

69.5%

\$ 35,357

Proportion of customers (x)	Cumulative gains (y)
0.0	0.00
0.1	0.38
0.2	0.55
0.3	0.68
0.4	0.75
0.5	0.81
0.6	0.86
0.7	0.90
0.8	0.94
0.9	0.97
1.0	1.00

The graph plots Profit (Y-axis, 0 to 40,000) against the Proportion of customers (X-axis, 0.0 to 1.0). The profit curve starts at (0,0), rises steeply to a peak of approximately 38,000 at a proportion of 0.6, and then gradually declines to about 34,000 at a proportion of 1.0. A vertical dashed line is drawn at a proportion of approximately 0.3, and a horizontal dashed line is drawn at a profit of 0.

Proportion of customers	Profit
0.0	0
0.1	22,000
0.2	30,000
0.3	35,000
0.4	37,000
0.5	37,500
0.6	38,000
0.7	37,500
0.8	36,500
0.9	35,500
1.0	34,000



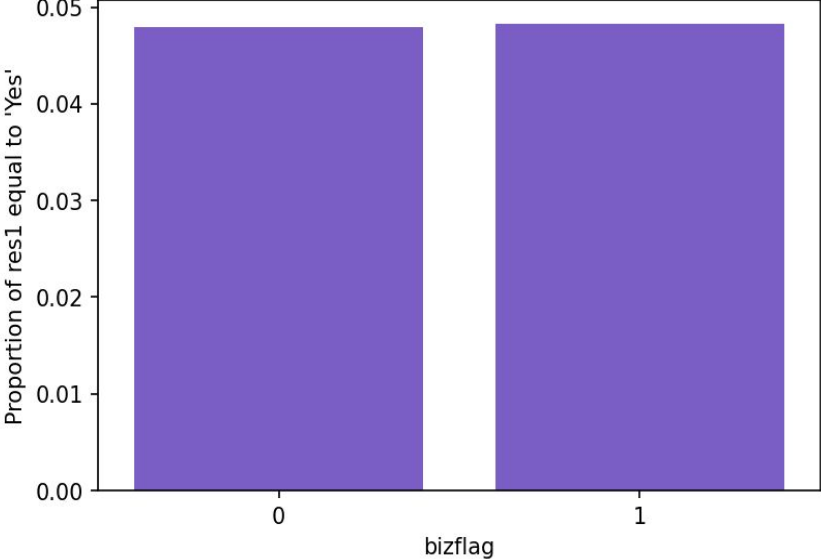
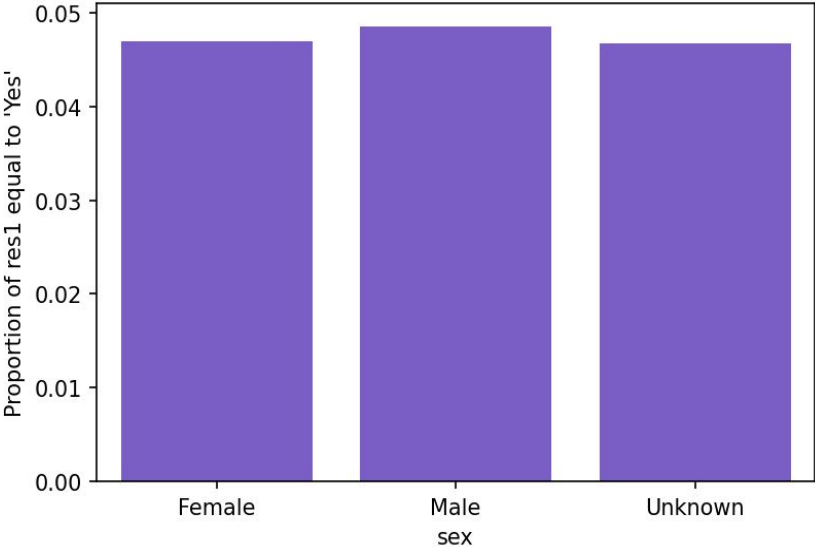


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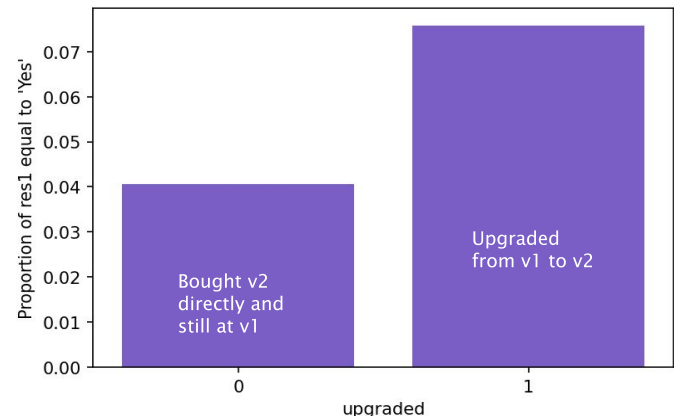
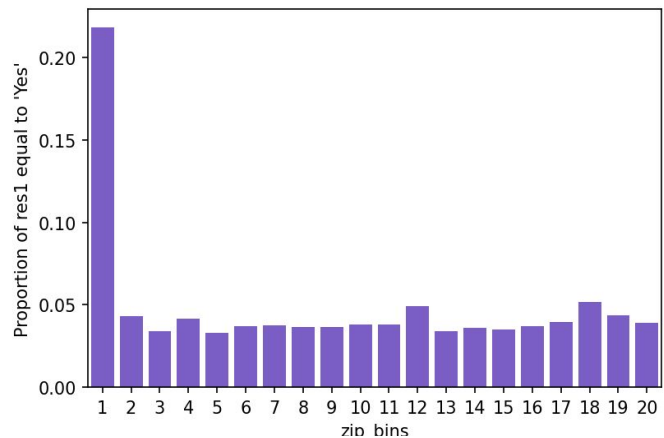
Modelling an Upsell Campaign



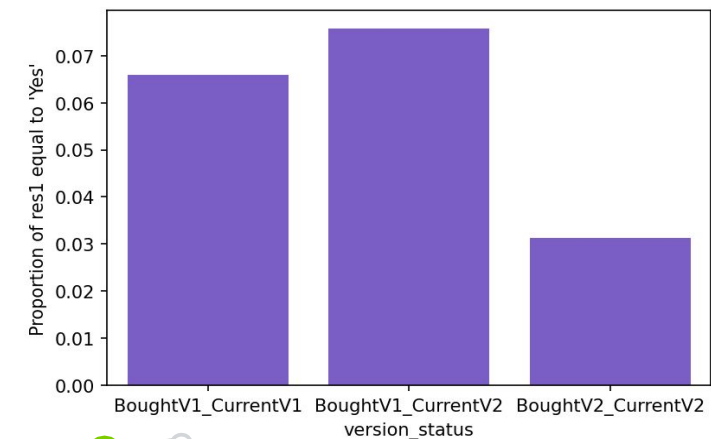
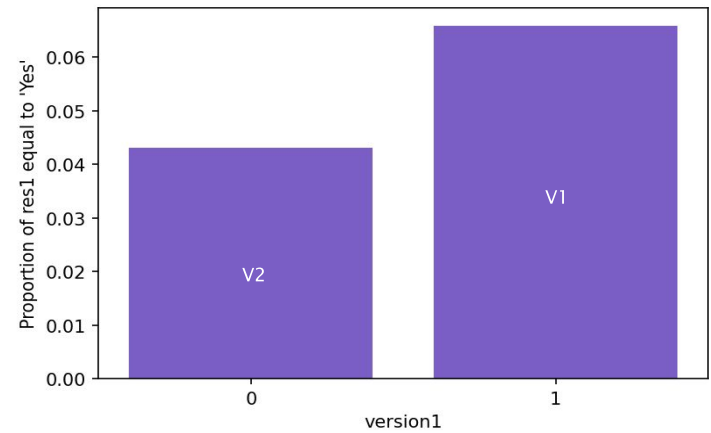
No Visible Relationship

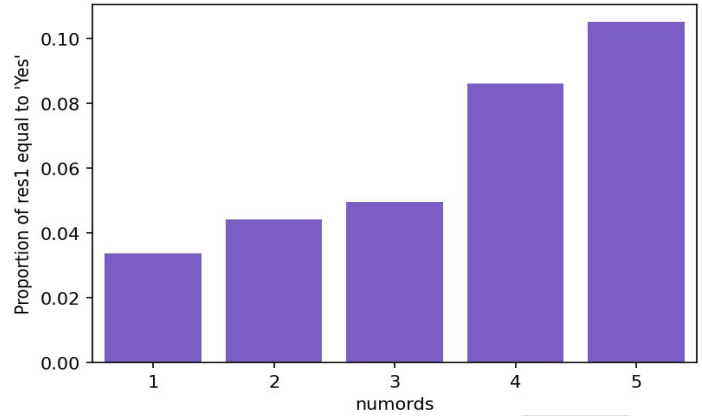
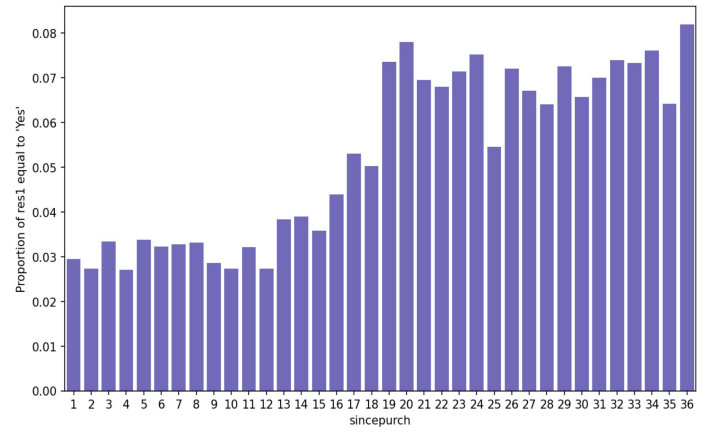


Exploratory Data Analysis

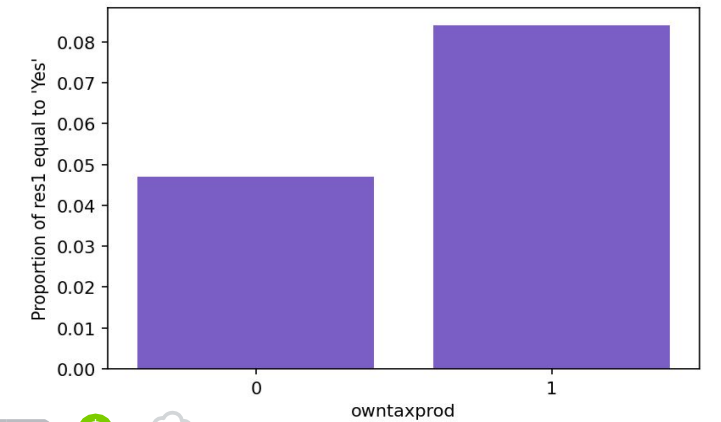
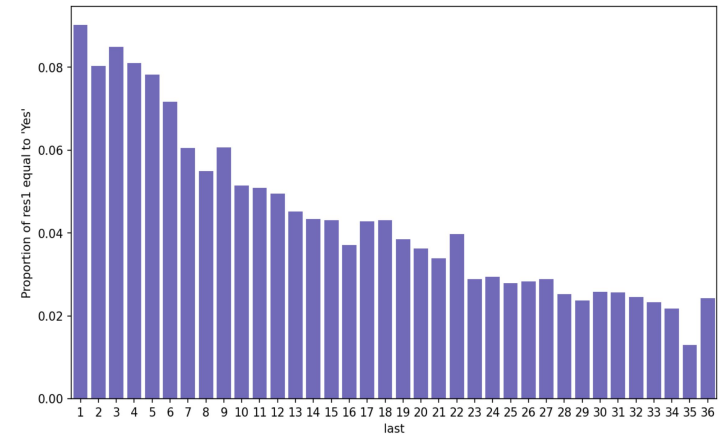


Visible relationship

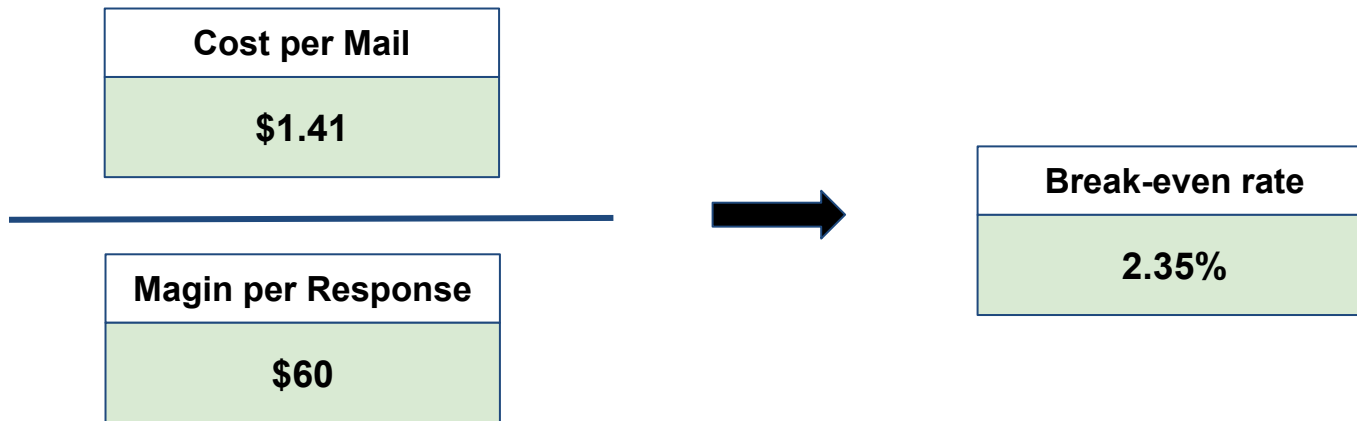




Visible relationship



Break-even Analysis





RFM Analysis - Models

Model 1
RFM IQ

Model 2
RFM SQ

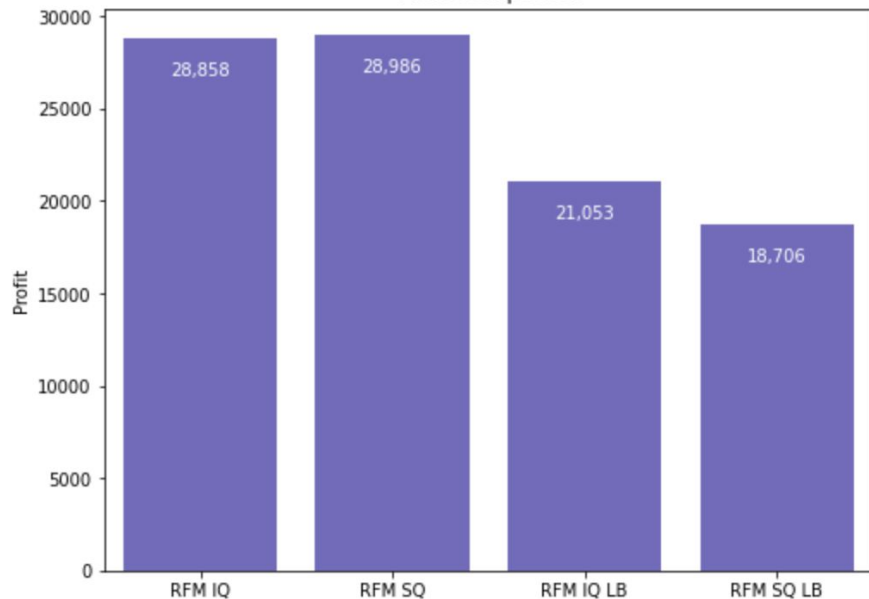
Model 3
RFM IQ LB

Model 4
RFM SQ LB



Model Performance Analysis

Profit Comparison



Return on Marketing Expenditures (ROME)

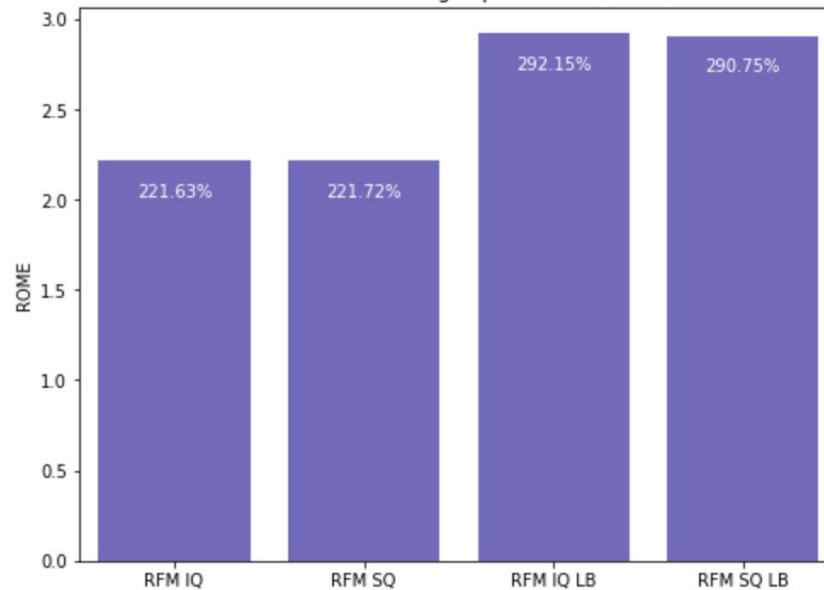


Figure 1 is a line graph showing the cumulative gains of four predictors as a function of the proportion of customers. The x-axis represents the 'Proportion of customers' from 0.0 to 1.0, and the y-axis represents 'Cumulative gains' from 0.0 to 1.0. A dashed orange line represents the ideal performance (y=x). The four predictors are: iq_response_rate (blue line), sq_response_rate (orange line), prop_iq_lb (green line), and prop_sq_lb (red line). The prop_iq_lb and prop_sq_lb predictors show higher cumulative gains than the iq_response_rate and sq_response_rate predictors across most of the customer proportion range.

Proportion of customers	iq_response_rate	sq_response_rate	prop_iq_lb	prop_sq_lb
0.0	0.00	0.00	0.00	0.00
0.1	0.22	0.25	0.20	0.22
0.2	0.38	0.42	0.38	0.36
0.3	0.52	0.55	0.50	0.50
0.4	0.62	0.65	0.58	0.60
0.5	0.72	0.75	0.68	0.68
0.6	0.78	0.82	0.75	0.76
0.7	0.85	0.88	0.82	0.82
0.8	0.92	0.95	0.88	0.88
0.9	0.98	1.00	0.95	0.95
1.0	1.00	1.00	1.00	1.00

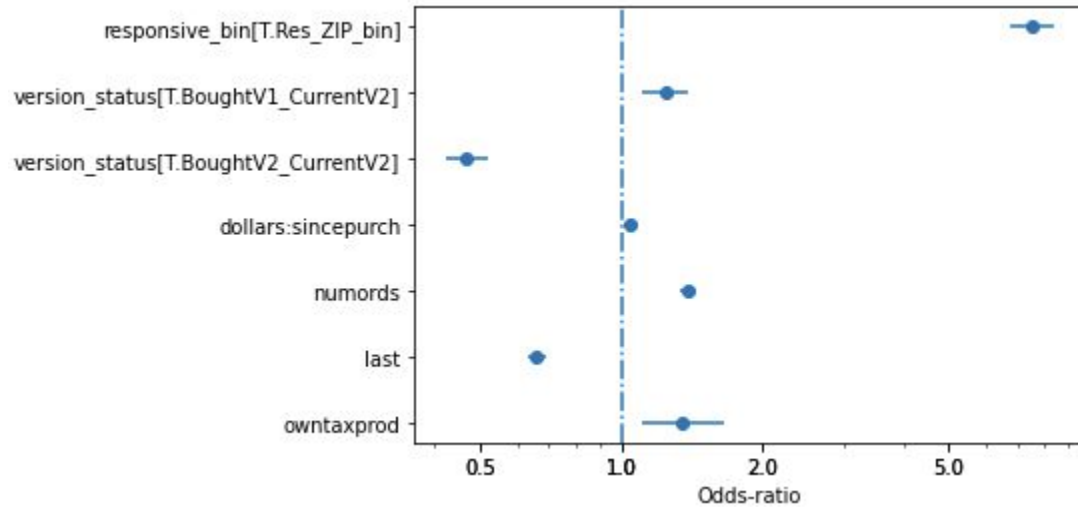
Proportion of customers	iq_response_rate	sq_response_rate	prop_iq_lb	prop_sq_lb
0.0	0	0	0	0
0.1	12000	13000	11000	11000
0.2	21000	21000	19000	18000
0.3	26000	26000	24000	24000
0.4	29000	30000	27000	27000
0.5	33000	33000	30000	30000
0.6	34000	34000	32000	31000
0.7	35000	35000	33000	32000
0.8	35000	35000	33000	33000
0.9	35000	35000	34000	34000
1.0	35000	35000	34000	34000

\$ 28,986





Odd's Ratios of the LR Model



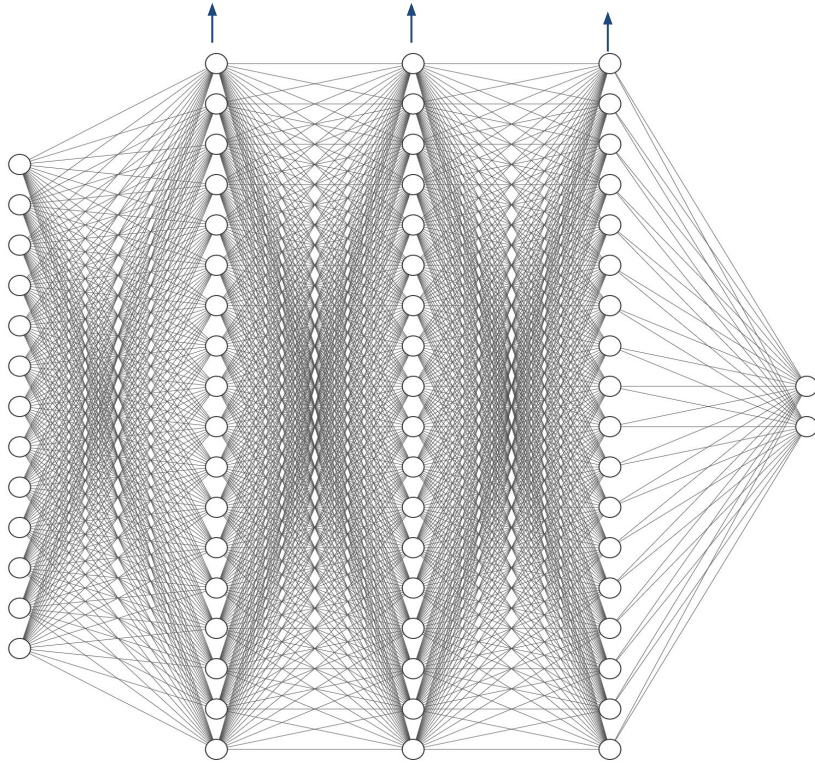


**3 hidden
layers, 100
nodes each**

2 response variables

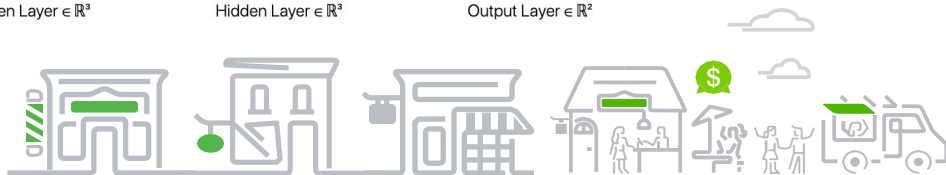
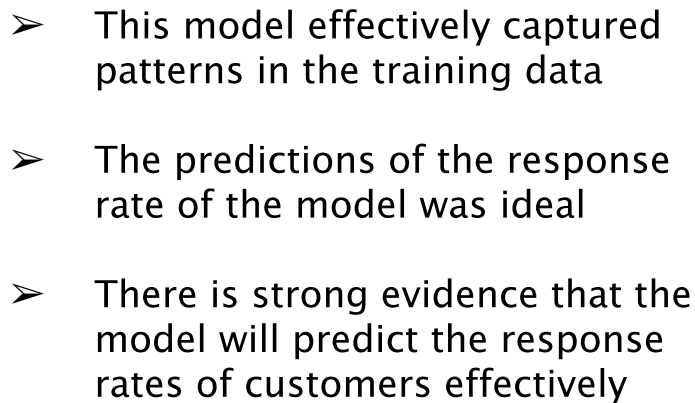


Neural Network Model 1

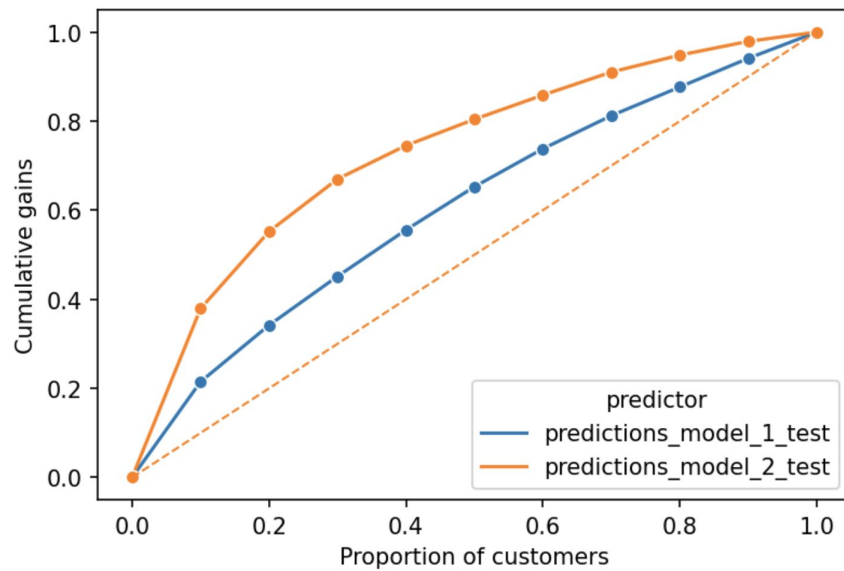


- This model effectively captures patterns in the training data
- The predictions of the response rate of the model was satisfactory but not ideal
- There is strong evidence that the model will perform poorly on foreign data





Gains Plot



Expected Profit

\$ 36,000

AUC-ROC Score

75.53%

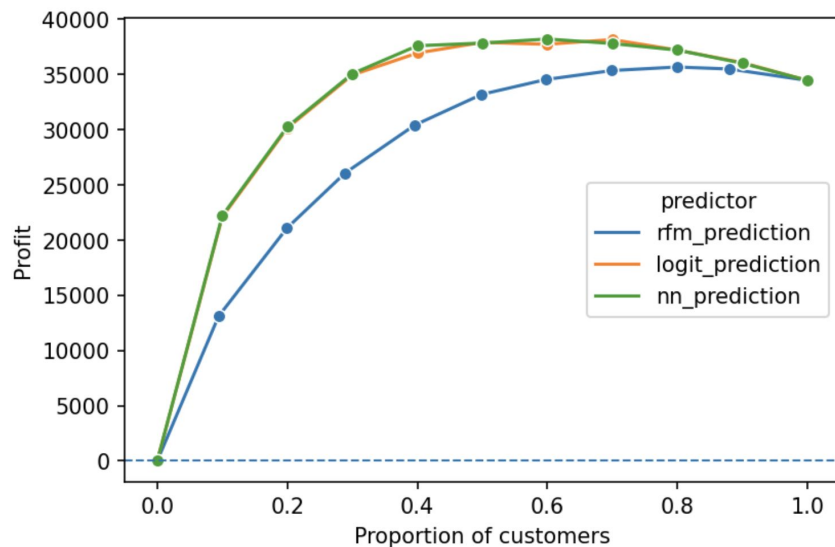


Final Model and Projected Profit

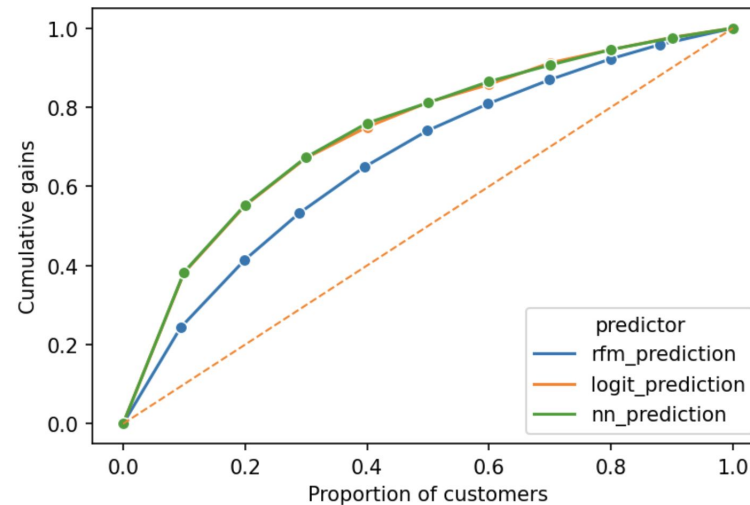


Model comparison- RFM SQ, Logistic and NN

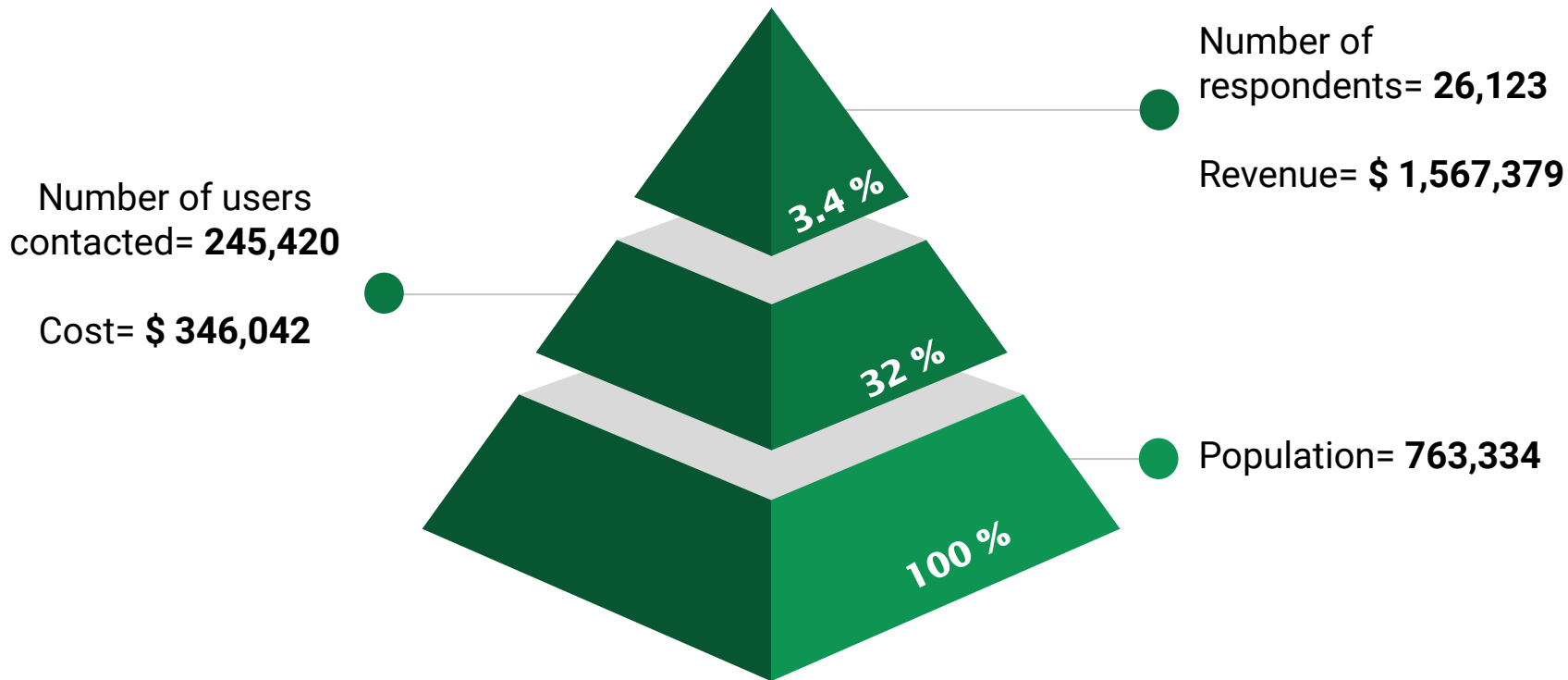
Profit Plot



Gains Plot



Projected Profit



Total Profit= \$ 1,221,337

Thank you!