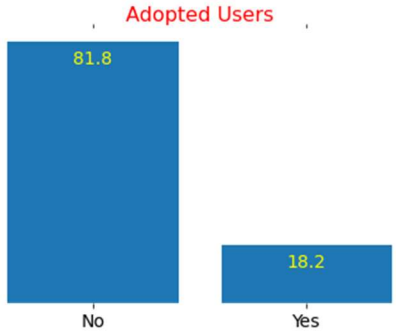
Business problem: Identify which factors predict future user adoption.

Who are the adopted users? Adopted user is a user who has logged into the product on three separate days in at least one seven-day period.

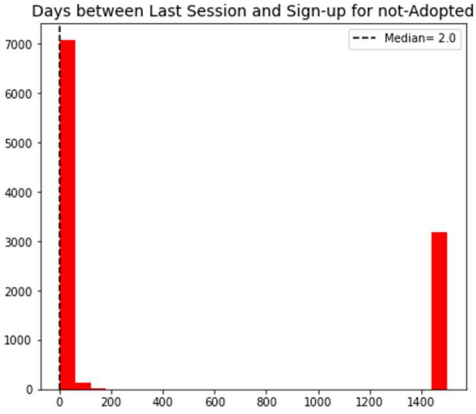
Exploration Findings: After merging and analyzing two tables about users who signed up to use a product from '2012-05-31' to '2014-06-06' I found:

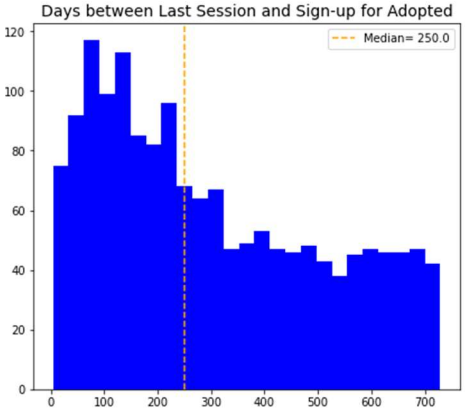
1. From 12000 users who signed up, 3177 of them didn't have logged-in for any sessions. From the remaining 8823 users who created session at least one time, only 1602 has adopted.



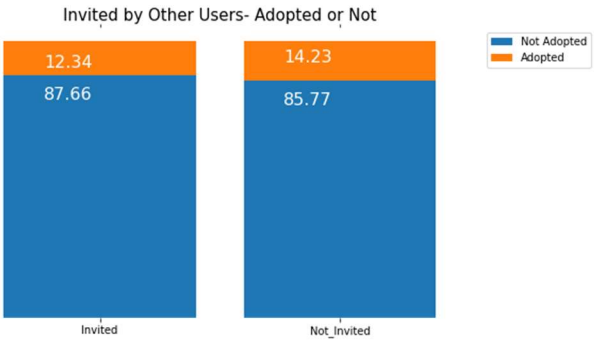
This is a highly imbalanced dataset.

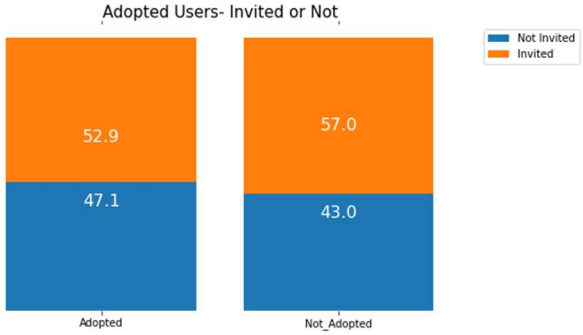
2. 50% of not-adopted users logged-in for the last time within first 2 days after their sign up. But, last logged-in of 50% of adopted users happened within 250 days after their sign-up date.



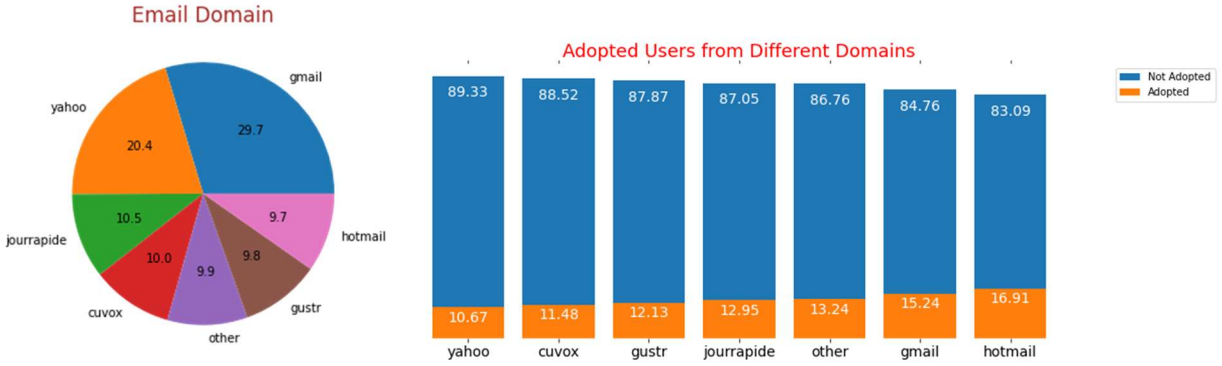


3. Self-motivated users were more adopted than users invited by other users. Since, only 12% of invited users were adopted, while almost 14% of not-invited users were adopted. Also, almost 57% of not adopted users were invited by other users.

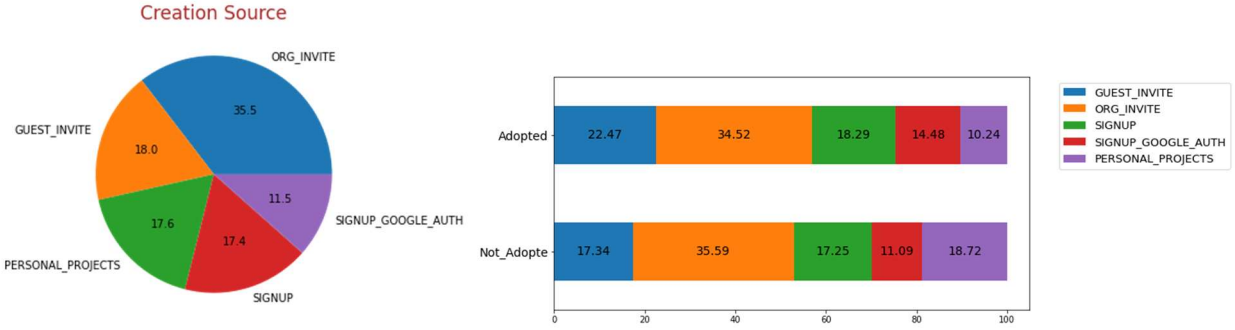




4. About 51% of users had Gmail or Yahoo. About one third of adopted users used Hotmail and Gmail.

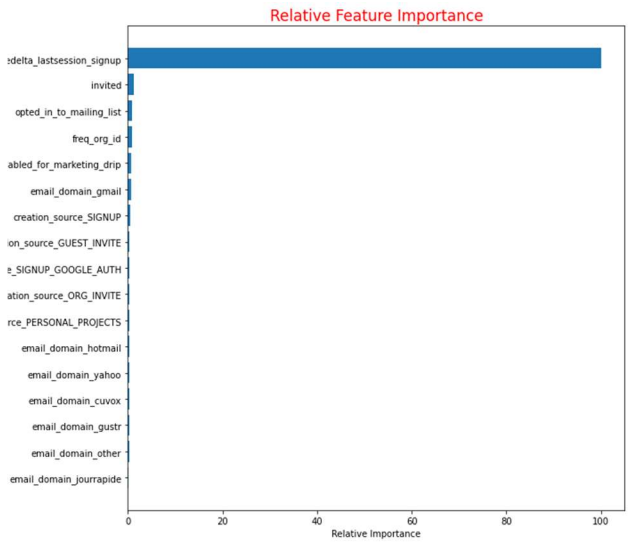


5. More than 75% of adopted users created their accounts when invited to an organization (as a full member), invited to an organization as a guest (limited permissions) or signed up via the website.



6. Only 8 organization id had one percent or more frequency (12000/100= 120, 120 or higher frequency). Those were [0, 1, 2, 3, 4, 6, 5, 9].

7. I used **Boruta** method for feature engineering using Random Forest Classifier.



Based on RandomForest Classifire, Linear SVC and Gradient Boosting Classifier, the two most important features are:

1) timedelta_lastsession_signup

2) invited

BorutaPy method showed the same result. Tree based classifiers and BorutaPy also demonstrate other influencing features including:

3) opted_in_to_mailing_list

4) freq_org_id

5) enabled_for_marketing_drip

6) email_domain_gmail