

Portfolio Project: Credit Card Defaulters

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
ID	LIMIT_BAL	SEX	EDUCATION	MARRIAGE	AGE	PAY_0	PAY_1	PAY_2	PAY_3	PAY_4	PAY_5	PAY_6	BILL_AMT1	BILL_AMT2	BILL_AMT3	BILL_AMT4	BILL_AMT5	PAY_AMT1	PAY_AMT2	PAY_AMT3
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2	120000	2	2	2	26	-1	2	0	0	0	2	2682	1725	2682	3272	3455	3261	0	0	1000
3	90000	2	2	2	34	0	0	0	0	0	0	29239	14027	13559	14131	14948	13449	1518	1500	0
4	50000	2	2	1	37	0	0	0	0	0	0	46990	48213	49251	28114	28919	29547	2000	2019	0
5	50000	1	2	1	37	-1	0	-1	0	0	0	8617	5670	10435	20940	19146	19131	2000	36681	0
6	50000	1	1	2	37	0	0	0	0	0	0	64400	57069	57068	19194	19619	20024	2500	1815	0
7	5100-45	1	1	2	29	0	0	0	0	0	0	367905	412023	403007	542053	483003	477944	55000	40000	0
8	1100-45	2	2	2	23	0	1	-1	0	0	1	11879	880	601	121	159	567	880	601	0
9	140000	2	3	1	28	0	0	2	0	0	0	11385	14096	12108	12211	11793	3719	3129	0	0
10	20000	1	3	2	35	-2	-2	-2	-2	-1	-1	0	0	0	0	0	13407	19922	0	0
11	1100-45	2	3	2	34	0	0	2	0	0	-1	11073	9787	5575	2513	1828	3731	2106	12	0
12	200000	2	1	2	51	-1	-1	-1	-1	-1	-1	12261	21670	9966	8517	22287	13668	21818	9966	0
13	40000	2	2	2	41	-1	0	-1	-1	-1	-1	12137	6500	6500	6500	6500	2870	1030	0	0
14	70000	1	2	2	30	1	2	2	0	0	0	60802	67369	65701	66782	36137	36694	3200	0	0
15	250000	1	1	2	29	0	0	0	0	0	0	70887	67060	67061	58096	56875	55512	3000	3000	0
16	50000	2	3	3	23	1	2	0	0	0	0	50614	29173	28116	28771	29531	30211	0	1500	0
17	20000	1	1	2	24	0	0	2	2	2	2	15376	18010	17428	18138	17905	19104	3200	0	0
18	330000	1	1	1	49	0	0	0	-1	-1	-1	251286	246536	194663	70374	1856	195599	10158	10000	0
19	240000	2	3	1	49	1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0
20	180000	2	1	2	29	1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0	0
21	130000	2	3	2	39	0	0	0	0	0	-1	38108	27688	24489	20616	11802	930	3000	1517	0
22	120000	2	2	1	39	-1	-1	-1	-1	-1	-1	226	316	316	0	612	316	316	316	0
23	70000	2	2	2	26	2	0	0	2	2	2	41087	42445	45020	44006	46905	46012	2007	1582	0
24	400000	2	1	1	40	-2	-2	-2	-2	-2	-2	5512	19420	1473	580	0	19428	1473	0	0
25	90000	1	1	2	23	0	0	0	0	0	0	4264	7070	0	1208	6360	8202	5717	0	0
26	50000	1	3	2	23	0	0	0	0	0	0	47030	41810	36023	28967	29829	30046	1973	1426	0
27	60000	1	1	2	27	1	-2	-1	-1	-1	-1	-109	-425	259	-57	127	-189	0	1000	0

ID	LIMIT_BAL	SEX	AGE	EDUCATION	STATE	EDUCATION_LEVEL	MARRITAL STATUS
1	20000	2	24	2	Ill	PostGraduate	Married
2	120000	2	26	2	Ill	PostGraduate	Married
3	90000	2	34	0	Ill	PostGraduate	Married
4	50000	2	37	0	Ill	PostGraduate	Married
5	50000	1	37	1	Ill	PostGraduate	Married
6	50000	1	37	0	Ill	PostGraduate	Married
7	5100-45	1	29	0	Ill	PostGraduate	Married
8	1100-45	2	23	0	Ill	PostGraduate	Married
9	140000	2	28	0	Ill	PostGraduate	Married
10	20000	1	35	-2	Ill	PostGraduate	Married
11	1100-45	2	34	0	Ill	PostGraduate	Married
12	200000	2	51	-1	Ill	PostGraduate	Married
13	40000	2	41	-1	Ill	PostGraduate	Married
14	70000	1	30	1	Ill	PostGraduate	Married
15	250000	1	29	0	Ill	PostGraduate	Married
16	50000	2	23	1	Ill	PostGraduate	Married
17	20000	1	24	0	Ill	PostGraduate	Married
18	330000	1	49	0	Ill	PostGraduate	Married
19	240000	2	49	1	Ill	PostGraduate	Married
20	180000	2	29	1	Ill	PostGraduate	Married
21	130000	2	39	0	Ill	PostGraduate	Married
22	120000	2	39	-1	Ill	PostGraduate	Married
23	70000	2	26	2	Ill	PostGraduate	Married
24	400000	2	40	-2	Ill	PostGraduate	Married
25	90000	1	23	0	Ill	PostGraduate	Married
26	50000	1	23	0	Ill	PostGraduate	Married
27	60000	1	27	1	Ill	PostGraduate	Married

Credit Card Default

MARRITAL STATUS

- ☐ Married
- ☐ Single
- ☐ Unknown

EDUCATION LEVEL

- ☐ HighSchool
- ☐ PostGraduate
- ☐ UnderGraduate
- ☐ Unknown

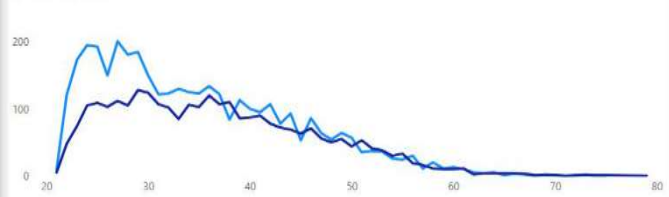
Defaulted Ratio

0.22

Average of DEFAULTED

DEFAULTED by AGE

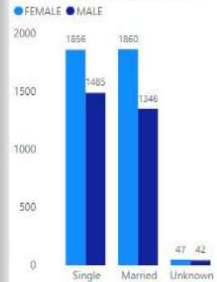
● FEMALE ● MALE



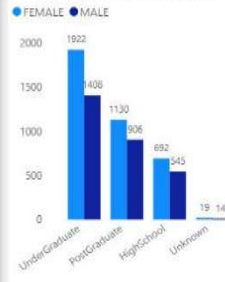
DEFAULTED by GENDER



DEFAULTED by MARRITAL STATUS



DEFAULTED by EDUCATION LEVEL



DEFAULTED by STATE



Introduction: The objective of this data analysis project was to examine the density of credit card defaulters across different states in the USA, focusing on specific aspects that influence default rates. Understanding regional variations in credit card default behaviour can aid financial institutions in devising targeted risk management strategies and optimizing credit offerings.

Data Collection & Processing: The dataset used in this analysis was sourced from Kaggle, a reliable platform for datasets. To ensure data integrity and suitability for analysis, the following steps were undertaken:

- Column Selection:** Unnecessary columns that did not contribute to the analysis were identified and removed from the dataset, streamlining the subsequent processing.
- Handling Missing Values:** Efforts were made to handle missing or incomplete data by employing appropriate imputation techniques to maintain data integrity.
- STATE Column Creation:** A new column called "STATE" was created to categorize credit card holders based on their respective states within the USA. This categorization enables the analysis of regional patterns in credit card defaulting.

Data Exploration and Analysis: With the dataset now cleaned and pre-processed, the analysis delved into understanding the following key aspects:

- Regional Density of Credit Card Defaulters:** The density of credit card defaulters was examined across different states to identify regions with higher default rates.
- Influential Factors:** Specific aspects, such as demographic indicators or economic conditions, were assessed to understand their influence on defaulting patterns.

VCCreditCard - Excel (Project: Education) - RAREBY																											
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T							
1	ID	LIMIT_BAL	SEX	EDUCATION	MARRIAGE	AGE	PAY_0	PAY_1	PAY_2	PAY_3	PAY_4	PAY_5	PAY_6	BILL_AMT1	BILL_AMT2	BILL_AMT3	BILL_AMT4	BILL_AMT5	BILL_AMT6	PAY_AMT1	PAY_AMT2	PAY_7					
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3	2	120000	2	2	2	26	-1	2	0	0	0	0	2	2682	1725	2682	3272	3455	3261	0	0	1000					
4	3	90000	2	2	2	34	0	0	0	0	0	0	29239	14027	13559	14331	14948	15549	1518	1500							
5	4	50000	2	2	1	37	0	0	0	0	0	0	46990	48233	49291	28314	28959	29547	2000	2019							
6	5	50000	1	2	1	57	-1	0	-1	0	0	0	8617	5670	35835	20940	19146	19131	2000	36681							
7	6	50000	1	1	2	37	0	0	0	0	0	0	64400	57069	57608	19394	19619	20024	2500	1815							
8	7	5.00E+05	1	1	2	29	0	0	0	0	0	0	367965	412023	445007	542653	483003	473944	55000	40000							
9	8	1.00E+05	2	2	2	23	0	-1	-1	0	0	-1	11876	380	601	221	-159	567	380	601							
10	9	140000	2	3	1	28	0	0	2	0	0	0	11285	14096	12108	12211	11793	3719	3329	0							
11	10	20000	1	3	2	35	-2	-2	-2	-2	-1	-1	0	0	0	0	13007	13912	0	0							
12	11	2.00E+05	2	3	2	34	0	0	2	0	0	-1	11073	9787	5535	2513	1828	3731	2306	12							
13	12	260000	2	1	2	51	-1	-1	-1	-1	-1	-1	12261	21670	9966	8517	22287	13668	21818	9966							
14	13	630000	2	2	2	41	-1	0	-1	-1	-1	-1	12137	6500	6500	6500	2870	1000	6500								
15	14	70000	1	2	2	30	1	2	2	0	0	2	65802	67369	65701	66782	36137	36894	3200	0							
16	15	250000	1	1	2	29	0	0	0	0	0	0	70887	67060	63561	59696	56875	55512	3000	3000							
17	16	50000	2	3	3	23	1	2	0	0	0	0	50614	29173	28116	28771	29531	30211	0	1500							
18	17	20000	1	1	1	24	0	0	2	2	2	2	15376	18010	17428	18338	17905	19104	3200	0							
19	18	320000	1	1	1	49	0	0	0	0	0	-1	253286	246536	194663	70074	5856	195599	10358	10000							
20	19	360000	2	1	1	49	1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0							
21	20	180000	2	1	2	29	1	-2	-2	-2	-2	-2	0	0	0	0	0	0	0	0							
22	21	130000	2	3	2	39	0	0	0	0	0	-1	38358	27688	24489	20616	11802	930	3000	1537							
23	22	120000	2	2	1	39	-1	-1	-1	-1	-1	-1	316	316	316	0	632	316	316	316							
24	23	70000	2	2	2	26	2	0	0	2	2	2	41087	42445	45020	44006	46905	46012	2007	3582							
25	24	450000	2	1	1	40	-2	-2	-2	-2	-2	-2	5512	19420	1473	560	0	0	0	19428	1473						
26	25	90000	1	1	2	23	0	0	0	-1	0	0	4744	7070	0	5398	6360	8292	5757	0							
27	26	50000	1	3	2	23	0	0	0	0	0	0	47620	36023	28967	29829	30046	1973	1426								
28	27	60000	1	1	2	27	1	-2	-1	-1	-1	-1	-109	-425	259	-57	127	-189	0	1000							
29	28	50000	2	3	2	30	0	0	0	0	0	0	22541	16138	17163	17878	18931	19617	1300	1300							

ID	LIMIT_BAL	SEX	AGE	DEFAULTED	STATE	EDUCATION_LEVEL	MARITAL_STATUS
19	360000	FEMALE	49	0	Ohio	PostGraduate	Married
123	110000	FEMALE	48	0	Alaska	PostGraduate	Married
719	150000	FEMALE	35	0	Massachusetts	PostGraduate	Married
1602	150000	FEMALE	31	0	Mississippi	PostGraduate	Married
1965	150000	FEMALE	38	1	New Hampshire	PostGraduate	Married
1981	150000	FEMALE	38	1	Connecticut	PostGraduate	Married
2672	300000	FEMALE	38	1	Massachusetts	PostGraduate	Married
2795	150000	FEMALE	33	1	Connecticut	PostGraduate	Married
3366	500000	FEMALE	37	1	Alaska	PostGraduate	Married
3788	200000	FEMALE	37	0	New York	PostGraduate	Married
3813	300000	FEMALE	33	0	Ohio	PostGraduate	Married
4090	200000	FEMALE	37	1	Missouri	PostGraduate	Married
4586	150000	FEMALE	31	0	Delaware	PostGraduate	Married
5112	180000	FEMALE	30	1	Pennsylvania	PostGraduate	Married
5314	80000	FEMALE	50	0	New Hampshire	PostGraduate	Married
6012	280000	FEMALE	30	0	Wisconsin	PostGraduate	Married
6174	160000	FEMALE	48	0	Delaware	PostGraduate	Married
6219	450000	FEMALE	40	0	Mississippi	PostGraduate	Married
6741	150000	FEMALE	32	0	Maryland	PostGraduate	Married
6763	240000	FEMALE	45	0	New York	PostGraduate	Married
7086	210000	FEMALE	36	1	Florida	PostGraduate	Married
7149	240000	FEMALE	39	0	New Mexico	PostGraduate	Married
7722	360000	FEMALE	33	1	Nebraska	PostGraduate	Married
7747	170000	FEMALE	31	0	Oregon	PostGraduate	Married
7791	140000	FEMALE	32	0	Alaska	PostGraduate	Married
8092	290000	FEMALE	35	0	New York	PostGraduate	Married
8575	150000	FEMALE	32	1	New York	PostGraduate	Married

Dashboard:

Defaulted Ratio and Demographic Trends:

The defaulted ratio for the current dataset is approximately 22%. This indicates that around 22% of the credit card holders in the dataset have a history of defaulting on their credit card payments.

Demographic Insights:

Upon analysing the dataset, intriguing patterns emerge regarding credit card defaulting behaviour among different demographics. Specifically, we observed the following trends:

1. **Gender Differences:** Females appear to have a higher default rate compared to males.
2. **Age Group Analysis:** Credit card holders aged between 23 and 32 exhibit a higher likelihood of defaulting, irrespective of gender.
3. **Educational Impact:** Notably, credit card holders who are currently pursuing or have recently completed undergraduate or post-graduate studies are more susceptible to credit card defaulting.

