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Inferential Statistics

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OVERVIEW

This report presents the results of the inferential statistical methods applied on two hypothesis tests namely:

1. Gender Preferences for Airbnb Bookings
2. Relationship between Signup Method and Device Type.

GENDER PREFERENCES FOR AIRBNB BOOKINGS

This test was performed to test if there is a relationship between the gender of a user and the Airbnb Country Destination. In other words, does your gender influence the country you will travel to and book an Airbnb in? To perform this analysis, we only took into consideration users that identified themselves as either male or female. Users with no destination or a destination to a country not listed as a class were not considered either.

Since we were comparing two categorical variables, of which one was multivariate, the ideal statistical tool to be used was the Chi Square Test for Significance. The data available to us was pivoted into a form usable by Scipy's Chi Square Contingency Method.

gender	AU	CA	DE	ES	FR	GB	IT	NL	PT	US
FEMALE	207	455	358	853	1962	881	1091	254	78	22694
MALE	188	477	416	677	1335	682	699	278	69	19457

Results:

1. There is a significant relationship between gender and country destination.
2. The P-Value obtained was 5.8×10^{-21}

DEVICE AND SIGNUP PREFERENCES

This test was performed to check if there is a relationship between the type of device and the signup method. In other words, were you more likely to signup through Facebook if you were using a mobile? To perform this analysis, we only took into consideration the basic and the Facebook signup methods as they made up the bulk of the signups. Also, we considered two types of devices: Computer and Mobile. iOS, Android and the Mobile Web Browser were all clubbed into the same category.

Since we were dealing with two binary categorical variables, we had the choice between two statistical tests: The Chi Square Test for Significance and the Two Sample Significance Test. We applied both these tests and compared the results to arrive at our conclusion.

	Basic	Facebook	Total
Computer	131237	51480	182717
Mobile	21660	8528	30188
Total	152897	60008	212905

Results:

1. There is no relationship between device type and signup method. The two variables are independent of each other.
2. The result obtained from both the two sample significance test and the chi square test were the same. The Chi Square Test was performed without the correction term.
3. The P-Value obtained in both tests was 0.78.