Acquiring New Customers in the Hospitality Industry: Teaching Note[1]

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Question 1: List each statistically significant predictor of a traveler's likelihood to book on Airbnb. Provide a brief explanation of what may cause a significant statistical relationship for each variable.

	Coefficients	StandardError	Tvalues	Pvalues
(Intercept)	-0.738	0.398	-1.855	0.064
Email_25	**0.595**	**0.136**	**4.384**	**0.000**
Email_Taxi	0.215	0.14	1.531	0.126
Gmail	**0.289**	**0.137**	**2.106**	**0.035**
yahoo	-0.173	0.179	-0.971	0.332
Edu	**0.515**	**0.185**	**2.788**	**0.005**
AlaskaFF	**0.286**	**0.112**	**2.56**	**0.010**
Add_Ore	-0.341	0.126	-2.703	0.007
Add_Eug	-1.567	0.153	-10.275	0.000
Age	-0.05	0.007	-7.105	0.000
Tickets	-0.036	0.053	-0.675	0.500
RoundTrip	**0.474**	**0.206**	**2.296**	**0.022**

Interpretation of Significant Predictors
- Age: Given the negative and significant coefficient of Age, younger passengers are more likely to be travelers. Possible explanations for this statistical pattern include younger generations' comfort with technology, younger people having fewer established travel habits or loyalty to hotel room providers, younger people being more adventurous and comfortable staying in homes, etc.
- Add_Eug and Add_Ore: When a person resides in Eugene or Oregon, he or she is less likely to book Airbnb services.
- Email_25: Relative to the base "welcome email," the $25 off coupon increases booking probability. Looking at the elasticity in the results, it appears that the use of the $25 off coupon increases booking probability by 17.4%.

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- Edu and Gmail: Recipients with an .edu or Gmail address are more likely to book Airbnb services, perhaps related to income (education), awareness of the platform, or adoption of innovative technology (for gmail).
- AlaskaFF: Consumers with an Alaska Airlines frequent flyer account are more likely to book with Airbnb. Perhaps they travel more and are more curious about new travel options, or perhaps are wealthier and can afford higher-end Airbnb options.

Students should realize the elasticities (not the coefficients) are the best indicators of the sensitivity of the outcome—acquisition likelihood in the case of travelers. Because the coefficients relate the observed variable to the outcome, they differ in magnitude partly due to the range of the scale on which the predictor variable was measured. A variable that takes a value of 1 or 0, such as the dummy coded email, often has larger coefficients than a variable that has a larger range, such as age.

The t-statistic and associated significance indicator show the likelihood that we would observe the same coefficient direction (positive or negative) if we started over and followed the same procedure to generate data. It does not necessarily mean the predictor causes the outcome.

Pixabay Airbnb Icon

Question 2: Follow the same process to predict retained hosts.

	Coefficients	StandardError	Tvalues	Pvalues
(Intercept)	-3.214	1.084	-2.964	0.003
Length	**0.002**	**0.001**	**2.138**	**0.033**
Type_Hm	0.638	0.448	1.424	0.154
Guests	-0.246	0.114	-2.159	0.031
ZestimateK	-0.001	0.003	-0.346	0.729
ListPrice	-0.001	0.004	-0.209	0.835
Rating	**0.695**	**0.173**	**4.019**	**0.000**
Rev_AbB	**0.002**	**0.001**	**2.455**	**0.014**
Loc_1	-0.035	0.494	-0.07	0.944
Loc_2	0.984	0.527	1.869	0.062
Loc_3	0.962	0.578	1.665	0.096
Loc_4	1.016	0.522	1.946	0.052
Loc_5	0.889	0.535	1.661	0.097

Top-5 Variable Interpretation
- Rating: Hosts with higher ratings are more likely to continue listing with Airbnb. This conclusion makes sense, as rating should be a proxy for quality service and indicate a dedicated owner who offers a good service. This should reflect the owner's interest in the platform and possibly the likelihood of booking guests in the future, which would increase the benefit of remaining with Airbnb.
- Guest: The variable also shows a negative impact, which might be tied to higher probability of a poor experience if the property hosts large groups for parties, reunions, football games, or other events. (Eugene is a college town.)
- Rev_AbB: As expected, the variable has a positive impact. Higher revenue generated for Airbnb also means higher revenue for the property owner, which should lead to continued property listing.
- Length: The positive impact of the variable shows that property owners staying with Airbnb longer are more likely to continue listing the property. One explanation for this statistical relationship could be that experience increases utility as property owners become used to the system and switching costs rise. An alternative explanation is that those who have already left the platform have low length scores. The relationship may not be causal, but the causality could run in the opposite direction (i.e., if owners stay, the more their tenure will grow).

Question 3: What would be your plan of attack to attract travelers to Eugene to book on Airbnb?

All recommendations below are subject to the assumption the model found is valid and useful:
- Focus on young consumers, generally in college or another educational institute where they receive .edu email addresses.
- Take the commercial agreement with Alaska Airlines or other airlines to the next level and use their information to send special discount deals to passengers with frequent flyer accounts.
- Focus the campaign on non-residents of Oregon or Springfield.

Advanced users could use the coefficients from the model estimate to calculate the probability that a customer with certain characteristics would be acquired. In an advanced class, consider having students use the acquisition probability to calculate an acquisition cost using,

Acquisition cost for each customer type and email type =

(($3,000 to send emails to 1,000 customers) + (cost of promotion for an acquired customer: $25 or $0 depending on email) x (number of acquired customers: estimated acquisition probability x 1,000 customers))

/ (number of acquired customers: estimated acquisition probability x 1,000 customers)

Students can use the model coefficients, multiplied by observed interest value for each variable, to calculate the estimated acquisition probability with

Probability

= exp(constant + coefficients x observed values)

/ (1 + exp(constant + coefficients x observed values))

Students can also calculate an expected customer lifetime value given the acquisition cost by assuming a retention rate, discount rate, cost to serve, and annual revenue.

Question 4: What would be your plan of attack to entice owners to list accommodations on Airbnb?

All recommendations below are subject to the assumption the model found is valid and useful:
- Service providers must offer diverse options to their clients. In this case, Airbnb would need to work on promoting listings outside Springfield, and that might include reducing property fees in different areas or stimulating more demand for those properties by providing discount coupons to renters.
- Airbnb could also create analytics models to predict when a property owner is expected to stop listing a property. Before that time, the firm could test a variety of promotions or efforts to build relationships to increase retention rate.
- Ratings serve as a significant predictor of retention rate and are important to property owners and renters. Airbnb could send service recommendations and create (then test) educational material designed to help property owners understand best practices for providing good guest experiences.

As with the travelers data, advanced users could calculate an expected retention rate based on the model coefficients. With an estimated retention rate, the students could make assumptions about cost to serve, revenue, acquisition costs, and discount rate.