Predictive Analysis Project

By:

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Introduction

The Presentation is based on credit card dataset obtained from Kaggel. With data on 10,000 customers and 18 different features, we used predictive analytics to gain insights and develop strategies to reduce customer attrition, improve customer satisfaction and ultimately drive business success. By using various predictive analytic models, We Used the tools from this class to gain valuable insights about the dataset which we will be sharing with you further ahead in the presentation.

Understanding the Data

Variables Used in the Analysis and their Descriptions

- Clientnum - Unique identifier for the customer.
- Attrition Flag - Flag indicating if the customer has churned or not
- Income Category - Range of Income of a Customer
- Card Category - Type of credit card the customer has.
- Months on book - Number of months the customer has been a client.
- Total Revolving Bal – Debt that is yet to pay off by the customer
- Avg Open To Buy - Average amount of credit available for the customer to make purchases.
- Total Trans Amt - Total transaction amount of the customer.
- Avg Utilization Ratio - Average Spending ratio of the customer.

Original Data set

CLIENTNUM	Attrition_Flag	Customer_A	Gender	Dependent_c	Education_Leve	Marital_Status	Income_Catego	Card_Catego	Months_(	Total_Relatio	Months_Ina	Contacts_Cou	Credit_Limit	Total_Revolv	Avg_Open	Total_Amt_(	Total_Trans_	Total_Trans_	Total_Ct_Ch	Avg_Utilizat	Naive_Baye	Naive_Bayes
768805383	Existing Customer	45	M	3	High School	Married	$60K - $80K	Blue	39	5	1	3	12691	777	11914	1.335	1144	42	1.625	0.061	9.34E-05	0.99991
818770008	Existing Customer	49	F	5	Graduate	Single	Less than $40K	Blue	44	6	1	2	8256	864	7392	1.541	1291	33	3.714	0.105	5.69E-05	0.99994
713982108	Existing Customer	51	M	3	Graduate	Married	$80K - $120K	Blue	36	4	1	0	3418	0	3418	2.594	1887	20	2.333	0	2.11E-05	0.99998
769911858	Existing Customer	40	F	4	High School	Unknown	Less than $40K	Blue	34	3	4	1	3313	2517	796	1.405	1171	20	2.333	0.76	0.0001337	0.99987
709106358	Existing Customer	40	M	3	Uneducated	Married	$60K - $80K	Blue	21	5	1	0	4716	0	4716	2.175	816	28	2.5	0	2.17E-05	0.99998
713061558	Existing Customer	44	M	2	Graduate	Married	$40K - $60K	Blue	36	3	1	2	4010	1247	2763	1.376	1088	24	0.846	0.311	5.51E-05	0.99994
810347208	Existing Customer	51	M	4	Unknown	Married	$120K +	Gold	46	6	1	3	34516	2264	32252	1.975	1330	31	0.722	0.066	0.000123	0.99988
818906208	Existing Customer	32	M	0	High School	Unknown	$60K - $80K	Silver	27	2	2	2	29081	1396	27685	2.204	1538	36	0.714	0.048	8.58E-05	0.99991
710930508	Existing Customer	37	M	3	Uneducated	Single	$60K - $80K	Blue	36	5	2	0	22352	2517	19835	3.355	1350	24	1.182	0.113	4.48E-05	0.99996
719661558	Existing Customer	48	M	2	Graduate	Single	$80K - $120K	Blue	36	6	3	3	11656	1677	9979	1.524	1441	32	0.882	0.144	0.0003025	0.9997
708790833	Existing Customer	42	M	5	Uneducated	Unknown	$120K +	Blue	31	5	3	2	6748	1467	5281	0.831	1201	42	0.68	0.217	0.0001909	0.99981
710821833	Existing Customer	65	M	1	Unknown	Married	$40K - $60K	Blue	54	6	2	3	9095	1587	7508	1.433	1314	26	1.364	0.174	0.0001975	0.9998
710599683	Existing Customer	56	M	1	College	Single	$80K - $120K	Blue	36	3	6	0	11751	0	11751	3.397	1539	17	3.25	0	4.78E-05	0.99995
816082233	Existing Customer	35	M	3	Graduate	Unknown	$60K - $80K	Blue	30	5	1	3	8547	1666	6881	1.163	1311	33	2	0.195	9.61E-05	0.9999
712396908	Existing Customer	57	F	2	Graduate	Married	Less than $40K	Blue	48	5	2	2	2436	680	1756	1.19	1570	29	0.611	0.279	0.0001138	0.99989
714885258	Existing Customer	44	M	4	Unknown	Unknown	$80K - $120K	Blue	37	5	1	2	4234	972	3262	1.707	1348	27	1.7	0.23	6.35E-05	0.99994
709967358	Existing Customer	48	M	4	Post-Graduate	Single	$80K - $120K	Blue	36	6	2	3	30367	2362	28005	1.708	1671	27	0.929	0.078	0.0002362	0.99976
753327333	Existing Customer	41	M	3	Unknown	Married	$80K - $120K	Blue	34	4	4	1	13535	1291	12244	0.653	1028	21	1.625	0.095	0.0001495	0.99985
806160108	Existing Customer	61	M	1	High School	Married	$40K - $60K	Blue	56	2	2	3	3193	2517	676	1.831	1336	30	1.143	0.788	0.0001747	0.99983
709327383	Existing Customer	45	F	2	Graduate	Married	Unknown	Blue	37	6	1	2	14470	1157	13313	0.966	1207	21	0.909	0.08	5.51E-05	0.99994
806165208	Existing Customer	47	M	1	Doctorate	Divorced	$60K - $80K	Blue	42	5	2	0	20979	1800	19179	0.906	1178	27	0.929	0.086	5.70E-05	0.99994
708508758	Attrited Customer	62	F	0	Graduate	Married	Less than $40K	Blue	49	2	3	3	1438.3	0	1438.3	1.047	692	16	0.6	0	0.99616	0.0038363
784725333	Existing Customer	41	M	3	High School	Married	$40K - $60K	Blue	33	4	2	1	4470	680	3790	1.608	931	18	1.571	0.152	6.92E-05	0.99993
811604133	Existing Customer	47	F	4	Unknown	Single	Less than $40K	Blue	36	3	3	2	2492	1560	932	0.573	1126	23	0.353	0.626	0.0002074	0.99979
789124683	Existing Customer	54	M	2	Unknown	Married	$80K - $120K	Blue	42	4	2	3	12217	0	12217	1.075	1110	21	0.75	0	0.0002104	0.99979
771071958	Existing Customer	41	F	3	Graduate	Single	Less than $40K	Blue	28	6	1	2	7768	1669	6099	0.797	1051	22	0.833	0.215	5.72E-05	0.99994
720466383	Existing Customer	59	M	1	High School	Unknown	$40K - $60K	Blue	46	4	1	2	14784	1374	13410	0.921	1197	23	1.3	0.093	5.03E-05	0.99995
804424383	Existing Customer	63	M	1	Unknown	Married	$60K - $80K	Blue	56	3	3	2	10215	1010	9205	0.843	1904	40	1	0.099	0.0001856	0.99981
718813833	Existing Customer	44	F	3	Uneducated	Single	Unknown	Blue	34	5	2	2	10100	0	10100	0.525	1052	18	1.571	0	0.0001214	0.99988
806624208	Existing Customer	47	M	4	High School	Married	$40K - $60K	Blue	42	6	0	0	4785	1362	3423	0.739	1045	38	0.9	0.285	7.66E-06	0.99999
778348233	Existing Customer	53	M	3	Unknown	Married	$80K - $120K	Blue	33	3	2	3	2753	1811	942	0.977	1038	25	2.571	0.658	0.0002183	0.99978
712991808	Existing Customer	53	M	2	Uneducated	Married	$60K - $80K	Blue	48	2	5	1	2451	1690	761	1.323	1596	26	1.6	0.69	0.0001246	0.99988
709029408	Existing Customer	41	M	4	Graduate	Married	$60K - $80K	Blue	36	4	1	2	8923	2517	6406	1.726	1589	24	1.667	0.282	5.78E-05	0.99994
788658483	Existing Customer	53	F	2	College	Married	Less than $40K	Blue	38	5	2	3	2650	1490	1160	1.75	1411	28	1	0.562	0.0001861	0.99981
787937058	Existing Customer	58	M	0	Graduate	Married	$80K - $120K	Blue	49	6	2	2	12555	1696	10859	0.519	1291	24	0.714	0.135	9.77E-05	0.9999
715318008	Existing Customer	55	F	1	College	Single	Less than $40K	Blue	36	4	2	1	3520	1914	1606	0.51	1407	43	0.483	0.544	6.26E-05	0.99994
713962233	Existing Customer	55	F	3	Graduate	Married	Less than $40K	Blue	36	6	2	3	3035	2298	737	1.724	1877	37	1.176	0.757	0.0001986	0.9998
785432733	Existing Customer	42	F	4	High School	Married	Less than $40K	Gold	36	2	3	3	15433	0	15433	0.865	966	22	1.2	0	0.0003553	0.99964
715190283	Existing Customer	57	F	1	Graduate	Unknown	$40K - $60K	Blue	49	3	3	2	3672	886	2786	1.32	1464	28	0.556	0.241	0.0001688	0.99983
708300483	Attrited Customer	66	F	0	Doctorate	Married	Unknown	Blue	56	5	4	3	7882	605	7277	1.052	704	16	0.143	0.077	0.9978	0.0021971
827111283	Existing Customer	45	M	3	Graduate	Single	$80K - $120K	Blue	41	2	2	2	32426	578	31848	1.042	1109	28	0.474	0.018	0.0001181	0.99988
758551608	Existing Customer	51	M	2	Unknown	Married	$40K - $60K	Blue	44	4	1	0	6205	2204	4001	0.803	1347	28	0.556	0.355	2.23E-05	0.99998
773146383	Existing Customer	50	F	1	College	Single	$40K - $60K	Silver	43	3	2	3	17304	2517	14787	1.449	1756	33	1.2	0.145	0.0001579	0.99984
778493808	Existing Customer	49	M	3	High School	Married	$60K - $80K	Blue	37	5	2	1	3906	0	3906	1.214	1756	32	1	0	6.92E-05	0.99993
720572508	Existing Customer	38	F	4	Graduate	Single	Unknown	Blue	28	2	3	3	9830	2055	7775	0.977	1042	23	0.917	0.209	0.0003173	0.99968

Updated Data set

Clientnum	Attrition_Flag	Customer_Age	Gender	Dependent_c	Education_Leve	Marital_Status	Income_Catego	Card_Catego	Months_	Total_Relatio	Months_Inactive_12_mon	Credit_Limit	Total_Revolv	Avg_Open_To_Buy	Total_Trans	Total_Trans_Ct	Avg_Utilization_Ratio
768805383	Existing Customer	45	M	3	High School	Married	$60K - $80K	Blue	39	5	1	12691	777	11914	1144	42	0.061
818770008	Existing Customer	49	F	5	Graduate	Single	Less than $40K	Blue	44	6	1	8256	864	7392	1291	33	0.105
713982108	Existing Customer	51	M	3	Graduate	Married	$80K - $120K	Blue	36	4	1	3418	0	3418	1887	20	0
769911858	Existing Customer	40	F	4	High School	Unknown	Less than $40K	Blue	34	3	4	3313	2517	796	1171	20	0.76
709106358	Existing Customer	40	M	3	Uneducated	Married	$60K - $80K	Blue	21	5	1	4716	0	4716	816	28	0
713061558	Existing Customer	44	M	2	Graduate	Married	$40K - $60K	Blue	36	3	1	4010	1247	2763	1088	24	0.311
810347208	Existing Customer	51	M	4	Unknown	Married	$120K +	Gold	46	6	1	34516	2264	32252	1330	31	0.066
818906208	Existing Customer	32	M	0	High School	Unknown	$60K - $80K	Silver	27	2	2	29081	1396	27685	1538	36	0.048
710930508	Existing Customer	37	M	3	Uneducated	Single	$60K - $80K	Blue	36	5	2	22352	2517	19835	1350	24	0.113
719661558	Existing Customer	48	M	2	Graduate	Single	$80K - $120K	Blue	36	6	3	11656	1677	9979	1441	32	0.144
708790833	Existing Customer	42	M	5	Uneducated	Unknown	$120K +	Blue	31	5	3	6748	1467	5281	1201	42	0.217
710821833	Existing Customer	65	M	1	Unknown	Married	$40K - $60K	Blue	54	6	2	9095	1587	7508	1314	26	0.174
710599683	Existing Customer	56	M	1	College	Single	$80K - $120K	Blue	36	3	6	11751	0	11751	1539	17	0
816082233	Existing Customer	35	M	3	Graduate	Unknown	$60K - $80K	Blue	30	5	1	8547	1666	6881	1311	33	0.195
712396908	Existing Customer	57	F	2	Graduate	Married	Less than $40K	Blue	48	5	2	2436	680	1756	1570	29	0.279
714885258	Existing Customer	44	M	4	Unknown	Unknown	$80K - $120K	Blue	37	5	1	4234	972	3262	1348	27	0.23
709967358	Existing Customer	48	M	4	Post-Graduate	Single	$80K - $120K	Blue	36	6	2	30367	2362	28005	1671	27	0.078
753327333	Existing Customer	41	M	3	Unknown	Married	$80K - $120K	Blue	34	4	4	13535	1291	12244	1028	21	0.095
806160108	Existing Customer	61	M	1	High School	Married	$40K - $60K	Blue	56	2	2	3193	2517	676	1336	30	0.788
709327383	Existing Customer	45	F	2	Graduate	Married	Unknown	Blue	37	6	1	14470	1157	13313	1207	21	0.08
806165208	Existing Customer	47	M	1	Doctorate	Divorced	$60K - $80K	Blue	42	5	2	20979	1800	19179	1178	27	0.086
708508758	Attrited Customer	62	F	0	Graduate	Married	Less than $40K	Blue	49	2	3	1438.3	0	1438.3	692	16	0
784725333	Existing Customer	41	M	3	High School	Married	$40K - $60K	Blue	33	4	2	4470	680	3790	931	18	0.152
811604133	Existing Customer	47	F	4	Unknown	Single	Less than $40K	Blue	36	3	3	2492	1560	932	1126	23	0.626
789124683	Existing Customer	54	M	2	Unknown	Married	$80K - $120K	Blue	42	4	2	12217	0	12217	1110	21	0
771071958	Existing Customer	41	F	3	Graduate	Single	Less than $40K	Blue	28	6	1	7768	1669	6099	1051	22	0.215
720466383	Existing Customer	59	M	1	High School	Unknown	$40K - $60K	Blue	46	4	1	14784	1374	13410	1197	23	0.093
804424383	Existing Customer	63	M	1	Unknown	Married	$60K - $80K	Blue	56	3	3	10215	1010	9205	1904	40	0.099
718813833	Existing Customer	44	F	3	Uneducated	Single	Unknown	Blue	34	5	2	10100	0	10100	1052	18	0
806624208	Existing Customer	47	M	4	High School	Married	$40K - $60K	Blue	42	6	0	4785	1362	3423	1045	38	0.285
778348233	Existing Customer	53	M	3	Unknown	Married	$80K - $120K	Blue	33	3	2	2753	1811	942	1038	25	0.658
712991808	Existing Customer	53	M	2	Uneducated	Married	$60K - $80K	Blue	48	2	5	2451	1690	761	1596	26	0.69
709029408	Existing Customer	41	M	4	Graduate	Married	$60K - $80K	Blue	36	4	1	8923	2517	6406	1589	24	0.282
788658483	Existing Customer	53	F	2	College	Married	Less than $40K	Blue	38	5	2	2650	1490	1160	1411	28	0.562
787937058	Existing Customer	58	M	0	Graduate	Married	$80K - $120K	Blue	49	6	2	12555	1696	10859	1291	24	0.135
715318008	Existing Customer	55	F	1	College	Single	Less than $40K	Blue	36	4	2	3520	1914	1606	1407	43	0.544
713962233	Existing Customer	55	F	3	Graduate	Married	Less than $40K	Blue	36	6	2	3035	2298	737	1877	37	0.757
785432733	Existing Customer	42	F	4	High School	Married	Less than $40K	Gold	36	2	3	15433	0	15433	966	22	0
715190283	Existing Customer	57	F	1	Graduate	Unknown	$40K - $60K	Blue	49	3	3	3672	886	2786	1464	28	0.241
708300483	Attrited Customer	66	F	0	Doctorate	Married	Unknown	Blue	56	5	4	7882	605	7277	704	16	0.077
827111283	Existing Customer	45	M	3	Graduate	Single	$80K - $120K	Blue	41	2	2	32426	578	31848	1109	28	0.018
758551608	Existing Customer	51	M	2	Unknown	Married	$40K - $60K	Blue	44	4	1	6205	2204	4001	1347	28	0.355
773146383	Existing Customer	50	F	1	College	Single	$40K - $60K	Silver	43	3	2	17304	2517	14787	1756	33	0.145
778493808	Existing Customer	49	M	3	High School	Married	$60K - $80K	Blue	37	5	2	3906	0	3906	1756	32	0

Blue – Character Variables

Orange – Numeric Variables

The Highlighted Numeric Variables were Widely used

Key Insights From our Analysis

Summary Statistics of Credit Limit by Card Category and Income Category

The MEANS Procedure

Analysis Variable : Credit_Limit												
Card_Category	Income_Category	N Obs	Mean	Std Dev	Skewness	Kurtosis	Minimum	Maximum	N	Lower Quartile	Median	Upper Quartile
Blue	$120K +	645	17896.65	11553.53	0.2273274	-1.4231570	1438.30	34516.00	645	7474.00	15769.00	29695.00
	$40K - $60K	1675	4590.52	3096.63	1.3386345	1.1229776	1438.30	14987.00	1675	2359.00	3454.00	5877.00
	$60K - $80K	1273	8743.40	6306.69	0.8433707	-0.3804960	1438.30	24657.00	1273	3384.00	6784.00	13003.00
	$80K - $120K	1395	13932.58	10042.08	0.6346430	-0.7710820	1438.30	34516.00	1395	4994.00	11617.00	21328.00
	Less than $40K	3403	3331.08	1942.02	1.5001921	1.6419930	1438.30	9977.00	3403	1981.00	2705.00	3947.00
	Unknown	1045	7990.63	6380.89	1.2893156	1.0312606	1438.30	29939.00	1045	3054.00	5798.00	11012.00
Gold	$120K +	18	33428.33	4614.58	-4.2426407	18.0000000	14938.00	34516.00	18	34516.00	34516.00	34516.00
	$40K - $60K	15	22401.60	5185.90	-3.8178222	14.6880169	3735.00	23981.00	15	23051.00	23981.00	23981.00
	$60K - $80K	29	33540.41	5253.69	-5.3851648	29.0000000	6224.00	34516.00	29	34516.00	34516.00	34516.00
	$80K - $120K	21	34516.00	0	.	.	34516.00	34516.00	21	34516.00	34516.00	34516.00
	Less than $40K	24	15727.50	342.9910634	-0.8591726	-0.8057677	15016.00	15987.00	24	15460.00	15987.00	15987.00
	Unknown	9	31510.78	9015.67	-3.0000000	9.0000000	7469.00	34516.00	9	34516.00	34516.00	34516.00
Platinum	$120K +	4	34516.00	0	.	.	34516.00	34516.00	4	34516.00	34516.00	34516.00
	$40K - $60K	1	23981.00	.	.	.	23981.00	23981.00	1	23981.00	23981.00	23981.00
	$60K - $80K	4	34516.00	0	.	.	34516.00	34516.00	4	34516.00	34516.00	34516.00
	$80K - $120K	2	34516.00	0	.	.	34516.00	34516.00	2	34516.00	34516.00	34516.00
	Less than $40K	4	15987.00	0	.	.	15987.00	15987.00	4	15987.00	15987.00	15987.00
	Unknown	5	34516.00	0	.	.	34516.00	34516.00	5	34516.00	34516.00	34516.00
Silver	$120K +	60	34189.70	2527.51	-7.7459667	60.0000000	14938.00	34516.00	60	34516.00	34516.00	34516.00
	$40K - $60K	99	17457.69	2400.59	-1.4560704	9.7962200	3735.00	22361.00	99	15871.00	17304.00	18956.00
	$60K - $80K	96	29611.59	4671.54	-2.5349511	11.4032215	6224.00	34516.00	96	26994.00	29810.00	33196.50
	$80K - $120K	117	34516.00	0	.	.	34516.00	34516.00	117	34516.00	34516.00	34516.00
	Less than $40K	130	12248.98	1403.01	0.0418351	-1.2307342	10017.00	14910.00	130	10961.00	12319.50	13431.00
	Unknown	53	33510.45	1267.73	-0.9068370	-0.4492675	30310.00	34516.00	53	32444.00	34516.00	34516.00

Correlation Analysis

The CORR Procedure

3 Variables:	Total_Revolving_Bal Credit_Limit Total_Trans_Amt

Simple Statistics

Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
Total_Revolving_Bal	10127	1163	814.98734	11775818	0	2517
Credit_Limit	10127	8632	9089	87415795	1438	34516
Total_Trans_Amt	10127	4404	3397	44600182	510.00000	18484

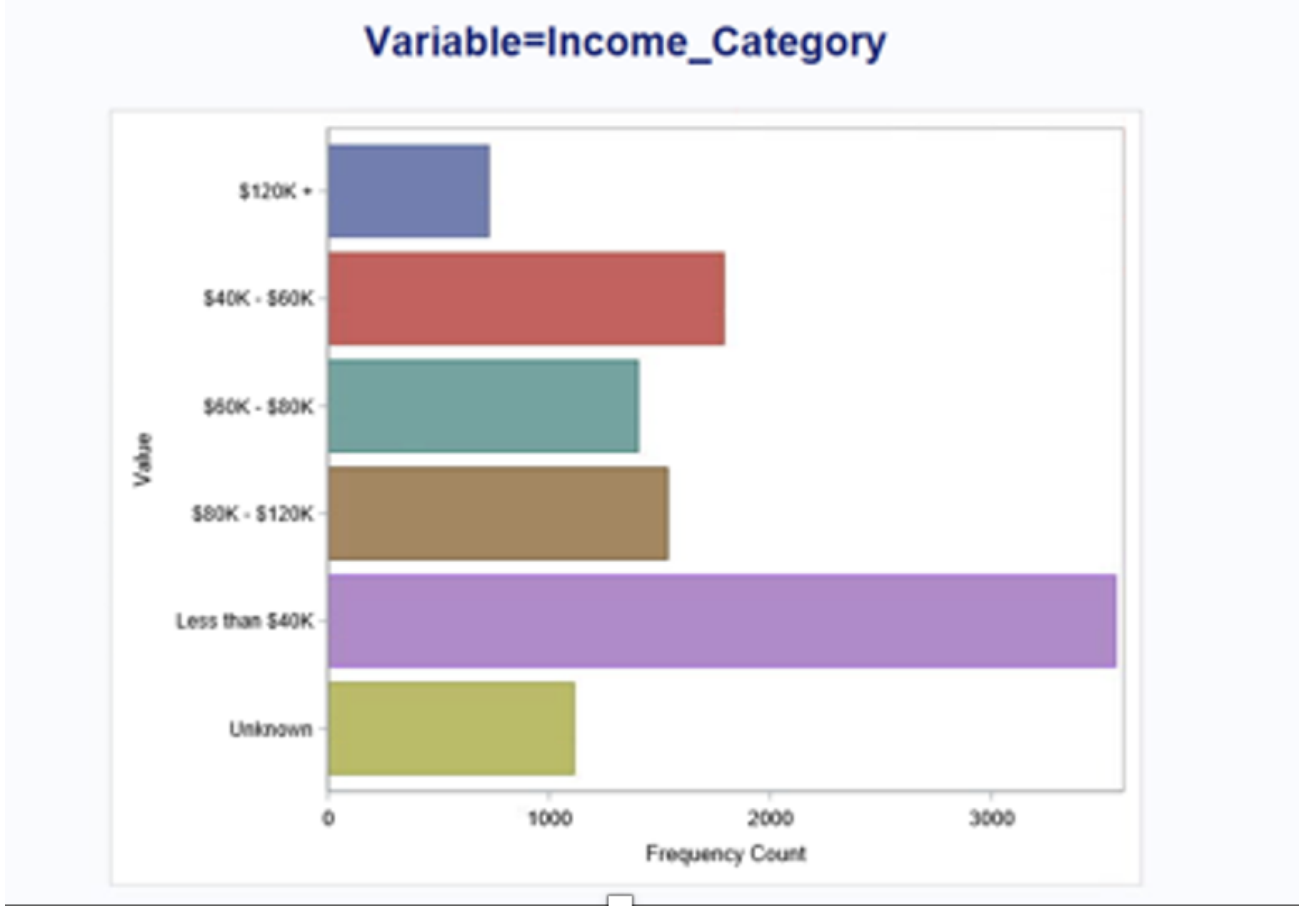
Pearson Correlation Coefficients, N = 10127
Prob > |r| under H0: Rho=0

	Total_Revolving_Bal	Credit_Limit	Total_Trans_Amt
Total_Revolving_Bal	1.00000	0.04249 <.0001	0.06437 <.0001
Credit_Limit	0.04249 <.0001	1.00000	0.17173 <.0001
Total_Trans_Amt	0.06437 <.0001	0.17173 <.0001	1.00000

The above Analysis show us the summary statistics and Correlation Analysis of some of our Key Variables

Insights and Predictive Analysis Results from the Dataset

Q1 – What is the distribution of customers across different income categories?



- The chart Show the distribution of Customer Income
- We can Notice that the Majority of the Customers have Less than $40K as Annual Income
- This Helps us Understand who our customers are and how to effectively provide value to them

Q2 – What is the distribution of credit card types among our customers

Percent
Row Pct

Table of Card_Category by Gender

Card_Category	Gender		
	F	M	Total
Blue	50.37 54.06	42.81 45.94	93.18
Gold	0.38 32.76	0.77 67.24	1.15
Platinum	0.09 45.00	0.11 55.00	0.20
Silver	2.07 37.84	3.41 62.16	5.48
Total	5358 52.91	4769 47.09	10127 100.00

- This table shows us the Population distribution of card type
- It also shows us the Preferred Card type
- The row percentage shows us that the Blue card was the most popular among our customers

Q3 – Is there a relationship between gender and card type? What is the probability of a customer being male or female and having a specific type of card?

Table Analysis Results

The FREQ Procedure

Expected
Cell Chi-Square
Percent
Row Pct

Table of Card_Category by Gender

Card_Category	Gender F	Gender M	Total
Blue	4992.4 2.3622 50.37 54.06	4443.6 2.6539 42.81 45.94	93.18
Gold	61.373 8.9015 0.38 32.76	54.627 10.001 0.77 67.24	1.15
Platinum	10.582 0.2364 0.09 45.00	9.4184 0.2656 0.11 55.00	0.20
Silver	293.64 23.824 2.07 37.84	261.36 26.766 3.41 62.16	5.48
Total	5358 52.91	4769 47.09	10127 100.00

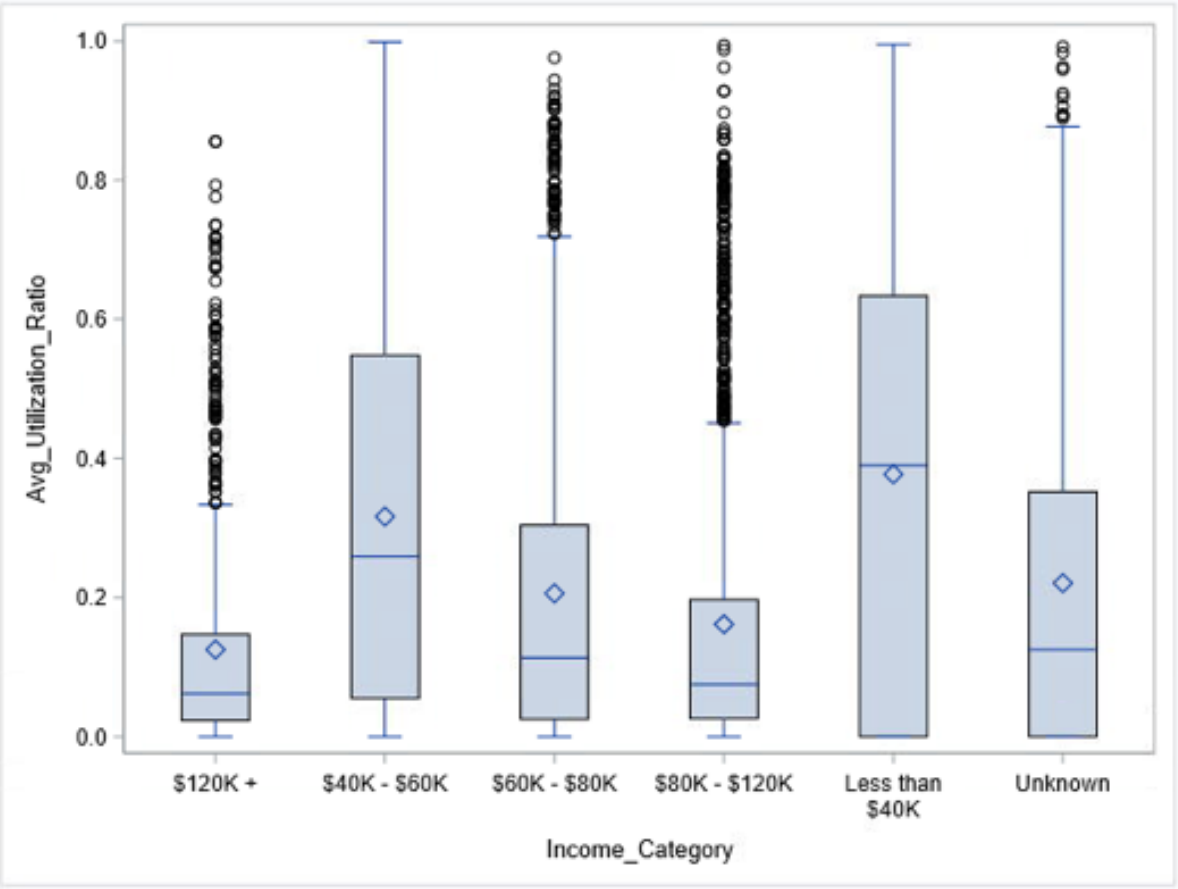
- The chi-square value is 50.37, indicating a significant association between Gender and Card Category.
- Females are more likely to have a blue card type.
- The p-value for the chi-square statistic is <.0001, allowing us to reject the null hypothesis at the 0.05 level.

Statistics for Table of Card_Category by Gender

Statistic	DF	Value	Prob
Chi-Square	3	75.0104	<.0001
Likelihood Ratio Chi-Square	3	75.4251	<.0001
Mantel-Haenszel Chi-Square	1	63.5218	<.0001
Phi Coefficient		0.0861	
Contingency Coefficient		0.0857	
Cramer's V		0.0861	

Sample Size = 10127

Q4 - How does income category relate to the average utilization ratio of credit cards

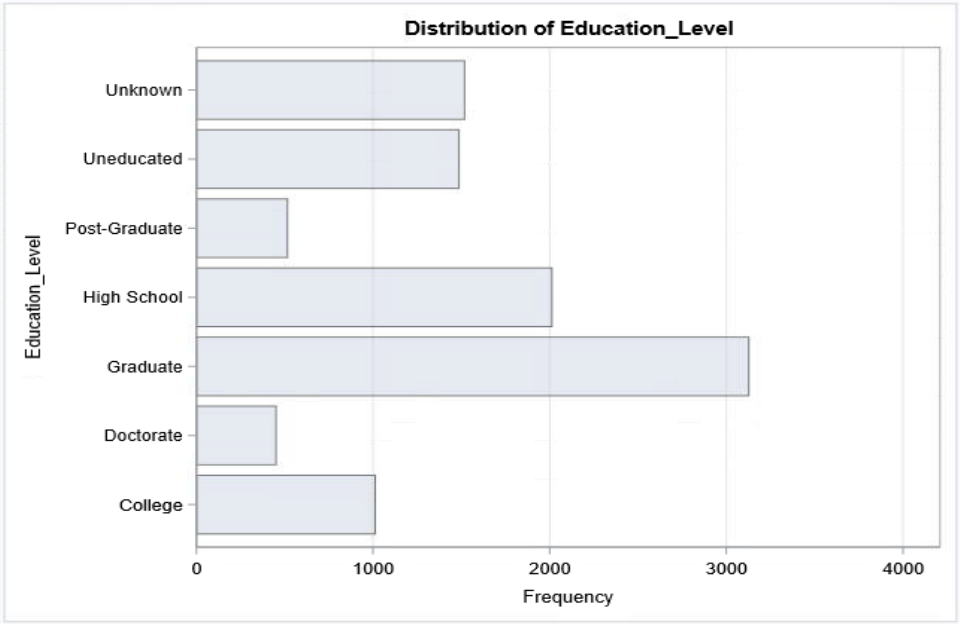


What we learnt using this Box plot is

- People with income over 120K have low average utilization ratio and many outliers.
- People with income between 40K to 60K have higher average utilization ratio and no outliers.
- People with income less than 40K have the highest average utilization ratio and no utilization ratio beyond the upper fence.

Q5 -What is the distribution of education levels among our customers?

Education_Level	Frequency	Percent
College	1013	10.00
Doctorate	451	4.45
Graduate	3128	30.89
High School	2013	19.88
Post-Graduate	516	5.10
Uneducated	1487	14.68
Unknown	1519	15.00



- We used a one-way frequency table to analyze the distribution of education levels among our customers.
- The highest percentage of customers have a graduate degree (30.89%), followed by high school (19.88%) and uneducated (14.68%).
- The lowest percentage of customers have a doctorate degree (4.45%).

Q6 - What are the results of the simple linear regression model between Credit Limits and Months_Inactive_12_mon?

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: Credit_Limit

Number of Observations Read	10127
Number of Observations Used	10127

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	347892233	347892233	4.21	0.0401
Error	10125	8.361191E11	82579660		
Corrected Total	10126	8.364669E11			

Root MSE	9087.33514	R-Square	0.0004
Dependent Mean	8631.95370	Adj R-Sq	0.0003
Coeff Var	105.27553		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|
Intercept	1	9061.33874	227.85725	39.77	<.0001
Months_Inactive_12_mon	1	-183.40640	89.35702	-2.05	0.0401

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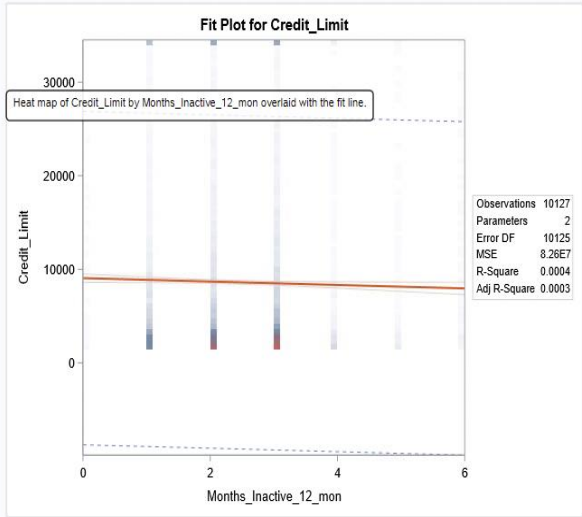
- A Simple Linear Regression Model indicates that there were no missing values for Credit Limits and
- The P-value less than .05, indicating that Months_Inactive_12_mon explains a significant amount of the variability of Credit Limits.
- The regression equation is Credit Limits = 9061.33874 - 183.40640 * (Months_Inactive_12_mon).
- The predictor variable explains a significant portion of variability in the response variable.

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: Credit_Limit



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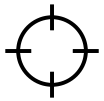
Conclusion

The dataset provides valuable insights into the credit card industry, including customer behavior and spending patterns.

Our analysis using various models has revealed several important relationships between different variables in the dataset.



Based on these findings, credit card companies can develop strategies to better target and serve different customer segments.

ongoing analysis of this and similar datasets can help companies stay competitive and adapt to changing customer needs and preferences.