

# Acquisition and Funnel Analysis

# Summary

- ❑ Acquisition Analysis
- ❑ Funnel and Spend Performance Analysis
- ❑ Action Plan

# Acquisition Analysis

- ❑ Wayfair acquires customers from multiple **channels** across different **device** types:
  - ❑ Device:
    - ❑ Desktop
    - ❑ Phone
    - ❑ Tablet
  - ❑ Channel:
    - ❑ Paid Search
    - ❑ Organic Search
    - ❑ Social Media
    - ❑ Display Ads
    - ❑ Comparison Shopping
- ❑ Acquisition data: Customers acquired from Sep 2002 to June 2016;
- ❑ Main metric: **total revenue** generated from different devices/channels

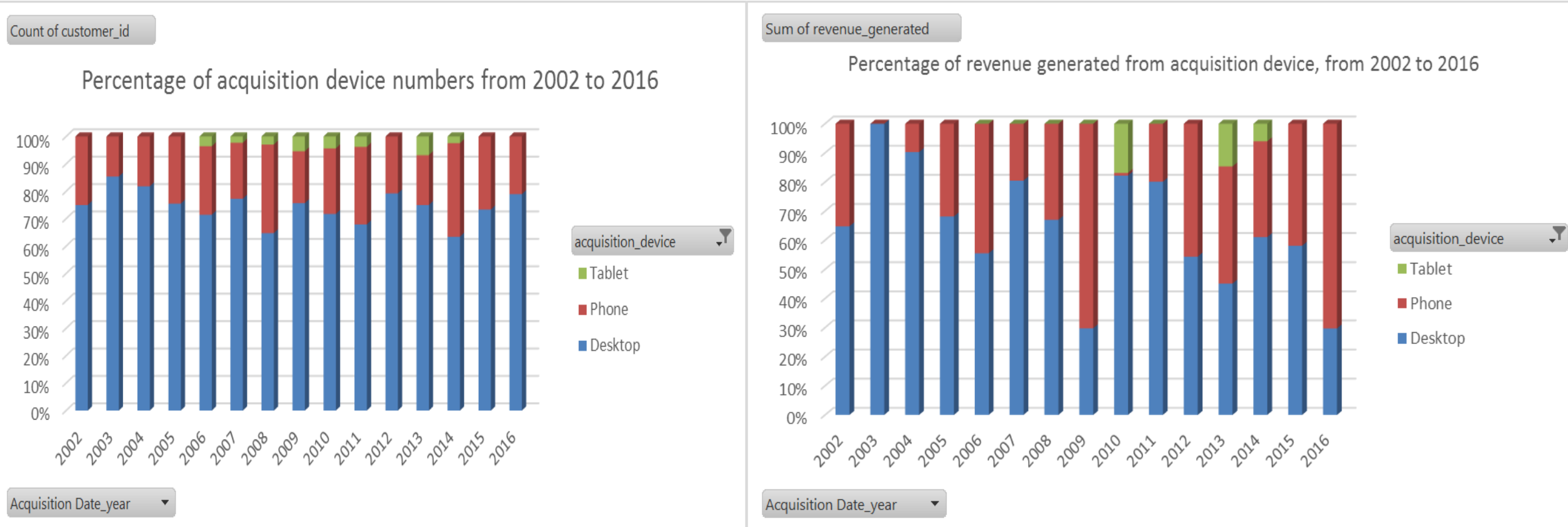
# Acquisition Analysis: Segmentation by Device

❑ 74% of customers acquired and 68% of revenue generated come from customers using desktop

Acquisition Device	Number of Customers	Percentage of Customers	Total Revenue Generated	Percentage of Revenue
Desktop	462	74%	\$ 31,011	68%
Phone	146	23%	\$ 12,971	28%
Tablet	14	2%	\$ 1,845	4%
Grand Total	622	100%	\$ 45,827	100%

# Acquisition Trend Analysis: Segmentation by Device

- ❑ Revenue generated from Phone acquisition has increase significantly in recent years although Desktop acquisition numbers are still dominant among the devices.



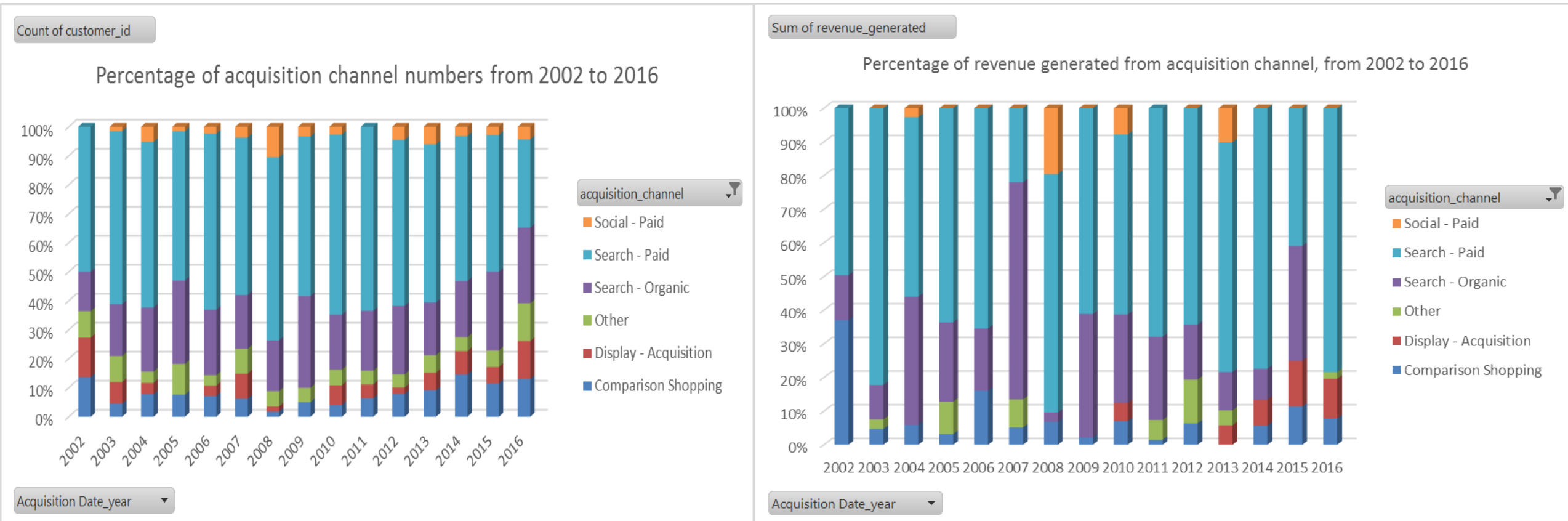
# Acquisition Analysis: Segmentation by Channel

- ❑ Most of customers acquired and revenue generated come from the search, either **Paid Search**, or **Organic Search**

Acquisition Channel	Number of Customers	Percentage of Customers	Total Revenue Generated	Percentage of Revenue
Search - Paid	537	56%	\$ 48,827	61%
Search - Organic	211	22%	\$ 19,378	24%
Comparison Shopping	72	7%	\$ 5,564	7%
Other	59	6%	\$ 2,710	3%
Display - Acquisition	48	5%	\$ 1,786	2%
Social - Paid	34	4%	\$ 1,830	2%
Total	961	100%	\$ 80,095	100%

# Acquisition Trend Analysis: Segmentation by Channel

- ❑ Search (paid or organic) has always been the major revenue source among all the channels.
- ❑ Revenue generated from Display Ads and Comparison shopping has increased in recent 2-3 years.



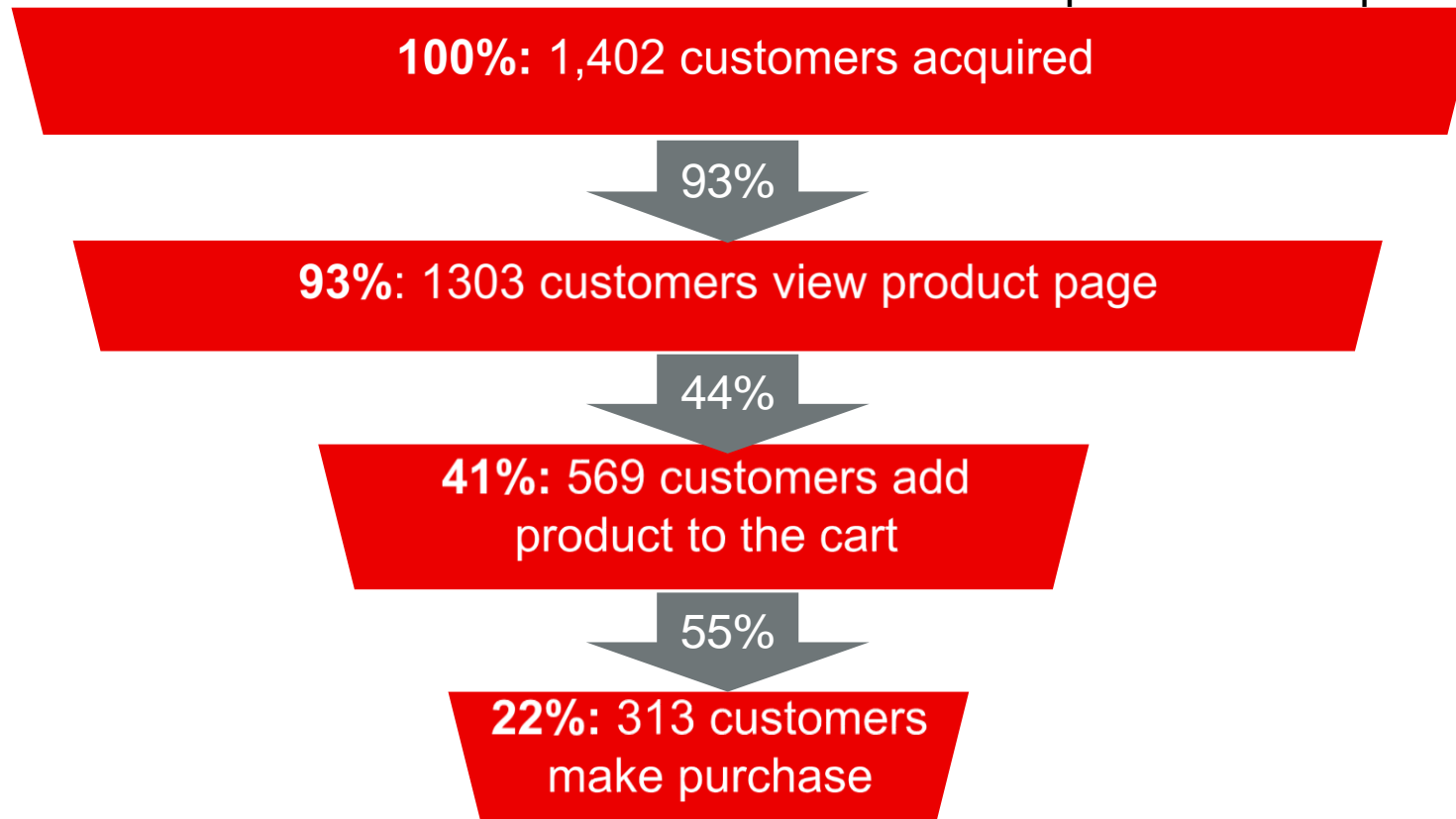
# Action Plan on Acquisition

- ❑ Device: focus more on **phone** acquisition, e.g. improve Wayfair APP, add more phone compatible features to Wayfair Emails/Website
- ❑ Channel: maintain the good acquisition channel from Search while explore some opportunities in Display Ads and Comparison shopping channels
- ❑ Organic search: investigate the reason of zero revenue generated from Organic Search for customer acquired in 2016
- ❑ Data quality and completeness: more than half of acquired customers with missing acquisition device information



# Funnel and Spend Performance Analysis

- ❑ Funnel and Spend Data from Sep 2016 to Aug 2018
- ❑ Main metric: **Conversion Rate** across the funnel
  - ❑ Conversion Rate (CR): the rate of which leads move through the online shopping funnel.
- ❑ Below is the conversion funnel for 1402 customers acquired from Sep 2002 to June 2016: total CR **22%**.



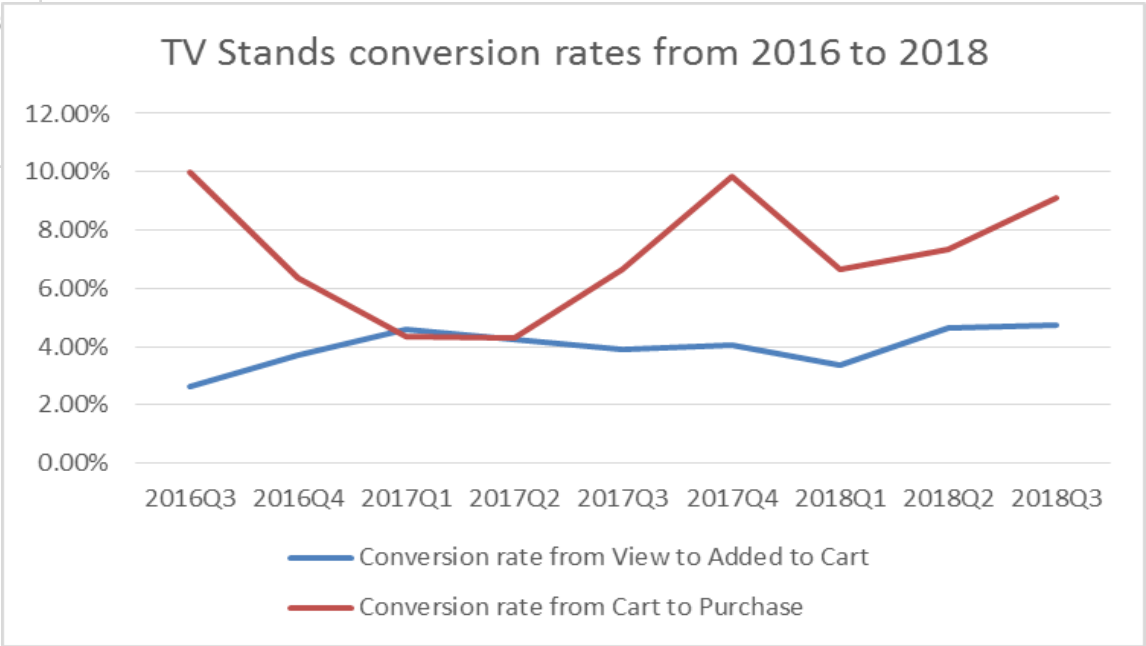
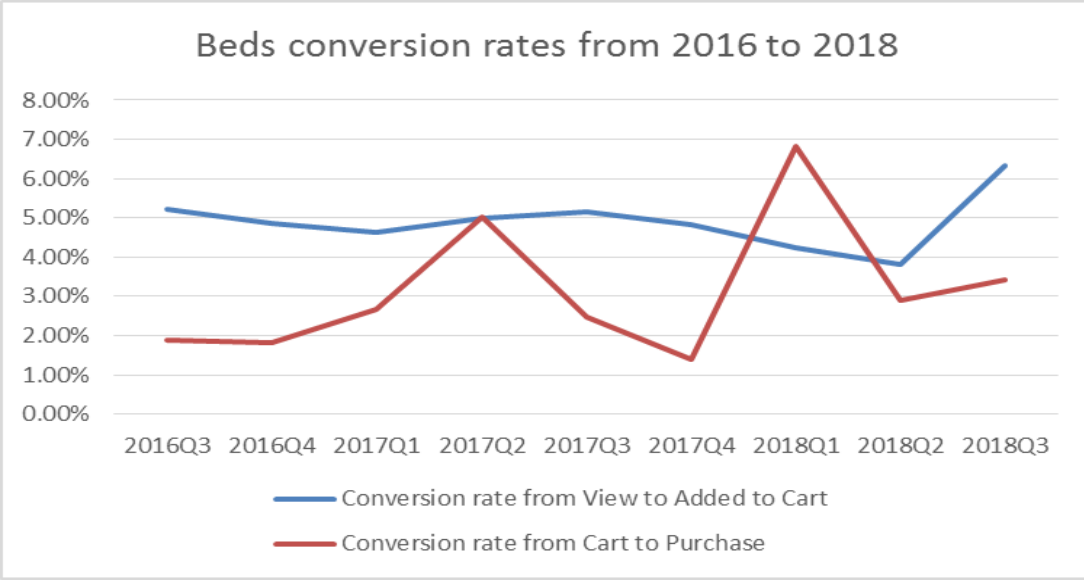
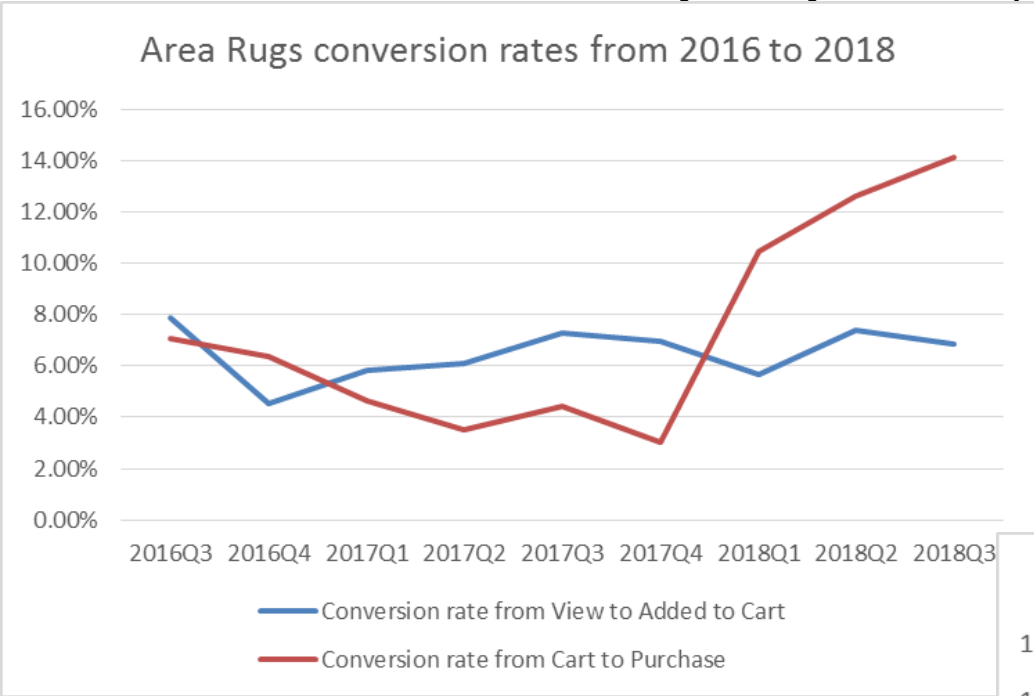
# Funnel and Spend Performance Analysis

## ☐ Segmentation by Product Class

Product Class	# viewed	# added to cart	# purchased	Revenue Generated	Percentage of Revenue Generated	Conversion rate from View to Added to Cart	Conversion rate from Cart to Purchase
Area Rugs	43,279	2,699	170	39,887	37.92%	6.24%	6.30%
TV Stands & Entertainment Centers	11,412	463	30	18,933	18.00%	4.06%	6.48%
Beds	24,642	1,192	36	12,208	11.61%	4.84%	3.02%
Sheets And Sheet Sets	1,955	242	33	7,688	7.31%	12.38%	13.64%
Wall Art	10,788	810	39	5,904	5.61%	7.51%	4.81%
End Tables	9,843	612	45	5,166	4.91%	6.22%	7.35%
Bar Stools	9,757	539	39	5,103	4.85%	5.52%	7.24%
Curtains & Drapes	6,688	301	35	3,915	3.72%	4.50%	11.63%
Bedding Sets	13,485	809	72	3,824	3.64%	6.00%	8.90%
Accent Pillows	5,331	624	75	2,556	2.43%	11.71%	12.02%
Total	137,180	8,291	574	105,184	100.00%	6.04%	6.92%

# Funnel and Spend Performance Analysis

❑ Conversion rate stability analysis for top 3 product classes:



# Funnel and Spend Performance Analysis

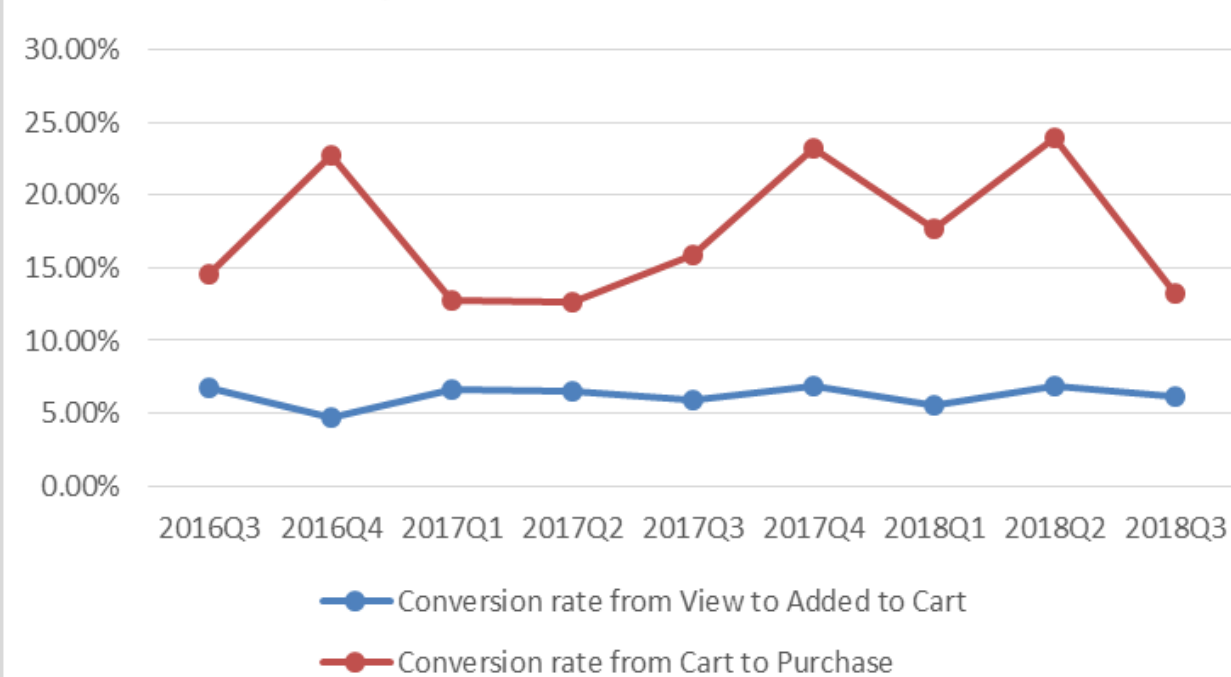
❑ Segmentation by Acquisition Device

Acquisition Device	# viewed	# added to cart	# purchased	Revenue Generated	Percentage of Revenue Generated	Conversion rate from View to Added to Cart	Conversion rate from Cart to Purchase
Desktop	16,238	994	174	31,011	67.67%	6.12%	17.51%
Phone	6,053	440	75	12,971	28.30%	7.27%	17.05%
Tablet	692	54	8	1,845	4.03%	7.80%	14.81%
Total	22,983	1,488	257	45,827	100.00%	6.47%	17.27%

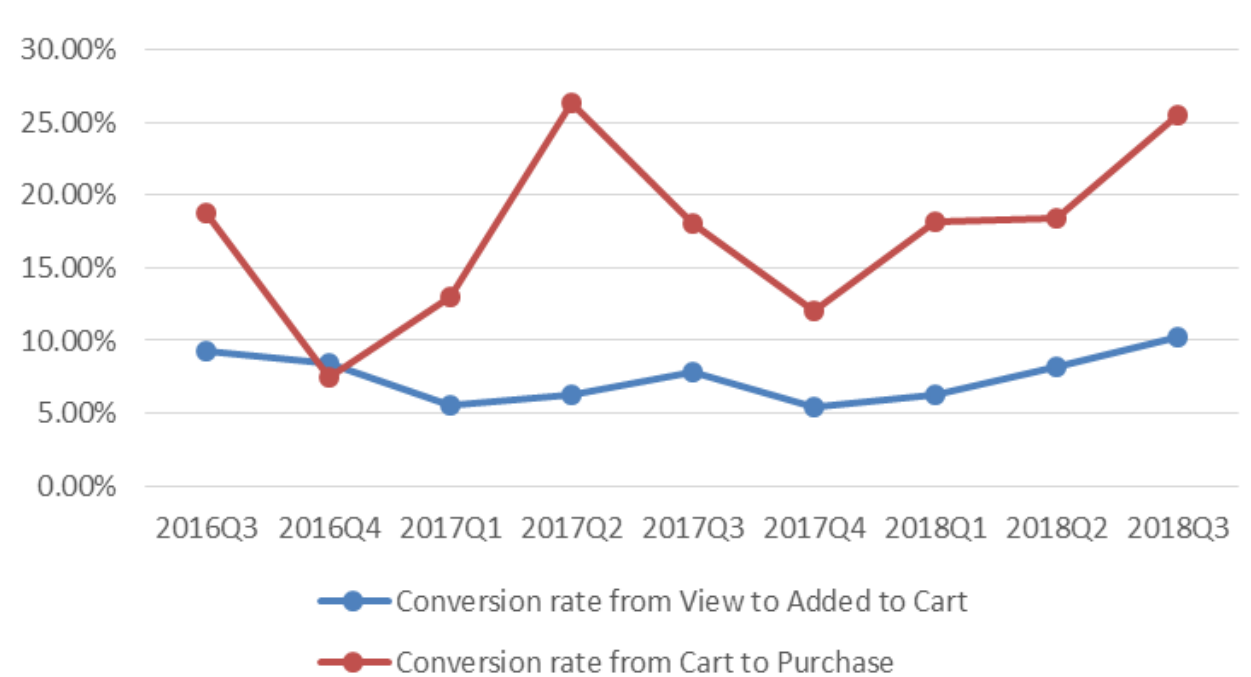
# Funnel and Spend Performance Analysis

❑ Conversion rate stability analysis for top 2 devices:

Desktop conversion rate from 2016 to 2018



Phone conversion rate from 2016 to 2018



# Funnel and Spend Performance Analysis

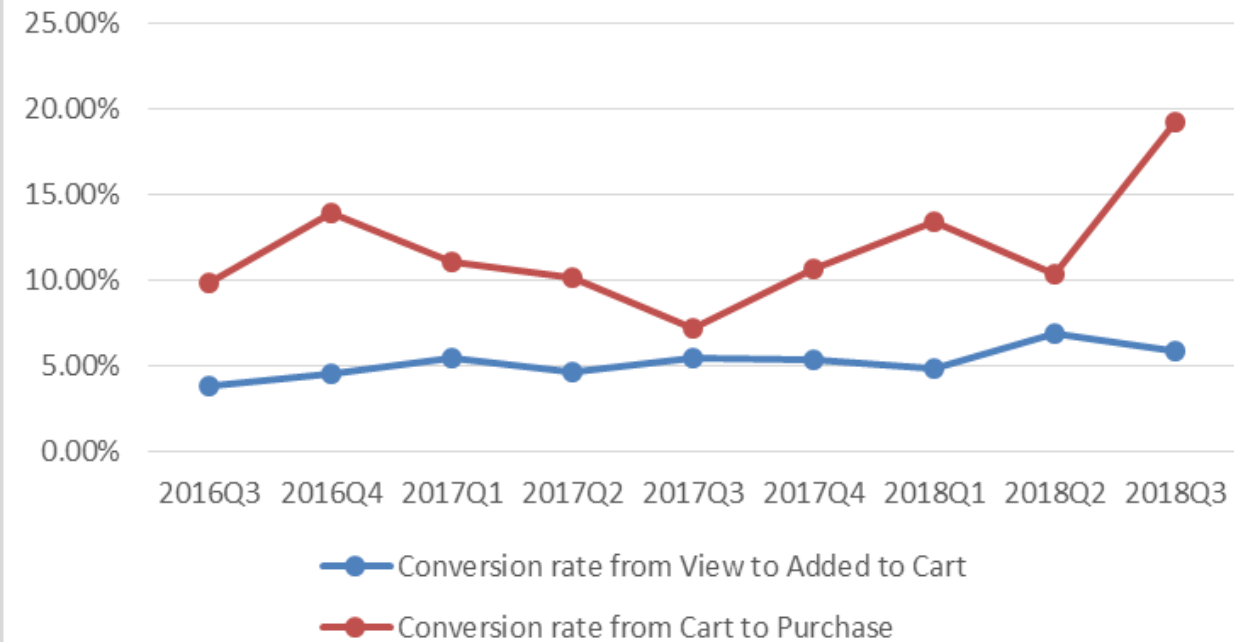
## ❑ Segmentation by Acquisition Channel

Acquisition Channel	# viewed	# added to cart	# purchased	Revenue Generated	Percentage of Revenue Generated	Conversion rate from View to Added to Cart	Conversion rate from Cart to Purchase
Search - Paid	42,451	2,234	256	48,827	60.96%	5.26%	11.46%
Search - Organic	70,105	4,664	111	19,378	24.19%	6.65%	2.38%
Comparison Shopping	2,556	183	38	5,564	6.95%	7.16%	20.77%
Other	1,244	112	16	2,710	3.38%	9.00%	14.29%
Social - Paid	2,637	155	8	1,830	2.28%	5.88%	5.16%
Display - Acquisition	1,663	81	8	1,786	2.23%	4.87%	9.88%
Total	120,656	7,429	437	80,095	100.00%	6.16%	5.88%

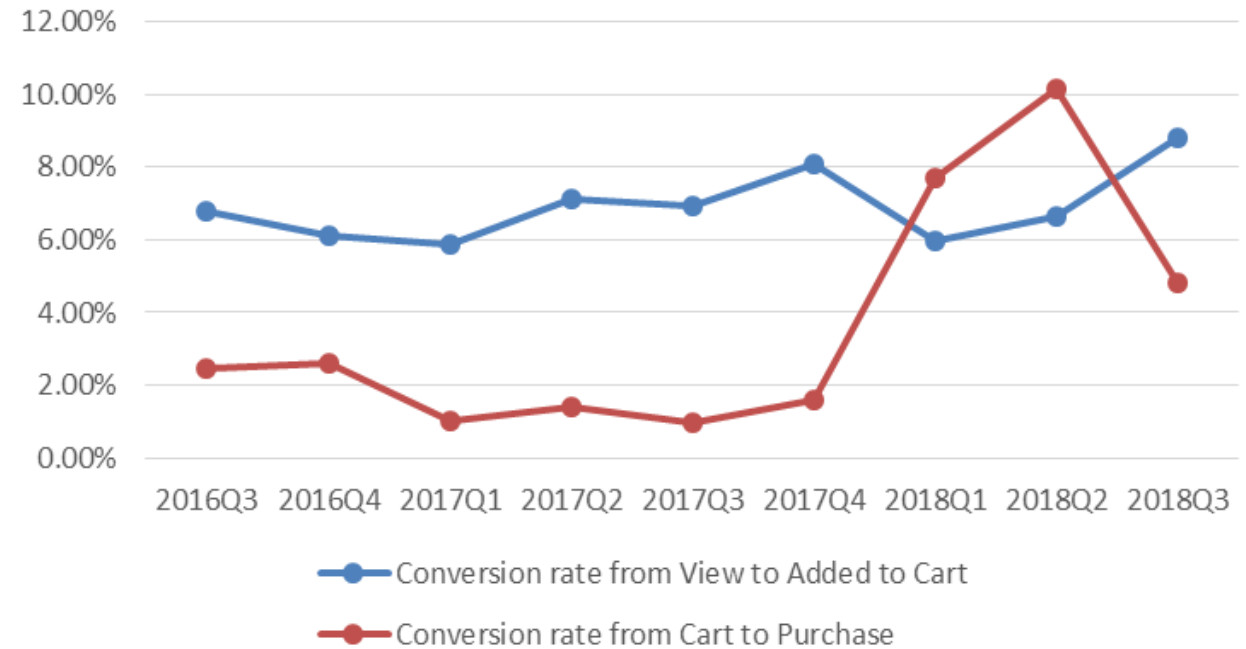
# Funnel and Spend Performance Analysis

❑ Conversion rate stability analysis for top 2 channels:

Paid search conversion rate from 2016 to 2018



Organic search conversion rate from 2016 to 2018



# Action Plan on Funnel and Spend

## ❑ Device:

- ❑ **Phone** conversion rates have improved steadily; Huge potential.
- ❑ **Desktop** conversion rate from adding to cart to making purchase dropped a lot in the recent quarter. Investigation needed.

## ❑ Channel:

- ❑ **Organic search:** conversion rate from adding to cart to making purchase dropped in the recent quarter. Investigation needed.

## ❑ Data:

- ❑ Need more detailed info between the steps from adding to cart to making purchase for further analysis; Steps may include adding contact information, delivery address, billing method, and validating that the order is correct.



## Appendix: Python code used

```
import pandas as pd
from pandasql import sqldf
#Read the first tab from excel
customer = pd.read_excel("/Interview Data APM L1-L4.xlsx",sheetname='Customer Overall Data',header=None)
new_header = customer.iloc[1402] #grab the last row for the header
customer = customer[:1402] #take the data less the header row
customer.columns = new_header #update the header using last row
# standarize the column names: remove space and convert to lower case
customer.columns = customer.columns.str.strip().str.lower().str.replace(' ', '_')

#####
##### Acquisition Analysis #####
#####

#Read Cust funnel & spendthe from excel
funnel_spend = pd.read_excel("/Interview Data APM L1-L4.xlsx",sheetname='Cust funnel & spend by class')
# standarize the column names: remove space and convert to lower case
funnel_spend.columns = funnel_spend.columns.str.strip().str.lower().str.replace(' ', '_')
#Calculate total revenue generated from each customer
customer_revenue = funnel_spend.groupby(['customer_id'])['revenue_generated'].sum()
customer_revenue = pd.DataFrame({'customer_id':customer_revenue.index, 'revenue_generated':customer_revenue.values})

#merge acquisition table with funnal data to get total revenue generated from each customer
customer_revenue_merge = customer.merge(customer_revenue, left_on='customer_id', right_on='customer_id')
```

## Appendix: Python code used

```
#####
##### Conversion funnel Analysis: customer Level #####
#####
customer_views_purchase = sqldf("""
    select customer_id, sum(skus_viewed) as view, sum(skus_added_to_cart) as cart, sum(skus_purchased) as buy
    from funnel_spend
    group by customer_id;
""")

customer_total_funnal = customer.merge(customer_views_purchase, left_on='customer_id', right_on='customer_id')
customer_total_funnal.astype(bool).sum(axis=0)
#customer_id          1402
#acquisition_date     1402
#acquisition_channel   1402
#acquisition_device    1402
#view                 1303
#cart                  569
#buy                   313

customer_total_funnal[customer_total_funnal['acquisition_device'] == 'Desktop'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_device'] == 'Phone'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_device'] == 'Tablet'].astype(bool).sum(axis=0)

customer_total_funnal[customer_total_funnal['acquisition_channel'] == 'Search - Paid'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_channel'] == 'Search - Organic'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_channel'] == 'Display - Acquisition'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_channel'] == 'Social - Paid'].astype(bool).sum(axis=0)
customer_total_funnal[customer_total_funnal['acquisition_channel'] == 'Comparison Shopping'].astype(bool).sum(axis=0)
```



# Appendix: Python code used

```
#####
##### Conversion funnel Analysis: all view level #####
#####
#merge funnel table with acquisition data to get Acquisition info for each customer
funnel_spend_merge = funnel_spend.merge(customer, left_on='customer_id', right_on='customer_id')

# first look at overall situation from 2016 to 2018

#get funnel segment by product class
funnel_spend_class = funnel_spend_merge.groupby(['class_name'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()

#get funnel segment by acquisition channel
funnel_spend_channel = funnel_spend_merge.groupby(['acquisition_channel'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()

#get funnel segment by product class
funnel_spend_device = funnel_spend_merge.groupby(['acquisition_device'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()

# Then look at the trend for the past three years
funnel_spend_merge['Q'] = (funnel_spend_merge['month'] - 1) // 3 + 1
funnel_spend_merge['YYYYQQ'] = funnel_spend_merge['year'].map(str) + 'Q' + funnel_spend_merge['Q'].map(str)

#get funnel segment by product class
funnel_spend_class_trend = funnel_spend_merge.groupby(['class_name', 'YYYYQQ'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()
funnel_spend_class_trend_new = funnel_spend_class_trend.reset_index()

#get funnel segment by channel
funnel_spend_channel_trend = funnel_spend_merge.groupby(['acquisition_channel', 'YYYYQQ'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()
funnel_spend_channel_trend = funnel_spend_channel_trend.reset_index()

#get funnel segment by device
funnel_spend_device_trend = funnel_spend_merge.groupby(['acquisition_device', 'YYYYQQ'])[['skus_viewed', 'skus_added_to_cart', 'skus_purchased', 'revenue_generated']].sum()
funnel_spend_device_trend = funnel_spend_device_trend.reset_index()
```