

In Vehicle Coupon Recommendation: Model Metrics

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Springboard Data Science Career Track

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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',

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'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

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{
    '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
Treatment	Coupon Acceptance Rate	90.60%	89.80%	92.31%	91.20%	90.12%	100.00%
	Percentage of Coupon Acceptances Captured	27.95%	20.61%	7.69%	39.94%	42.12%	3.70%
	Coupon Acceptances	405	88	12	145	155	5
	Coupon Acceptances Possible	1449	427	156	363	368	135
	Coupon Recommendations	447	98	13	159	172	5

	Coupon Recommendations Possible	2537	811	399	489	534	304
	Ad Revenue	\$4,874.00	\$484.00	\$180.00	\$2,175.00	\$1,860.00	\$175.00
	Ad Spend	\$962.27	\$96.39	\$31.00	\$424.00	\$377.63	\$33.25
	ROAS	506.51%	502.15%	580.65%	512.97%	492.54%	526.32%
Control	Coupon Acceptance Rate	56.01%	53.88%	34.19%	73.55%	65.56%	48.57%
	Percentage of Coupon Acceptances Captured	26.71%	29.27%	25.64%	24.52%	26.90%	25.19%
	Coupon Acceptances	387	125	40	89	99	34
	Coupon Acceptances Possible	1449	427	156	363	368	135
	Coupon Recommendations	691	232	117	121	151	70
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Ad Revenue	\$5,000.50	\$687.50	\$600.00	\$1,335.00	\$1,188.00	\$1,190.00
	Ad Spend	\$1,626.87	\$228.18	\$279.00	\$322.67	\$331.53	\$465.50
	ROAS	307.37%	301.30%	215.05%	413.74%	358.34%	255.64%
Uplift	Coupon Acceptance Rate	34.60%	35.92%	58.12%	17.64%	24.55%	51.43%
	Percentage of Coupon Acceptances Captured	1.24%	-8.67%	-17.95%	15.43%	15.22%	-21.48%
	Coupon Acceptances	18	-37	-28	56	56	-29
	Coupon Acceptances Possible	0	0	0	0	0	0
	Coupon Recommendations	-244	-134	-104	38	21	-65
	Coupon Recommendations Possible	0	0	0	0	0	0
	Ad Revenue	-\$126.50	-\$203.50	-\$420.00	\$840.00	\$672.00	-\$1,015.00
	Ad Spend	-\$664.60	-\$131.79	-\$248.00	\$101.33	\$46.11	-\$432.25
	ROAS	199.14%	200.85%	365.59%	99.23%	134.20%	270.68%

	\$200 Additional Production Cost			\$2,000 Additional Production Cost			\$20,000 Additional Production Cost		
	Profit	Spend	ROI	Profit	Spend	ROI	Profit	Spend	ROI
Control	\$3,173.63	\$1,826.87	173.72%	\$1,373.63	\$3,626.87	37.87%	-\$16,626.37	\$21,626.87	-76.88%
Treatment	\$3,711.73	\$1,162.27	319.35%	\$1,911.73	\$2,962.27	64.54%	-\$16,088.27	\$20,962.27	-76.75%
Uplift	\$538.10	-\$664.60	145.63%	\$538.10	-\$664.60	26.66%	\$538.10	-\$664.60	0.13%

		95% Confidence Interval
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		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Treatment	Coupon Acceptance Rate	(87.8%, 93.2%)	(83.5%, 95.5%)	(75.0%, 100.0%)	(86.5%, 95.3%)	(85.5%, 94.4%)	(100%, 100%)
	Percentage of Coupon Acceptances Captured	(25.7%, 30.3%)	(16.9%, 24.6%)	(3.7%, 12.2%)	(34.8%, 45.1%)	(37.1%, 47.2%)	(0.8%, 7.1%)
	Coupon Acceptances	(369, 441)	(70, 107)	(6, 19)	(122, 168)	(132, 179)	(100, 100)
	Coupon Acceptances Possible	(1401, 1498)	(390, 464)	(133, 181)	(328, 398)	(334, 403)	(113, 158)
	Coupon Recommendations	(410, 485)	(79, 118)	(6, 21)	(135, 183)	(147, 197)	(100, 100)
	Coupon Recommendations Possible	(2537, 2537)	(765, 858)	(362, 435)	(450, 529)	(494, 575)	(271, 337)
	Ad Revenue	(\$4410.49, \$5348.0)	(\$385.0, \$588.5)	(\$90.0, \$285.0)	(\$1830.0, \$2520.0)	(\$1584.0, \$2148.0)	(\$35.0, \$350.0)
	Ad Spend	(\$875.96, \$1049.24)	(\$77.7, \$116.06)	(\$14.31, \$50.08)	(\$360.0, \$488.0)	(\$322.74, \$432.52)	(\$6.65, \$66.5)
	ROAS	(490.68%, 521.11%)	(466.91%, 533.79%)	(471.77%, 629.03%)	(486.58%, 536.25%)	(467.06%, 516.03%)	(526.32%, 526.32%)
Control	Coupon Acceptance Rate	(52.4%, 59.7%)	(47.4%, 60.2%)	(25.7%, 43.3%)	(65.8%, 81.2%)	(57.9%, 73.2%)	(36.9%, 60.3%)
	Percentage of Coupon Acceptances Captured	(24.5%, 29.0%)	(25.0%, 33.7%)	(19.0%, 32.7%)	(20.2%, 29.0%)	(22.5%, 31.5%)	(18.0%, 32.8%)
	Coupon Acceptances	(352, 422)	(104, 147)	(28, 53)	(72, 108)	(80, 119)	(23, 46)
	Coupon Acceptances Possible	(1401, 1498)	(390, 464)	(133, 181)	(328, 398)	(334, 403)	(113, 158)
	Coupon Recommendations	(647, 735)	(204, 261)	(97, 138)	(100, 142)	(128, 174)	(54, 86)
	Coupon Recommendations Possible	(2537, 2537)	(765, 858)	(362, 435)	(450, 529)	(494, 575)	(271, 337)
	Ad Revenue	(\$4462.99, \$5564.01)	(\$572.0, \$808.5)	(\$420.0, \$795.0)	(\$1080.0, \$1620.0)	(\$960.0, \$1428.0)	(\$805.0, \$1610.0)
	Ad Spend	(\$1498.3, \$1757.92)	(\$200.64, \$256.7)	(\$231.31, \$329.08)	(\$266.67, \$378.67)	(\$281.03, \$382.08)	(\$359.1, \$571.9)
	ROAS	(283.02%, 331.81%)	(265.16%, 336.4%)	(161.43%, 272.42%)	(369.93%, 457.03%)	(316.63%, 400.02%)	(194.33%, 317.34%)
Uplift	Coupon Acceptance Rate	(30.4%, 38.8%)	(27.6%, 44.1%)	(39.1%, 72.3%)	(9.9%, 25.5%)	(16.5%, 32.5%)	(39.0%, 63.1%)
	Percentage of Coupon Acceptances Captured	(-2.0%, 4.5%)	(-14.5%, -2.6%)	(-26.3%, -9.7%)	(8.4%, 22.3%)	(8.6%, 21.7%)	(-29.9%, -13.2%)
	Coupon Acceptances	(-29, 65)	(-62, -11)	(-42, -15)	(30, 81)	(31, 81)	(-41, -17)
	Coupon Acceptances Possible	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)
	Coupon Recommendations	(-302, -185)	(-167, -101)	(-126, -83)	(10, 65)	(-8, 50)	(-82, -48)
	Coupon Recommendations Possible	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)
	Ad Revenue	(\$-837.02, \$542.52)	(\$-341.0, \$-60.5)	(\$-630.0, \$-225.0)	(\$450.0, \$1215.0)	(\$372.0, \$972.0)	(\$-1435.0, \$-595.0)

	Ad Spend	(\$-822.91, \$-507.03)	(\$-164.25, \$-99.34)	(\$-300.46, \$-197.92)	(\$26.67, \$173.33)	(\$-17.56, \$109.78)	(\$-545.3, \$-319.2)
	ROAS	(172.28%, 226.21%)	(154.54%, 246.39%)	(246.23%, 454.93%)	(55.82%, 143.48%)	(89.93%, 177.59%)	(208.98%, 331.98%)

	95% Confidence Interval								
	\$200 Additional Production Cost			\$2,000 Additional Production Cost			\$20,000 Additional Production Cost		
	Profit	Spend	ROI	Profit	Spend	ROI	Profit	Spend	ROI
Treatment	(\$3334.66, \$4102.85)	(\$1075.96, \$1249.24)	(304.45%, 333.08%)	(\$1534.66, \$2302.85)	(\$2875.96, \$3049.24)	(53.3%, 75.7%)	(\$-16465.34, \$-15697.15)	(\$20875.96, \$21049.24)	(-78.87%, -74.59%)
Control	(\$2716.56, \$3657.38)	(\$1698.3, \$1957.92)	(151.84%, 195.44%)	(\$916.56, \$1857.38)	(\$3498.3, \$3757.92)	(25.77%, 50.2%)	(\$-17083.44, \$-16142.62)	(\$21498.3, \$21757.92)	(-79.28%, -74.37%)
Uplift	(\$-48.19, \$1101.09)	(\$-822.91, \$-507.03)	(121.24%, 169.45%)	(\$-48.19, \$1101.09)	(\$-822.91, \$-507.03)	(10.66%, 42.0%)	(\$-48.19, \$1101.09)	(\$-822.91, \$-507.03)	(-3.05%, 3.12%)

Performance metrics: Gradient Boosting

		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Treatment	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%
	Coupon Acceptances	1163	318	118	327	326	74
	Coupon Acceptances Possible	1449	427	156	363	368	135
	Coupon Recommendations	1456	397	157	392	392	118
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Ad Revenue	\$14,926.00	\$1,749.00	\$1,770.00	\$4,905.00	\$3,912.00	\$2,590.00
	Ad Spend	\$2,970.84	\$336.84	\$349.15	\$962.88	\$774.68	\$547.29
	ROAS	502.42%	519.23%	506.95%	509.41%	504.98%	473.24%
Control	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%
	Coupon Acceptances	1141	330	125	279	289	118
	Coupon Acceptances Possible	1449	427	156	363	368	135

	Coupon Recommendations	2016	626	333	378	426	253
	Coupon Recommendations Possible	2537	811	399	489	534	304
	Ad Revenue	\$15,473.00	\$1,815.00	\$1,875.00	\$4,185.00	\$3,468.00	\$4,130.00
	Ad Spend	\$4,215.48	\$531.14	\$740.55	\$928.50	\$841.87	\$1,173.42
	ROAS	367.05%	341.72%	253.19%	450.73%	411.94%	351.96%
Uplift	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%
	Coupon Acceptances	22	-12	-7	48	37	-44
	Coupon Acceptances Possible	0	0	0	0	0	0
	Coupon Recommendations	-560	-229	-176	14	-34	-135
	Coupon Recommendations Possible	0	0	0	0	0	0
	Ad Revenue	-\$547.00	-\$66.00	-\$105.00	\$720.00	\$444.00	-\$1,540.00
	Ad Spend	-\$1,244.64	-\$194.30	-\$391.40	\$34.39	-\$67.19	-\$626.13
	ROAS	135.36%	177.52%	253.76%	58.68%	93.04%	121.28%

		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Treatment	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%
	Coupon Acceptances	1163	318	118	327	326	74
	ROAS	502.42%	519.23%	506.95%	509.41%	504.98%	473.24%
Control	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%
	Coupon Acceptances	1141	330	125	279	289	118
	ROAS	367.05%	341.72%	253.19%	450.73%	411.94%	351.96%
Uplift	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%
	Coupon Acceptances	22	-12	-7	48	37	-44
	ROAS	135.36%	177.52%	253.76%	58.68%	93.04%	121.28%

	\$200 Additional Production Cost			\$2,000 Additional Production Cost			\$20,000 Additional Production Cost		
	Profit	Spend	ROI	Profit	Spend	ROI	Profit	Spend	ROI
Control	\$11,057.52	\$4,415.48	\$250.43	\$9,257.52	\$6,215.48	\$148.94	-\$8,742.48	\$24,215.48	-\$36.10

Treatment	\$11,755.16	\$3,170.84	\$370.73	\$9,955.16	\$4,970.84	\$200.27	-\$8,044.84	\$22,970.84	-\$35.02
Uplift	\$697.64	-\$1,244.64	\$120.30	\$697.64	-\$1,244.64	\$51.33	\$697.64	-\$1,244.64	\$1.08

		95% Confidence Interval					
		Overall	Coffee House	Bar	Takeout	Low-Cost Restaurant	Mid-Range Restaurant
Treatment	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%)
	Percentage of Coupon Acceptances Captured	(78.2%, 82.3%)	(70.4%, 78.6%)	(68.8%, 82.3%)	(86.9%, 93.1%)	(85.3%, 91.8%)	(46.4%, 63.3%)
	Coupon Acceptances	(1115, 1213)	(286, 351)	(98, 140)	(294, 361)	(294, 360)	(58, 91)
	Coupon Acceptances Possible	(1401, 1498)	(390, 464)	(133, 181)	(328, 398)	(334, 403)	(113, 158)
	Coupon Recommendations	(1407, 1505)	(361, 433)	(133, 182)	(356, 428)	(357, 429)	(98, 139)
	Coupon Recommendations Possible	(2537, 2537)	(765, 858)	(362, 435)	(450, 529)	(494, 575)	(271, 337)
	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	(\$2846.93, \$3098.58)	(\$306.3, \$367.39)	(\$295.78, \$404.75)	(\$874.46, \$1051.31)	(\$705.51, \$847.8)	(\$454.53, \$644.69)
	ROAS	(485.46%, 518.55%)	(493.8%, 544.38%)	(460.09%, 553.01%)	(486.65%, 531.53%)	(481.97%, 526.35%)	(405.85%, 538.14%)
Control	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%)
	Percentage of Coupon Acceptances Captured	(76.6%, 80.8%)	(73.3%, 81.2%)	(73.7%, 86.2%)	(72.5%, 81.1%)	(74.3%, 82.7%)	(81.6%, 92.8%)
	Coupon Acceptances	(1093, 1190)	(297, 364)	(104, 147)	(248, 310)	(258, 321)	(98, 140)
	Coupon Acceptances Possible	(1401, 1498)	(390, 464)	(133, 181)	(328, 398)	(334, 403)	(113, 158)
	Coupon Recommendations	(1976, 2055)	(584, 669)	(299, 366)	(343, 414)	(389, 463)	(223, 284)
	Coupon Recommendations Possible	(2537, 2537)	(765, 858)	(362, 435)	(450, 529)	(494, 575)	(271, 337)
	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	(\$4083.83, \$4349.14)	(\$495.51, \$567.63)	(\$664.94, \$813.94)	(\$842.52, \$1016.92)	(\$768.75, \$914.99)	(\$1034.28, \$1317.2)
	ROAS	(350.06%, 384.03%)	(316.86%, 367.33%)	(218.47%, 289.66%)	(423.55%, 477.54%)	(385.1%, 438.71%)	(304.81%, 398.62%)
Uplift	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%)

	Percentage of Coupon Acceptances Captured	(-1.4%, 4.4%)	(-8.7%, 3.1%)	(-13.8%, 4.6%)	(8.1%, 18.4%)	(4.8%, 15.2%)	(-42.0%, -23.1%)
	Coupon Acceptances	(-20, 64)	(-37, 13)	(-21, 7)	(29, 68)	(18, 57)	(-59, -30)
	Coupon Acceptances Possible	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)
	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)	(0.0, 0.0)	(0.0, 0.0)	(0.0, 0.0)
	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	(\$-1398.25, \$-1097.03)	(\$-227.39, \$-161.21)	(\$-453.67, \$-329.13)	(\$-24.56, \$95.8)	(\$-120.55, \$-13.83)	(\$-737.45, \$-514.82)
	ROAS	(120.31%, 150.38%)	(151.62%, 203.11%)	(214.2%, 294.6%)	(39.23%, 78.83%)	(71.26%, 114.84%)	(68.5%, 174.18%)
Treatment	Average Coupon Recommendation Cost Estimated	NaN	(\$0.85, \$0.85)	(\$2.22, \$2.22)	(\$2.46, \$2.46)	(\$1.98, \$1.98)	(\$4.64, \$4.64)
	Average Sale Estimated	NaN	(\$5.5, \$5.5)	(\$15.0, \$15.0)	(\$15.0, \$15.0)	(\$12.0, \$12.0)	(\$35.0, \$35.0)

	95% Confidence Interval								
	\$200 Additional Production Cost			\$2,000 Additional Production Cost			\$20,000 Additional Production Cost		
	Profit	Spend	ROI	Profit	Spend	ROI	Profit	Spend	ROI
Treatment	(\$11062.41, \$12460.41)	(\$3046.93, \$3298.58)	(354.69%, 385.84%)	(\$9262.41, \$10660.41)	(\$4846.93, \$5098.58)	(189.07%, 211.21%)	(\$-8737.59, \$-7339.59)	(\$22846.93, \$23098.58)	(-38.21%, -31.83%)
Control	(\$10263.34, \$11855.73)	(\$4283.83, \$4549.14)	(234.3%, 266.61%)	(\$8463.34, \$10055.73)	(\$6083.83, \$6349.14)	(137.16%, 160.91%)	(\$-9536.66, \$-7944.27)	(\$24083.83, \$24349.14)	(-39.5%, -32.73%)
Uplift	(\$70.49, \$1295.19)	(\$-1398.25, \$-1097.03)	(106.33%, 134.08%)	(\$70.49, \$1295.19)	(\$-1398.25, \$-1097.03)	(42.23%, 60.22%)	(\$70.49, \$1295.19)	(\$-1398.25, \$-1097.03)	(-1.67%, 3.71%)