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# Capstone: Churn Rates

A presentation about churn rates for the Learn SQL from Scratch course from CodeAcademy

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# 1. A brief summary of Codeflix

# 1.1 What is Codeflix?

Codeflix is a start-up company that deals in video streaming services. It begun receiving subscriptions in December 2016. There are two distinct channels from which they acquire subscribers and they wish to know which channel is more successful in keeping subscribers.

(For the rest of this presentation we will be referring to these channels from which subscribers are gained as “segments” and these two will be marked as “87” and “30”

Hence they have given us data on the first four months of their business, giving us the subscriber ID, the start and end dates of their subscription, and their segment of all customers in the period in an .sql file. With this we seek to calculate the “Churn Rate” for the months that they have provided data for.

**Churn rate** is the percent of subscribers that have canceled within a certain period, usually a month. For a user base to grow, the churn rate must be less than the new subscriber rate for the same period.

To calculate the churn rate, we only will be considering users who are subscribed at the beginning of the month. The churn rate is the number of these users who cancel during the month divided by the total number:

```
customers_who_canceled / customers_at_start
```

*Source: CodeAcademy*

# 1.2 A brief note on subscriptions

At this point we should make note of the fact that CodeFlix has a  minimum subscription length of 31 days, so a user can never start and end their subscription in the same month. There were 17 subscribers who signed on in the first day (1st December 2016) but because of the fact that we calculate active users as being active before the first day of the month they won't be counted so we will take care not to bring up December because that may involve Division By Zero.

*Left: The seventeen subscribers that signed up on day one and the SQL query that was used to retrieve them.*

Query Results

| id | subscription_start | subscription_end | segment |
|---|---|---|---|
| 1 | 2016-12-01 | 2017-02-01 | 87 |
| 2 | 2016-12-01 | 2017-01-24 | 87 |
| 3 | 2016-12-01 | 2017-03-07 | 87 |
| 4 | 2016-12-01 | 2017-02-12 | 87 |
| 5 | 2016-12-01 | 2017-03-09 | 87 |
| 6 | 2016-12-01 | 2017-01-19 | 87 |
| 7 | 2016-12-01 | 2017-02-03 | 87 |
| 8 | 2016-12-01 | 2017-03-02 | 87 |
| 9 | 2016-12-01 | 2017-02-17 | 87 |
| 10 | 2016-12-01 | 2017-01-01 | 87 |
| 11 | 2016-12-01 | 2017-01-17 | 87 |
| 12 | 2016-12-01 | 2017-02-07 | 87 |
| 13 | 2016-12-01 | Ø | 30 |
| 14 | 2016-12-01 | 2017-03-07 | 30 |
| 15 | 2016-12-01 | 2017-02-22 | 30 |
| 16 | 2016-12-01 | Ø | 30 |
| 17 | 2016-12-01 | Ø | 30 |

```
SELECT *
FROM subscriptions
LIMIT 25;
```

# 2. The Churn Rate

# 2.1 Active and Cancelled users per month.

Using SQL we creating a temporary table of months (by writing down) and using the CROSS JOIN function and logical statements we managed to keep track of who was active at the start of a particular month and who cancelled their subscription at the start of a month. Thus we have here a table of  the number of active users and cancelled users per month and the church rate.

NOTE: The churn rate has been rounded to 2 decimal places.

| Month | Number of Active Users | Number of Cancelled Users | Churn Rate Per Month |
|---|---|---|---|
| December 2017 | 0 | 0 | N/A |
| January 2017 | 569 | 92 | 16.17 |
| February 2017 | 980 | 186 | 18.98 |
| March 2017 | 1247 | 342 | 27.43 |

# 2.2 Conclusions from the table

As we see the Churn Rate increases per months and over these three months there is a 11.26 percentage point increase. As time goes on while the number of users increases so too does the number and proportion of users leaving.This would be of great concern to Codeflix so it is important that we know the exact cause of the churn increase.

In order find out the cause we should delve further into the data and divide the subscribers into the two segments of 87 and 30. Hopefully we will see if there is any disparity that could explain this.

| Month | Number of Active Users | Number of Cancelled Users | Churn Rate Per Month |
|---|---|---|---|
| December 2016 | 0 | 0 | N/A |
| January 2017 | 569 | 92 | 16.17 |
| February 2017 | 980 | 186 | 18.98 |
| March 2017 | 1247 | 342 | 27.43 |

# 2.3 Comparison between the Segments

| Segment 87 | | | |
|---|---|---|---|
| **Month** | **Number of Active Users** | **Number of Cancelled Users** | **Churn Rate Per Month** |
| December 2016 | 0 | 0 | N/A |
| January 2017 | 278 | 70 | 25.18 |
| February 2017 | 462 | 148 | 32.03 |
| March 2017 | 531 | 258 | 48.59 |

| Segment 30 | | | |
|---|---|---|---|
| **Month** | **Number of Active Users** | **Number of Cancelled Users** | **Churn Rate Per Month** |
| December 2016 | 0 | 0 | N/A |
| January 2017 | 291 | 22 | 7.56 |
| February 2017 | 518 | 38 | 7.34 |
| March 2017 | 716 | 84 | 11.74 |

# 2.4 Judging the Segments

It becomes very clear that the massive increase of the Churn Rate over the first few months of operation comes from Segment 87. Indeed, by itself the churn rate is even more larger than the rate calculated for all users, with almost half of all active users at the start of March 2017 deciding to cancel their subscription to Codeflix.

The Churn Rate for Segment 30 is much more smaller, and in fact went down in February 2017 before increasing again.

| Month | Churn Rate Per Month (87) | Churn Rate Per Month (30) | Churn Rate Per Month (All Users) |
|---|---|---|---|
| December 2016 | N/A | N/A | N/A |
| January 2017 | 25.18 | 7.56 | 16.17 |
| February 2017 | 32.03 | 7.34 | 18.98 |
| March 2017 | 48.59 | 11.74 | 27.43 |

That the Churn Rate for one of the segments is significantly lower than the other one should be of great relief to Codeflix, as it shows that at least one of their segments is holding well. In fact Segment 30 had a greater number of active subscribers than 87 in all three months, showing that 30 was overall a more successful channel for subscribers (as it was not a matter of segment 30 being a smaller but more loyal group). There was a increase in the churn rate for both segments in March but we cannot come to any conclusions about it just yet with the data we have.

# 3. Conclusion

# 3.1 Summing up

In conclusion, from the data we have gathered and processed, Segment 30 seems to be successful in keeping on subscribed users with a churn rate never rising significantly higher than one out of ten. Segment 87 on the other hand seems to be nearly hemorrhaging subscribed users, with the churn rate going higher and higher, first nearly a 7 percentage point increase from January to February and then over 16 percentage points from February to March. It seems that Segment 30 is a success while 87 is a failure and there should be more focus on expanding the user base via 30 since that represents a better long-term user base.

However, I do not think that Codeflix should immediately cancel 87 outright just yet. Though we have good reason to assume shutting down all of segment 87 would indeed work, I would advise that before this is done I would go in further and maybe understand *why* people in segment 87 are leaving at the rates they do (one example could be providing a questionnaire which pops up when they click ‘unsubscribe’). There could be more lessons to be learned by examining the reasons for the higher churn rate in segment 87.

# 4. Thank you for reading this presentation.