Model Metrics

Final model features

['destination_Home',
 'destination_No Urgent Place',
 'destination_Work',
 'passenger_Alone',
 'passenger_Friend(s)',
 'passenger_Kid(s)',
 'passenger_Partner',
 'weather_Rainy',
 'weather_Snowy',
 'weather_Sunny',
 'time_10AM',
 'time_10PM',
 'time_2PM',
 'time_6PM',
 'time_7AM',
 'coupon_venue_type_Bar',
 'coupon_venue_type_Carry out & Take away',
 'coupon_venue_type_Coffee House',
 'coupon_venue_type_Restaurant(20-50)',
 'coupon_venue_type_Restaurant(<20)',
 'expiration_1d',
 'expiration_2h',
 'gender_Female',
 'gender_Male',
 'age_21-25',
 'age_26-30',
 'age_31-35',
 'age_36-40',
 'age_41-45',
 'age_46-49',
 'age_50+',
 'age_<21',
 'maritalStatus_Divorced',
 'maritalStatus_Married partner',
 'maritalStatus_Single',
 'maritalStatus_Unmarried partner',
 'maritalStatus_Widowed',
 'education_Associates degree',

'education_Bachelors degree',
'education_Graduate degree (Masters or Doctorate)',
'education_High School Graduate',
'education_Some High School',
'education_Some college - no degree',
'occupation_Architecture & Engineering',
'occupation_Arts Design Entertainment Sports & Media',
'occupation_Building & Grounds Cleaning & Maintenance',
'occupation_Business & Financial',
'occupation_Community & Social Services',
'occupation_Computer & Mathematical',
'occupation_Construction & Extraction',
'occupation_Education&Training&Library',
'occupation_Farming Fishing & Forestry',
'occupation_Food Preparation & Serving Related',
'occupation_Healthcare Practitioners & Technical',
'occupation_Healthcare Support',
'occupation_Installation Maintenance & Repair',
'occupation_Legal',
'occupation_Life Physical Social Science',
'occupation_Management',
'occupation_Office & Administrative Support',
'occupation_Personal Care & Service',
'occupation_Production Occupations',
'occupation_Protective Service',
'occupation_Retired',
'occupation_Sales & Related',
'occupation_Student',
'occupation_Transportation & Material Moving',
'occupation_Unemployed',
'income_Less than \\$12500',
'income_\\$100000 or More',
'income_\\$12500 - \\$24999',
'income_\\$25000 - \\$37499',
'income_\\$37500 - \\$49999',
'income_\\$50000 - \\$62499',
'income_\\$62500 - \\$74999',
'income_\\$75000 - \\$87499',
'income_\\$87500 - \\$99999',
'car_Car that is too old to install Onstar :D',
'car_Mazda5',
'car_Scooter and motorcycle',
'car_crossover',
'car_do not drive',

'car_no response',
'Bar_1-3',
'Bar_4-8',
'Bar_<1',
'Bar_>8',
'Bar_never',
'Bar_no response',
'CoffeeHouse_1-3',
'CoffeeHouse_4-8',
'CoffeeHouse_<1',
'CoffeeHouse_>8',
'CoffeeHouse_never',
'CoffeeHouse_no response',
'CarryAway_1-3',
'CarryAway_4-8',
'CarryAway_<1',
'CarryAway_>8',
'CarryAway_never',
'CarryAway_no response',
'RestaurantLessThan20_1-3',
'RestaurantLessThan20_4-8',
'RestaurantLessThan20_<1',
'RestaurantLessThan20_>8',
'RestaurantLessThan20_never',
'RestaurantLessThan20_no response',
'Restaurant20To50_1-3',
'Restaurant20To50_4-8',
'Restaurant20To50_<1',
'Restaurant20To50_>8',
'Restaurant20To50_never',
'Restaurant20To50_no response',
'temperature',
'has_children',
'toCoupon_GEQ15min',
'toCoupon_GEQ25min',
'direction_same_or_opposite',
'expiration_category_representative_numeric_encoding',
'time_category_representative_numeric_encoding',
'age_category_representative_numeric_encoding',
'income_category_representative_numeric_encoding',
'gender_binary_encoding',
'expiration_binary_encoding',
'coupon_venue_type_ordinal_integer_encoding',
'education_ordinal_integer_encoding',

'income_ordinal_integer_encoding',
'age_ordinal_integer_encoding',
'time_ordinal_integer_encoding',
'temperature_ordinal_integer_encoding',
'Bar_venue_visit_frequency_yes_response_ordinal_integer_encoding',
'CoffeeHouse_venue_visit_frequency_yes_response_ordinal_integer_encoding',
'CarryAway_venue_visit_frequency_yes_response_ordinal_integer_encoding',
'RestaurantLessThan20_venue_visit_frequency_yes_response_ordinal_integer_encoding',
'Restaurant20To50_venue_visit_frequency_yes_response_ordinal_integer_encoding',
'Bar_venue_visit_frequency_no_response_indicator',
'CoffeeHouse_venue_visit_frequency_no_response_indicator',
'CarryAway_venue_visit_frequency_no_response_indicator',
'RestaurantLessThan20_venue_visit_frequency_no_response_indicator',
'Restaurant20To50_venue_visit_frequency_no_response_indicator']

Parameters

random_state=200

Hyperparameters: Random Forest

```
{
    'n_estimators': [200],
    'criterion':['gini'],
    'max_depth': [25],
    'min_samples_split': [5],
    'min_samples_leaf':[1],
    'min_weight_fraction_leaf':[0.0],
    'max_features':['auto'],
    'max_leaf_nodes':[None],
    'min_impurity_decrease':[0.0],
    'bootstrap': [False],
    'oob_score': [False],
    'n_jobs': [None],
    'warm_start':[False],
    'class_weight':[None],
    'ccp_alpha':[0.0],
    'max_samples':[None],
```

```
        }
```

Hyperparameters: Gradient Boosting

```
{
        criterion='squared_error',
        loss='exponential',
        learning_rate = 0.1,
        max_depth = 9,
        n_estimators = 250,
        random_state=200,
        subsample=1.0,
        min_samples_split=2,
        min_samples_leaf=1,
        min_weight_fraction_leaf=0.0,
        min_impurity_decrease=0.0,
        init=None,
        max_features=None,
        verbose=0,
        max_leaf_nodes=None,
        warm_start=False,
        n_iter_no_change=None
}
```

Performance metrics: Random Forest

		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Model	**Coupon Acceptance Rate**	89.53%	89.63%	94.12%	90.91%	87.44%	100.00%
	Percentage of Coupon Acceptances Captured	34.23%	28.34%	10.26%	46.83%	49.18%	5.93%
	Percentage of Coupon Acceptances	100.00%	24.40%	3.23%	34.27%	36.49%	1.61%
	Coupon Acceptances	496	121	16	170	181	8
	Percentage of Coupon Recommendations	100.00%	24.37%	3.07%	33.75%	37.36%	1.44%

	Coupon Recommendations	554	135	17	187	207	8
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Coupon Recommendations to Coupon Recommendations Possible Ratio	21.84%	16.65%	4.26%	38.24%	38.76%	2.63%
Survey	Coupon Acceptance Rate	56.02%	53.47%	33.86%	74.22%	65.63%	50.63%
	Percentage of Coupon Acceptances Captured	28.57%	30.68%	27.56%	26.17%	28.53%	29.63%
	Percentage of Coupon Acceptances	100.00%	31.64%	10.39%	22.95%	25.36%	9.66%
	Coupon Acceptances	414	131	43	95	105	40
	Percentage of Coupon Recommendations	100.00%	33.15%	17.19%	17.32%	21.65%	10.69%
	Coupon Recommendations	739	245	127	128	160	79
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Coupon Recommendations to Coupon Recommendations Possible Ratio	29.13%	30.21%	31.83%	26.18%	29.96%	25.99%
Model-Survey Difference	Coupon Acceptance Rate	33.51%	36.16%	60.26%	16.69%	21.81%	49.37%
	Percentage of Coupon Acceptances Captured	5.66%	-2.34%	-17.31%	20.66%	20.65%	-23.70%
	Percentage of Coupon Acceptances	0.00%	-7.25%	-7.16%	11.33%	11.13%	-8.05%
	Coupon Acceptances	82	-10	-27	75	76	-32
	Percentage of Coupon Recommendations	0.00%	-8.78%	-14.12%	16.43%	15.71%	-9.25%
	Coupon Recommendations	-185	-110	-110	59	47	-71
	Coupon Recommendations Possible	0	0	0	0	0	0

	Coupon Recommendations to Coupon Recommendations Possible Ratio	-7.29%	-13.56%	-27.57%	12.07%	8.80%	-23.36%
Model	Average Coupon Recommendation Cost Estimated	NaN	$0.99	$2.29	$2.65	$2.20	$6.39
	Average Sale Estimated	NaN	$5.50	$15.00	$15.00	$12.00	$35.00
Survey	Average Coupon Recommendation Cost Estimated	NaN	$0.54	$1.24	$2.20	$1.71	$3.08
	Average Sale Estimated	NaN	$5.50	$15.00	$15.00	$12.00	$35.00
Model	Ad Revenue	$5,907.50	$665.50	$240.00	$2,550.00	$2,172.00	$280.00
	Ad Spend	$1,175.84	$133.70	$38.86	$496.02	$456.14	$51.13
Survey	Ad Revenue	$5,450.50	$720.50	$645.00	$1,425.00	$1,260.00	$1,400.00
	Ad Spend	$1,729.93	$242.63	$290.29	$339.52	$352.57	$504.91
Model-Survey Difference	Ad Revenue	$457.00	-$55.00	-$405.00	$1,125.00	$912.00	-$1,120.00
	Ad Spend	-$554.08	-$108.94	-$251.43	$156.50	$103.57	-$453.78
Model	ROAS	502.41%	497.77%	617.65%	514.09%	476.17%	547.62%
Survey	ROAS	315.07%	296.95%	222.19%	419.71%	357.38%	277.28%
Model-Survey Difference	ROAS	187.33%	200.82%	395.45%	94.38%	118.80%	270.34%
Model	Profit 200	$4,531.66	NaN	NaN	NaN	NaN	NaN
	Spend 200	$1,375.84	NaN	NaN	NaN	NaN	NaN
	ROI 200	329.37%	NaN	NaN	NaN	NaN	NaN
Survey	Profit 200	$3,520.57	NaN	NaN	NaN	NaN	NaN
	Spend 200	$1,929.93	NaN	NaN	NaN	NaN	NaN
	ROI 200	182.42%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 200	$1,011.08	NaN	NaN	NaN	NaN	NaN
	Spend 200	-$554.08	NaN	NaN	NaN	NaN	NaN
	ROI 200	146.95%	NaN	NaN	NaN	NaN	NaN
Model	Profit 2000	$2,731.66	NaN	NaN	NaN	NaN	NaN
	Spend 2000	$3,175.84	NaN	NaN	NaN	NaN	NaN
	ROI 2000	86.01%	NaN	NaN	NaN	NaN	NaN
Survey	Profit 2000	$1,720.57	NaN	NaN	NaN	NaN	NaN
	Spend 2000	$3,729.93	NaN	NaN	NaN	NaN	NaN
	ROI 2000	46.13%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 2000	$1,011.08	NaN	NaN	NaN	NaN	NaN
	Spend 2000	-$554.08	NaN	NaN	NaN	NaN	NaN

		Overall					
	ROI 2000	39.88%	NaN	NaN	NaN	NaN	NaN
Model	**Profit 20000**	-$15,268.34	NaN	NaN	NaN	NaN	NaN
	Spend 20000	$21,175.84	NaN	NaN	NaN	NaN	NaN
	ROI 20000	-72.10%	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 20000**	-$16,279.43	NaN	NaN	NaN	NaN	NaN
	Spend 20000	$21,729.93	NaN	NaN	NaN	NaN	NaN
	ROI 20000	-74.92%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	**Profit 20000**	$1,011.08	NaN	NaN	NaN	NaN	NaN
	Spend 20000	-$554.08	NaN	NaN	NaN	NaN	NaN
	ROI 20000	2.81%	NaN	NaN	NaN	NaN	NaN

		95% Confidence Interval					
		Overall	**Coffee House**	**Bar**	**Takeout**	**Low-Cost Restaurant**	**Mid-Range Restaurant**
Model	**Coupon Acceptance Rate**	(86.9%, 92.1%)	(84.3%, 94.6%)	(80.0%, 100.0%)	(86.6%, 94.8%)	(82.8%, 91.8%)	(100%, 100%)
	Percentage of Coupon Acceptances Captured	(31.8%, 36.8%)	(24.1%, 32.7%)	(5.7%, 15.4%)	(41.6%, 52.0%)	(44.1%, 54.3%)	(2.3%, 10.2%)
	Percentage of Coupon Acceptances	(100%, 100%)	(20.7%, 28.2%)	(1.8%, 4.9%)	(30.0%, 38.5%)	(32.3%, 40.7%)	(0.6%, 2.8%)
	Coupon Acceptances	(458, 536)	(100, 143)	(9, 24)	(145, 195)	(156, 207)	(3, 14)
	Percentage of Coupon Recommendations	(100%, 100%)	(20.8%, 28.0%)	(1.7%, 4.6%)	(29.8%, 37.7%)	(33.4%, 41.4%)	(0.5%, 2.5%)
	Coupon Recommendations	(514, 596)	(113, 158)	(10, 26)	(161, 213)	(180, 234)	(3, 14)
	Coupon Recommendations Possible	(2537, 2537)	(811, 811)	(399, 399)	(489, 489)	(534, 534)	(304, 304)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(20.3%, 23.5%)	(14.1%, 19.3%)	(2.4%, 6.4%)	(33.9%, 42.6%)	(34.7%, 42.9%)	(100%, 100%)
Survey	**Coupon Acceptance Rate**	(52.5%, 59.6%)	(47.2%, 59.6%)	(25.6%, 42.6%)	(66.7%, 81.6%)	(58.3%, 73.0%)	(39.8%, 61.6%)
	Percentage of Coupon Acceptances Captured	(26.3%, 30.9%)	(26.4%, 35.1%)	(20.8%, 34.7%)	(21.8%, 30.7%)	(24.0%, 33.2%)	(22.0%, 37.5%)
	Percentage of Coupon Acceptances	(100%, 100%)	(27.2%, 36.2%)	(7.6%, 13.5%)	(19.0%, 27.1%)	(21.3%, 29.7%)	(6.9%, 12.6%)

	Coupon Acceptances	(378, 451)	(109, 153)	(31, 56)	(77, 114)	(86, 125)	(28, 53)
	Percentage of Coupon Recommendations	(100%, 100%)	(29.8%, 36.6%)	(14.5%, 20.0%)	(14.6%, 20.1%)	(18.7%, 24.6%)	(8.5%, 13.0%)
	Coupon Recommendations	(695, 784)	(216, 275)	(106, 149)	(107, 150)	(136, 184)	(62, 97)
	Coupon Recommendations Possible	(2537, 2537)	(811, 811)	(399, 399)	(489, 489)	(534, 534)	(304, 304)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(27.4%, 30.9%)	(27.1%, 33.4%)	(27.4%, 36.4%)	(22.4%, 30.0%)	(26.2%, 33.9%)	(21.1%, 31.0%)
Model-Survey Difference	Coupon Acceptance Rate	(29.4%, 37.6%)	(28.6%, 43.7%)	(44.9%, 72.4%)	(9.4%, 24.0%)	(14.2%, 29.6%)	(38.4%, 60.2%)
	Percentage of Coupon Acceptances Captured	(2.2%, 9.1%)	(-8.6%, 4.1%)	(-25.7%, -9.0%)	(13.6%, 27.6%)	(14.0%, 27.1%)	(-32.5%, -14.8%)
	Percentage of Coupon Acceptances	(0.0%, 0.0%)	(-12.2%, -2.2%)	(-10.3%, -4.3%)	(6.5%, 16.2%)	(6.4%, 15.8%)	(-11.0%, -5.2%)
	Coupon Acceptances	(32, 132)	(-37, 17)	(-41, -14)	(49, 102)	(51, 101)	(-45, -19)
	Percentage of Coupon Recommendations	(0.0%, 0.0%)	(-13.1%, -4.3%)	(-17.1%, -11.2%)	(12.3%, 20.6%)	(11.5%, 19.9%)	(-11.7%, -6.9%)
	Coupon Recommendations	(-246, -123)	(-144, -75)	(-133, -88)	(30, 88)	(17, 77)	(-89, -53)
	Coupon Recommendations Possible	(0, 0)	(0, 0)	(0, 0)	(0, 0)	(0, 0)	(0, 0)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(-9.7%, -4.8%)	(-17.7%, -9.3%)	(-32.5%, -22.5%)	(6.3%, 17.9%)	(3.2%, 14.3%)	(-28.8%, -18.1%)
Model	Ad Revenue	($5406.0, $6425.5)	($550.0, $786.5)	($135.0, $360.0)	($2175.0, $2925.0)	($1872.0, $2484.0)	($105.0, $490.0)
	Ad Spend	($1083.54, $1271.78)	($111.91, $156.47)	($22.86, $59.43)	($427.06, $564.99)	($396.64, $515.63)	($19.17, $89.48)
Survey	Ad Revenue	($4883.48, $6041.02)	($599.5, $841.5)	($465.0, $840.0)	($1155.0, $1710.0)	($1032.0, $1500.0)	($980.0, $1855.0)
	Ad Spend	($1600.13, $1865.57)	($213.91, $272.34)	($242.29, $340.57)	($283.82, $397.88)	($299.68, $405.45)	($396.26, $619.96)
Model-Survey Difference	Ad Revenue	($-270.5, $1182.01)	($-203.5, $93.5)	($-615.0, $-210.0)	($735.0, $1530.0)	($612.0, $1212.0)	($-1575.0, $-665.0)
	Ad Spend	($-719.12, $-391.05)	($-142.61, $-74.28)	($-304.0, $-201.14)	($79.58, $233.42)	($37.46, $169.67)	($-568.83, $-338.74)
Model	ROAS	(487.1%, 516.64%)	(468.16%, 525.14%)	(525.0%, 656.25%)	(489.49%, 536.31%)	(450.86%, 499.66%)	(547.62%, 547.62%)
Survey	ROAS	(291.26%, 339.15%)	(262.13%, 330.77%)	(168.13%, 279.62%)	(377.0%, 461.45%)	(317.42%, 397.39%)	(217.8%, 337.49%)
Model-Survey Difference	ROAS	(161.0%, 213.74%)	(159.0%, 242.49%)	(294.98%, 475.36%)	(52.96%, 135.91%)	(77.27%, 160.98%)	(210.13%, 329.82%)

Model	**Profit 200**	($4117.93, $4963.07)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($1283.54, $1471.78)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(315.02%, 342.37%)	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 200**	($3030.56, $4028.06)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($1800.13, $2065.57)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(161.05%, 204.04%)	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	**Profit 200**	($403.48, $1616.52)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($-719.12, $-391.05)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(123.27%, 170.12%)	NaN	NaN	NaN	NaN	NaN
Model	**Profit 2000**	($2317.93, $3163.07)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($3083.54, $3271.78)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(74.91%, 96.95%)	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 2000**	($1230.56, $2228.06)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($3600.13, $3865.57)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(33.59%, 58.68%)	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	**Profit 2000**	($403.48, $1616.52)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($-719.12, $-391.05)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(24.46%, 55.18%)	NaN	NaN	NaN	NaN	NaN
Model	**Profit 20000**	($-15682.07, $-14836.93)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($21083.54, $21271.78)	NaN	NaN	NaN	NaN	NaN
	ROI 20000	(-74.36%, -69.79%)	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 20000**	($-16769.44, $-15771.94)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($21600.13, $21865.57)	NaN	NaN	NaN	NaN	NaN

						Low-Cost	Mid-Range
Model-Survey Difference	**ROI 20000**	(-77.45%, -72.29%)	NaN	NaN	NaN	NaN	NaN
	Profit 20000	($403.48, $1616.52)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($-719.12, $-391.05)	NaN	NaN	NaN	NaN	NaN
	ROI 20000	(-0.41%, 6.05%)	NaN	NaN	NaN	NaN	NaN

Performance metrics: Gradient Boosting

		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Model	**Coupon Acceptance Rate**	79.88%	80.10%	75.16%	83.42%	83.16%	62.71%
	Percentage of Coupon Acceptances Captured	80.26%	74.47%	75.64%	90.08%	88.59%	54.81%
	Percentage of Coupon Acceptances	100.00%	27.34%	10.15%	28.12%	28.03%	6.36%
	Coupon Acceptances	1163	318	118	327	326	74
	Percentage of Coupon Recommendations	100.00%	27.27%	10.78%	26.92%	26.92%	8.10%
	Coupon Recommendations	1456	397	157	392	392	118
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Coupon Recommendations to Coupon Recommendations Possible Ratio	57.39%	48.95%	39.35%	80.16%	73.41%	38.82%
Survey	**Coupon Acceptance Rate**	56.60%	52.72%	37.54%	73.81%	67.84%	46.64%
	Percentage of Coupon Acceptances Captured	78.74%	77.28%	80.13%	76.86%	78.53%	87.41%
	Percentage of Coupon Acceptances	100.00%	28.92%	10.96%	24.45%	25.33%	10.34%
	Coupon Acceptances	1141	330	125	279	289	118
	Percentage of Coupon Recommendations	100.00%	31.05%	16.52%	18.75%	21.13%	12.55%
	Coupon Recommendations	2016	626	333	378	426	253
	Coupon Recommendations Possible	2537	811	399	489	534	304

	Coupon Recommendations to Coupon Recommendations Possible Ratio	79.46%	77.19%	83.46%	77.30%	79.78%	83.22%
Model-Survey Difference	**Coupon Acceptance Rate**	23.28%	27.39%	37.62%	9.61%	15.32%	16.07%
	Percentage of Coupon Acceptances Captured	1.52%	-2.81%	-4.49%	13.22%	10.05%	-32.59%
	Percentage of Coupon Acceptances	0.00%	-1.58%	-0.81%	3.66%	2.70%	-3.98%
	Coupon Acceptances	22	-12	-7	48	37	-44
	Percentage of Coupon Recommendations	0.00%	-3.79%	-5.73%	8.17%	5.79%	-4.45%
	Coupon Recommendations	-560	-229	-176	14	-34	-135
	Coupon Recommendations Possible	0	0	0	0	0	0
	Coupon Recommendations to Coupon Recommendations Possible Ratio	-22.07%	-28.24%	-44.11%	2.86%	-6.37%	-44.41%
Model	**Average Coupon Recommendation Cost Estimated**	NaN	$0.85	$2.22	$2.46	$1.98	$4.64
	Average Sale Estimated	NaN	$5.50	$15.00	$15.00	$12.00	$35.00
Survey	**Average Coupon Recommendation Cost Estimated**	NaN	$0.54	$1.24	$2.20	$1.71	$3.08
	Average Sale Estimated	NaN	$5.50	$15.00	$15.00	$12.00	$35.00
Model	**Ad Revenue**	$14,926.00	$1,749.00	$1,770.00	$4,905.00	$3,912.00	$2,590.00
	Ad Spend	$2,970.67	$336.78	$348.95	$962.88	$774.78	$547.29
Survey	**Ad Revenue**	$15,473.00	$1,815.00	$1,875.00	$4,185.00	$3,468.00	$4,130.00
	Ad Spend	$4,215.06	$531.04	$740.12	$928.50	$841.98	$1,173.42
Model-Survey Difference	**Ad Revenue**	-$547.00	-$66.00	-$105.00	$720.00	$444.00	-$1,540.00
	Ad Spend	-$1,244.38	-$194.26	-$391.18	$34.39	-$67.20	-$626.13
Model	**ROAS**	502.45%	519.33%	507.24%	509.41%	504.92%	473.24%
Survey	**ROAS**	367.09%	341.78%	253.34%	450.73%	411.89%	351.96%
Model-Survey Difference	**ROAS**	135.36%	177.55%	253.90%	58.68%	93.03%	121.28%
Model	**Profit 200**	$11,755.33	NaN	NaN	NaN	NaN	NaN
	Spend 200	$3,170.67	NaN	NaN	NaN	NaN	NaN
	ROI 200	370.75%	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 200**	$11,057.94	NaN	NaN	NaN	NaN	NaN
	Spend 200	$4,415.06	NaN	NaN	NaN	NaN	NaN

		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
	ROI 200	250.46%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 200	$697.38	NaN	NaN	NaN	NaN	NaN
	Spend 200	-$1,244.38	NaN	NaN	NaN	NaN	NaN
	ROI 200	120.29%	NaN	NaN	NaN	NaN	NaN
Model	Profit 2000	$9,955.33	NaN	NaN	NaN	NaN	NaN
	Spend 2000	$4,970.67	NaN	NaN	NaN	NaN	NaN
	ROI 2000	200.28%	NaN	NaN	NaN	NaN	NaN
Survey	Profit 2000	$9,257.94	NaN	NaN	NaN	NaN	NaN
	Spend 2000	$6,215.06	NaN	NaN	NaN	NaN	NaN
	ROI 2000	148.96%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 2000	$697.38	NaN	NaN	NaN	NaN	NaN
	Spend 2000	-$1,244.38	NaN	NaN	NaN	NaN	NaN
	ROI 2000	51.32%	NaN	NaN	NaN	NaN	NaN
Model	Profit 20000	-$8,044.67	NaN	NaN	NaN	NaN	NaN
	Spend 20000	$22,970.67	NaN	NaN	NaN	NaN	NaN
	ROI 20000	-35.02%	NaN	NaN	NaN	NaN	NaN
Survey	Profit 20000	-$8,742.06	NaN	NaN	NaN	NaN	NaN
	Spend 20000	$24,215.06	NaN	NaN	NaN	NaN	NaN
	ROI 20000	-36.10%	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 20000	$697.38	NaN	NaN	NaN	NaN	NaN
	Spend 20000	-$1,244.38	NaN	NaN	NaN	NaN	NaN
	ROI 20000	1.08%	NaN	NaN	NaN	NaN	NaN

		95% Confidence Interval					
		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Model	Coupon Acceptance Rate	(77.8%, 81.9%)	(76.2%, 84.0%)	(68.2%, 82.0%)	(79.7%, 87.0%)	(79.4%, 86.7%)	(53.8%, 71.3%)
	Recall	(78.2%, 82.3%)	(70.4%, 78.6%)	(68.8%, 82.3%)	(86.9%, 93.1%)	(85.3%, 91.8%)	(46.4%, 63.3%)
	Percentage of Coupon Acceptances	(100%, 100%)	(24.8%, 29.9%)	(8.4%, 12.0%)	(25.5%, 30.7%)	(25.5%, 30.6%)	(5.0%, 7.8%)
	Coupon Acceptances	(1115, 1213)	(286, 351)	(98, 140)	(294, 361)	(294, 360)	(58, 91)
	Percentage of Coupon Recommendations	(100%, 100%)	(25.0%, 29.6%)	(9.2%, 12.4%)	(24.6%, 29.2%)	(24.7%, 29.2%)	(6.7%, 9.5%)

Group	Metric						
	Coupon Recommendations	(1407, 1505)	(361, 433)	(133, 182)	(356, 428)	(357, 429)	(98, 139)
	Coupon Recommendations Possible	(2537, 2537)	(811, 811)	(399, 399)	(489, 489)	(534, 534)	(304, 304)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(55.5%, 59.3%)	(45.5%, 52.5%)	(34.6%, 44.2%)	(76.6%, 83.7%)	(69.7%, 77.1%)	(33.4%, 44.4%)
Survey	Coupon Acceptance Rate	(54.5%, 58.7%)	(48.9%, 56.7%)	(32.4%, 42.9%)	(69.4%, 78.2%)	(63.4%, 72.2%)	(40.4%, 52.8%)
	Recall	(76.6%, 80.8%)	(73.3%, 81.2%)	(73.7%, 86.2%)	(72.5%, 81.1%)	(74.3%, 82.7%)	(81.6%, 92.8%)
	Percentage of Coupon Acceptances	(100%, 100%)	(26.3%, 31.6%)	(9.2%, 12.9%)	(22.0%, 27.0%)	(22.8%, 27.9%)	(8.6%, 12.1%)
	Coupon Acceptances	(1093, 1190)	(297, 364)	(104, 147)	(248, 310)	(258, 321)	(98, 140)
	Percentage of Coupon Recommendations	(100%, 100%)	(29.1%, 33.1%)	(14.9%, 18.2%)	(17.0%, 20.5%)	(19.4%, 22.9%)	(11.1%, 14.0%)
	Coupon Recommendations	(1976, 2055)	(584, 669)	(299, 366)	(343, 414)	(389, 463)	(223, 284)
	Coupon Recommendations Possible	(2537, 2537)	(811, 811)	(399, 399)	(489, 489)	(534, 534)	(304, 304)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(77.9%, 81.0%)	(74.3%, 80.1%)	(79.6%, 87.0%)	(73.5%, 80.9%)	(76.3%, 83.1%)	(78.8%, 87.3%)
Model-Survey Difference	Coupon Acceptance Rate	(21.3%, 25.2%)	(23.4%, 31.3%)	(31.8%, 43.7%)	(6.4%, 12.9%)	(11.7%, 18.9%)	(9.1%, 23.1%)
	Recall	(-1.4%, 4.4%)	(-8.7%, 3.1%)	(-13.8%, 4.6%)	(8.1%, 18.4%)	(4.8%, 15.2%)	(-42.0%, -23.1%)
	Percentage of Coupon Acceptances	(0.0%, 0.0%)	(-3.4%, 0.2%)	(-2.0%, 0.3%)	(2.2%, 5.2%)	(1.2%, 4.2%)	(-5.2%, -2.8%)
	Coupon Acceptances	(-20, 64)	(-37, 13)	(-21, 7)	(29, 68)	(18, 57)	(-59, -30)
	Percentage of Coupon Recommendations	(0.0%, 0.0%)	(-5.7%, -2.0%)	(-7.2%, -4.3%)	(6.7%, 9.7%)	(4.3%, 7.3%)	(-5.7%, -3.2%)
	Coupon Recommendations	(-624, -497)	(-268, -190)	(-204, -148)	(-10, 39)	(-61, -7)	(-159, -111)
	Coupon Recommendations Possible	(0, 0)	(0, 0)	(0, 0)	(0, 0)	(0, 0)	(0, 0)
	Coupon Recommendations to Coupon Recommendations Possible Ratio	(-24.6%, -19.6%)	(-32.8%, -23.7%)	(-50.1%, -38.0%)	(-2.1%, 7.9%)	(-11.4%, -1.3%)	(-50.6%, -38.1%)
Model	Ad Revenue	($14132.98, $15725.56)	($1573.0, $1930.5)	($1470.0, $2100.0)	($4410.0, $5415.0)	($3528.0, $4320.0)	($2030.0, $3185.0)
	Ad Spend	($2846.74, $3098.39)	($306.24, $367.32)	($295.6, $404.51)	($874.46, $1051.31)	($705.6, $847.91)	($454.53, $644.69)

Survey	Ad Revenue	($14602.48, $16338.54)	($1633.5, $2002.0)	($1560.0, $2205.0)	($3720.0, $4650.0)	($3096.0, $3852.0)	($3430.0, $4900.0)
	Ad Spend	($4083.39, $4348.74)	($495.41, $567.52)	($664.55, $813.47)	($842.52, $1016.92)	($768.85, $915.11)	($1034.28, $1317.2)
Model-Survey Difference	Ad Revenue	($-1256.5, $139.54)	($-203.5, $71.5)	($-315.0, $105.0)	($435.0, $1020.0)	($216.0, $684.0)	($-2065.0, $-1050.0)
	Ad Spend	($-1397.99, $-1096.78)	($-227.35, $-161.18)	($-453.41, $-328.94)	($-24.56, $95.8)	($-120.56, $-13.84)	($-737.45, $-514.82)
Model	ROAS	(485.49%, 518.58%)	(493.9%, 544.48%)	(460.35%, 553.33%)	(486.65%, 531.53%)	(481.91%, 526.29%)	(405.85%, 538.14%)
Survey	ROAS	(350.1%, 384.07%)	(316.93%, 367.4%)	(218.6%, 289.83%)	(423.55%, 477.54%)	(385.05%, 438.65%)	(304.81%, 398.62%)
Model-Survey Difference	ROAS	(120.3%, 150.38%)	(151.64%, 203.15%)	(214.32%, 294.77%)	(39.23%, 78.83%)	(71.25%, 114.82%)	(68.5%, 174.18%)
Model	Profit 200	($11062.61, $12460.6)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($3046.74, $3298.39)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(354.71%, 385.87%)	NaN	NaN	NaN	NaN	NaN
Survey	Profit 200	($10263.79, $11856.17)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($4283.39, $4548.74)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(234.33%, 266.64%)	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	Profit 200	($70.23, $1294.93)	NaN	NaN	NaN	NaN	NaN
	Spend 200	($-1397.99, $-1096.78)	NaN	NaN	NaN	NaN	NaN
	ROI 200	(106.32%, 134.07%)	NaN	NaN	NaN	NaN	NaN
Model	Profit 2000	($9262.61, $10660.6)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($4846.74, $5098.39)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(189.08%, 211.23%)	NaN	NaN	NaN	NaN	NaN
Survey	Profit 2000	($8463.79, $10056.17)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($6083.39, $6348.74)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(137.17%, 160.92%)	NaN	NaN	NaN	NaN	NaN

Model-Survey Difference	**Profit 2000**	($70.23, $1294.93)	NaN	NaN	NaN	NaN	NaN
	Spend 2000	($-1397.99, $-1096.78)	NaN	NaN	NaN	NaN	NaN
	ROI 2000	(42.22%, 60.22%)	NaN	NaN	NaN	NaN	NaN
Model	**Profit 20000**	($-8737.39, $-7339.4)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($22846.74, $23098.39)	NaN	NaN	NaN	NaN	NaN
	ROI 20000	(-38.21%, -31.82%)	NaN	NaN	NaN	NaN	NaN
Survey	**Profit 20000**	($-9536.21, $-7943.83)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($24083.39, $24348.74)	NaN	NaN	NaN	NaN	NaN
	ROI 20000	(-39.5%, -32.73%)	NaN	NaN	NaN	NaN	NaN
Model-Survey Difference	**Profit 20000**	($70.23, $1294.93)	NaN	NaN	NaN	NaN	NaN
	Spend 20000	($-1397.99, $-1096.78)	NaN	NaN	NaN	NaN	NaN
	ROI 20000	(-1.67%, 3.71%)	NaN	NaN	NaN	NaN	NaN