codecademy

Calculating Churn Rates

Learn SQL from Scratch

James Hillmar

October 3, 2018

Table of Contents

1. Get familiar with Codeflix
   1.1. How many months has the company been operating?
   1.2. Which months do you have enough information to calculate a churn rate?
   1.3. What segments of users exist?
2. What is the overall churn trend since the company started?
3. Compare the churn rates between user segments.
   3.1. Which segment of users should the company focus on expanding?
4. Modifying the SQL code.

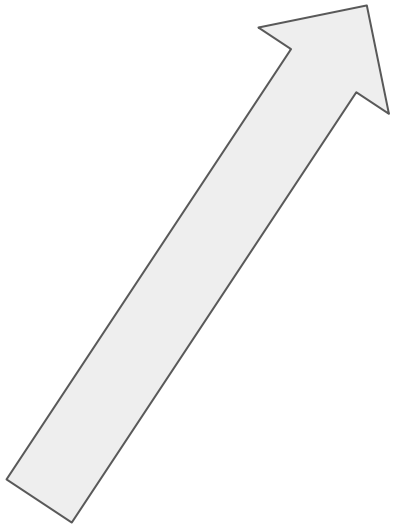
1 - 1.3. Get familiar with Codeflix

- Codeflix has been operating for four months
- We have enough information to determine the churn rate for three months
    - A subscription is a minimum of 31 days
    - Cannot begin and end a subscription in the same month
    - Service started in December
    - Therefore, we cannot calculate the churn rate for December
- There are two segments of users
    - Segment 87
    - Segment 30

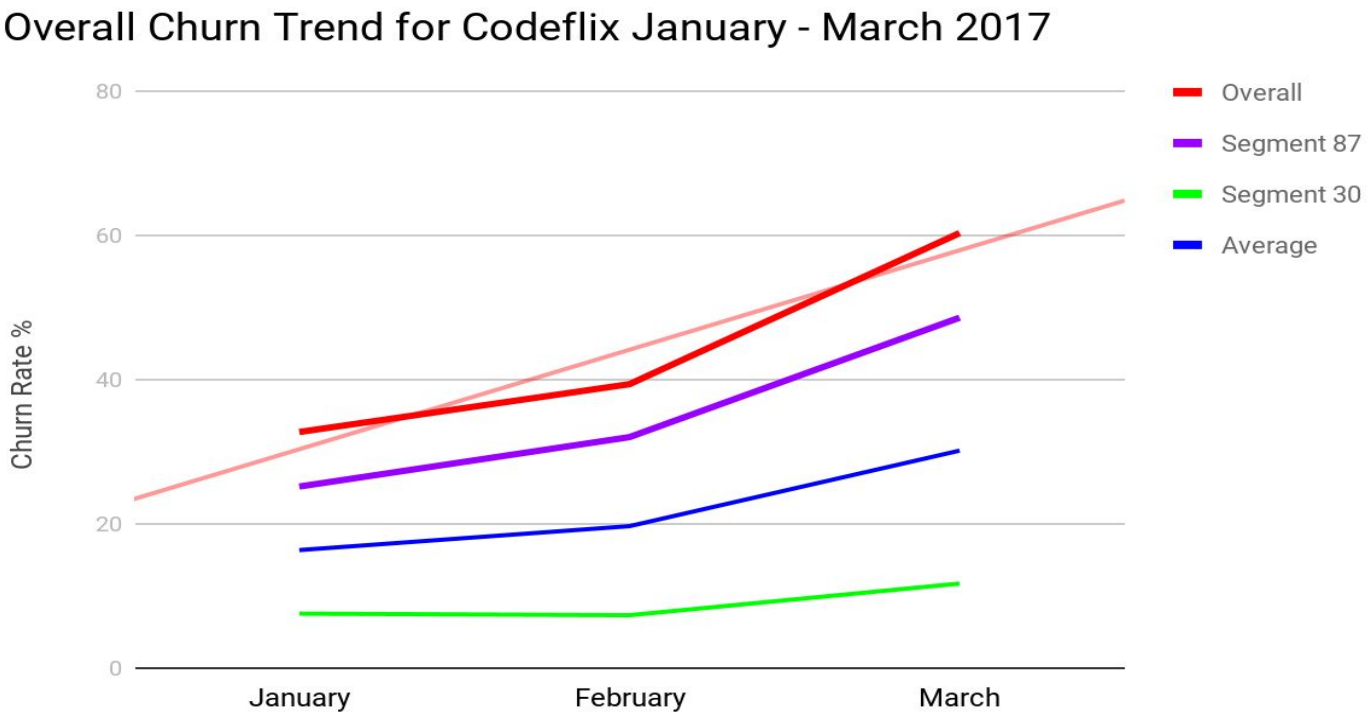
months	segment
December 2016	87
January 2017	30
February 2017	
March 2017	

2. What is the overall churn trend since the company started?

- The chart on the next slide will show that the overall churn rate trend is increasing!
- The data is from the project queries



2. What is the overall churn trend since the company started? - Continued



3. Compare the churn rates between user segments

- Need to create total active and total canceled for both segments
- status temporary table with columns:
  - is_active_87
  - is_active_30
  - is_canceled_87
  - is_canceld_30
- Case statement used
  - Example for active segment 87 at right

```
status AS (
 SELECT id,
 first_day as month,
 CASE
 WHEN (subscription_start <
first_day)
 AND (subscription_end >
first_day OR
      subscription_end IS NULL)
      AND (segment = 87)
      THEN 1
      ELSE 0
 END AS is_active_87,
```

3. Compare the churn rates between user segments - Continued

- Case statement used
  - Example for canceled segment 30 at right

```
status AS (
 …

CASE
   WHEN (subscription_end
BETWEEN first_day AND
last_day)
   AND (segment = 30)
   THEN 1
   ELSE 0
 END AS is_canceled_30,
```

3. Compare the churn rates between user segments - Continued

- Temporary table status_aggregate used to sum the active and canceled segments
- Created columns:
  - sum_active_87
  - sum_active_30
  - sum_canceled_87
  - sum_canceled_30

```
status_aggregate AS(
 SELECT month,
    SUM(is_active_87) AS
sum_active_87,
    SUM(is_active_30) AS
sum_active_30,
    SUM(is_canceled_87) AS
sum_canceled_87,
    SUM(is_canceled_30) AS
sum_canceled_30
    FROM status
    GROUP BY month
 )
```

3. Compare the churn rates between user segments - Continued

- Month to month, segment 30 has a much lower churn rate
- Segment 87 has almost doubled it's churn rate in our three month period
- Segment 87 churn is 3x to 5x higher

month	churn_%_seg_87	churn_%_seg_30
2017-01-01	25.18	7.56
2017-02-01	32.03	7.34
2017-03-01	48.59	11.73

```
SELECT month,
ROUND(100.0 *
sum_canceled_87/sum_active
_87,2) AS
'churn_%_seg_87',
ROUND(100.0 *
sum_canceled_30/sum_active
_30,2) AS 'churn_%_seg_30'
FROM status_aggregate;
```

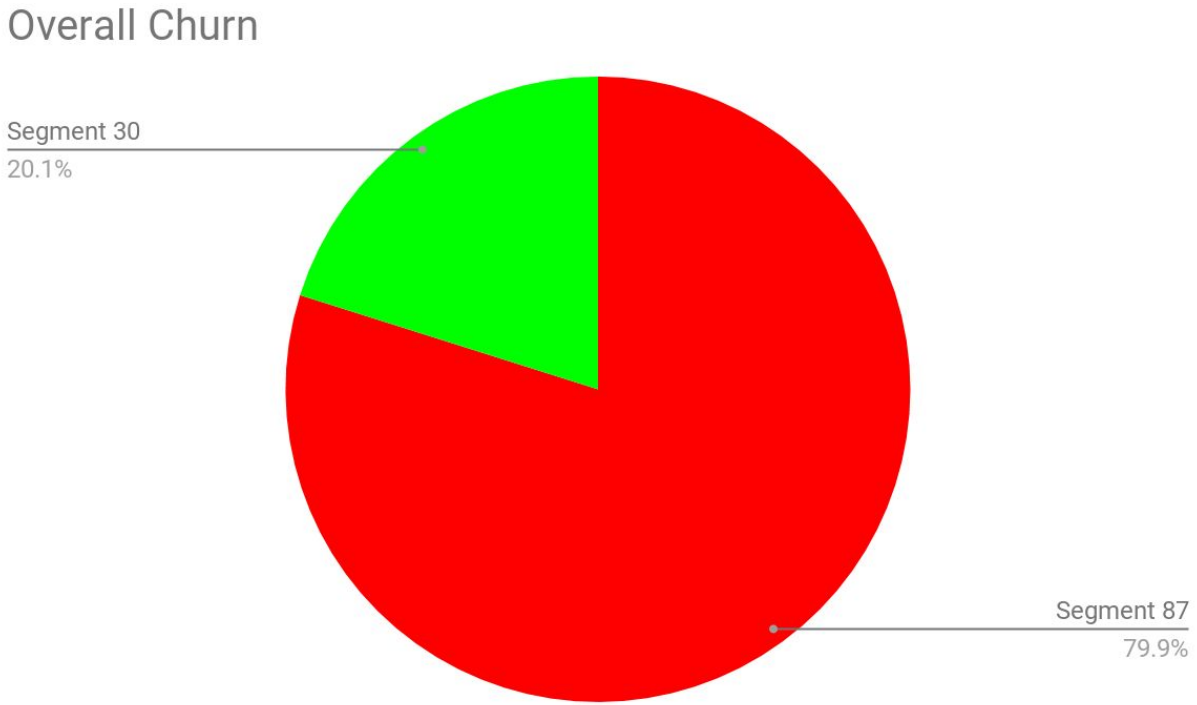
3.1 Which segment of users should the company focus on expanding?

- With a few small changes to the query, we can see the total churn rate by segment
- Nearly 400% more churn with segment 87
- **Codeflix should definitely focus on segment 30 of users**

total _churn_%_seg_87	total_churn_%_seg_30
37.45	9.44

```
SELECT
--month,
ROUND(100.0 *
sum_canceled_87/sum_active
_87,2) AS
'total_churn_%_seg_87',
ROUND(100.0 *
sum_canceled_30/sum_active
_30,2) AS
'total_churn_%_seg_30'
FROM status_aggregate;
```

3.1 Which segment of users should the company focus on expanding? - Continued



4. Modifying the SQL code

- Step 9 of the project asks how users should modify the code to support a large number of segments
    - Avoid repeating code
    - Do not hard code segments
        - Simply determine active or canceled
        - Add a segment column
        - Then group by segment (and month)

Thank you!

Jim Hillmar
jhillm@rocketmail.com