codecademy

Calculating Churn Rates

Learn SQL from Scratch

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1. Get familiar with Codeflix

1 Background on churn rate analysis

It's been four months since we launched Codeflix, and so I've taken an early look at our churn rates to see how we're doing (% of active subscribers who cancel in each month). Some quick notes:

- **Codeflix has been operating for four months**. Our first subscription took place on 1st December 2016, with our most recent on 30th March 2017.
- **Churn rate has been calculated for three months**. As December was our first month, there is insufficient data to calculate the churn rate (as the minimum subscription period is 31 days). Churn has been calculated from January to March.
- **Two segments of users analysed**. Our subscribers consist of two segments labelled 87 and 30. The churn rate for each of these segments has been investigated with the aim of obtaining insights to assist marketing decisions.

```
-- When was our first and most recent subscription?

SELECT MIN(subscription_start) AS
'earliest_subscription',
            MAX(subscription_start) AS
'latest_subscription'
FROM subscriptions;

-- When was our first cancelation?

SELECT MIN(subscription_end) AS 'first_cancelation'
FROM subscriptions;

-- What segments exist in our database?

SELECT DISTINCT segment
FROM subscriptions;
```

2. Codeflix Overall Churn Rate

2 Overall churn rate

Before looking at the performance of particular segments, I've taken a top level view of churn to see if there are any early trends. Highlights:

- 1,537 user subscriptions were analysed, and had a total churn rate of 40%
- Churn rate was below 20% for the first two months of 2017
- March 2017 saw a significant increase in subscriber churn, up nearly 45% month-on-month
- Segment-level view of churn rate may assist with understanding increase in churn rate

Month	Churn Rate
2017-01-01	16.14%
2017-02-01	18.88%
2017-03-01	27.16%

```
-- number of subscriptions before March 2017
SELECT COUNT(*) AS 'subscriptions'
FROM subscriptions
WHERE subscription_start < '2017-03-01';

-- number of cancels during time period
SELECT COUNT(*) As 'canceled'
FROM subscriptions
WHERE subscription_end IS NOT NULL;
```

2. Total churn rate – segment overview

Codeflix's subscribers are distributed relatively evenly between the two segments.

However, subscribers belonging to segment 87 are over three times more likely to cancel their subscription than subscribers I segment 30.

Segment	User_count	Count_of_canceled	Churn rate
30	778	144	18.51%
87	759	476	62.71%

```
WITH total_subscriptions AS (
  SELECT segment,
              COUNT(subscription_start) AS
'user_count'
              FROM subscriptions
              WHERE subscription_start < '2017-
03-01'
              GROUP BY 1
),
dropouts AS (
  SELECT segment,
              COUNT(subscription_start) AS
'count_of_canceled'
              FROM subscriptions
              WHERE subscription_start < '2017-
03-01'
                              AND subscription_end
IS NOT NULL
              GROUP BY 1
  )
  SELECT ts.segment,
              ts.user_count,
    d.count_of_canceled
  FROM total_subscriptions AS ts
  JOIN dropouts AS d
              ON d.segment = ts.segment;
```

3. Churn rate by segment

1 Overall Churn Rate By Month

To understand the increase in churn rate seen over the first few months, I've had a look at each of the two segments by month. What I've found is:

- Segment 87 churn rate has been steadily increasing each month. March churn was almost double what it was in January
- Segment 30 is performing significantly better than 87, despite also seeing a jump in churn in March
- The users in segment 30 are much more likely to remain subscribers of Codeflix, and we should focus our marketing activities on recruiting more users like these
- We could also introduce a survey targeted at users cancelling their subscription. The insights from this could help us understand reasons for cancelling and give us ideas for reducing churn (ultimately increasing user value)

Month	Churn_87	Churn_30
Jan-17	25.09%	7.56%
Feb-17	31.69%	7.34%
Mar-17	47.69%	11.70%