Rosetta Stone

User Insights: Optimizing and Growing Rosetta Stone's Subscriber Base

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EXECUTIVE SUMMARY

TODAY

- Users with auto-renew on , push notifications on, emails on, free trials, limited subscribers, app users, and consumer type were most valuable
- Data inconsistencies/poor data collection limited the amount of effective data analysis that could be performed
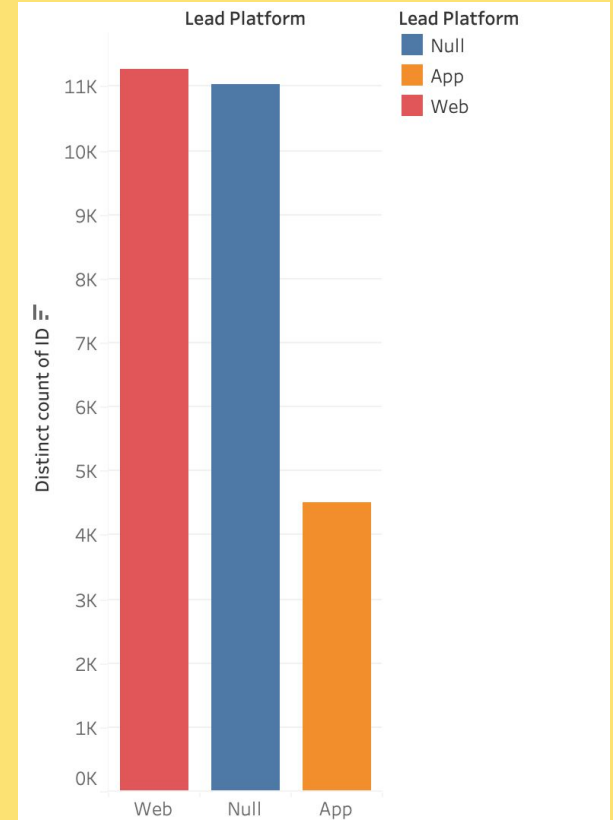
LOOKING AHEAD

- Promoting or providing incentives to get users to turn on auto-renew
- Targeting users who have push notifications and emails on
- Consistent data collection and access to more consumer variables would vastly increase the amount of valuable information that could be obtained from the data
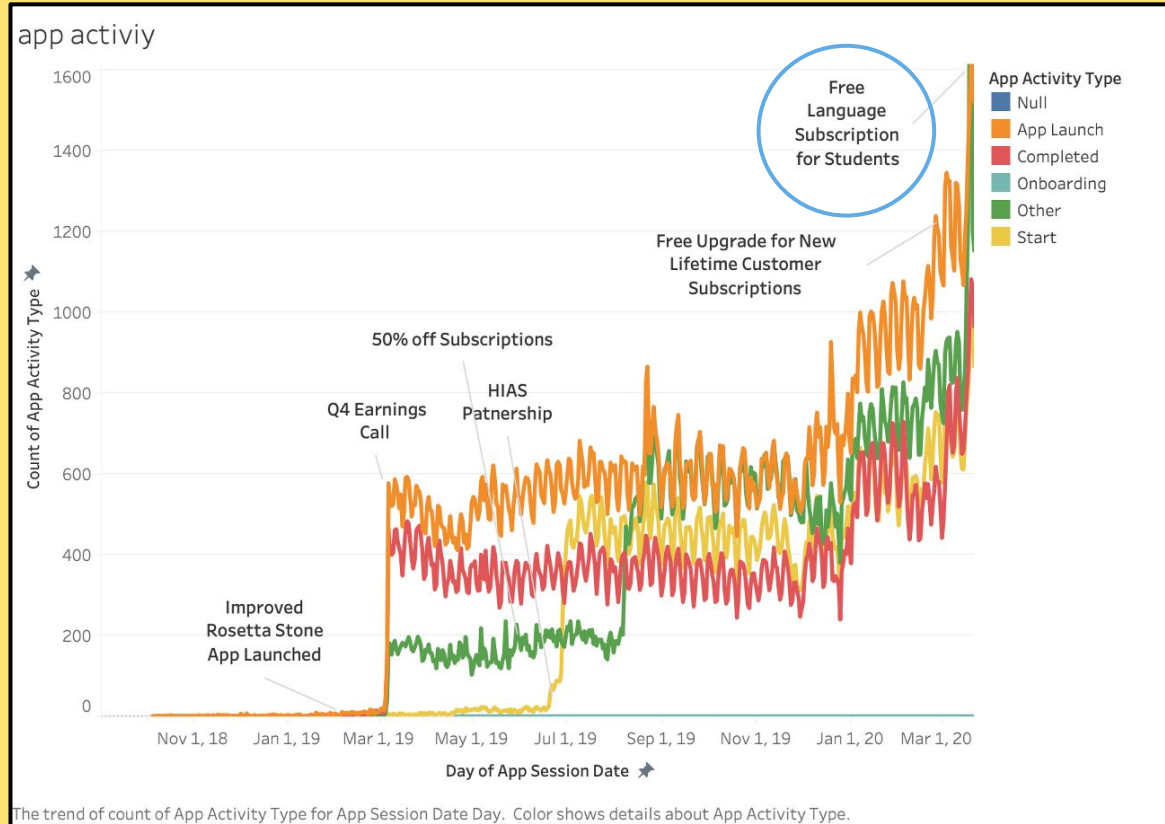
QUANTITATIVE METHODOLOGY: Initial Findings

- October 1st, 2018 to March 31st, 2020
- **26,805** Total Subscribers
- Majority: consumers with a limited subscription
- **12.21%** are free-trial users
- **25.09%** are demo-users
- **44.72%** have auto-renewals turned on

	Subscription Type	
Subscription Type	Consumer	Other
Lifetime	2,992	2,419
Limited	12,373	9,021

QUALITATIVE METHODOLOGY: Business Context

app activiy

Count of App Activity Type vs Day of App Session Date

- Improved Rosetta Stone App Launched
- Q4 Earnings Call
- 50% off Subscriptions
- HIAS Patnership
- Free Upgrade for New Lifetime Customer Subscriptions
- Free Language Subscription for Students

App Activity Type
- Null
- App Launch
- Completed
- Onboarding
- Other
- Start

The trend of count of App Activity Type for App Session Date Day. Color shows details about App Activity Type.

Free Language Subscription for K-12 Students announced March 20th, 2020 due to pandemic affecting learning
- Free three month subscription
- One language per child
- Available worldwide

In data, free trials started this day were listed as three <u>day</u> subscriptions with purchase amounts.

01.
SUBSCRIBER SEGMENTS

Subscription Type	Count
Free Subscriptions	7,010
3 Months	7,652
12 Months	5,111
Lifetime	730
Lifetime Plus	4825
Too High	1477
NULL	13,095
Total	39,900

Findings

<u>Free Subscription Users</u> - Any subscriber who had a payment amount of zero

<u>3 Month Users</u> - Large due to error causing free trial users to input card information, would be smaller due to short term users likely opting for free services (duolingo)

<u>12 Month Users</u> - Long term users pay for the large variety of services offered

<u>Lifetime/Lifetime Plus</u> - Committed users who pay for lifetime fee, as it is a better deal for consumer

3 Month	12 Month	Lifetime	LifeTime Plus
$11.99/month	$7.99/month	$179	$299

02.
MOST VALUABLE SUBSCRIBERS

Findings
- 13 positive coefficients
  - isAutoRenewTRUE
  - isUserTypeConsumerTRUE
  - isLeadPlatformWebFALSE
  - isEmailSubscriberTRUE
  - isFreeTrialUserTRUE
  - is Push Notifications TRUE
- Auto-renews
  - Tied along with subscription type

Auto Renew

Subscription Type
- Lifetime
- Limited
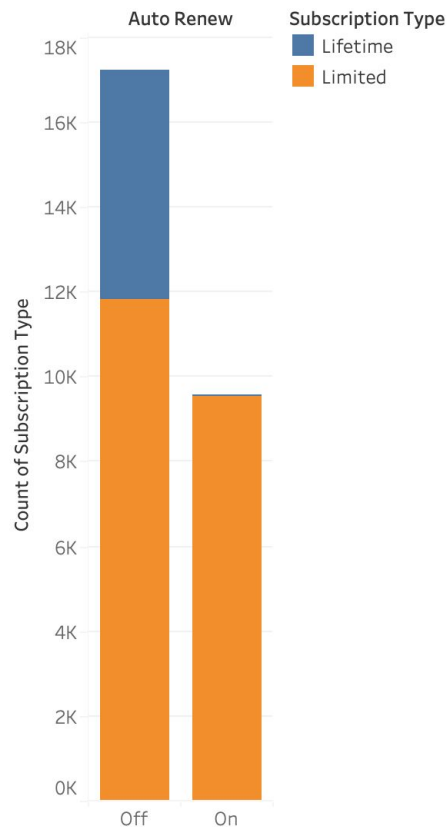
MOST VALUABLE SUBSCRIBERS
SUBSCRIBERS WHO...

LEAD PLATFORM: **OTHER**

Customers who primarily use the program on the mobile app.

AUTO-RENEW: **ON**

Customers that have a limited subscription type and have auto-renew on

EMAIL SUBSCRIPTION: **ON**

Customers that have opted to subscribe to company emails

USER TYPE: **CONSUMER**

Focus on customers that are regular consumes as opposed to other (companies and home schools)

FREE TRIAL USER

Push the free trial program because those users bring more revenue over time.

Push Notification: **ON**

Push consumers to have their notification for the program on

03.
SUBSCRIBER GROWTH TARGETS

Findings
- Target: Limited user types since lifetime users purchase product/service one time
- Top 5 Factors Negatively Impacting Value
  - isLeadPlatformWebTRUE
  - **isAutoRenewFALSE**
  - isPushNotificationsFALSE
  - isEmailSubscriberFALSE
  - isFreeTrialUserFALSE

Goal: Identify subscribers who could be sold additional products/services.
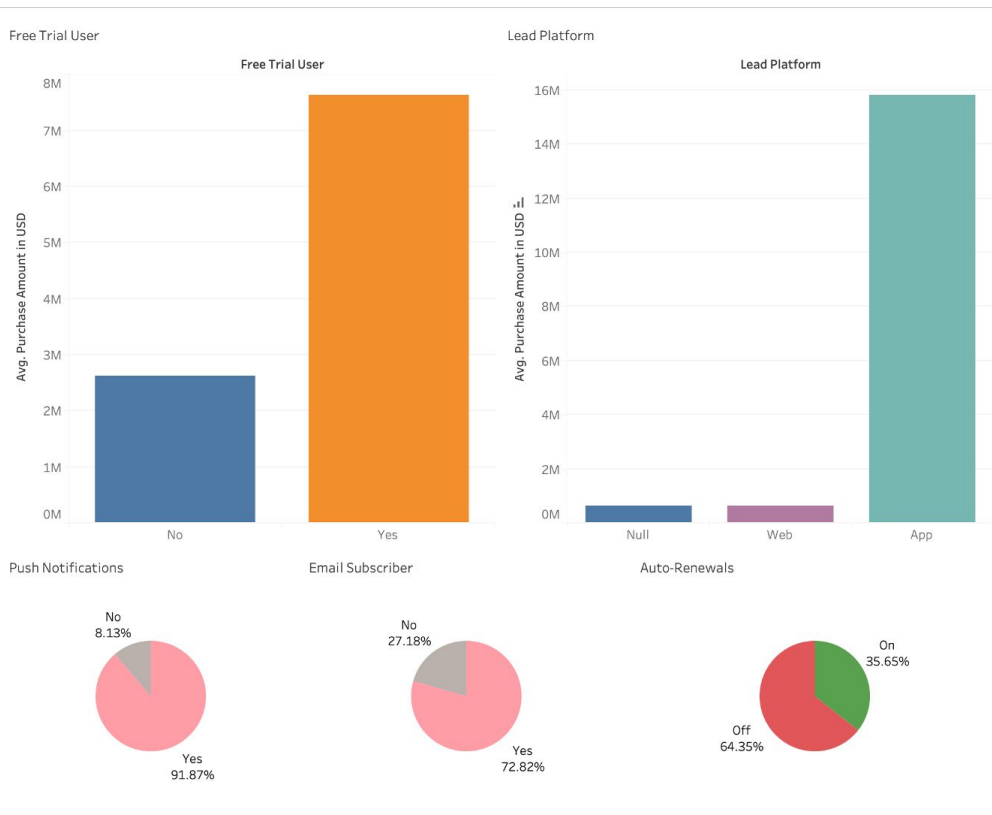
GROWTH TARGETS:
SUBSCRIBERS WHO...
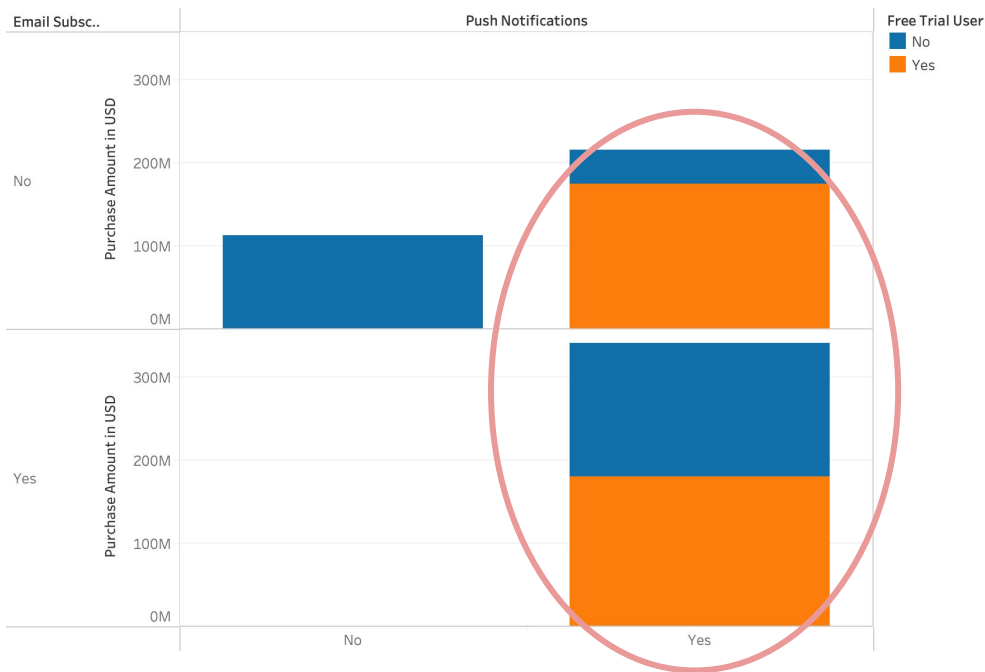
Shows subscribers with auto-renew off and had push-notifications and subscribed to emails purchased more.

USER TYPE:
LIMITED/ FREE TRIAL

Potential to continuously make subscription payments.

AUTO-RENEW: OFF

Want to convince subscribers with auto renew off to turn on auto-renew.

PUSH NOTIFICATIONS: ON

Channel of communication to encourage users to turn on auto-renew & use app.

EMAIL SUBSCRIPTION: ON

2nd channel of communication to encourage users to turn on auto-renew & use app .
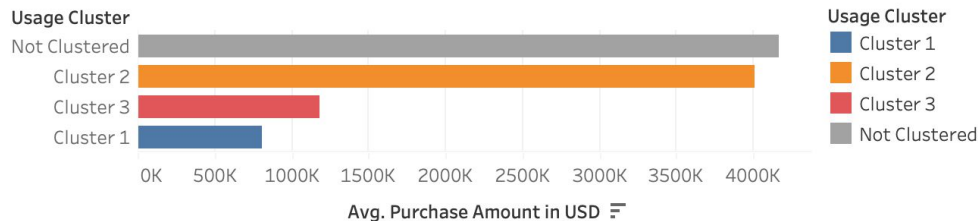
04.
Profile: Inactive Users

Findings

INACTIVE SUBSCRIBER PROFILE (CLUSTER 2)

- 29% of total subscribers
- Lowest average usage of the products: ~13 sessions
- Lowest Average Email Open Rate: ~ 3.37%
- Highest Average Purchase Amount

Average Total Purchase Amount

Average Number of App Sessions in Each Cluster
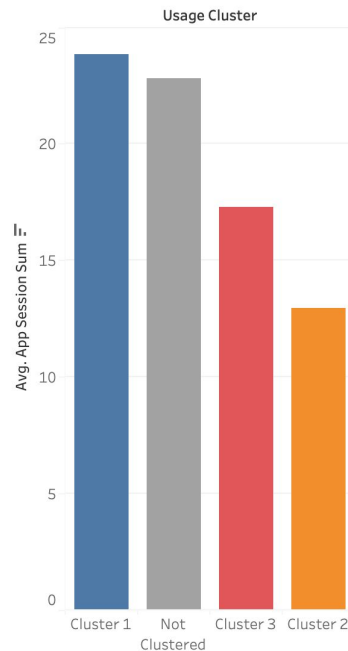
Average Email Open Rate by Cluster

Inactive Users Profile

- **Limited Subscribers**
- **Not Free/Demo Subscriber**
- **Engage using the web**
- **Have Auto-Renew Off**
- **Push Notifications - On**
- **Subscribed to Emails**

Inactive Users Insights

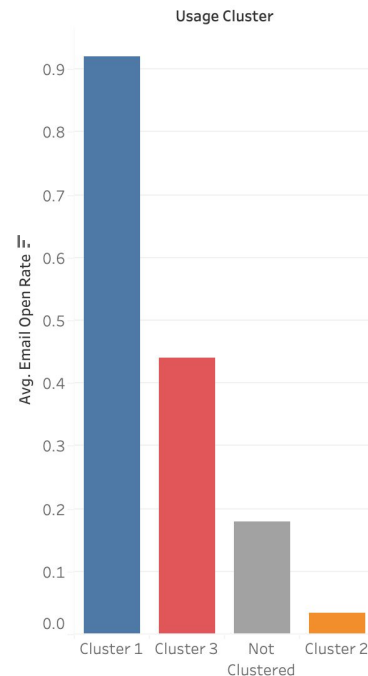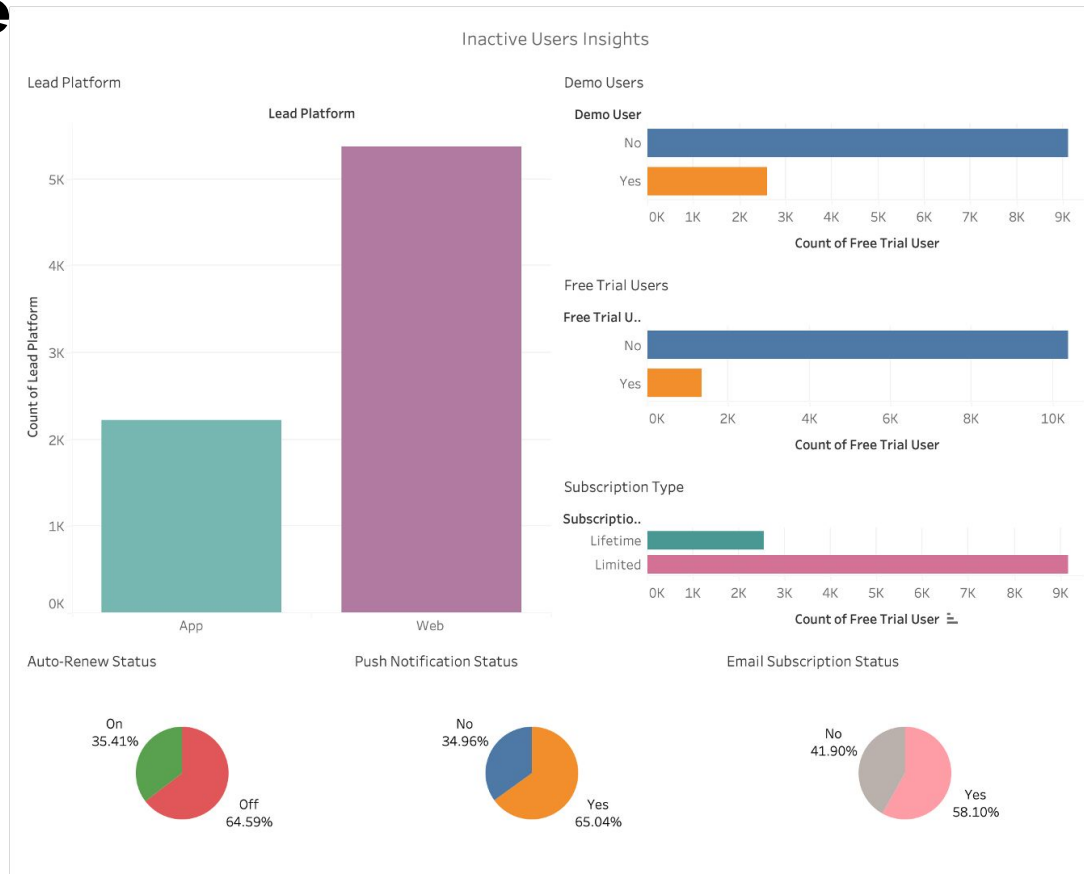# POTENTIAL BARRIERS TO SUBSCRIBER ENGAGEMENT

01.

LEAD PLATFORM CHOICE

The app has more recent updates/ features which may be more useful and interactive for the user.

02.

AUTO-RENEWAL SETTING

The inactive user might not intend to continue their subscription which deters them from investing time in starting a lesson.

03.

EMAIL CONTENT

While 58% of inactive users are email subscribers, they only open 3% of the emails on average. This may be a reflection of their disinterest in the content they receive.

04.

PUSH NOTIFICATION SETUP

The frequency of the push notifications or the types of push notifications could factor in to a users inactivity.

OTHER BUSINESS OPPORTUNITIES .05

Marketing Opportunity

At the beginning of Covid, K-12 students were offered a free 3 month trial. In addition, we discovered free trial users with Rosetta Stone became more valuable subscribers to the company. *We would recommend targeting those that took advantage of the student promotion in 2020 to become full subscribers after the trial.*

Data Management

Any purchases made in an app store were not recorded in the data set. Combining the purchase data from the app store with the current data would allow for better exploration and models. *We lost some of the data integrity with all the nulls that came from app purchases when attempting to develop our supervised learning models.*

Overview

Goal 1:
Understanding subscriber segments

Different subscriber segments can be attributed to the types of subscription.

Goal 2:
Determine most valuable subscribers

Most valuable consumers have: Auto-renew **on**, emails **on**, push notifications **on**

Goal 3:
Identify subscribes that could be sold additional products/services

Target non-auto renew subscribers have push notifications **on** and emails **on** because they have a history of spending more.

Goal 4:
Not continuing with their usage & barriers

Inactive users have the largest purchases, don't open emails, no auto-renewal, and push-notifications. Barriers include lead platform type, auto-renewal setting, email content, & push notification setup.

Goal 5:
Opportunities

Target 2020 promotion free trial users & Data management

THANK YOU

ANY QUESTIONS?

APPENDIX

Analytical Plan Summary

- We started by meeting, organizing, and creating plan to answer questions at hand
- Outlining final documents and timeline
- Began data cleaning and initial findings
- Researched outside sources for external factors and information on Rosetta Stone services and pricing
- Planned multiple potential methods/models for reaching each goal
- Coding Team (Grace and Ben) executed models they deemed fit to get the information they needed while communicating results with other members of the team
- Research Team (Besty, Kayla, Nikki) continued to search for information that could answer arising questions in the data and provided input to Coding Team
- Research Team started organizing presentation and finalizing word document deliverables
- Coding Team finalized models and analyzed results
- Both teams communicated to ensure entire team was on same page and familiar with all steps taken to complete each goal at hand and were ready to present findings

GOAL 4: Subscriber Clusters

Summary Diagnostics

Number of Clusters:	3
Number of Points:	19399
Between-group Sum of Squares:	2411.4
Within-group Sum of Squares:	338.05
Total Sum of Squares:	2749.5

			Centers		
Clusters	Number of Items	Avg. App Session Sum	Avg. Purchase Amount in USD	Avg. Email Open Rate
Cluster 1	3918	23.835	8.1021e+05	0.92014
Cluster 2	11672	12.931	4.009e+06	0.033732
Cluster 3	3809	17.28	1.1857e+06	0.44115
Not Clustered	20501			

Analysis of Variance:

			Model		Error	
Variable	F-statistic	p-value	Sum of Squares	DF	Sum of Squares	DF
Avg. Email Open Rate	9132.0	0.0	2409.0	2	2558.0	19396
Avg. Purchase Amount in USD	116.9	0.0	2.016	2	167.2	19396
Avg. App Session Sum	106.6	0.0	0.2628	2	23.91	19396

Subscribers Grouped By Purchase Amount in USD & Total # of App sessions

Model Performance
.8770 of the variance is explained by the model
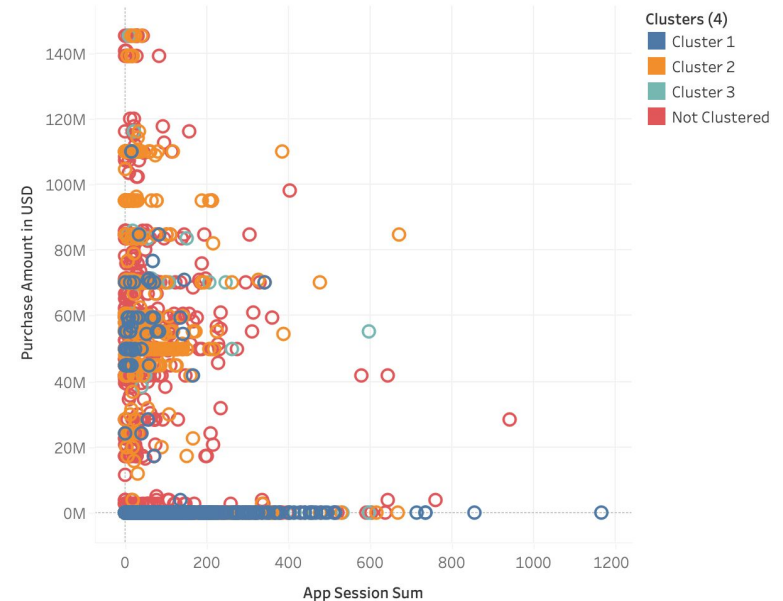
Data Cleaning

- We ran a pivot table against the App Activity data set and combined the app session types and app activity types based on ID values. In this way, we were able to combine the Subscriber Information and App Activity data sets.

ID	App Session - android	App Session - ios	App Session - NULL	App Session - web	App Activity - App Launch	App Activity - Completed	App Activity - NULL	App Activity - Onboarding	App Activity - Other	App Activity - Start
1	0	14	0	0	12	2	0	0	0	0
2	68	0	0	9	27	16	0	0	25	12
3	0	76	0	0	39	37	0	0	2	0
4	0	38	0	0	15	6	0	0	9	8
5	53	98	0	0	63	21	0	0	30	38
6	49	0	0	0	16	10	0	0	21	3
7	33	0	0	0	12	9	0	0	9	7
8	0	78	0	0	25	19	0	0	21	13
9	0	0	0	43	14	14	0	0	1	15
10	0	22	0	0	12	8	0	0	3	0
11	0	153	0	0	52	41	0	0	29	31
12	0	19	0	0	3	4	0	0	7	6
13	10	268	0	0	90	87	0	0	67	42
14	0	7	0	0	2	1	0	0	3	2
15	0	12	0	0	5	1	0	0	4	3
16	78	0	0	34	36	21	0	0	20	35

- There were approximately 100 duplicate ID values in the Subscriber Information data set, which we decided to remove.
- Purchase Amount was converted to all be in USD.
- We noticed an many abnormally large purchase amounts, however, there were too many instances of these to remove them. After discussing many options, we decided to leave these values in the data set.

Data Inconsistencies

- We noticed multiple inconsistencies within the data
- Attempted to find outside sources that could have influenced data and explain findings
  - Long term subscriptions with $0 purchase amount
  - Extremely high purchase amounts
  - March 2020: large purchases ≠ free trial sign ups
  - Purchase amounts present for free trial users
  - Total purchase amounts do not make sense relevant to to revenue earned
    - 2018: $173.6 million
    - 2019: $182.7 million
    - 2020: $176.0 million

Free Trial Start Date

Purchase Amount in USD

- 2018: $2,845,756,371
- 2019: $9,752,491,743
- 2020: $10,026,414,426

Languag	Subscrip	isSubscri	Subscrip	isSubscri	Purchase Store	isPurcha	Purchase	Currency	Purchas	Subscription Start Date	Subscription Expiration	Demo User	isDemo	Free Tria
ALL	Lifetime	TRUE	INITIAL_PU	FALSE	Web	TRUE	199	USD	199	3/25/2020	1/1/2099	No	FALSE	Yes
ESP	Lifetime	TRUE	INITIAL_PU	FALSE	App	FALSE	NULL	NULL	NULL	3/29/2020	1/1/2099	No	FALSE	Yes
ALL	Limited	FALSE	RENEWAL	TRUE	App	FALSE	NULL	NULL	NULL	3/29/2020	4/1/2021	No	FALSE	Yes
DEU	Limited	FALSE	INITIAL_PU	FALSE	Web	TRUE	62.3	EUR	75.38	3/24/2020	9/30/2020	No	FALSE	Yes
ALL	Limited	FALSE	INITIAL_PU	FALSE	Web	TRUE	239	EUR	289.19	3/22/2020	3/22/2022	No	FALSE	Yes
CHI	Limited	FALSE	INITIAL_PU	FALSE	Web	TRUE	24.5	EUR	29.65	3/20/2020	6/24/2020	No	FALSE	Yes
ALL	Limited	FALSE	RENEWAL	TRUE	App	FALSE	NULL	NULL		3/20/2020	3/23/2021	No	FALSE	Yes
DEU	Limited	FALSE	INITIAL_PU	FALSE	App	FALSE	NULL	NULL		3/25/2020	7/6/2020	No	FALSE	Yes
ESP	Limited	FALSE	INITIAL_PU	FALSE	Web	TRUE	35.97	USD	35.97	3/24/2020	6/30/2020	No	FALSE	Yes