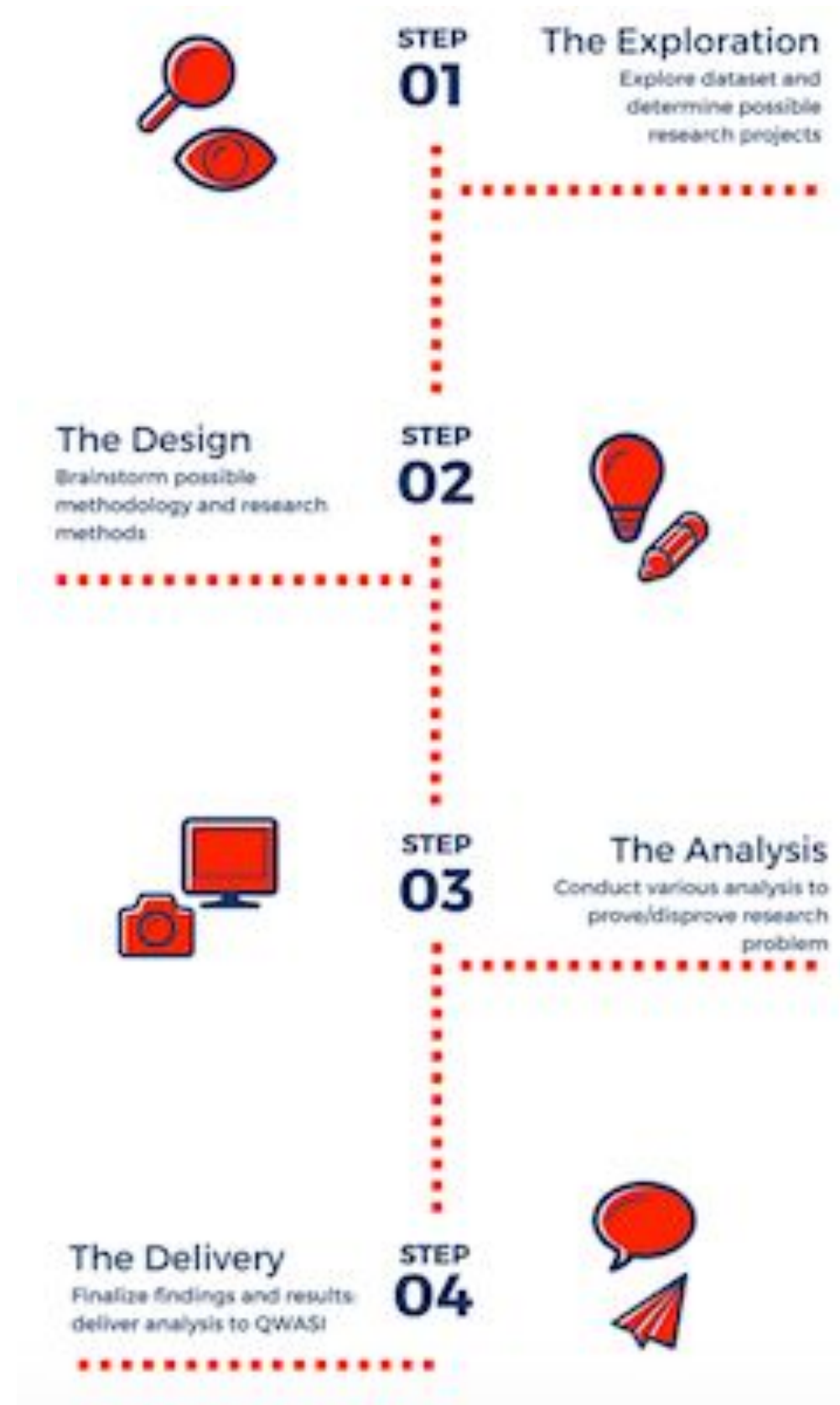
### Engagement

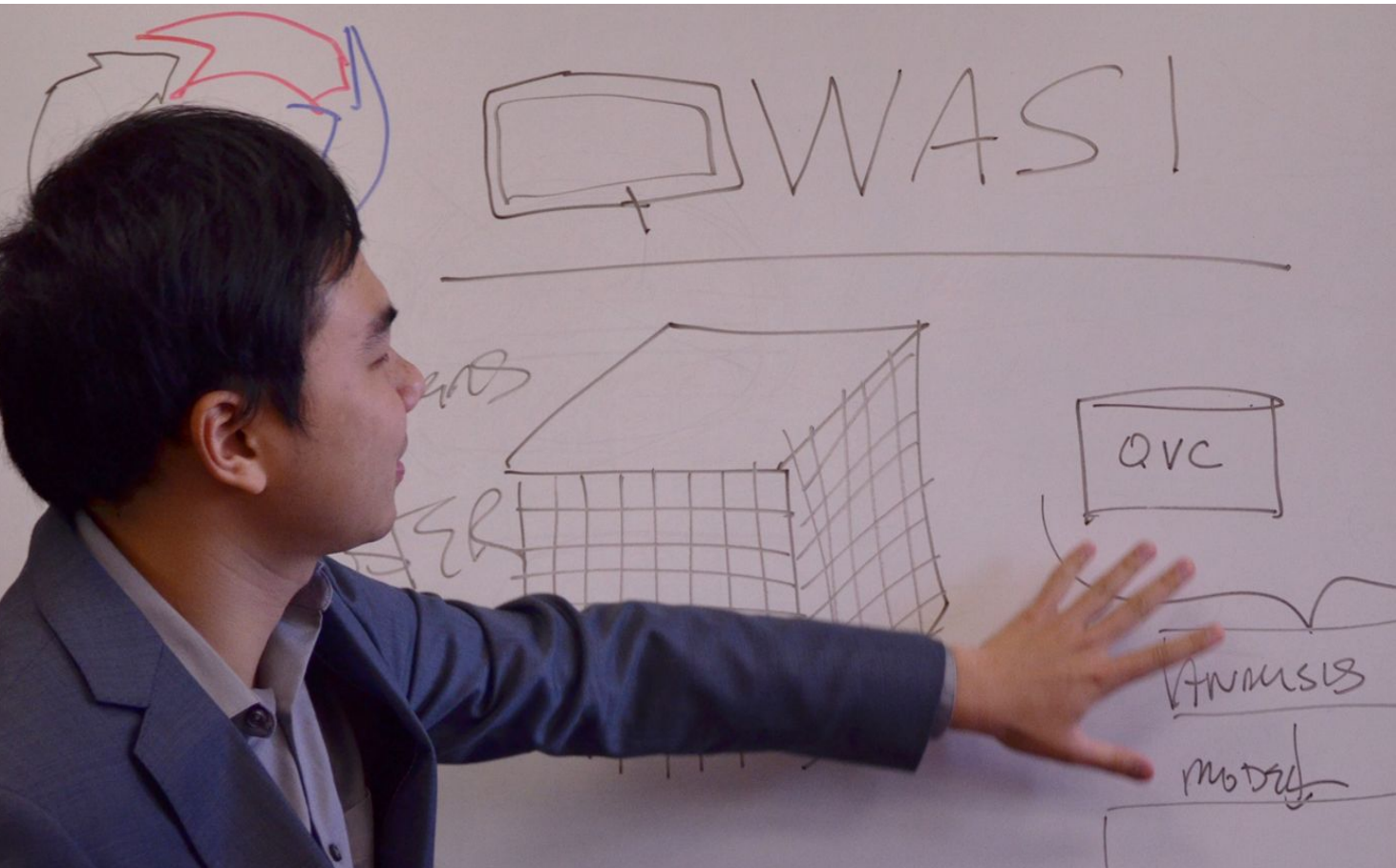
Providing a metric that visualizes customer journey



# Design Process

An overview of the process





## LOYALTY METRICS

Analyzing key metrics to determine effect on loyalty

- H1** The frequency of events between client and customer is positively related to loyalty
- H2** The recency of events between client and customer is positively related to loyalty
- H3** The purchase amount (or points) made by the customer is positively related to loyalty
- H4** The frequency with which a customer receives a campaign is positively related to loyalty



# Meaning of Loyalty



Loyalty has different meaning to different companies



Revenue



Loyalty Program



**Others:**  
Duration,  
Engagement





# RFM Model

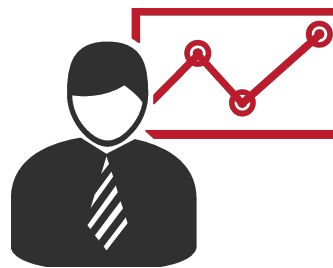


Analyzing customer value



**R**ecency

How recently a customer has purchased



**F**requency

How often the customer purchases



**M**onetary

How much the customer spends

## SUBSTITUTES

E: Engagement

D: Duration

I: Interaction



# Value of RFM



Customizing communication to enhance customer experience and loyalty



Segment Customer Value



Target



Foster Relationship

---

## Budget Savings

 Revenue

 Cost

## Marketing

 Controlled Targeting

 Marketing Efficiency

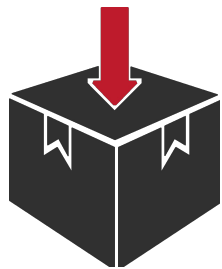


# Methodology

---

Determining the variables that effect loyalty

1



**Aggregate** annual customer purchase behavior (RFM) and SMS triggers' frequency

2



**Standardize** purchase recency, frequency and monetary with Z score and exclude outliers

3



Use **SPSS correlation** to prove the relation among RFM variables and triggers

# THE FINDINGS

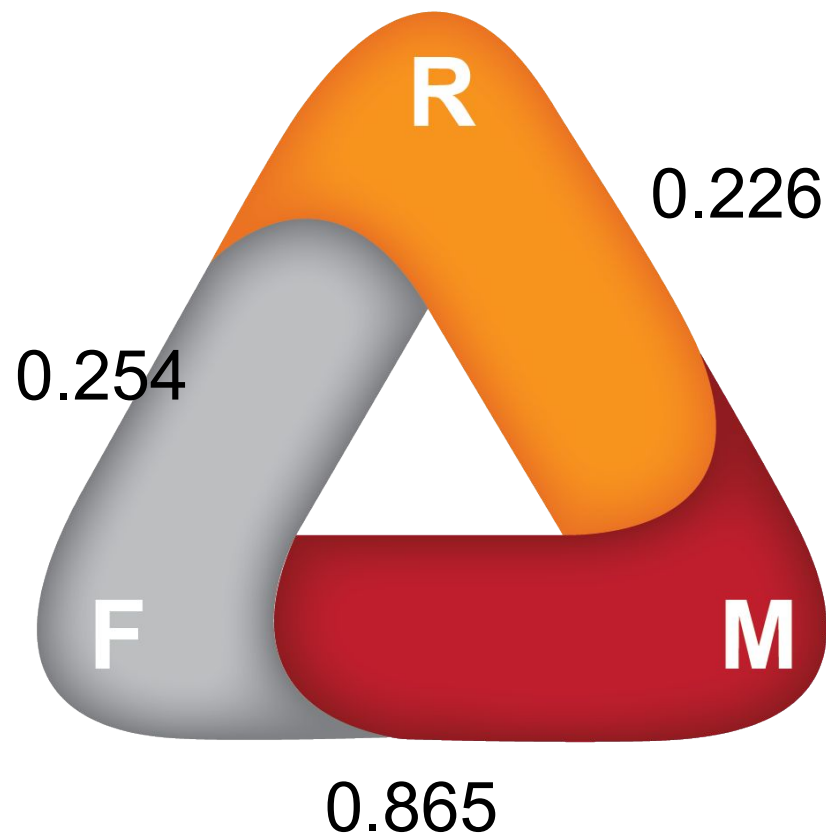
The RFM model  
determines customer  
loyalty



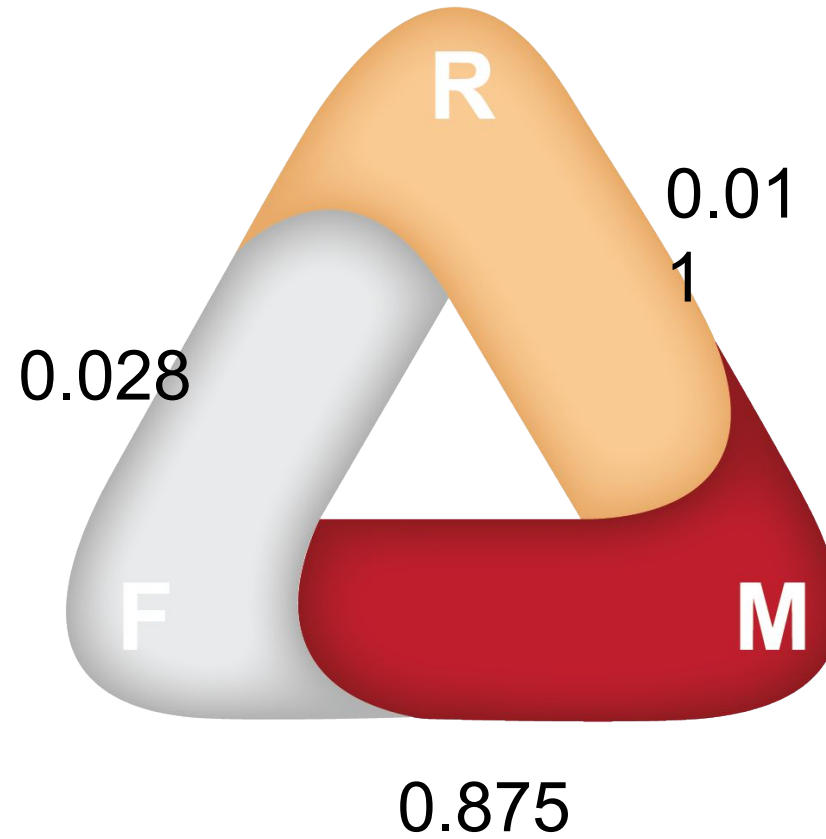


# QVC: RFM Correlation Relationship

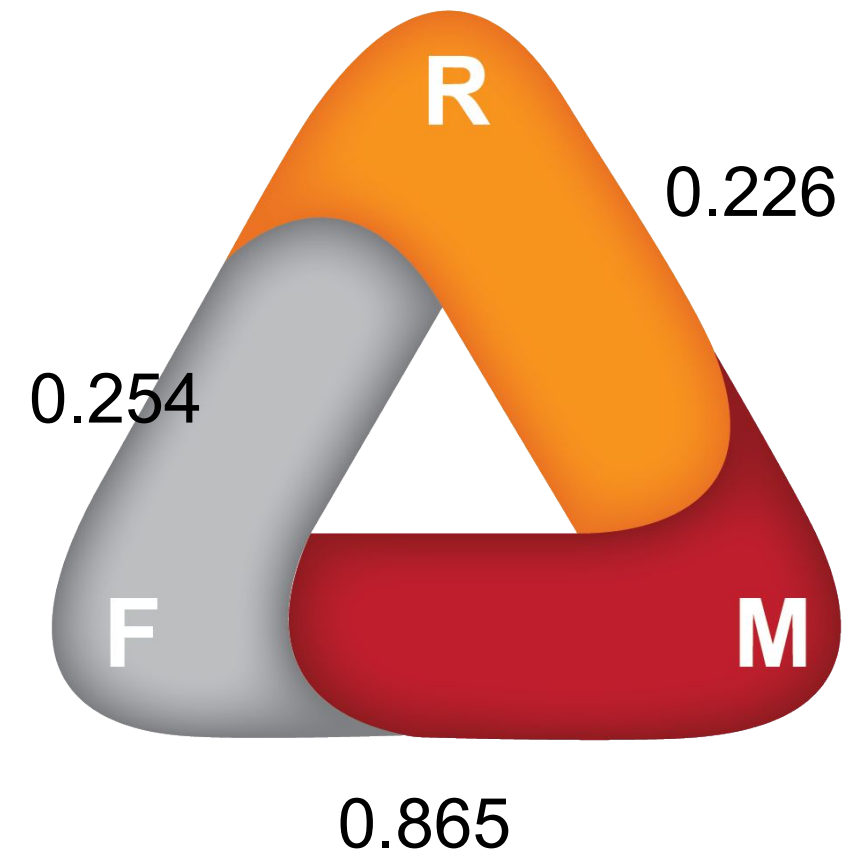
2012

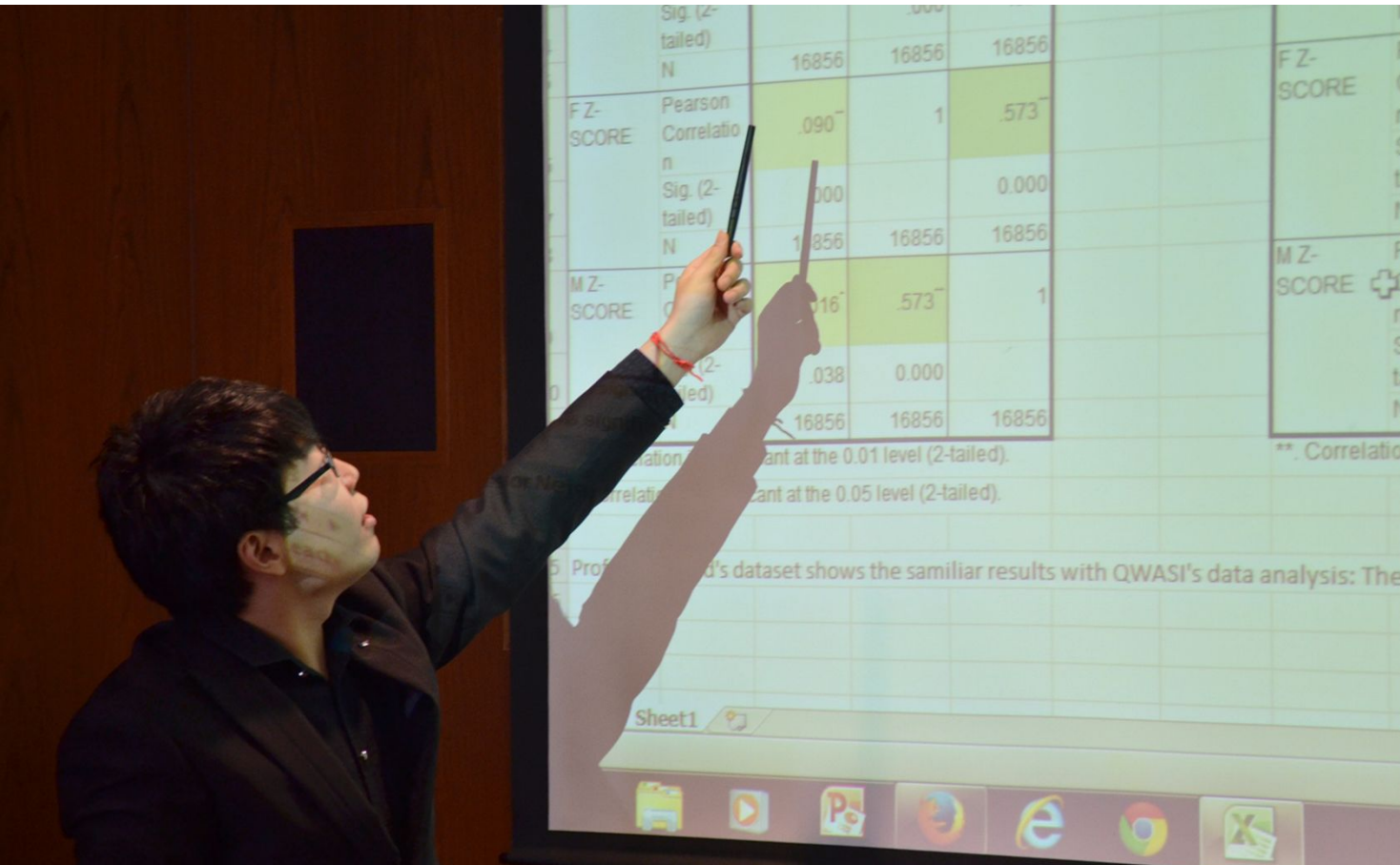


2013



2014





# QVC

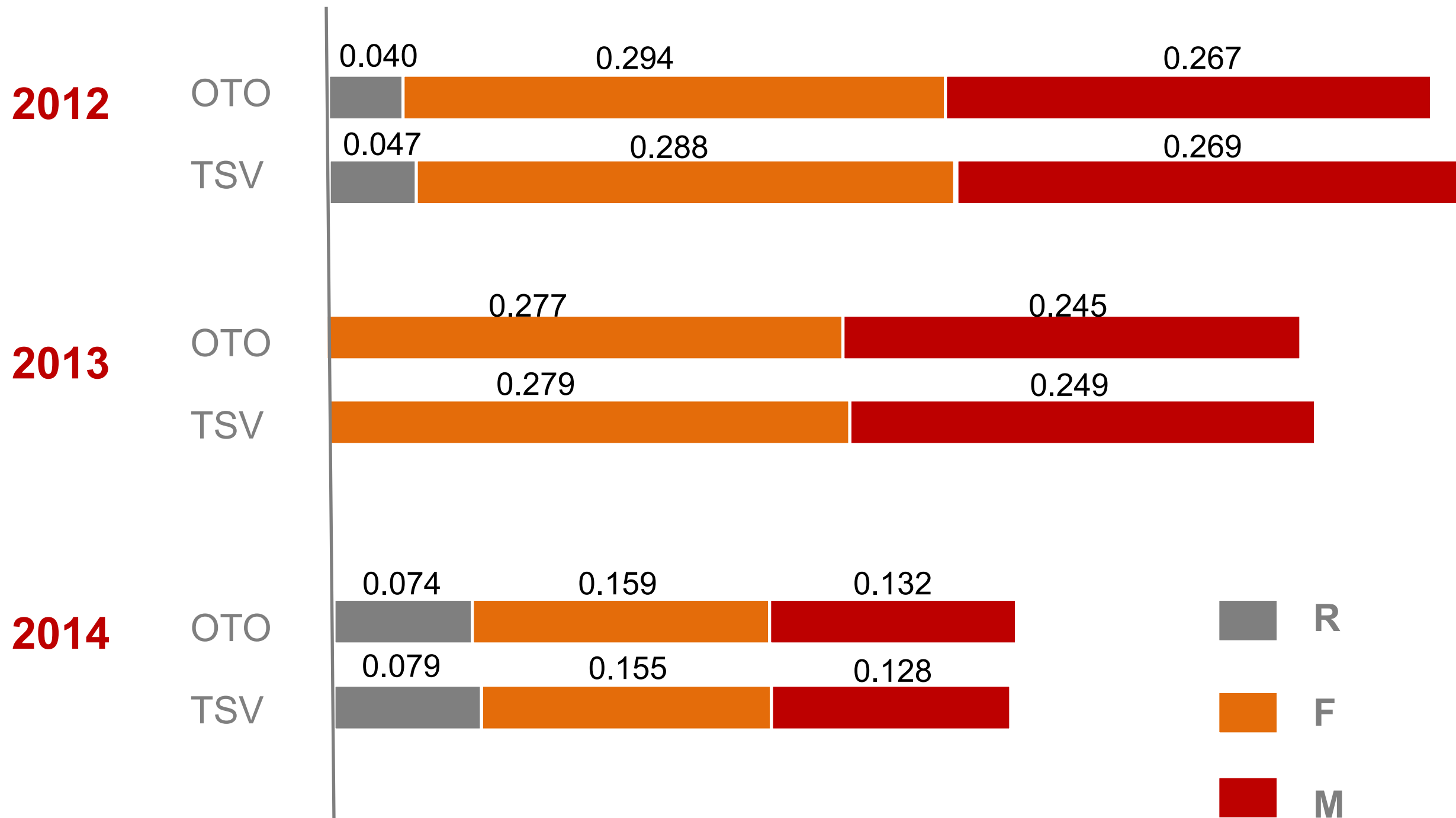
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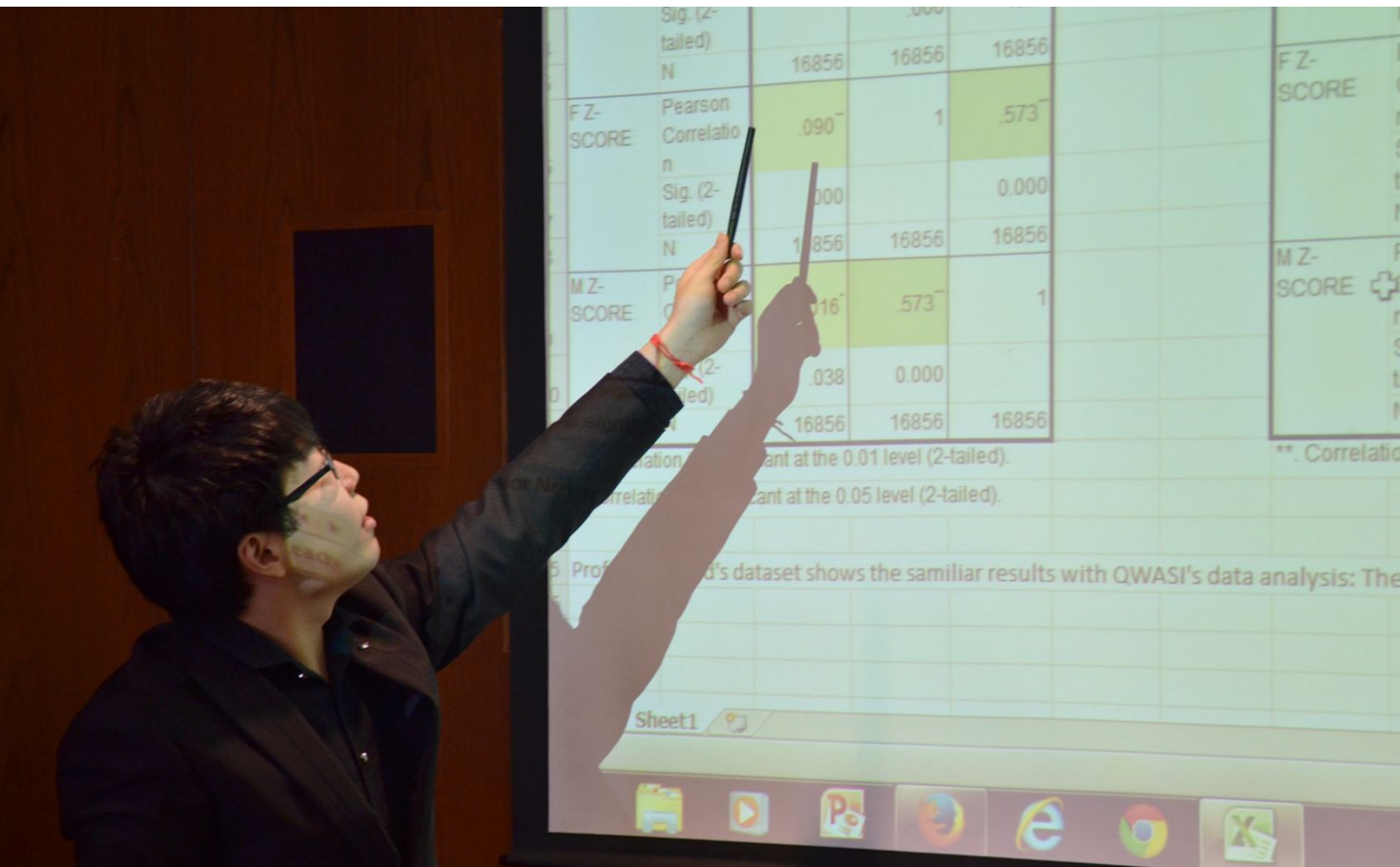
The relationship between RFM

- R has a similar relation level with F and M
- F and M have a stronger relation
- The correlation among these three are positive



# QVC: Relationship between RFM and Triggers





## QVC

---

The relationship between RFM and triggers

- In 2014, the triggers were not as strong as they used to be
- The relationship level is not outstanding. This means that text messages doesn't represent a high performance as in 2012





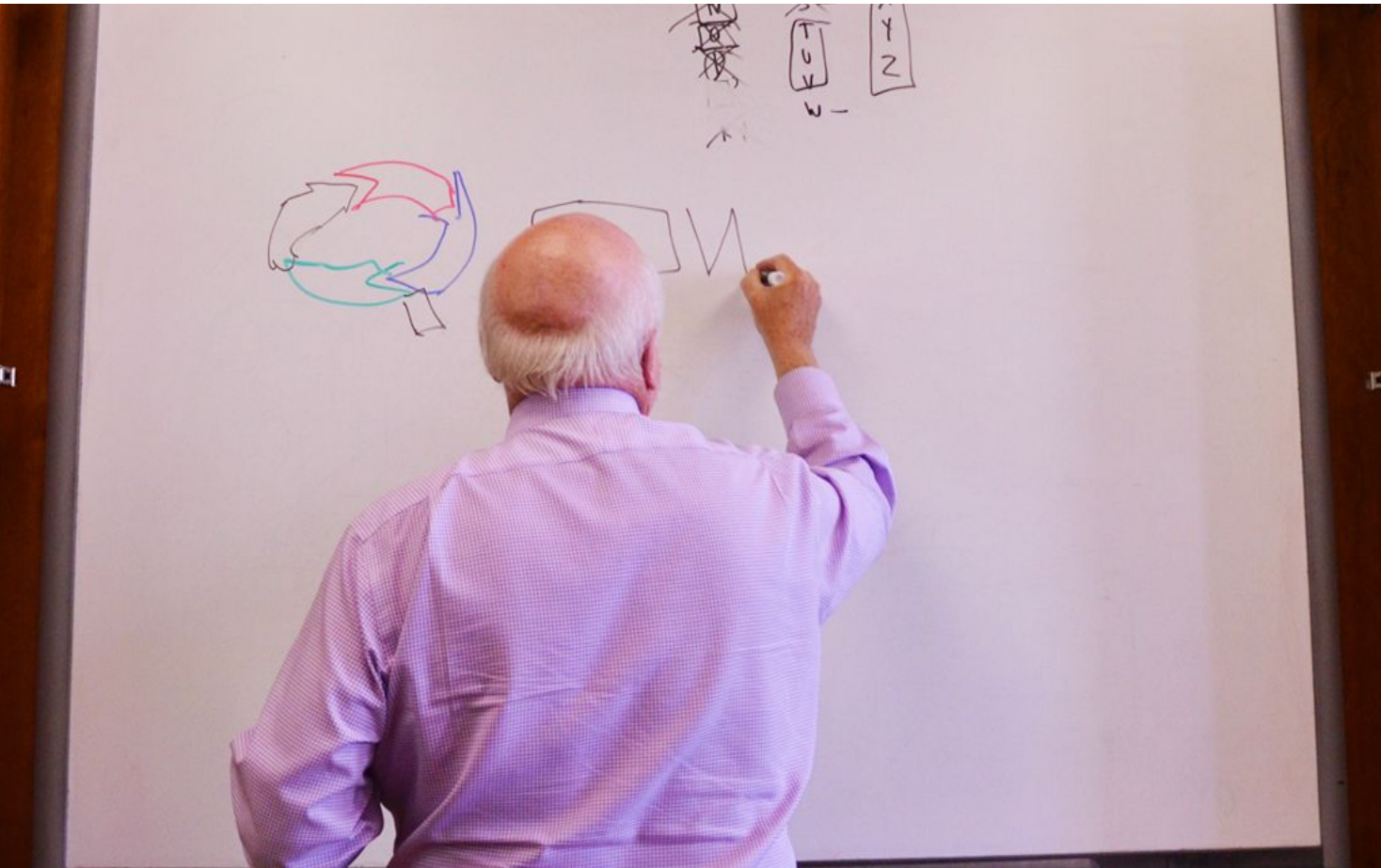
## LOYALTY MODEL

---

Providing a model that determines customer loyalty

**H1** When adjusted for key variables such as campaign frequency, seasonality, recency and others there is a predictive model to determine loyalty

- \* The predictive model will be based on the findings from the loyalty metric analysis



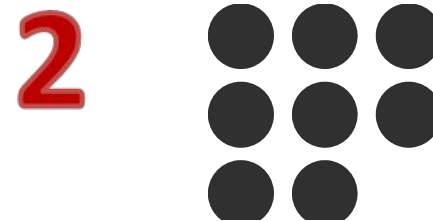
# Methodology

---

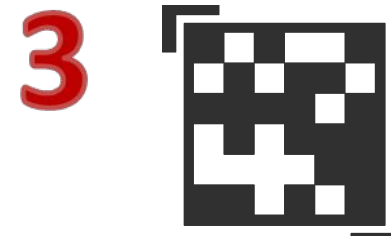
Determining the loyalty model



RFM Model to **classify** customer behavior



K-Means to narrow down to **8 purchase** behavior groups



Run analysis on **another dataset** to test loyalty score



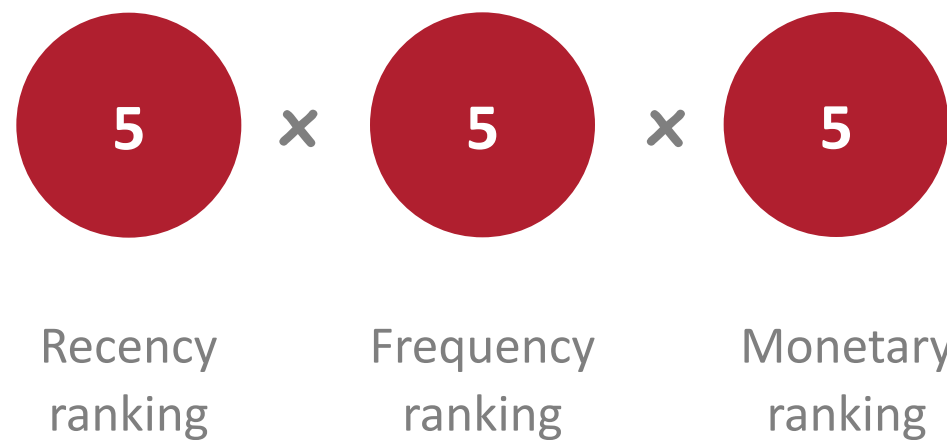
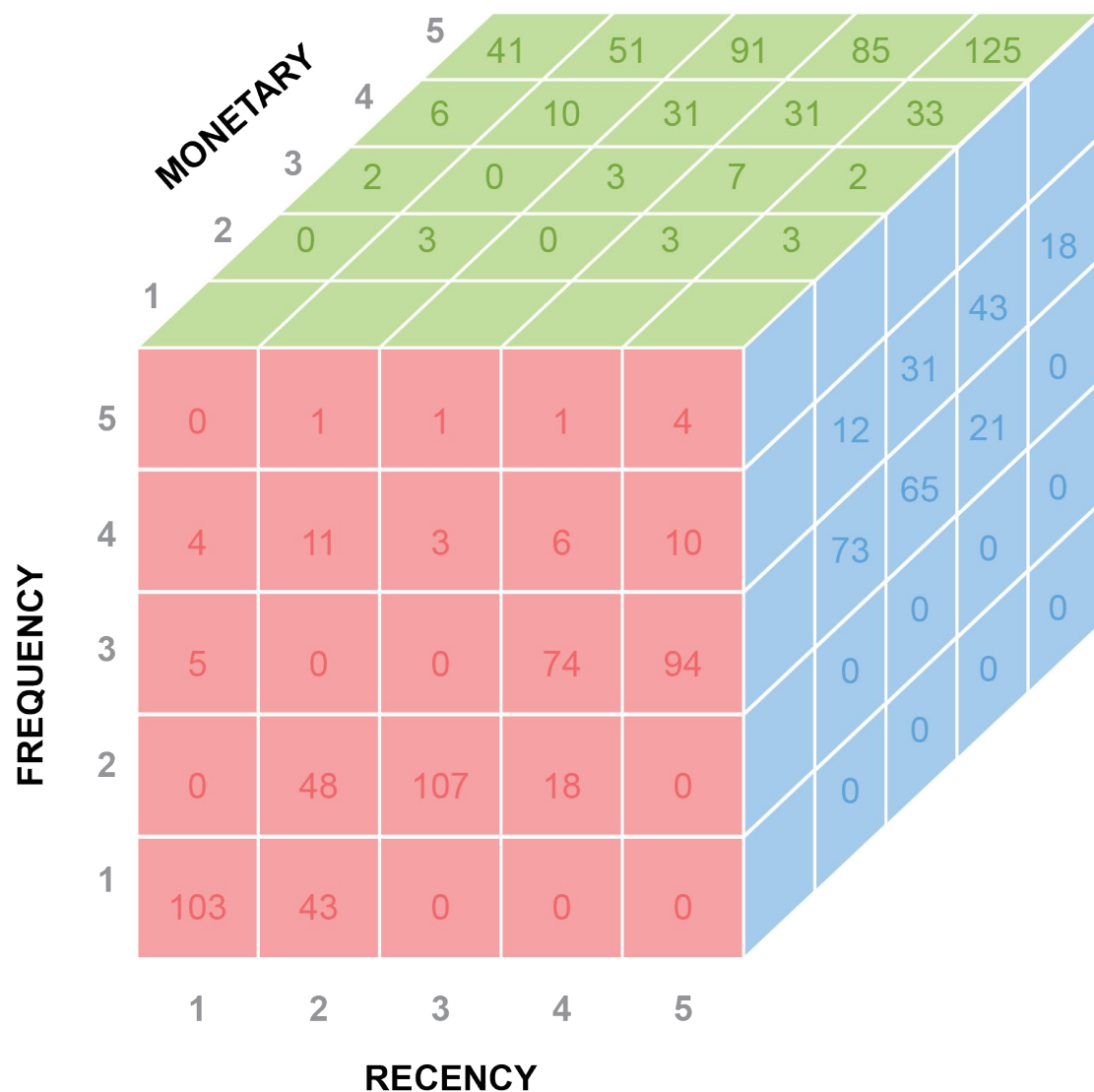
Use **group change comparison** in different years to test trigger performance



# Cluster Combinations



Possible clustering based on 5-point RFM scale



**125 segment combinations**



# Cluster Groups



8 possible groups by recency, frequency and monetary

		<b>R</b>	<b>F</b>	<b>M</b>	
High Value	Best	●	●	●	● High ● Low
	Valuable	●	●	●	
	Shopper	●	●	●	
	Frequent	●	●	●	
	Spenders	●	●	●	
Low Value	First Time	●	●	●	
	Churn	●	●	●	
	Uncertain	●	●	●	

# THE FINDINGS

The RFM model provides key insights into customer loyalty

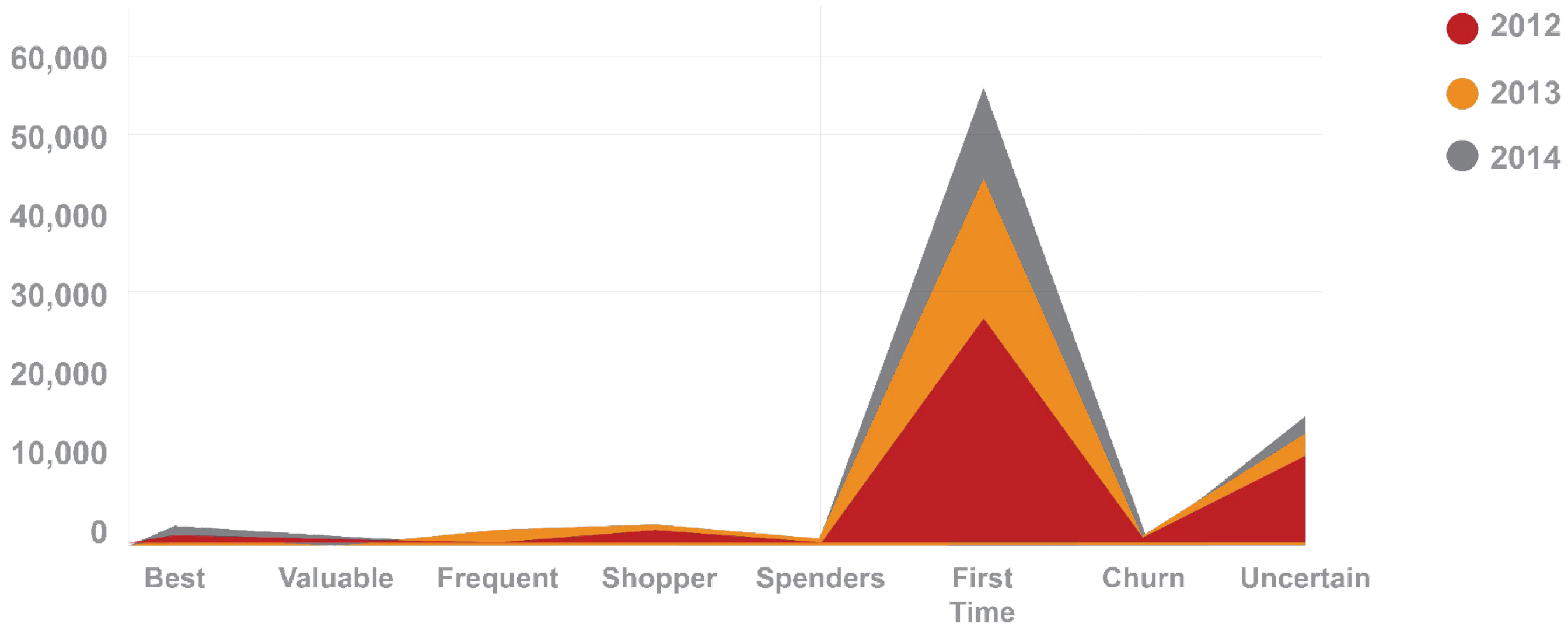




# QVC Customer Clusters



QVC's first time customers outweighs all other groups



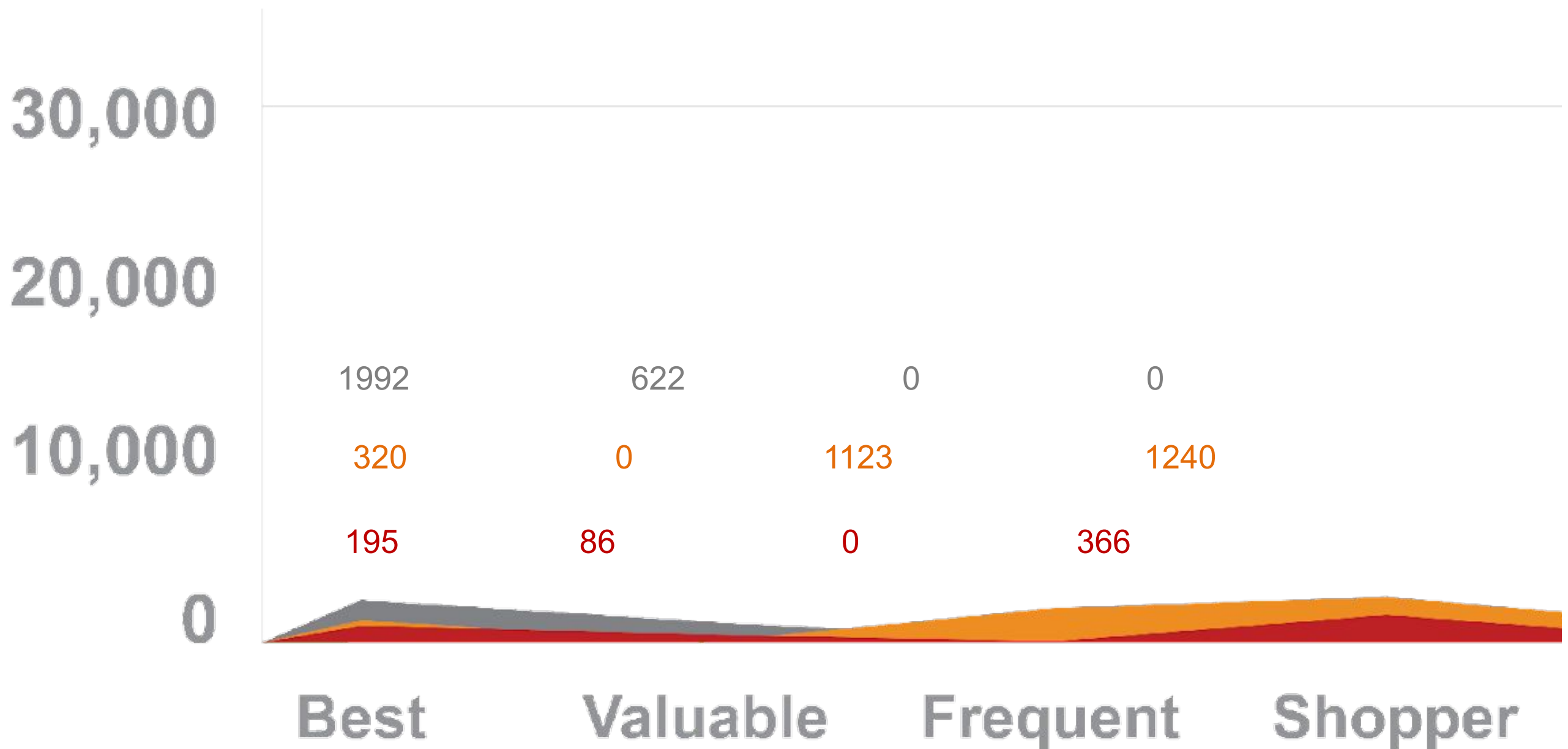
	Best	Valuable	Frequent Shopper	Spenders	First Time	Churn	Uncertain
2012	195	86	0	366	0	26870	49
2013	320	0	1123	1240	141	44088	234
2014	1992	622	0	0	92	55251	28



# QVC Customer Clusters



A deeper look into the top customers for QVC



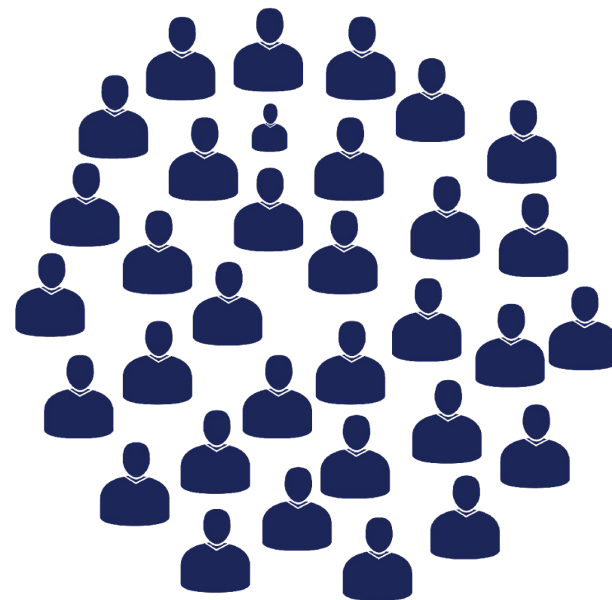


# Triggers Impact on “Uncertain” Customers

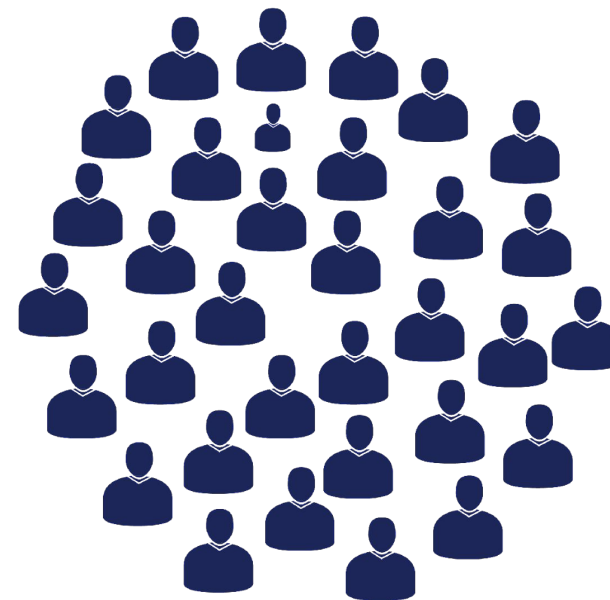


With trigger, uncertain customers become more valuable customers in the next year

## Trigger



## No Trigger



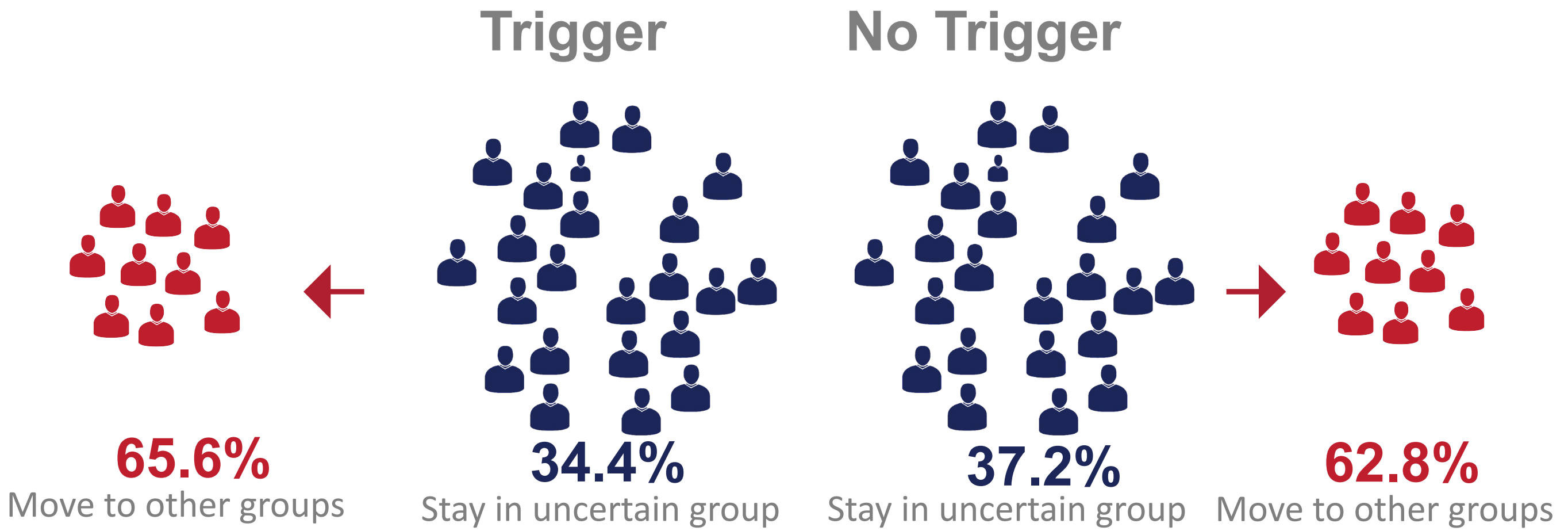




# Triggers Impact on “Uncertain” Customers



With trigger, uncertain customers become more valuable customers in the next year



2012-2013

Affects

2.8%

2013-2014

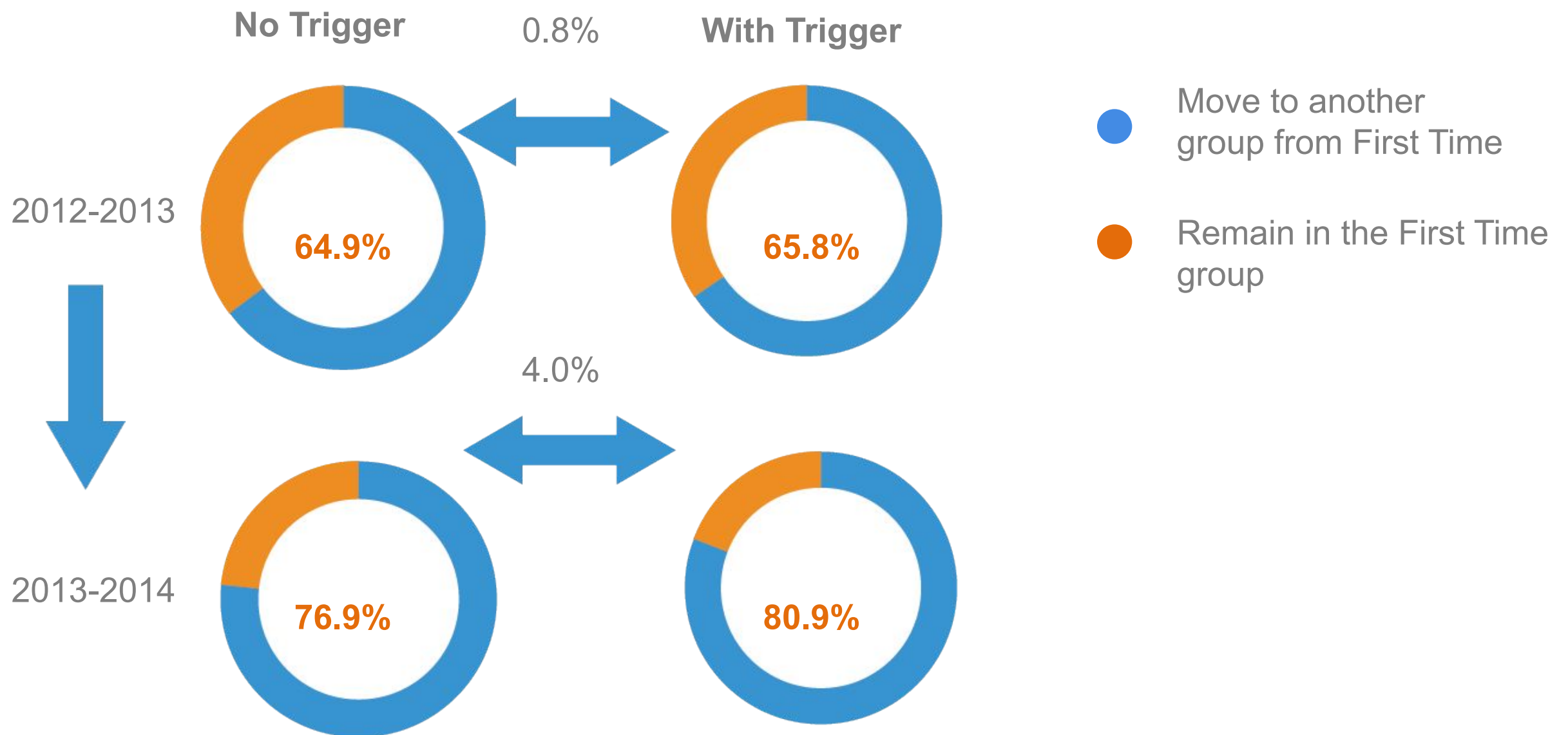
2.6%



# Triggers Impact on “First Time” Customers



With Trigger, first time customers will still be first time customer in the next year, which means the trigger has no significant impact on first time customers



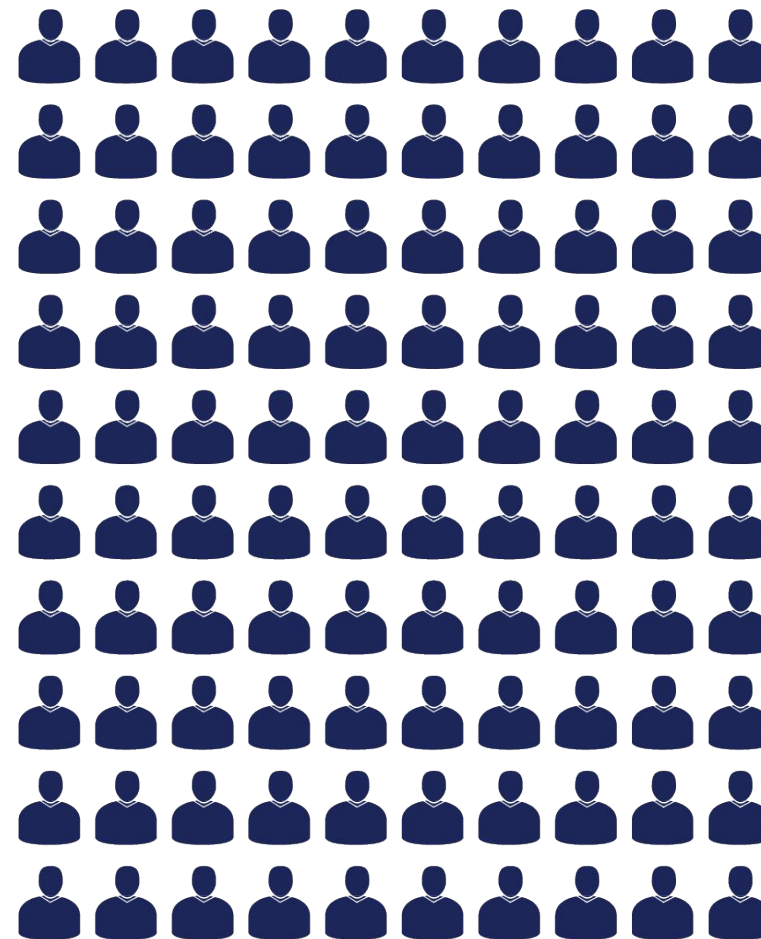
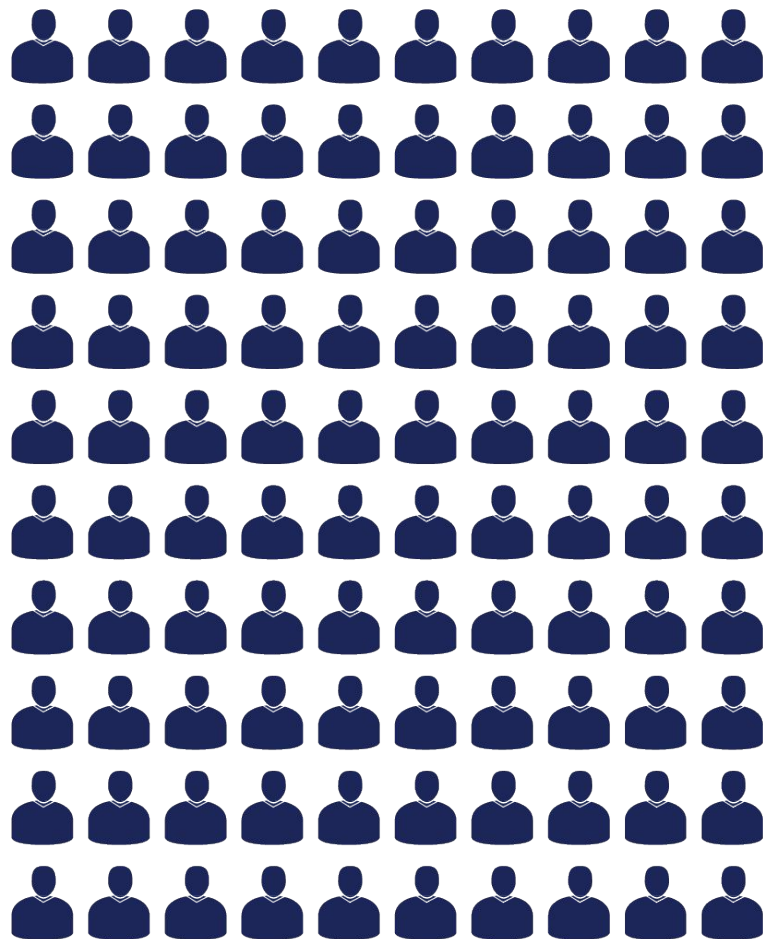


# Triggers increase the value of customers year to year



With Trigger, those customers that return will become more valuable the next year

Customers from 2012 will become high-value customer in 2013:





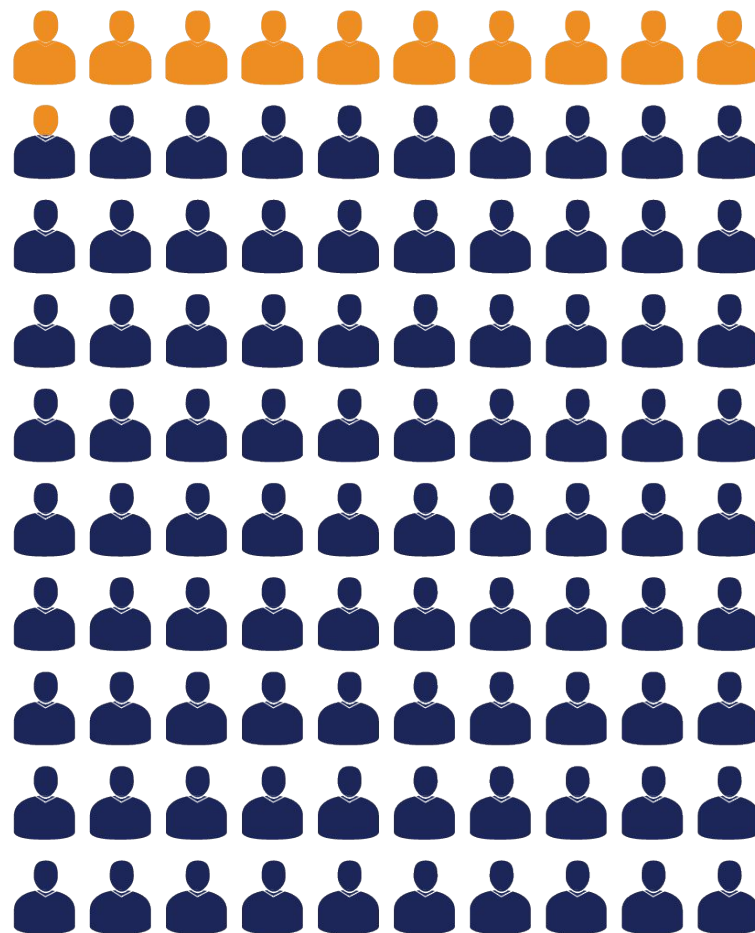
# Triggers increase the value of customers year to year



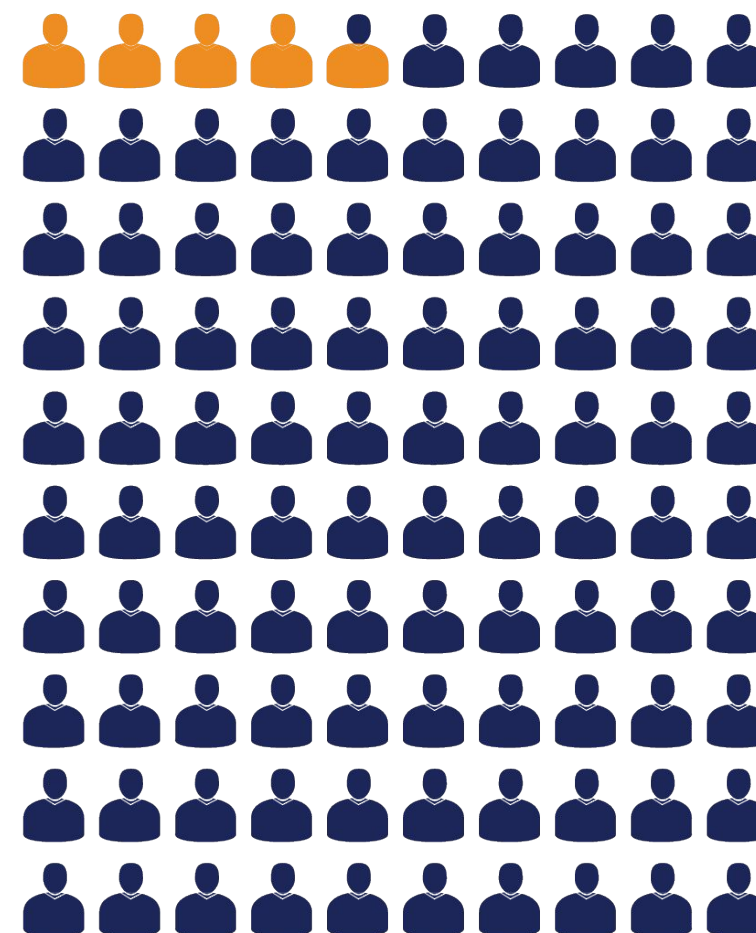
With Trigger, those customers that return will become more valuable the next year

**With: 10.5%**

Customers from 2012 will become high-value customer in 2013:



**Without: 4.6%**



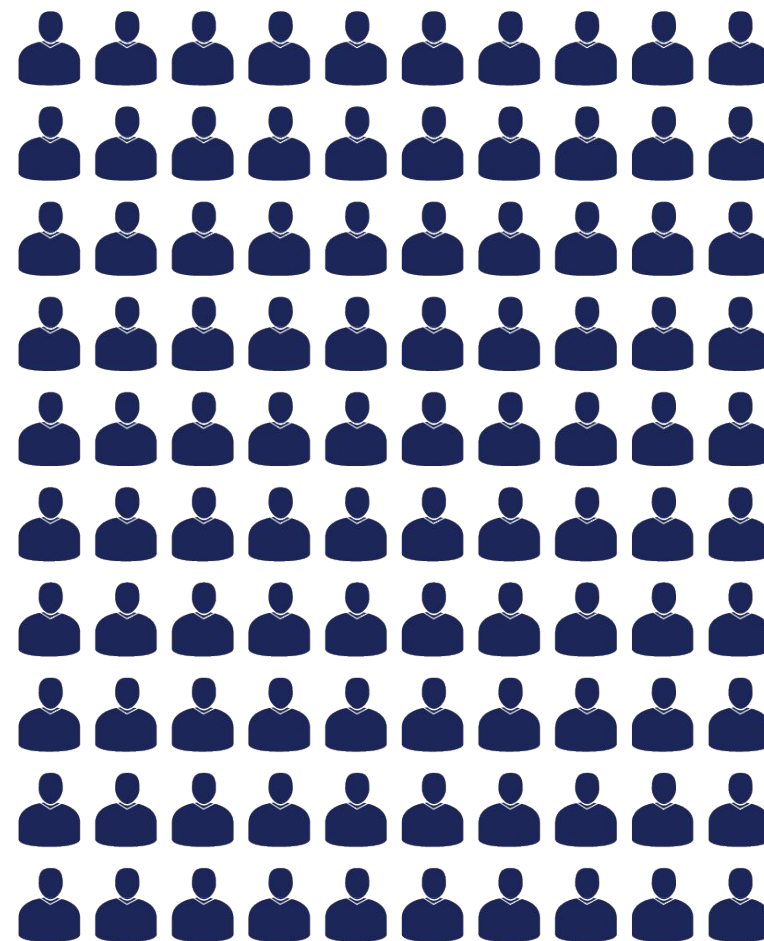
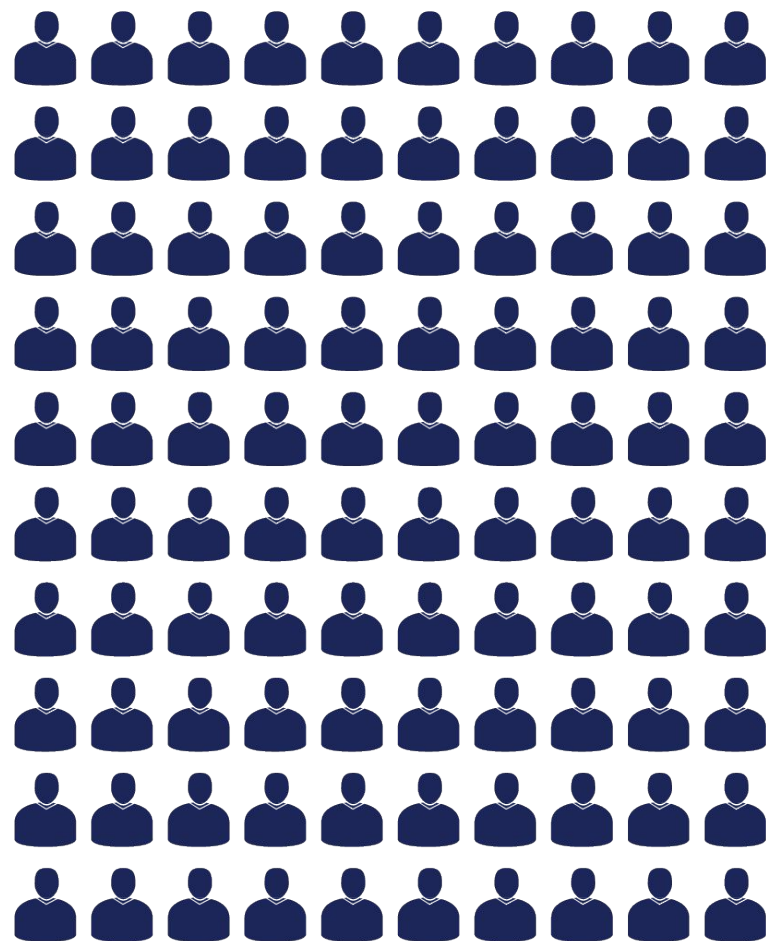


# Triggers increase the value of customers year to year



With Trigger, those customers that return will become more valuable the next year

Customers from 2013 will become high-value customer in 2014:





# Triggers increase the value of customers year to year

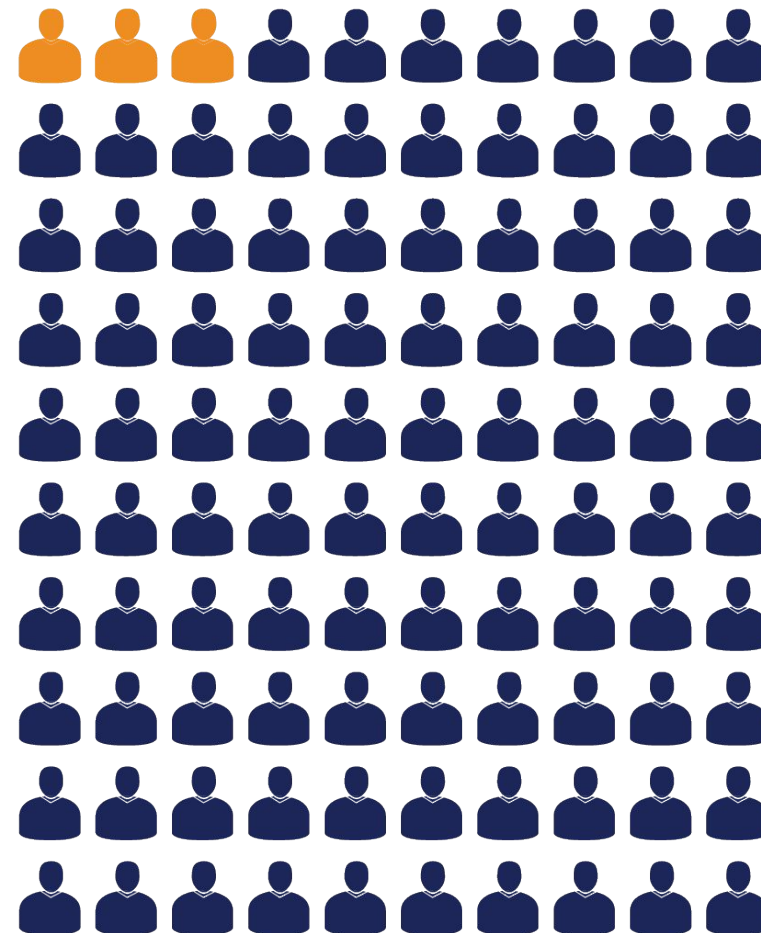
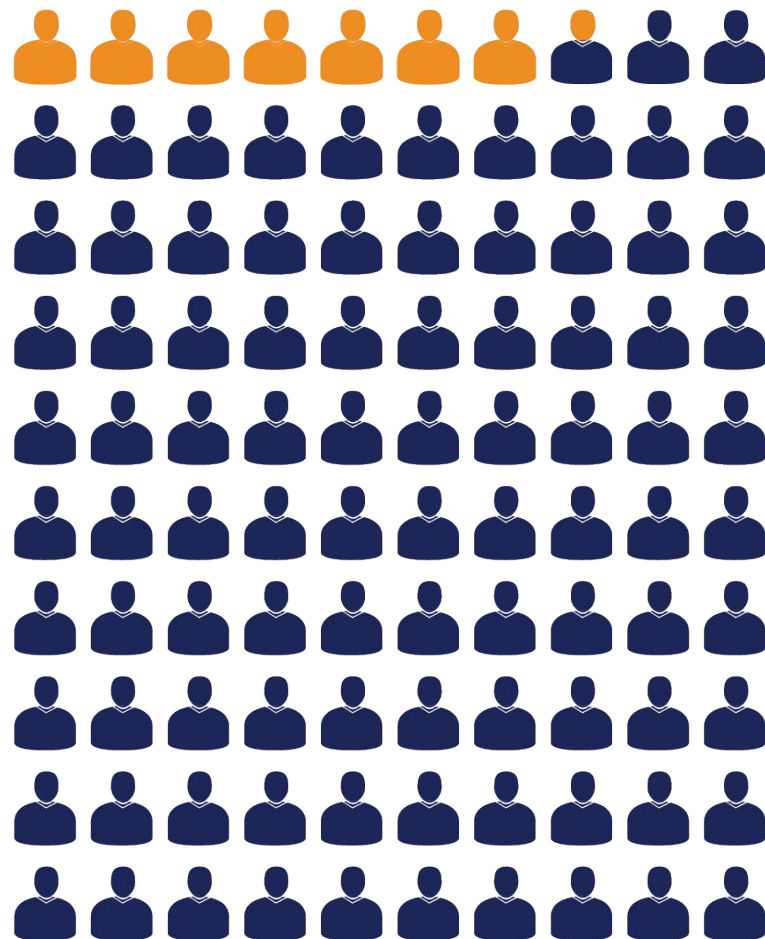


With Trigger, those customers that return will become more valuable the next year

**With: 7.4%**

**Without: 3.1%**

Customers from 2013 will become high-value customer in 2014:



# Further Analysis

Quantify Loyalty for  
Company





# Quantifying Loyalty



Weight RFM to determine loyalty score

Combination	Recency	Frequency	Monetary
C1	10%	20%	70%
C2	10%	30%	60%
C3	10%	40%	50%
C4	20%	30%	50%

Classify into 5 equal group(20%) by loyalty score

Classify customer into 3 equal group (33.33%) by Monetary

Very High Loyalty
High Loyalty
Neutral
Low Loyalty
Very Low Loyalty

How many high loyalty customers will be high profitable customers in next year

High Profitable
Medium Profitable
Low Profitable





# Weighted RFM Model



Quantitative Loyalty Score validated by using two retail data sets

Combination 1    Combination 2    Combination 3    Combination 4

**RETAILER**

**QVC**

2010-2011	8.306%	8.573%	8.727%	8.603%
2011-2012	5.733%	5.737%	5.793%	5.792%
2012-2013	54.32%	54.97%	55.62%	55.89%
2013-2014	69.28%	70.17%	70.91%	67.30%

Combination	Recency	Frequency	Monetary
<b>C3</b>	<b>10%</b>	<b>40%</b>	<b>50%</b>
<b>C4</b>	<b>20%</b>	<b>30%</b>	<b>50%</b>



# ENGAGEMENT FUNNEL

---

Providing a visualization of  
customer journey

**H1** There is a way to visualize customer journey to further understand customer behavior in the various engagement stages



# Methodology

---

Determining the engagement funnel

1



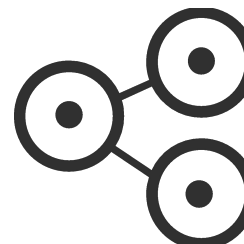
Explore dataset and customers' event lists

2



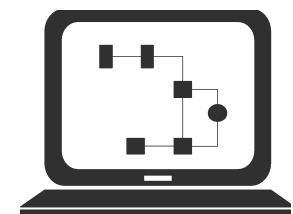
Select **appropriate variables** which can stand for customer engagement

3



Organize a logical variable order to show customer engagement

4



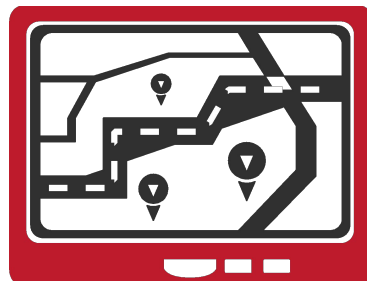
Develop and design funnel dashboard



# Value of Engagement Funnel

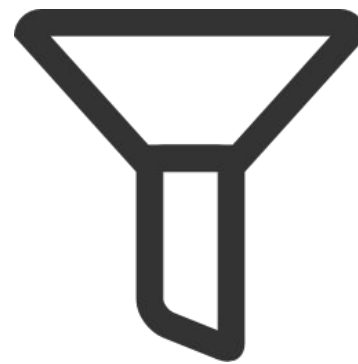


Providing customer journey will enhance how a client communicates with its customers



## VISUALIZATION

Visual of customer  
journey



## LOGICAL

Customers in lower  
position have higher value



## MARKETING

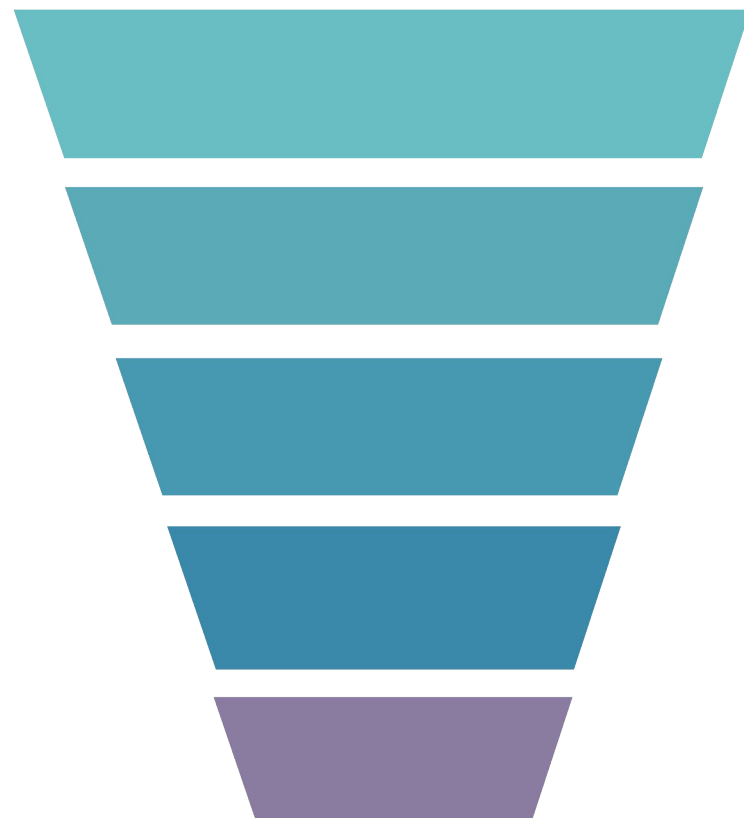
Easy to see problem areas



# Engagement Funnel Design



Visualizing a customer's journey from app download to heavy usage



When customer download the app and use it for the first time

Customer who enable the push notification

Count ( $\leq 2 \times$  Time period = Light users)

Count ( $(2 \leq 5) \times$  Time period = Medium users)

Count ( $> 5 \times$  Time period = Heavy users)

Device\_Register (First Time)

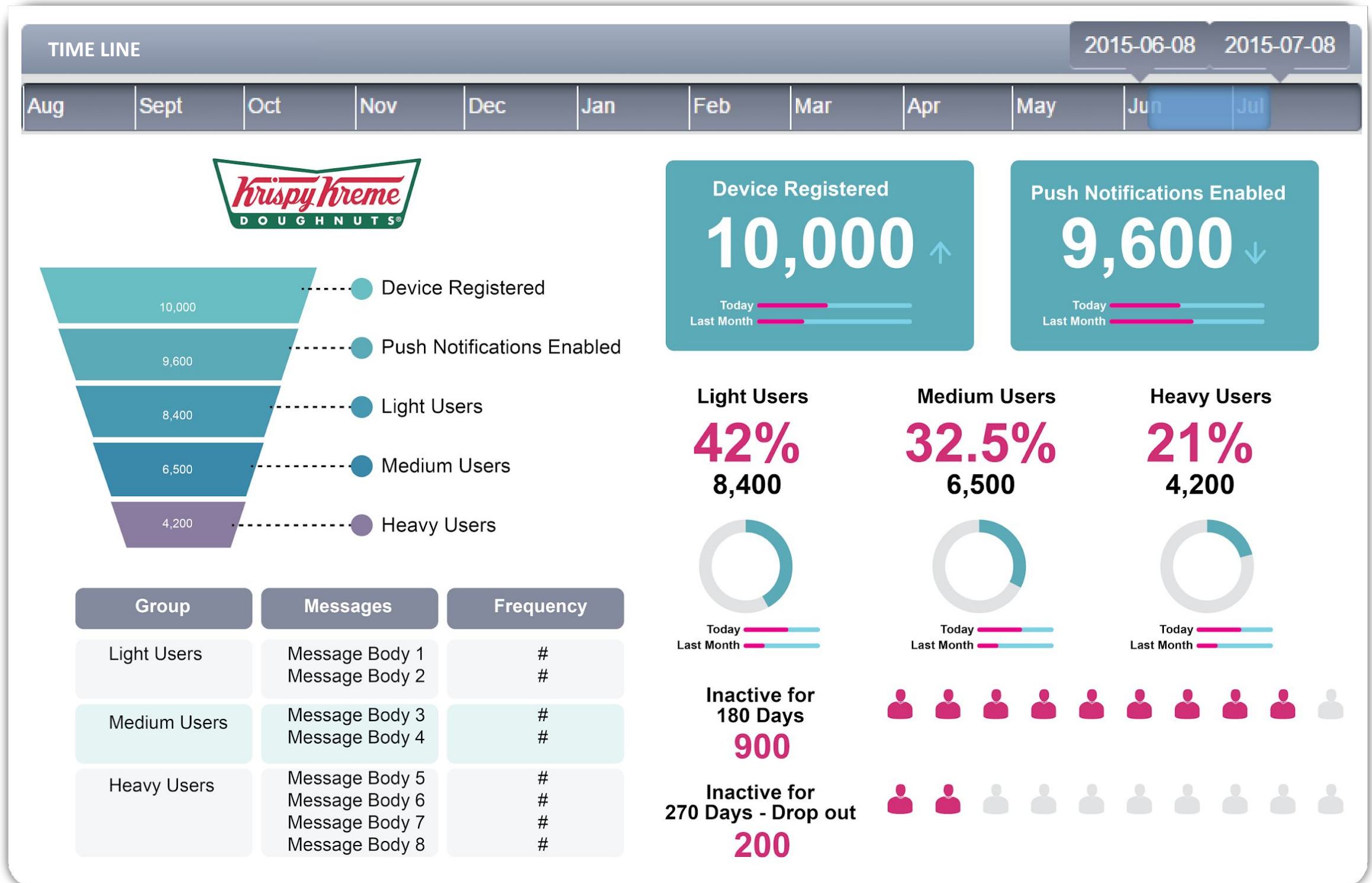
Push\_Register (First Time)

Application\_State (Open and Foreground)

Application\_State (Open and Foreground)

Application\_State (Open and Foreground)

# Engagement Funnel Dashboard





# RECOMMENDATIONS

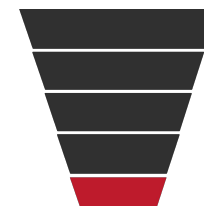
Providing key loyalty metrics to clients

## 10-40-50

Provide the 10/40/50 RFM loyalty model to retail clients to help marketers gauge different customer segments and predict future behavior



Define engagement/triggers impact on loyalty through behavior change



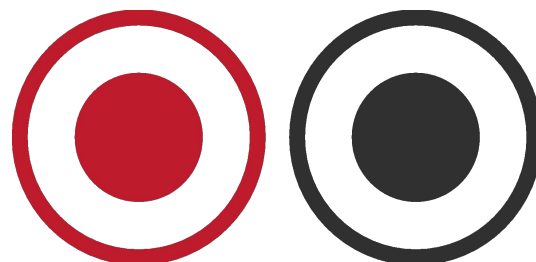
Engagement funnel will provide value to client's to determine weaknesses in moving customer groups to profitability

IBM SPSS Statistics Data Editor

	MSZSCORE	C1	C2	C3	C4	M_GROUP	C1GROUP	C2GROUP	C3GROUP
1	3.111906677459656	2.4078808371029234	3.2877186562684490	2.75	2.66	3.00	5.00	5.00	5.00
2	6.963783594790864	2.6462924057616104	3.2717173052653044	2.75	2.69	3.00	5.00	5.00	5.00
3	5.398726271109184	3.1231155430789848	3.2537841591791925	2.85	2.84	3.00	5.00	5.00	5.00
4	1.1157847588913403	2.224414577316246	3.2316905714206360	2.42	2.82	3.00	5.00	5.00	5.00
5	1.1248320370669384	2.0899987455580074	3.2231918785439310	2.79	2.12	3.00	5.00	5.00	5.00
6	0.465631880633809	2.423090884531819	3.2071995687034210	2.30	2.67	3.00	5.00	5.00	5.00
7	1.1432286328151347	2.7853658208125114	3.1871477768398890	2.90	2.00	3.00	5.00	5.00	5.00
8	9515081539678336	2.4674837292675953	3.1791162106993160	2.62	2.86	3.00	5.00	5.00	5.00
9	5.398726271109184	1.9111900690639920	3.1763179708638460	2.55	2.55	3.00	5.00	5.00	5.00
10	5.398726271109184	6.793969643274417	3.1758779676156190	2.31	2.43	3.00	5.00	5.00	5.00
11	7.228181946028808	2.5668218828753813	3.1512377857149300	2.65	2.06	3.00	5.00	5.00	5.00
12	1.1432286328151347	2.4476160985460380	3.1511081957171645	2.81	2.59	3.00	5.00	5.00	5.00
13	9602918263231724	2.9045716051418546	3.1249671808190990	2.86	2.74	3.00	5.00	5.00	5.00
14	1.1066374803167423	2.3880132063813660	3.1223829151659874	2.77	2.84	3.00	5.00	5.00	5.00
15	1.1823738721897328	2.4674837292675953	3.1188478205757830	2.79	2.70	3.00	5.00	5.00	5.00
16	5.866090189832090	2.9541744973065265	3.1178608269881520	2.72	2.73	3.00	5.00	5.00	5.00
17	5.81671838601147	1.0370143173154724	3.0910477523342337	2.32	2.70	3.00	5.00	5.00	5.00
18	6138508541077034	3.023773894711983	3.0839278367593340	2.70	2.11	3.00	5.00	5.00	5.00
19	1.088429235675460	1.8317195461777630	3.0812697349447050	2.54	2.70	3.00	5.00	5.00	5.00
20	1.1432286328151347	1.5933079775190757	3.0754321576035070	2.58	2.42	3.00	5.00	5.00	5.00
21	1.1432286328151347	1.0966122084801113	3.0557668770811210	2.48	2.28	3.00	5.00	5.00	5.00
22				2.09	2.09	3.00	5.00	5.00	5.00

# LIMITATIONS

Limitations of analysis and findings



Limitation using two datasets:  
 QVC and Retail Company X



Loyalty exploration based  
 only on revenue



# QUESTIONS AND ANSWERS





# RECOMMENDATIONS

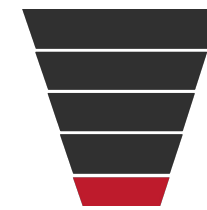
Providing key loyalty metrics to clients

## 10-40-50

Provide the 10/40/50 RFM loyalty model to retail clients to help marketers gauge different customer segments



Define engagement/triggers impact on loyalty through behavior change



Engagement funnel will provide value to client's to determine weaknesses in moving customer groups to profitability





# Relationship between RFM

**2012**

**2013**

**2014**

Correlations between RFM Zscore in 2012				
		R-Z SCORE	F-Z SCORE	M-Z SCORE
R-Z SCORE	Pearson Correlation	1	.254**	.226**
	Sig. (2-tailed)		0.000	0.000
	N	37707	37707	37707
F-Z SCORE	Pearson Correlation	.254**	1	.865**
	Sig. (2-tailed)	0.000		0.000
	N	37707	37707	37707
M-Z SCORE	Pearson Correlation	.226**	.865**	1
	Sig. (2-tailed)	0.000	0.000	
	N	37707	37707	37707

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Correlations between RFM Zscore in 2013				
		R-Z SCORE	F-Z SCORE	M-Z SCORE
R-Z SCORE	Pearson Correlation	1	.028**	.011**
	Sig. (2-tailed)		.000	.006
	N	60342	60342	60342
F-Z SCORE	Pearson Correlation	.028**	1	.875**
	Sig. (2-tailed)	.000		0.000
	N	60342	60342	60342
M-Z SCORE	Pearson Correlation	.011**	.875**	1
	Sig. (2-tailed)	.006	0.000	
	N	60342	60342	60342

\*\* . Correlation is significant at the 0.01 level (2-tailed).

Correlations between RFM Zscore in 2014				
		ZR	ZF	ZM
ZR	Pearson Correlation	1	.306**	.273**
	Sig. (2-tailed)		0.000	0.000
	N	72504	72504	72504
ZF	Pearson Correlation	.306**	1	.893**
	Sig. (2-tailed)	0.000		0.000
	N	72504	72504	72504
ZM	Pearson Correlation	.273**	.893**	1
	Sig. (2-tailed)	0.000	0.000	
	N	72504	72504	72504

\*\* . Correlation is significant at the 0.01 level (2-tailed).

# Relationship between RFM and Triggers

## 2012

Correlations between trigger and RFM in 2012					
	2012 OTO	2012 TSV	2012 R	2012 F	2012 M
2012 OTO Pearson Correlation	1	.810**	.040**	.294**	.267**
Sig. (2-tailed)		0.000	.000	0.000	0.000
N	37707	37707	37707	37707	37707
2012 TSV Pearson Correlation	.810**	1	.047**	.288**	.269**
Sig. (2-tailed)	0.000		.000	0.000	0.000
N	37707	37707	37707	37707	37707

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## 2013

Correlations between trigger and RFM in 2013					
	2013 OTO	2013 TSV	2013 R	2013 F	2013 M
2013 OTO Pearson Correlation	1	.807**	-.072**	.277**	.245**
Sig. (2-tailed)		0.000	.000	0.000	0.000
N	60313	60313	60313	60313	60313
2013 TSV Pearson Correlation	.807**	1	-.094**	.279**	.249**
Sig. (2-tailed)	0.000		.000	0.000	0.000
N	60313	60313	60313	60313	60313

\*\* . Correlation is significant at the 0.01 level (2-tailed).

## 2014

Correlations between trigger and RFM in 2014					
	2014 OTO	2014 TSV	2014 R	2014 F	2014 M
2014 OTO Pearson Correlation	1	.880**	.074**	.159**	.132**
Sig. (2-tailed)		0.000	.000	0.000	.000
N	63145	63145	63145	63145	63145
2014 TSV Pearson Correlation	.880**	1	.079**	.155**	.128**
Sig. (2-tailed)	0.000		.000	0.000	.000
N	63145	63145	63145	63145	63145

\*\* . Correlation is significant at the 0.01 level (2-tailed).