

First 10 Rows of raw data

Obs	Card	Year	Month	Day	Time	Amount	Use_Chip	Merchant_City	Merchant_State	Errors	Is_Fraud_
1	0	2008	1	1	6:34	\$90	Swipe Transaction	La Verne	CA		No
2	0	2008	1	1	13:06	\$66	Swipe Transaction	Mira Loma	CA		No
3	0	2008	1	1	13:14	\$-66	Swipe Transaction	Mira Loma	CA		No
4	0	2008	1	1	13:15	\$43	Swipe Transaction	Mira Loma	CA		No
5	0	2008	1	1	13:19	\$10	Swipe Transaction	Mira Loma	CA		No
6	0	2008	1	1	20:10	\$88	Swipe Transaction	La Verne	CA		No
7	0	2008	1	2	6:57	\$50	Swipe Transaction	La Verne	CA		No
8	0	2008	1	2	20:49	\$82	Swipe Transaction	Mira Loma	CA		No
9	0	2008	1	3	6:59	\$32	Swipe Transaction	La Verne	CA		No
10	0	2008	1	4	7:36	\$42	Swipe Transaction	Monterey Park	CA		No

First 10 Rows of preprocessing data

Obs	Card	Year	Month	Day	Time	Amount	Use_Chip	Merchant_City	Merchant_State	Errors	Is_Fraud_	Location_Group
1	0	2008	1	1	6:34	\$90	Swipe Transaction	La Verne	CA	Unknown	No	US State
2	0	2008	1	1	13:06	\$66	Swipe Transaction	Mira Loma	CA	Unknown	No	US State
3	0	2008	1	1	13:14	\$-66	Swipe Transaction	Mira Loma	CA	Unknown	No	US State
4	0	2008	1	1	13:15	\$43	Swipe Transaction	Mira Loma	CA	Unknown	No	US State
5	0	2008	1	1	13:19	\$10	Swipe Transaction	Mira Loma	CA	Unknown	No	US State
6	0	2008	1	1	20:10	\$88	Swipe Transaction	La Verne	CA	Unknown	No	US State
7	0	2008	1	2	6:57	\$50	Swipe Transaction	La Verne	CA	Unknown	No	US State
8	0	2008	1	2	20:49	\$82	Swipe Transaction	Mira Loma	CA	Unknown	No	US State
9	0	2008	1	3	6:59	\$32	Swipe Transaction	La Verne	CA	Unknown	No	US State
10	0	2008	1	4	7:36	\$42	Swipe Transaction	Monterey Park	CA	Unknown	No	US State

Table 1: Fraud Count by Year and Location Group

Fraud Transactions Summary	Location					
	Other			US State		
	Fraud Status		Subtotal	Fraud Status		Subtotal
	No	Yes		No	Yes	
	Count	Count	Count	Count	Count	Count
Transaction Year						
2008	85	.	85	1,068	10	1,078
2015	108	13	121	1,061	.	1,061
2016	187	2	189	928	2	930

Total	380	15	395	3,057	12	3,069
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Table 2: Total and Average Transaction Amount by Fraud

Transaction Summary by Fraud Status		Total Amount	Average Amount
		Amount	Amount
Location	Fraud Status		
Other	No	\$37,102.90	\$97.64
	Yes	\$1,786.69	\$119.11
	Subtotal	\$38,889.59	\$98.45
US State	Fraud Status		
	No	\$240,456.52	\$78.66
	Yes	\$830.59	\$69.22
	Subtotal	\$241,287.11	\$78.62

Table 3: Fraud Analysis by Card, Use Chip, and Fraud Status

Fraud Transactions by Card & Chip Usage		Fraud Status						Subtotal		
		No			Yes					
		Percentage %	Avg Amount	Count	Percentage %	Avg Amount	Count	Percentage %	Avg Amount	Count
			Amount			Amount			Amount	
Card Type	Chip Usage									
0	Chip Transaction	10.97	\$60.00	380	.	.	.	10.97	\$60.00	380
	Online Transaction	1.18	\$74.88	41	0.38	\$95.74	13	1.56	\$79.90	54
	Swipe Transaction	8.60	\$61.64	298	.	.	.	8.60	\$61.64	298
	Total	20.76	\$61.53	719	0.38	\$95.74	13	21.13	\$62.14	732
1	Chip Usage									
	Chip Transaction	9.64	\$63.89	334	.	.	.	9.64	\$63.89	334
	Online Transaction	0.95	\$54.96	33	.	.	.	0.95	\$54.96	33
	Swipe Transaction	0.40	\$42.28	14	.	.	.	0.40	\$42.28	14
	Total	11.00	\$62.32	381	.	.	.	11.00	\$62.32	381
2	Chip Usage									
	Chip Transaction	8.86	\$65.25	307	0.03	\$81.93	1	8.89	\$65.30	308
	Online Transaction	1.24	\$111.80	43	0.03	\$297.86	1	1.27	\$116.03	44
	Swipe Transaction	9.09	\$63.55	315	.	.	.	9.09	\$63.55	315
	Total	19.20	\$67.45	665	0.06	\$189.90	2	19.26	\$67.82	667
3	Chip Usage									
	Online Transaction	4.30	\$136.67	149	0.03	\$244.23	1	4.33	\$137.39	150
	Swipe Transaction	43.53	\$95.61	1508	0.32	\$68.06	11	43.85	\$95.41	1519
	Total	47.83	\$99.30	1657	0.35	\$82.74	12	48.18	\$99.18	1669
4	Chip Usage									
	Online Transaction	0.12	\$4.42	4	.	.	.	0.12	\$4.42	4
	Swipe Transaction	0.32	\$14.54	11	.	.	.	0.32	\$14.54	11
	Total	0.43	\$11.84	15	.	.	.	0.43	\$11.84	15

Total	Chip Usage									
	Chip Transaction	29.47	\$62.85	1021	0.03	\$81.93	1	29.50	\$62.87	1022
	Online Transaction	7.79	\$111.38	270	0.43	\$119.11	15	8.23	\$111.79	285
	Swipe Transaction	61.95	\$85.42	2146	0.32	\$68.06	11	62.27	\$85.33	2157
	Total	99.22	\$80.76	3437	0.78	\$96.94	27	100.00	\$80.88	3464

Model Accuracy Summary

Obs	Total	Correct	Accuracy
1	3464	3437	99.22%

Visualization



