CLUSTER ANALYSIS FOR AD CONVERSIONS DATA

my project aims to enhance sales, marketing and customer satisfaction by analyzing ideas to improve ad offerings

Tools used in this project:

- Microsoft Excel
- Tableau

Data used in this project:
https://www.kaggle.com/datasets/loveall/clicks-conversion-tracking

amryalamoudui99@gmail.com

CONTENT OF USED DATA

The data used in this project is from an anonymous organisation's social media ad campaign. The file conversion_data.csv contains 1143 observations in 11 variables. Below are the descriptions of the variables.

1.) ad_id: an unique ID for each ad.

2.) xyz_campaign_id: an ID associated with each ad campaign of XYZ company.

3.) fb_campaign_id: an ID associated with how Facebook tracks each campaign.

4.) age: age of the person to whom the ad is shown.

5.) gender: gender of the person to whim the add is shown

6.) interest: a code specifying the category to which the person's interest belongs (interests are as mentioned in the person's Facebook public profile).

7.) Impressions: the number of times the ad was shown.

8.) Clicks: number of clicks on for that ad.

9.) Spent: Amount paid by company xyz to Facebook, to show that ad.

10.) Total conversion: Total number of people who enquired about the product after seeing the ad.

11.) Approved conversion: Total number of people who bought the product after seeing the ad.

BUSINESS QUESTIONS

1. How to optimize the social ad campaigns for the highest conversion rate possible? (Attain best Reach to Conversion ratios/Click to Conversion ratios).

2. Finding the perfect target demographics with the appropriate click through rates.

3. Understanding the ideal turnaround/decision making time per age group to convert and re-target future social campaigns.

4. Comparing the individual campaign performance so the best creative campaign can be run again with adjusted audiences.

DATA CLEANING AND DATA PREPARATION

We will first conduct data cleaning and data preparation activities.

Using the Excel tool, we cleaned and prepared the data through the following steps:

- Assess data quality.

- Check for missing values:

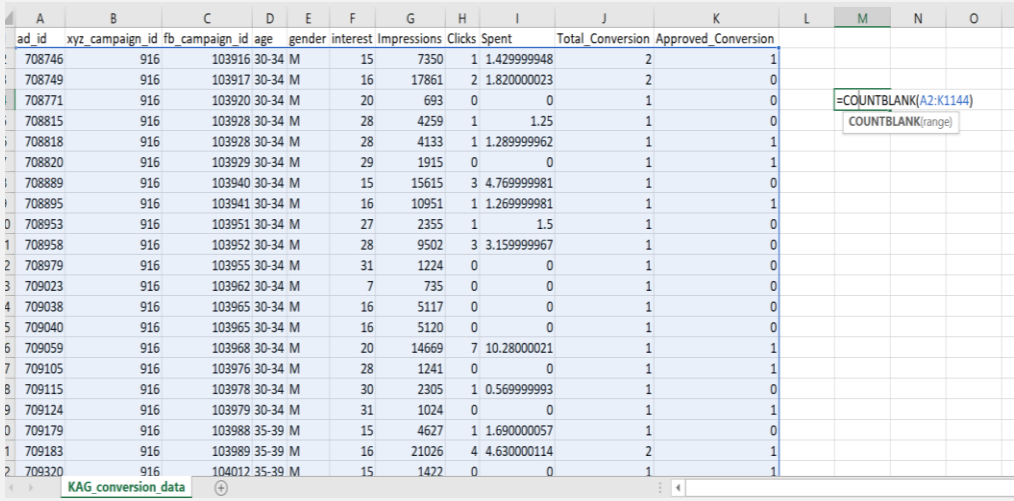
Using the COUNTBLANK function we will check for missing values.

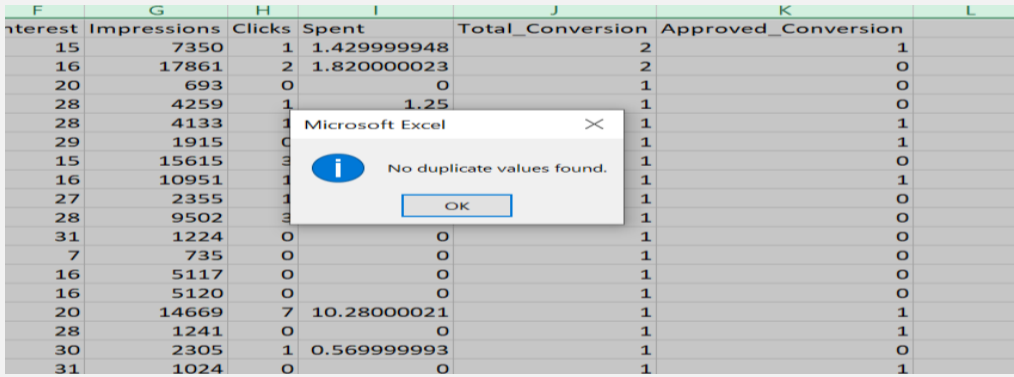
The result was that there were no missing values.

- Find duplicates.

Select all data and check for duplicates:

Fortunately, there were no duplicates.





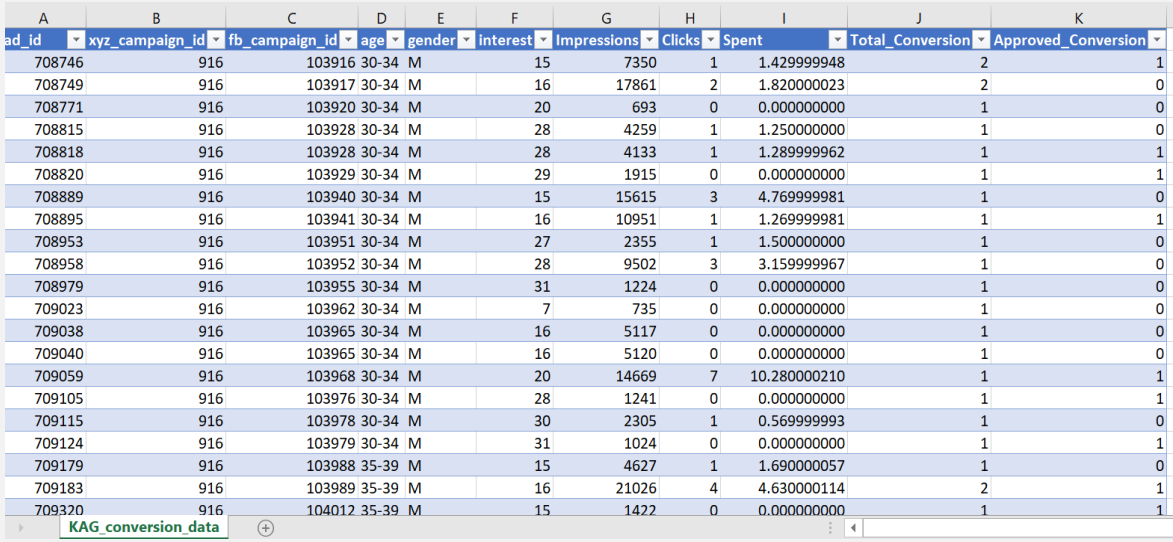
DATA CLEANING AND DATA PREPARATION

The second step of data cleaning and preparation

- Data format and consistency:

-We reviewed each column and ensured that the data was in the correct format.

-After fixing the data type for each column, we inserted all the data into a table to further organize and format the data.



A	B	C	D	E	F	G	H	I	J	K
ad_id	xyz_campaign_id	fb_campaign_id	age	gender	interest	Impressions	Clicks	Spent	Total_Conversion	Approved_Conversion
708746	916	103916	30-34	M	15	7350	1	1.429999948	2	1
708749	916	103917	30-34	M	16	17861	2	1.820000023	2	0
708771	916	103920	30-34	M	20	693	0	0.000000000	1	0
708815	916	103928	30-34	M	28	4259	1	1.250000000	1	0
708818	916	103928	30-34	M	28	4133	1	1.289999962	1	1
708820	916	103929	30-34	M	29	1915	0	0.000000000	1	1
708889	916	103940	30-34	M	15	15615	3	4.769999981	1	0
708895	916	103941	30-34	M	16	10951	1	1.269999981	1	1
708953	916	103951	30-34	M	27	2355	1	1.500000000	1	0
708958	916	103952	30-34	M	28	9502	3	3.159999967	1	0
708979	916	103955	30-34	M	31	1224	0	0.000000000	1	0
709023	916	103962	30-34	M	7	735	0	0.000000000	1	0
709038	916	103965	30-34	M	16	5117	0	0.000000000	1	0
709040	916	103965	30-34	M	16	5120	0	0.000000000	1	0
709059	916	103968	30-34	M	20	14669	7	10.280000210	1	1
709105	916	103976	30-34	M	28	1241	0	0.000000000	1	1
709115	916	103978	30-34	M	30	2305	1	0.569999993	1	0
709124	916	103979	30-34	M	31	1024	0	0.000000000	1	1
709179	916	103988	35-39	M	15	4627	1	1.690000057	1	0
709183	916	103989	35-39	M	16	21026	4	4.630000114	2	1
709320	916	104012	35-39	M	15	1422	0	0.000000000	1	1

KAG_conversion_data

DESCRIPTIVE ANALYTICS

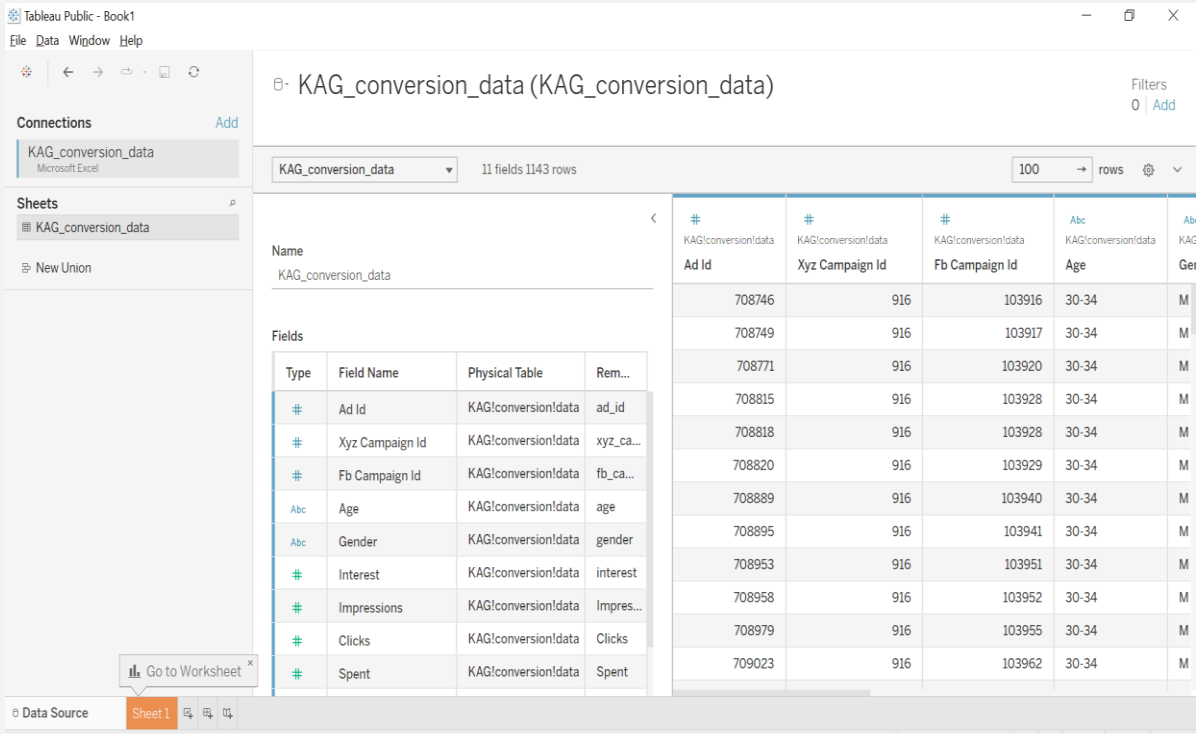
After cleaning and verifying the data, we now move to descriptive analyses:

- We will use the Tableau tool to conduct descriptive analysis.

- We imported the data after performing the cleaning and preparation process into Tableau.

- We will first explore the data:

Review the fields and ensure they are correctly identified as dimensions (categorical variables) or measures (numeric variables).



ANSWERING BUSINESS QUESTIONS

1) Optimize social advertising campaigns to obtain the highest conversion rate.

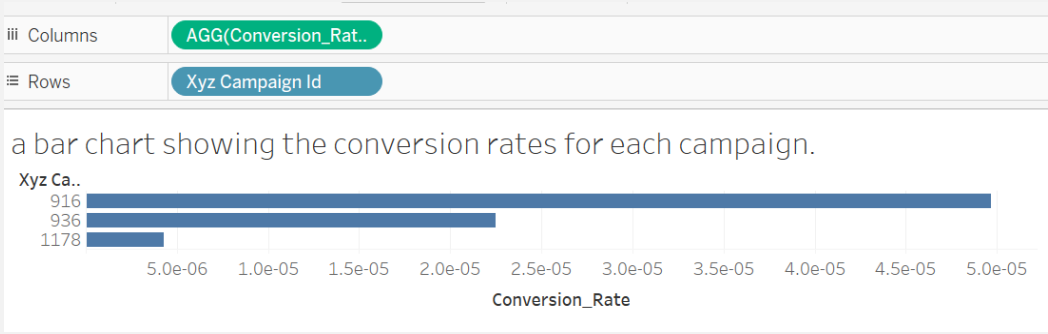
We calculate conversion rates by creating calculated fields. To calculate the conversion rate based on approved conversions, the formula will be:SUM([Approved conversion]) / SUM([Impressions])

We then created a table to compare conversion rates across different ads or campaigns.

To clarify further, we created a bar chart to compare conversion rates.

the conversion rates by campaign

Xyz Ca..	
916	0.00004970
936	0.00002251
1178	0.00000426



As a result, the campaign with ID 916 has the highest conversion rate among the three campaigns, followed by campaign 936, then campaign 1178. This indicates that campaign 916 performed relatively better in terms of reaching a higher conversion rate compared to the other campaigns.

ANSWERING BUSINESS QUESTIONS

To improve social advertising campaigns and achieve higher conversion rates.

We analyze the 916 campaign

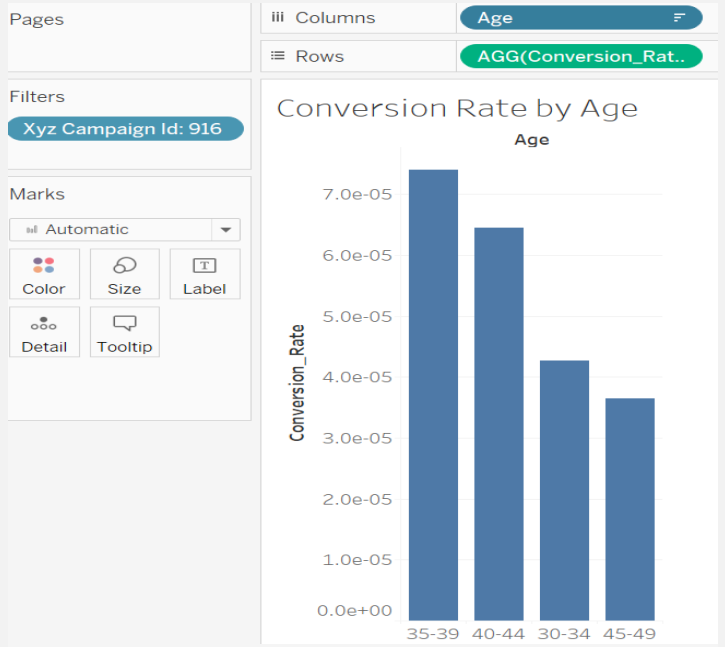
- First, I filtered the xyz_campaign_id advertising campaigns to bring only campaign 916 for analysis.

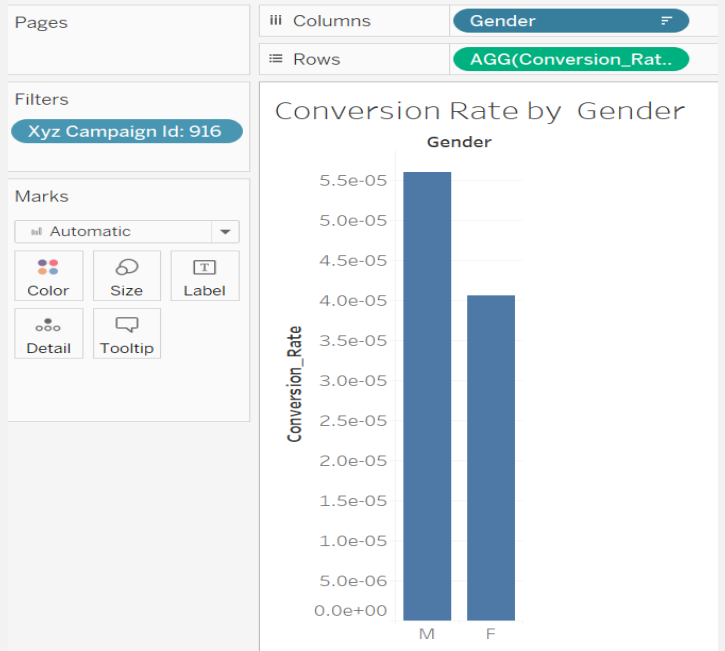
- Then I created a calculated field to calculate the conversion rate by dividing "Approved conversion" by "Impressions"

- Then I calculated the conversion rate according to age and gender

I also calculated ROAS. I created a calculated field by dividing "Approved Transfer" by "Spending".

The result of ROAS is 6,800

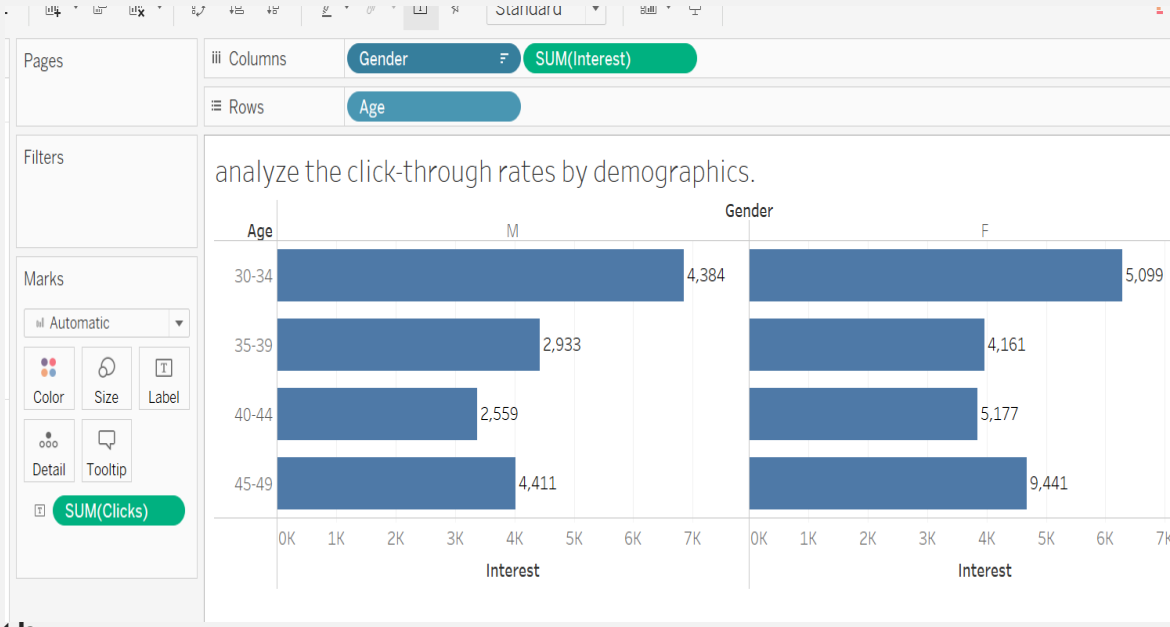




ANSWERING BUSINESS QUESTIONS

2. Find your ideal target demographics with the right click-through rates.

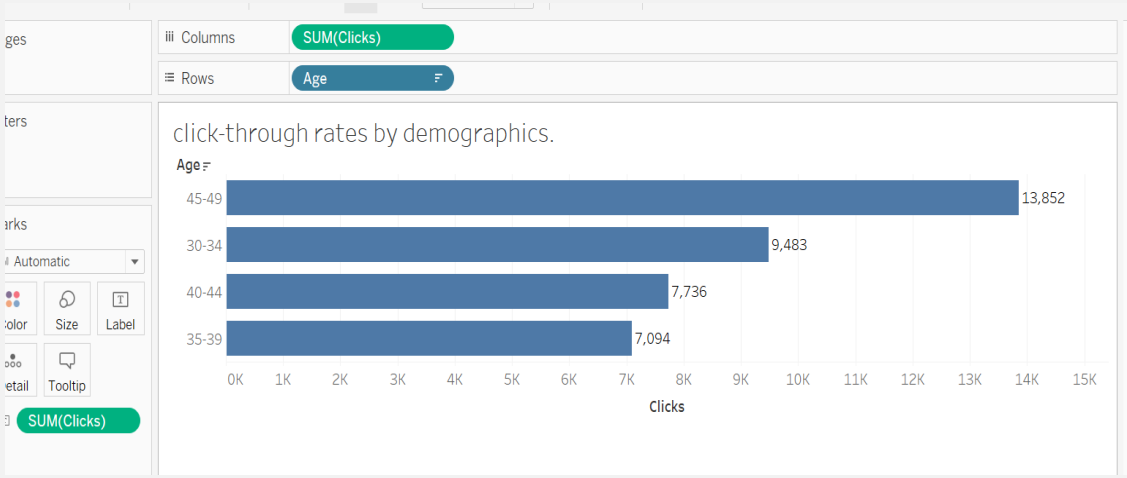
-I analyzed how these demographics affect click-through rates.



The bar graph shows that males aged 30 to 34 had the highest CTR with 4,384 clicks, followed by females aged 30 to 34 with 5,099 clicks. This suggests that targeting these demographics can lead to favorable click-through rates.

ANSWERING BUSINESS QUESTIONS

I have created a table or bar chart to visualize click-through rates by demographics.



The bar chart displays click-through rates by age groups. People aged 45 to 49 years had the highest rate at 13,852 people, followed by 30 to 34 years old with 9,483 people. This suggests that targeting both the older age group and the younger age group can be effective in achieving higher click-through rates.

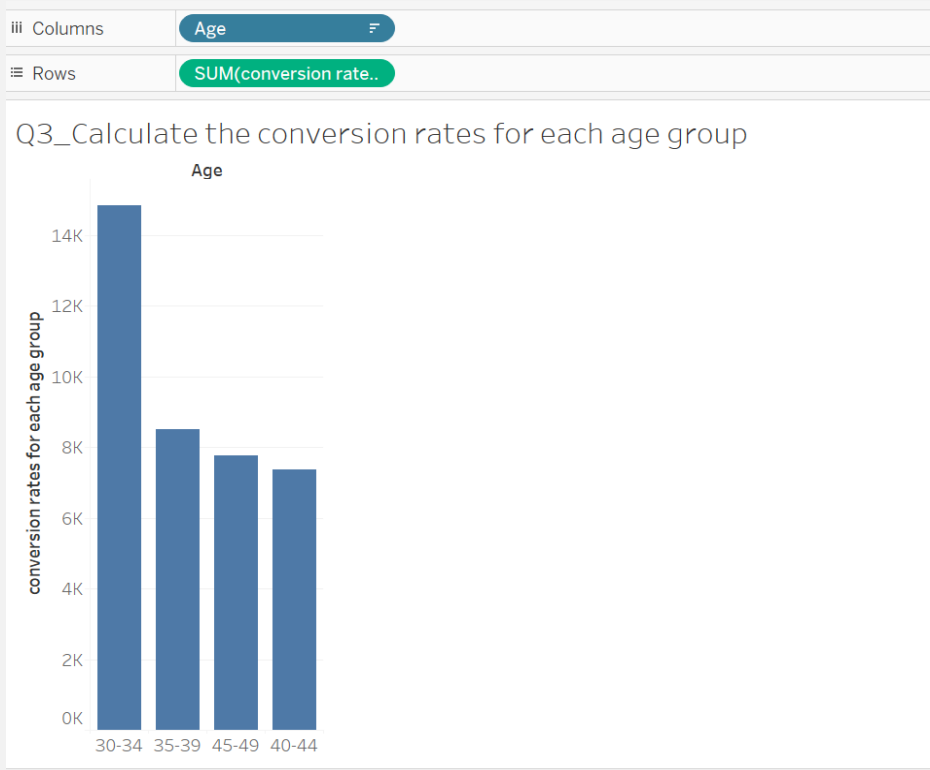
ANSWERING BUSINESS QUESTIONS

3.Understand the ideal decision/decision time for each age group to convert and target future social campaigns.

- I calculated conversion rates for each age group. By creating a calculated field by dividing 'Approved Conversion' by 'Total Conversion' and multiplying it by 100 to get the conversion rate as a percentage.

-I created a bar chart to visualize conversion rates by age group.

Analysis indicates that age groups 30-34, 35-39, 45-49 and 40-44 are likely to be most responsive to social campaigns, with the highest conversion rates observed in the 30-34 age group.



ANSWERING BUSINESS QUESTIONS

4. Comparing the individual campaign performance so the best creative campaign can be run again with adjusted audiences.

Xyz Ca..	Approved Conversi..	Clicks	Impressions	Total Conversion
916	24	113	482,925	58
936	183	1,984	8,128,187	537
1178	872	36,068	204,823,716	2,669

Based on these metrics, Xyz campaign ID 1178 appears to be the best performing campaign, as it has the highest numbers across all metrics measured. This indicates that Xyz campaign ID 1178 is generating the most attention, clicks, and conversions. It may be worth considering running this campaign again with modified audiences to further benefit from its effectiveness.

INTERPRETING THE DATA AND MAKING RECOMMENDATIONS

1. Optimization of Social Ad Campaigns:
   - Target the 35-39 age group, as they have the highest conversion rates.
   - Consider the 40-44 and 30-34 age groups as well, as they also show high conversion rates.
   - Prioritize the male audience, as they have shown higher presence and interaction with ads.
   - Optimize Campaign 916 further, as it has the highest conversion rate among the analyzed campaigns.
   - Continuously monitor and improve campaign performance by tracking metrics and testing different strategies.

2. Perfect Target Demographics:
   - Tailor advertising strategies to males aged 30-34 and females aged 30-34 to improve click-through rates.
   - Consider including the older age group of 45-49 in the targeting strategy, despite lower click-through rates.
   - Continuously monitor and improve campaigns based on performance metrics.

INTERPRETING THE DATA AND MAKING RECOMMENDATIONS

3. Turnaround/Decision Making Time per Age Group:

- Individuals aged 30-34 have the highest conversion rate, suggesting they have an ideal turnaround/decision-making time.
- Targeting this age group can be particularly effective in increasing conversions.

4. Comparing Campaign Performance:

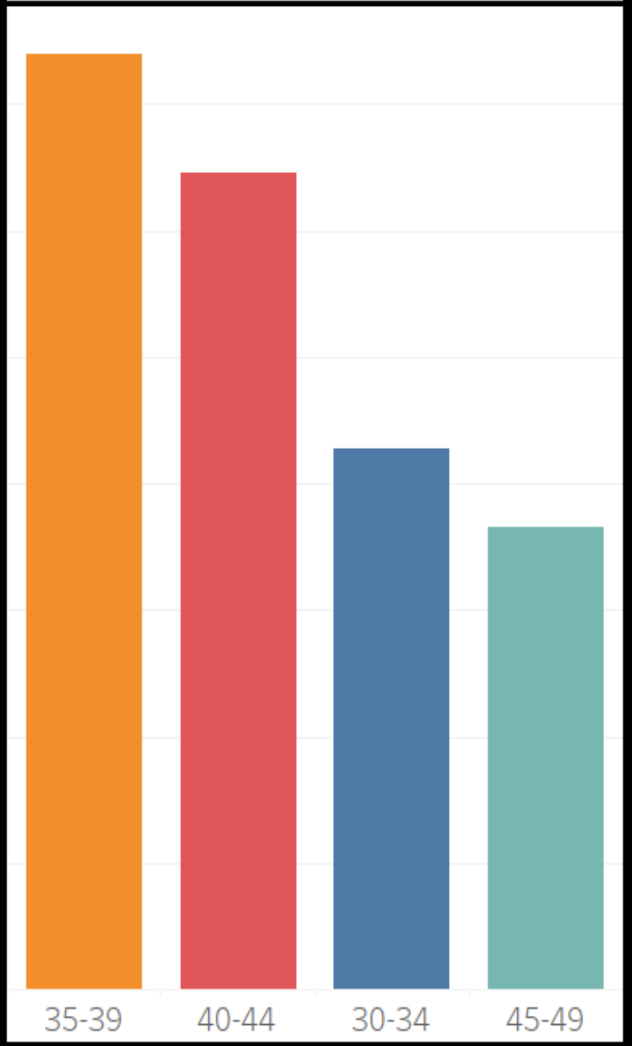
- Xyz Campaign ID 1178 has the highest impressions, clicks, total conversions, and approved transfers among the analyzed campaigns.
- Consider running Xyz Campaign ID 1178 again with adjusted audiences to further benefit from its effectiveness.

Cluster Analysis for Ad Conversions Data

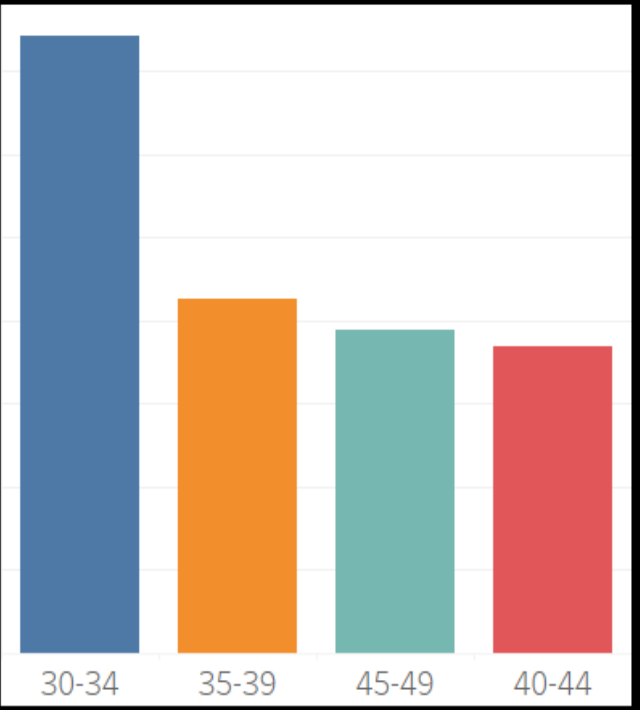
ROAS

6.800

Conversion Rates by Age

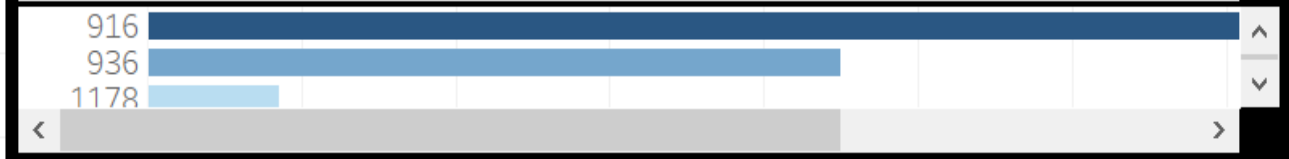


Conversion rates for each age group

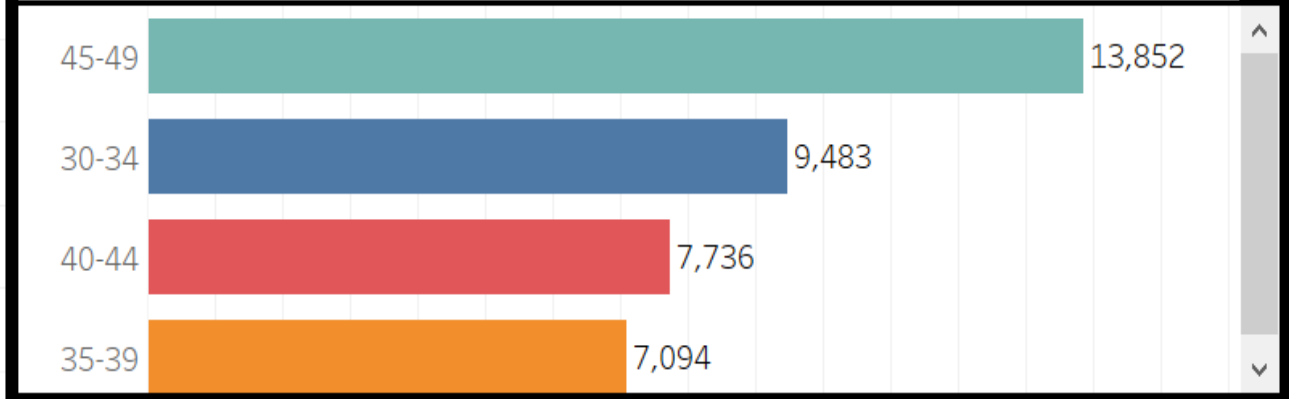


Conversion Rates by Gender

conversion rates for each campaign



click-through rates by age



analyze the click-through rates by age and gender