

Credit Card Data Analysis

By Sarthak Shah



Manager of ABC Bank collected a data of around 10,000 credit card customers containing their information such as gender, age, dependent count, credit limit, marital status, income and so on. Around 16% of the customers from this data have churned i.e. closed out their credit cards.

He wants to analyze this data and determine:

- Demographics of the customers who churned
- Segregation of income by age, gender and other variables
- Classification of card category
- Average credit limit and utilization of customers
- Inactivity of customers

This data analysis will give the manager valuable insights into customers and help him and the senior management devise strategies for how to:

- Stop customers from churning
- Effectively and efficiently manage credit limits
- Reduce/control customers' inactivity
- Promote additional or upgrade the existing credit card services

Gender

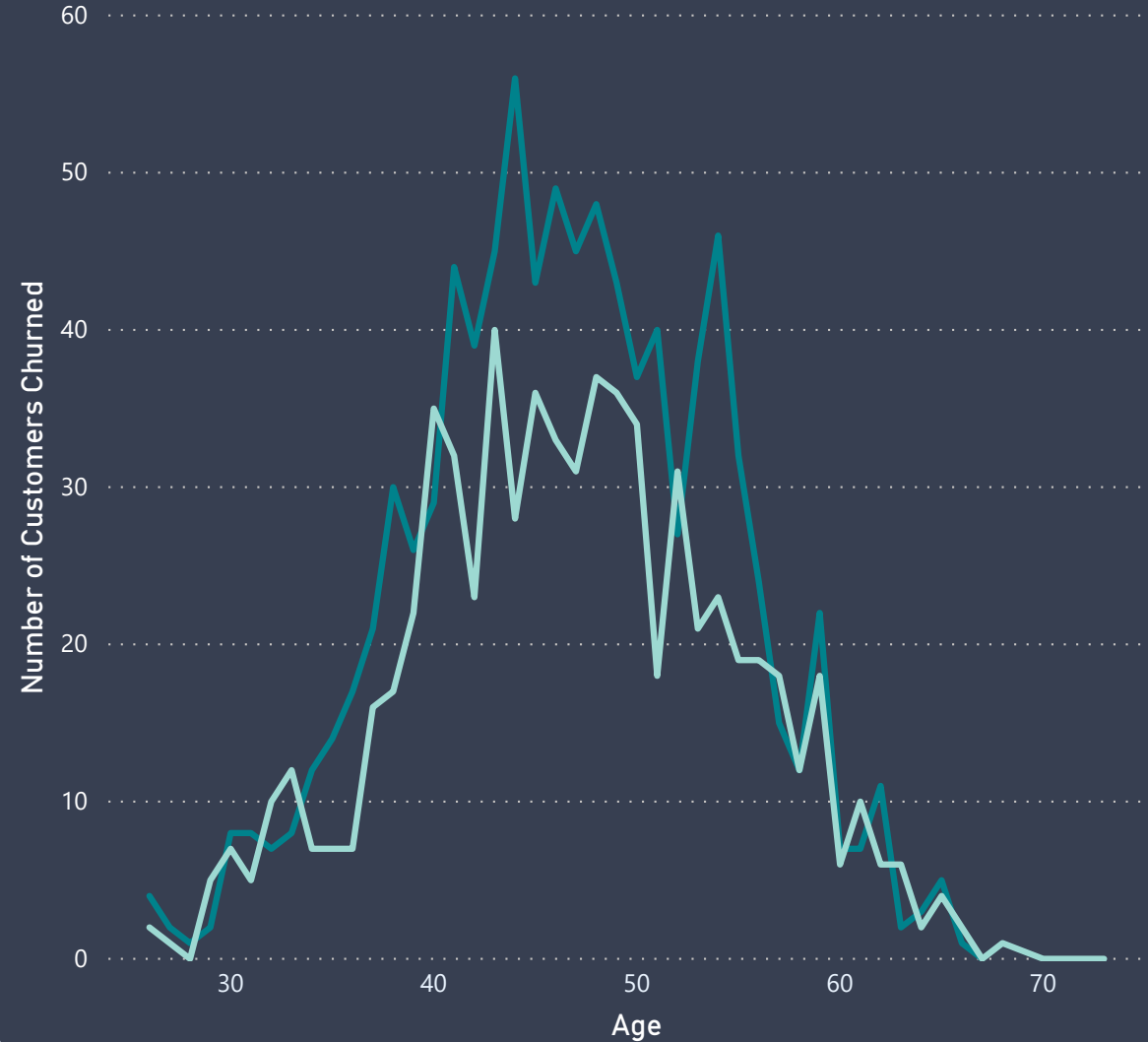
- ☒ Select all
- ☒ F
- ☒ M

Gender	Customers	Percentage
F	5358	57%
M	4769	43%
Total	10127	100%

Age	Customers	percentage
25-29	195	1%
30-34	540	5%
35-39	1301	11%
40-44	2139	23%
45-49	2422	25%
50-54	1920	19%
55-59	1078	12%
60-64	421	4%
65-69	109	1%
70-74	2	0%
Total	10127	100%

Customers Churned by Age

Gender ● F ● M



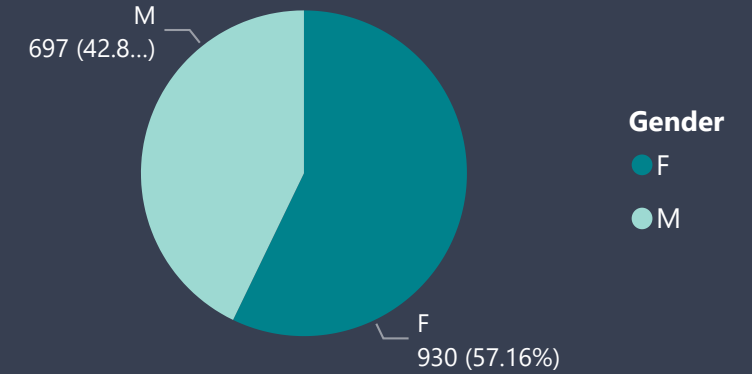
Mean

46.66

Standard Deviation

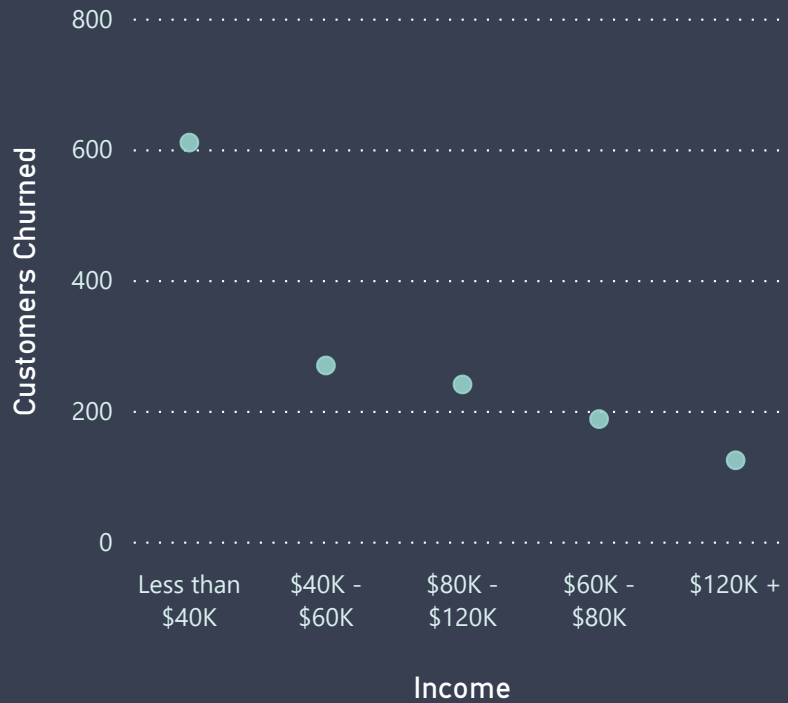
7.66

Customers Churned by Gender

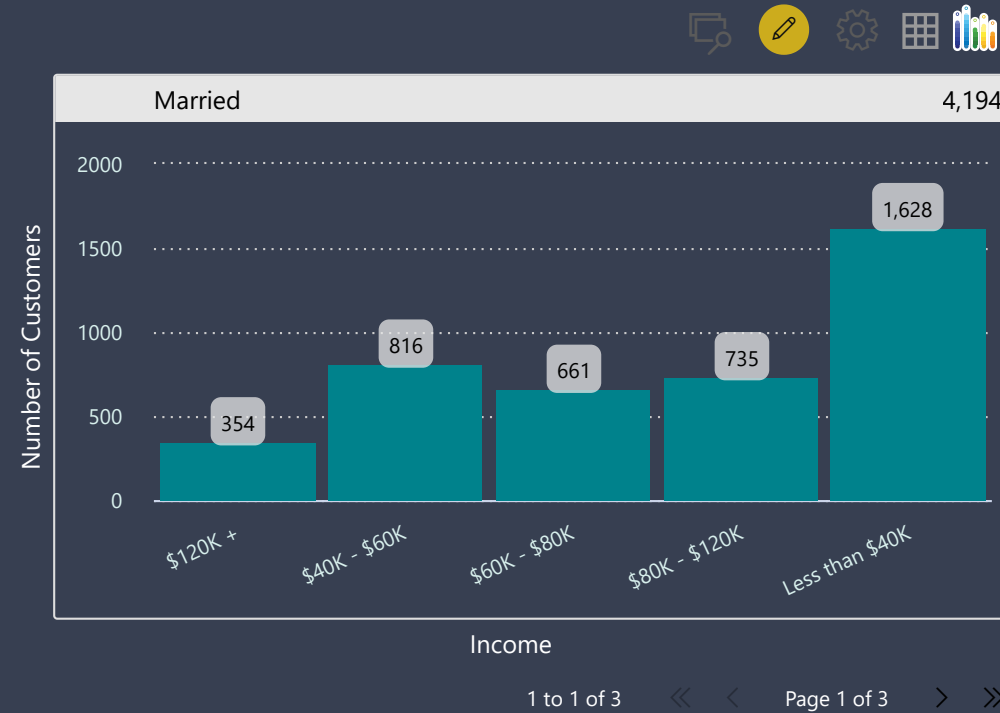


- There are more female customers (57%) than male customers (43%) and majority of the customers (89%) are concentrated between ages 35 and 55.
- Female customers churn relatively more than males.
- Looking at the line chart of churned customers, we are assuming that it is a normal distribution. Considering this assumption, we can say that 68% of customers churned fall within 1 standard deviation of the mean i.e. between ages 39 and 54 (7.66 +/- 46.66).

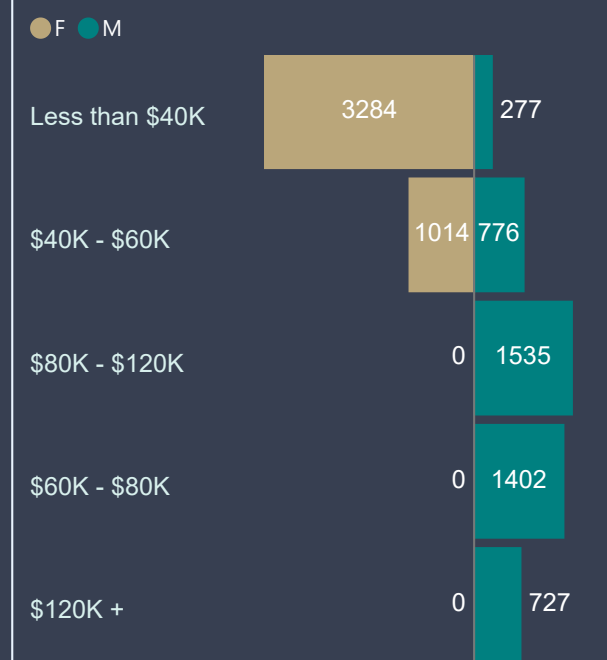
Customers Churned by Income



Customers by Income and Marital Status



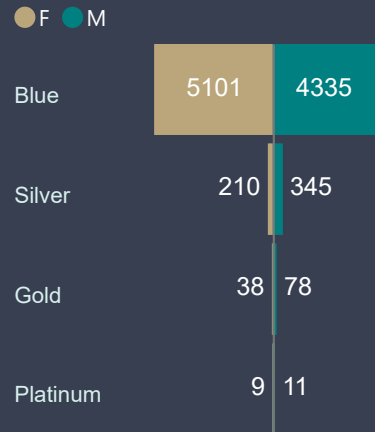
Customers by Income and Gender



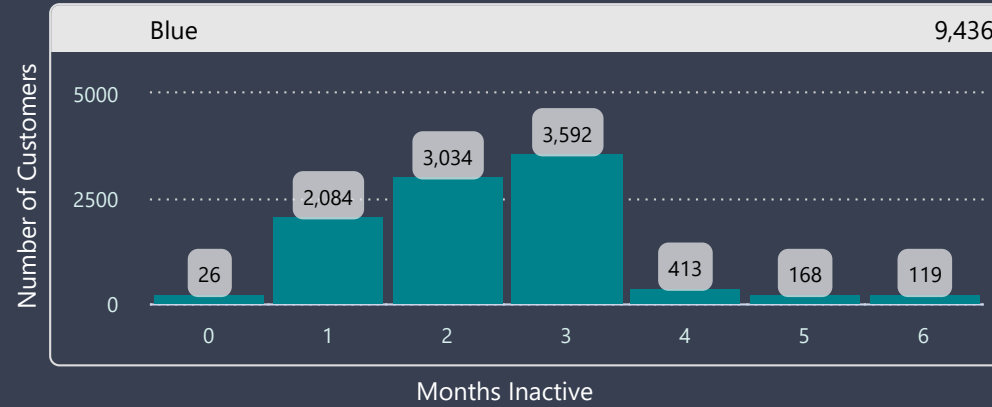
Income	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74
\$120K +	3	25	74	132	142	236	109	6		
\$40K - \$60K	43	107	245	381	442	269	176	100	26	1
\$60K - \$80K	16	70	192	336	369	213	141	65		
\$80K - \$120K	6	57	205	339	387	347	166	28		
Less than \$40K	89	213	449	746	808	652	378	165	60	1
Unknown	38	68	136	205	274	203	108	57	23	
Total	195	540	1301	2139	2422	1920	1078	421	109	2

- There is a linear relationship between Income and the number of customers churned. As the income decreases, number of customers churned increases.
- 48% of total customers are Singles and Married and have income < \$40k and between \$40k-\$60k.
- There are 0 female customers over \$60k income.
- 46% of total customers are aged between 40 and 55 and have income < \$40k and between \$40k-\$60k.

Customers by Gender & Card Category



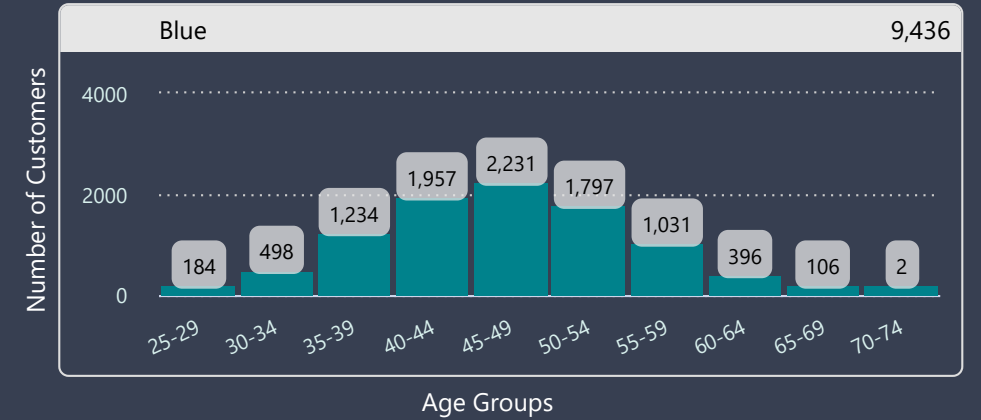
Customers by Inactive Months & Card Category



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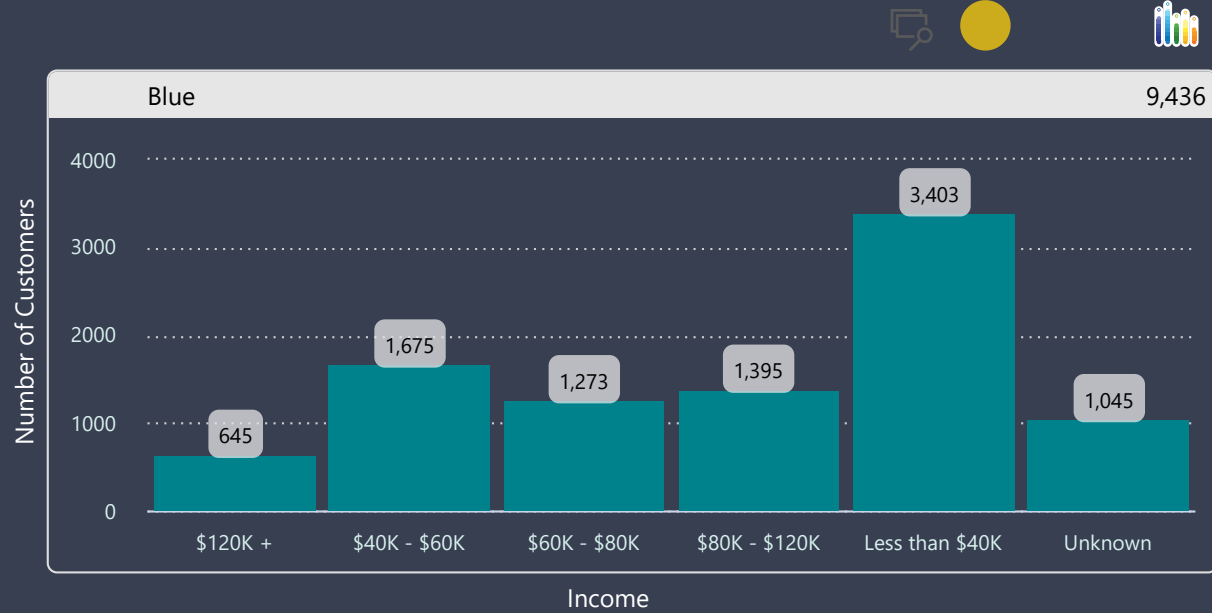
Customers by Age and Card Category



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Customers by Income and Card Category

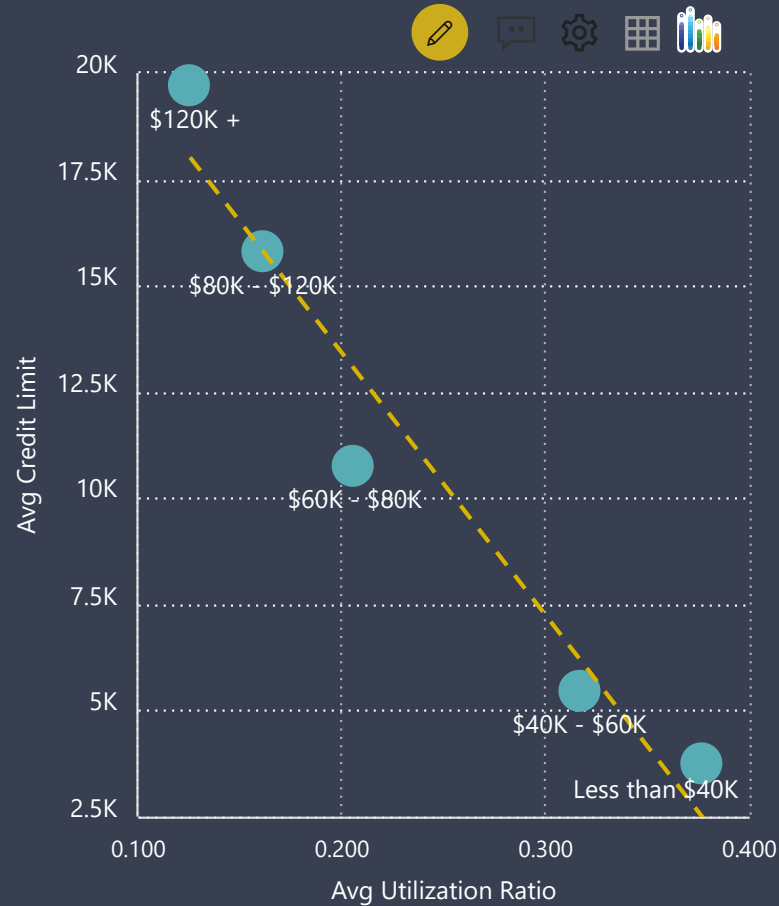


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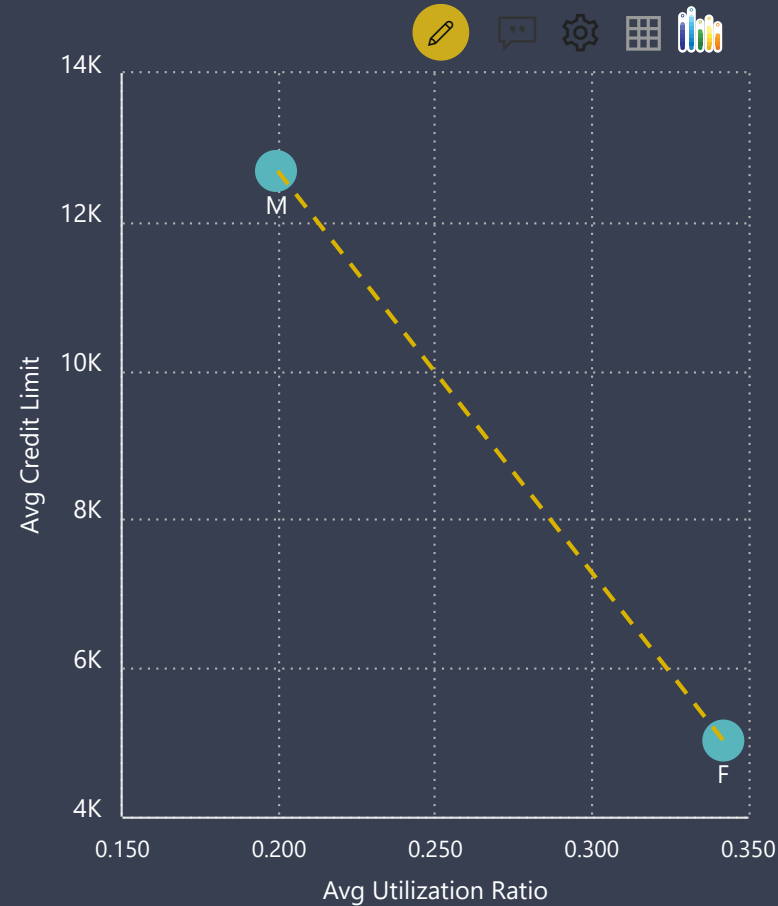
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- 93% of customers are concentrated in Blue card category. Silver has the second highest.
- Out of 9436 customers in Blue card category, 87% of customers are aged between 45 and 55.
- Blue Card category has the highest number of customers with income < \$40k and between \$40k-\$60k.

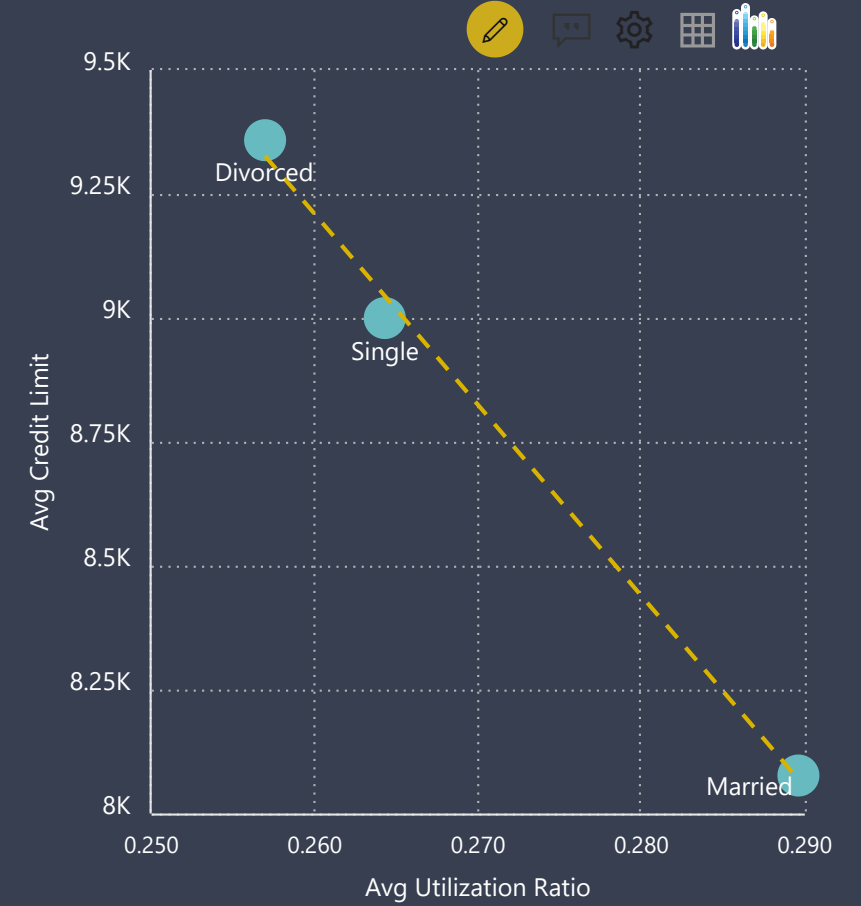
Avg Utilization Ratio & Avg Credit Limit by Income



Avg Utilization Ratio & Avg Credit Limit by Gender



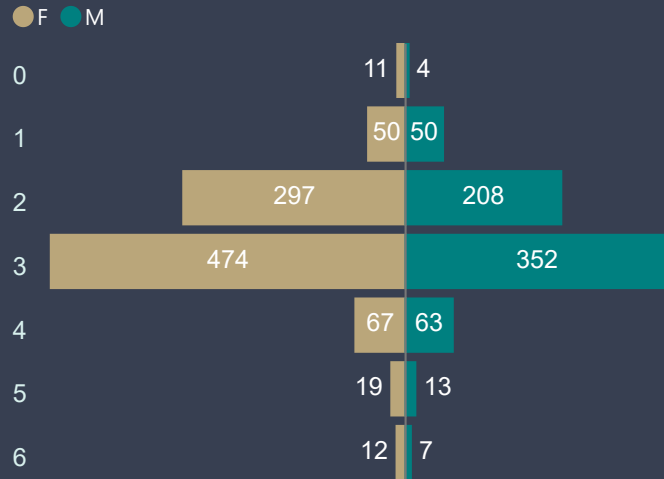
Avg Utilization Ratio & Avg Credit Limit by Marital Status



There exists an inverse relationship between Average Utilization Ratio and Average Credit limit for below listed categories which suggests that credit limits are not being allocated and monitored efficiently.

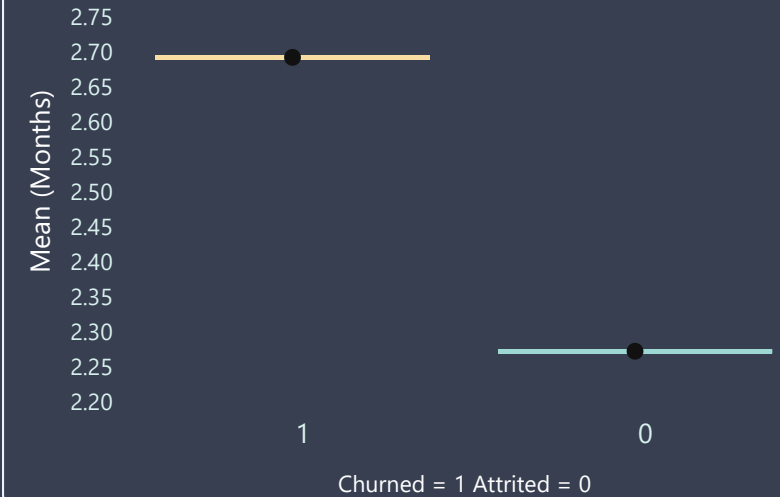
- People with income < \$40k have the highest average utilization ratio than other groups, however they are given the lowest credit limit possible (\$3.8k).
- Females seem to be spending more than males, yet the gap between their credit limit and males' credit limit is significant. Females Average Utilization Ratio is 70% higher than males, but their credit limit is 60% lower than male customers.
- There is not a significant difference between the Average Utilization Ratios for Divorced, Married & Single (0.25, 0.29 & 0.26 respectively), but the difference in the Average Credit Limit for these sub-categories is noteworthy.

Customers Churned by Gender and Months Inactive



Age Groups	0	1	2	3	4	5	6	Total
45-49	7	504	774	942	119	48	28	2422
40-44	2	465	737	814	70	27	24	2139
50-54	2	430	590	733	105	40	20	1920
35-39	4	288	439	507	35	16	12	1301
55-59	7	231	340	376	69	32	23	1078
30-34		144	181	197	6	6	6	540
60-64	4	103	123	155	19	8	9	421
25-29	1	56	57	76	5			195
65-69	2	12	40	45	7	1	2	109
70-74			1	1				2
Total	29	2233	3282	3846	435	178	124	10127

Mean of Inactive Months for Churned (1) vs Attrited (0) Customers



Customers by Income & Months Inactive



- Majority of churned customers stayed inactive for the first 3 months (1431 out of 1627, 88%). This number decreases once the number of months increases which suggests that inactivity in the earlier months can be one of the indicators of churning.
- Churned customers are more inactive as compared to attrited ones given the mean of inactivity (in months) is higher for churned customers (2.69) than the attrited (2.27).
- Customers between age 40 and 54 have the highest rate of inactivity.
- Customers with income < \$40k are the most inactive.

Based on the analysis done in previous pages, we recommend following:

Demographics

- Offer customized cashback options to customers depending on their gender and age group on certain websites to reduce their churning rate.

Income

- Customers with income < \$40k and between \$40k-\$60k churned more than other customers. Offering customers more affordable options such as offering credit cards with lower interest rate, lower annual fees, etc. would be a good option to explore.
- Promote products and services to attract female customers that earn over \$60k. In general, target area of focus should be on people that earn more than \$60k income.

Card Category

- Blue card has 93% of total customers and unfortunately the highest number of customers churned are in this category. This represents a significant risk indicating that other card categories are not too attractive to customers. It is imperative to promote Silver, Gold and Platinum cards more aggressively by upgrading or adding promotional items in them.

Credit Limit

- Credit limits and utilization ratio need to be re-assessed. Credit limits should be increased for customers who are female, with income < \$40k and have the marital status either Single or Married.

Inactivity

- Customers staying inactive in the initial months are more likely to churn, therefore it is necessary to encourage them to spend in those initial months by offering them competitive promotional services such as zero interest rate for the first year.