Analysing user behaviour at dating app, Click'd

Data analysis and interpretation

By Amy Birdee

Introduction

- The data are split into two tables. The users table gives details of users who registered on a hypothetical dating app called Click'd on 10th and 11th November. The events table shows the events carried out by these users, i.e. app start, left swipe or right swipe

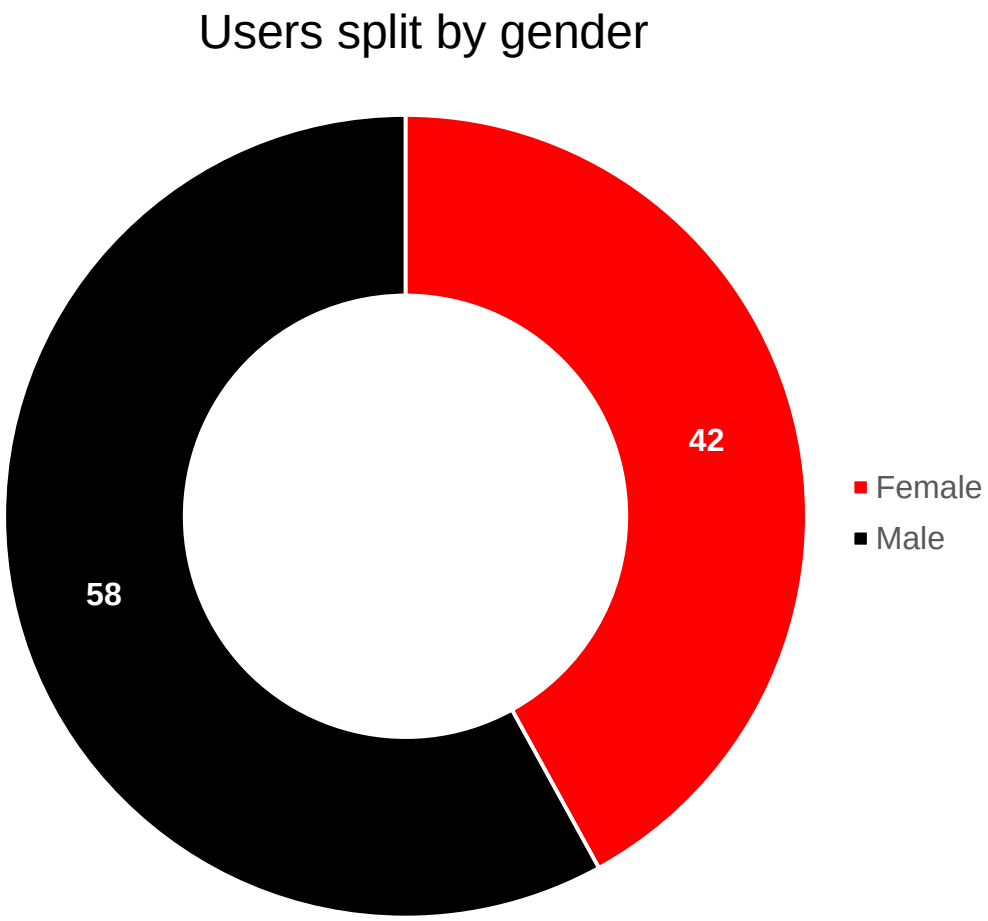
- There are 100 users and the events data span five days

- This project aims to segment the data and discover patterns in user behaviour. Cohort analysis is also carried out to analyse user retention as well as an A/B test which explores a new approach relating to how users interact with the dating app

- The customer segmentation was carried out in SQL and the cohort analysis and A/B test were carried out in Python

- The Python libraries used include Pandas, Numpy, Matplotlib, Seaborn, ScyPy and Random

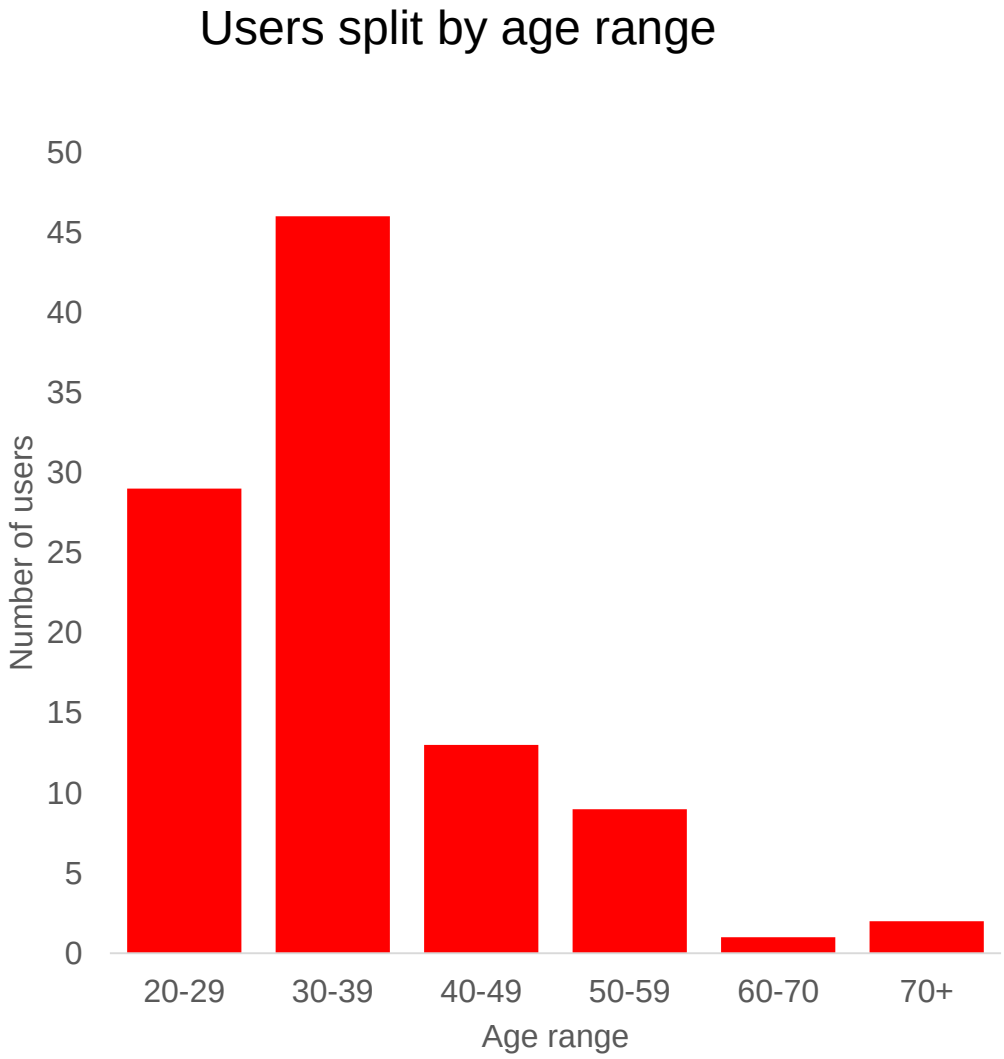
What is the gender split of users on Click’d?



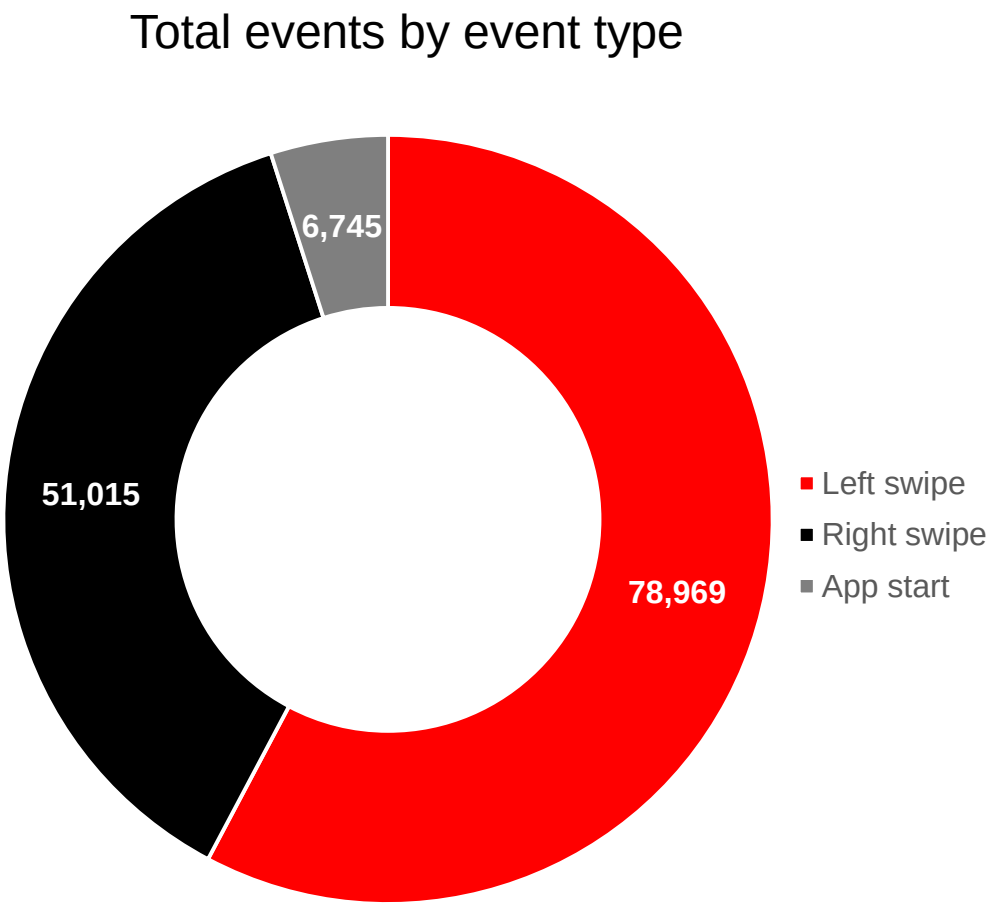
- There are 100 users registered to the site so far and the majority of them are male
- There are **38%** more males on the site compared to females
- To attract more females to the site, Click’d could target **more advertising to female users**

How old are the members of Click’d?

- The average age of users is **36** and the majority of users fall into the 30-39 age bracket
- Although Click’d mainly attracts a younger audience, there are still a few users in the older age categories
- **12%** of users are over the age of 50 and **two users** are **over the age of 70** showing that it’s never too late to look for love!

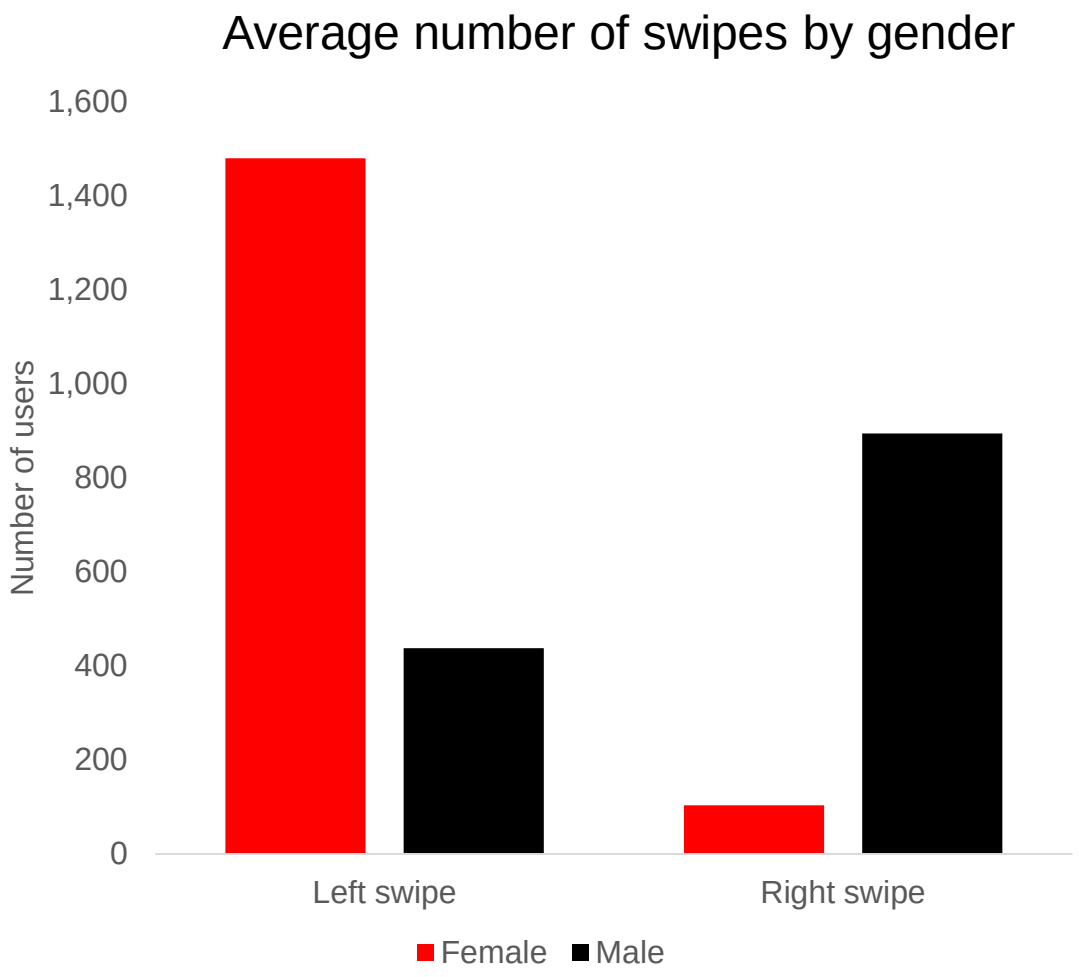


Which events do users carry out most often on Click’d?



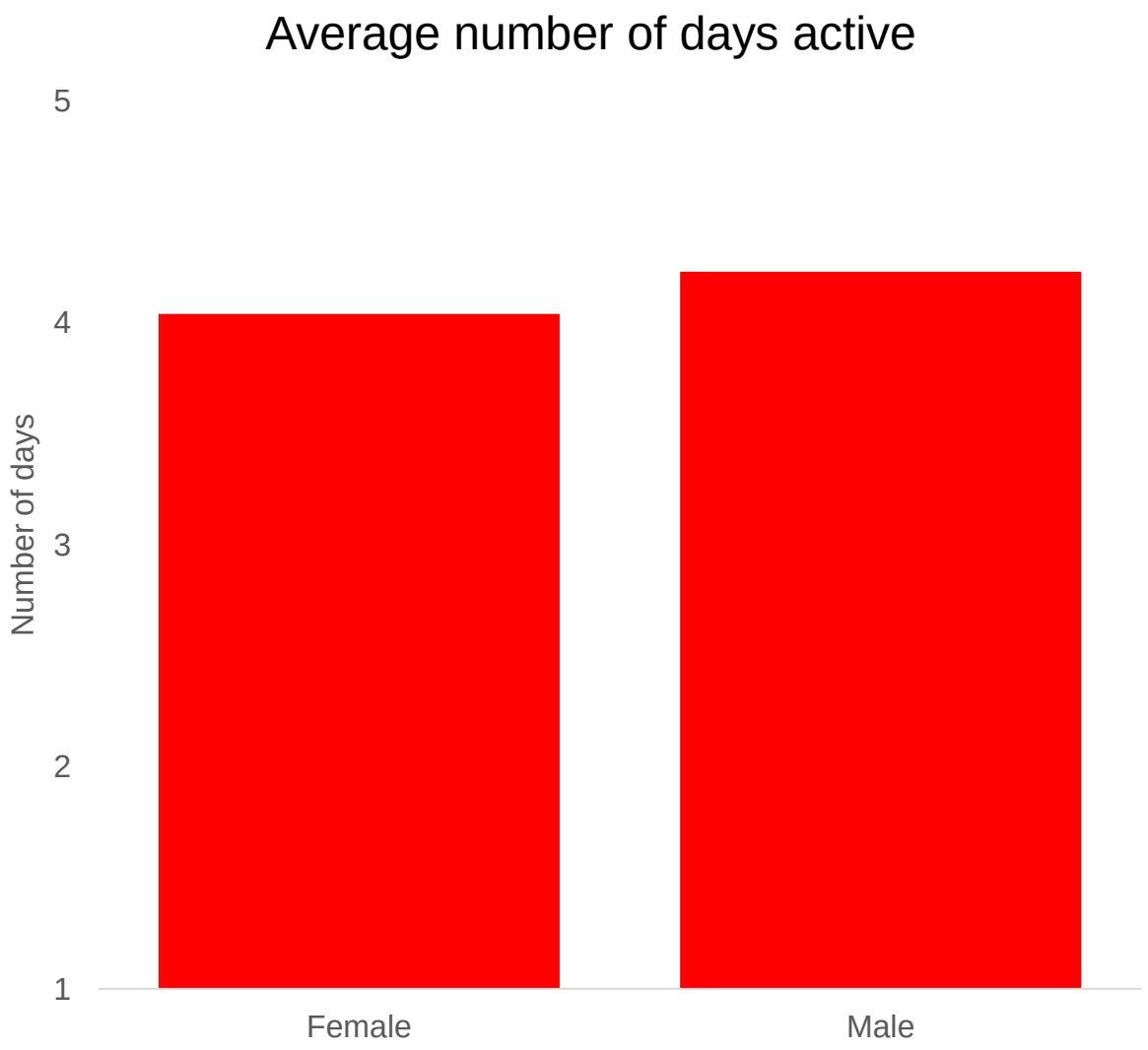
- A left swipe (i.e. passing on a potential match) is the most common action on the app
- However there are still numerous right swipes (which is how a user tells a potential match they like them)
- There were just over **51,000 right swipes** during the analysis period, many of which will have turned into matches

How does the event type differ between genders?



- Females are far more likely to swipe left compared to males – the number of left swipes was **239% higher for females** than for males
- Females are also **less likely to swipe right** – the number of right swipes was **88% lower for females** than for males

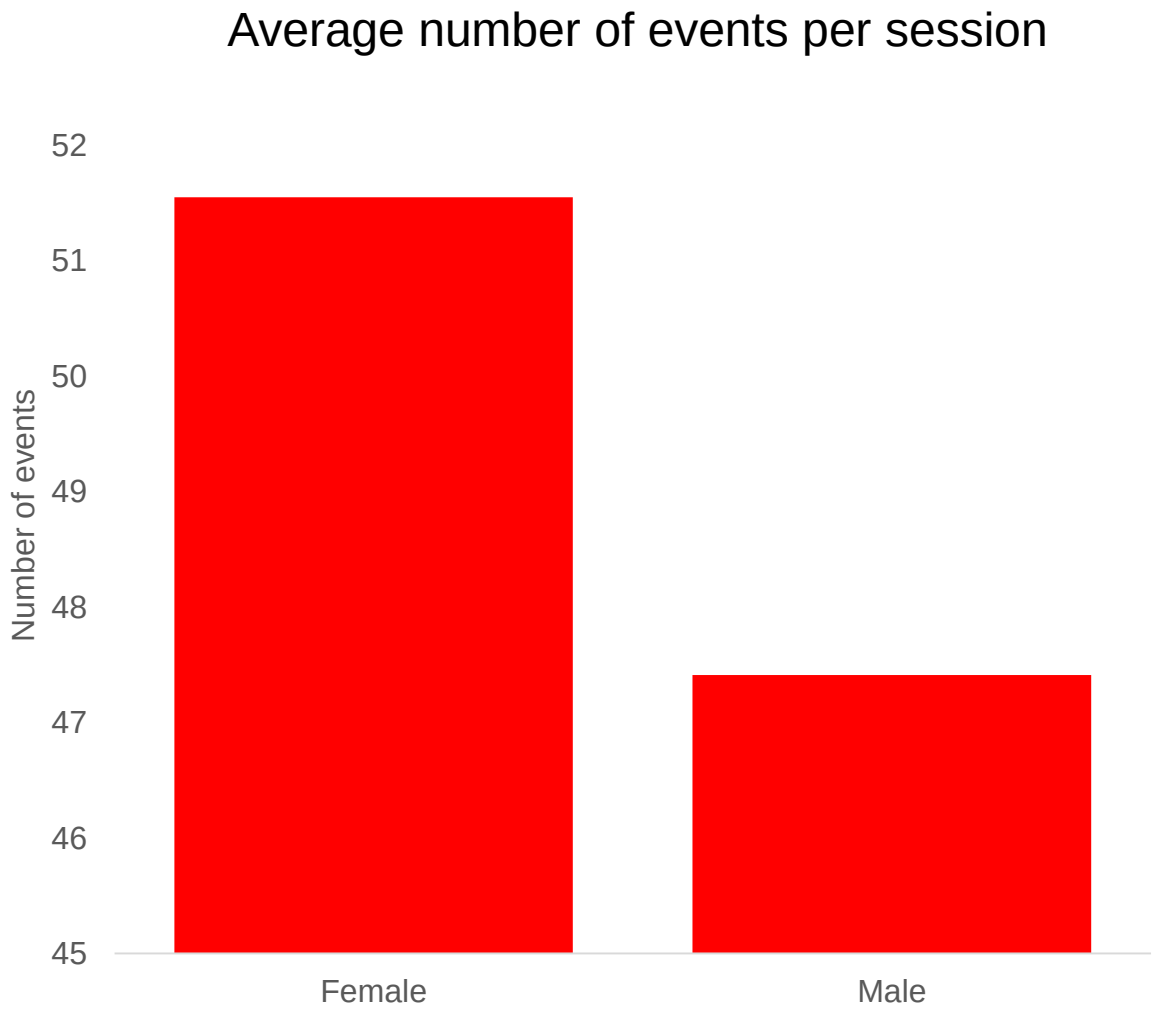
How often do users interact with the Click'd app?



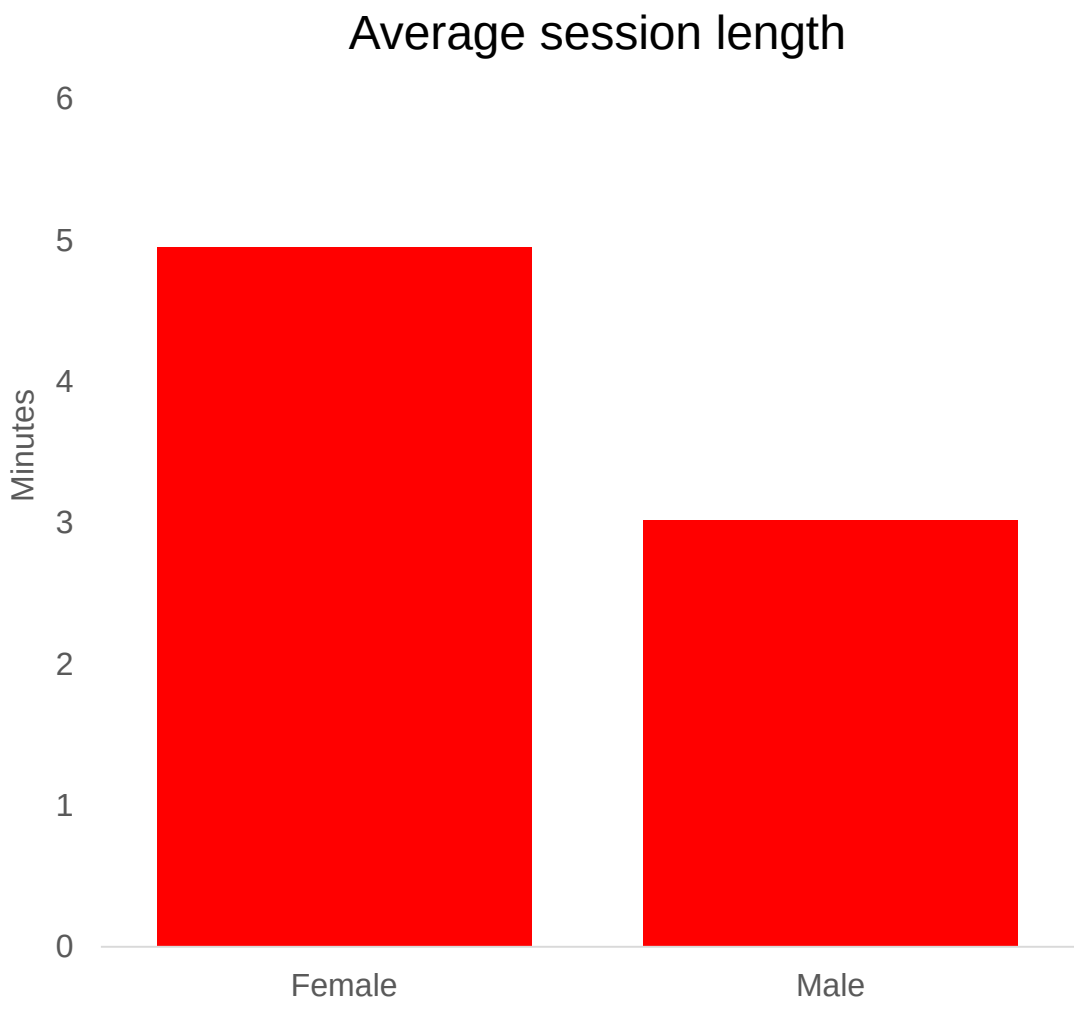
- On average, both males and females interacted with the app (swiped left or right) on four of the five days we have data for
- This means that the **majority of users interact with the app every day**

What is the average number of events per session?

- Users generally log onto the app multiple times a day and therefore accumulate multiple sessions per day
- A session in this case is a true interaction with the app, i.e. **a left or right swipe and does not include an app start**
- For females, the average number of events per session is **52** compared to **47** for males (figures are rounded to the nearest whole number)

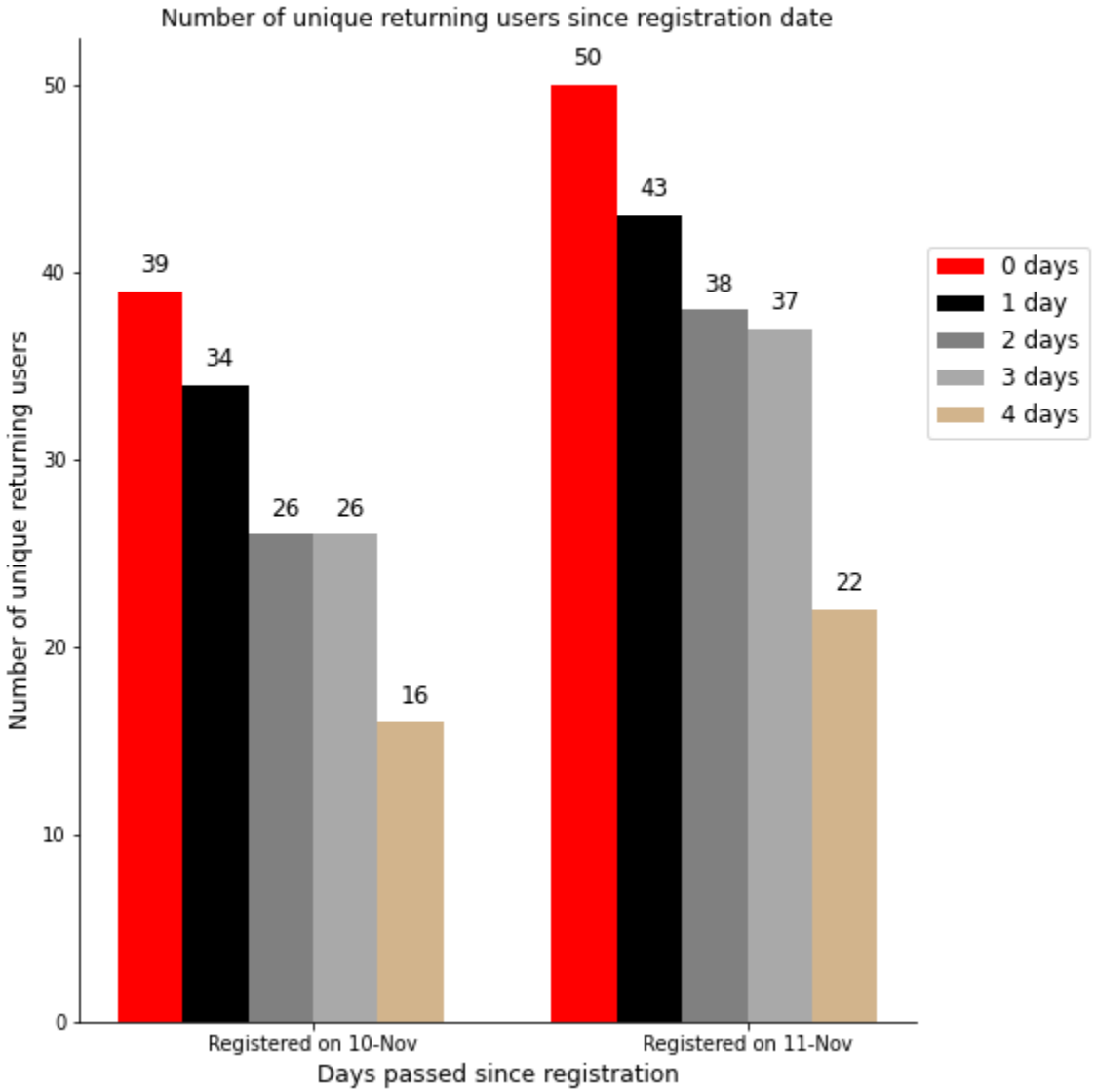


What is the average session length?



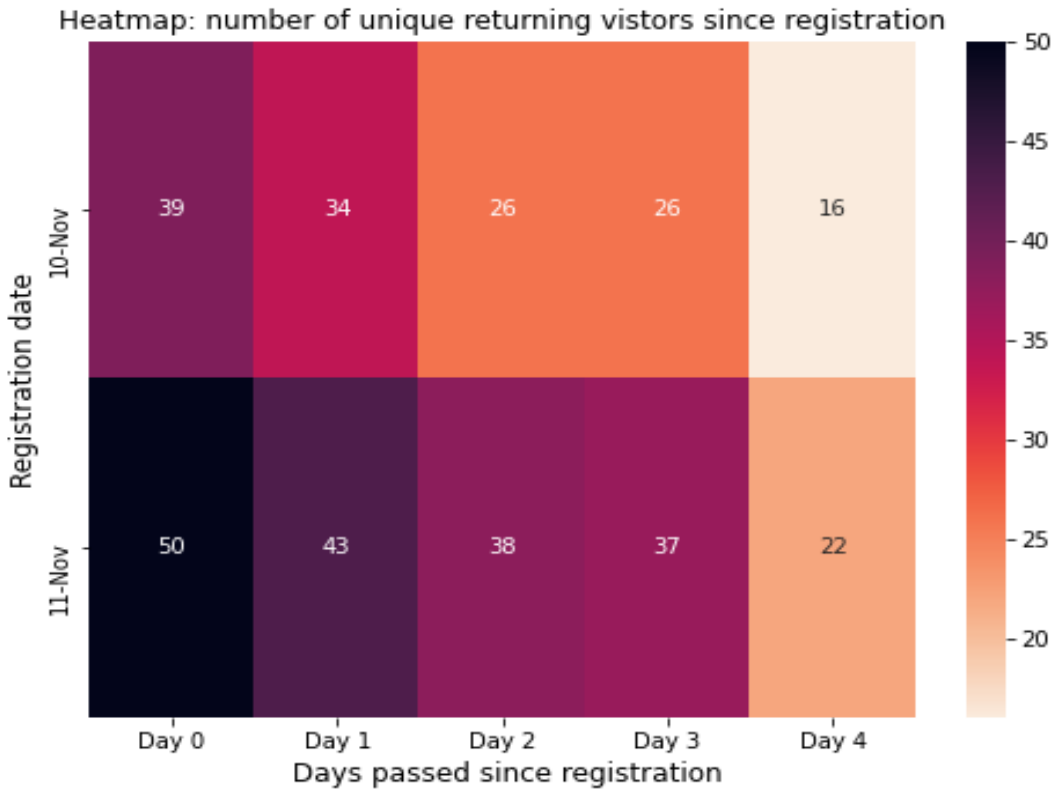
- Females tend to spend **5 minutes** on the app per session
- For males, this figure is lower at around **3 minutes** – this makes sense given that average number of events is also lower for males

Cohort analysis: how many unique users return after registration?



- Like most companies, Click'd is eager to increase customer retention and strives to encourage users to continually return to the app
- The cohort analysis shows that of the 46 users who registered on 10th November, **39 users (84%) interacted with the app on the same day**
- On 11th November, there were 54 new registrations and of these new registrants, **50 users (93%) interacted with the app on the same day**

Cohort analysis continued: alternative visualisation

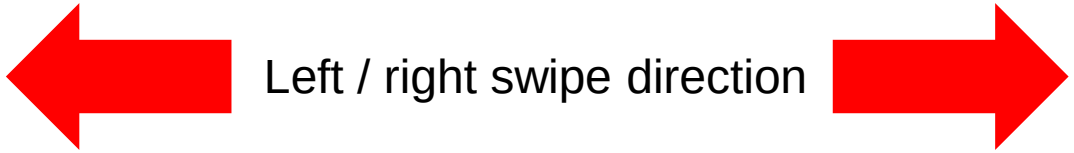


- However, despite the impressive level of app interaction on the registration date, the number of returning users declines over time
- By Day 4, just **16 users (35%)** who registered on 10th November return to interact with the app
- For users who registered on 11th November, the equivalent figures are **22 users or 41%** - this is higher than users who registered on the previous day but still **far lower than the user interaction seen on Day 0**
- Some of the loss of retention may be due to **users finding a match quickly**. However if users are reducing their interaction for a less positive reason, Click'd should address this by **offering promotions** such as **reduced membership** for a limited time period

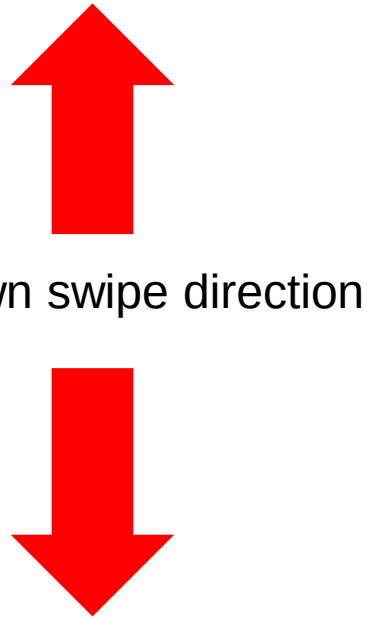
A/B test: does swipe direction influence user behaviour?

- Click'd decided to run an A/B test to see if the **swipe direction** affects the average number of events (swipes)
- Group A are the control group and will continue to use the traditional left/right swipe
- Group B are the test group – they will be testing an **up/down swipe direction** in which up corresponds to a right swipe (i.e. yes or positive) and down corresponds to a left swipe (no or negative)
- The A/B test groups were decided by Python's Random module

Group A – 49 users



Group B – 43 users



A/B test: define a null and alternative hypothesis

- **Null hypothesis**: the average number of swipes is no different between the traditional left/right swipe direction and the new up/down swipe direction
- **Alternative hypothesis**: the average number of swipes is higher for the up/down swipe direction than for left/right swipe direction
- We are testing for a **95% significance level**
- Given that we only have five days of data, the test will run for just five days. In a real world scenario, the test would run for at least two weeks

A/B test results

Test group	Average number of swipes
Group A	**1,073** left/right swipes
Group B	**1,800** up/down swipes

- The results show that the average number of swipes was **higher for Group B** despite this group consisting of a lower number of users
- However this result **may not be significant** and **could have happened by chance**
- A **T-Test can compare the means** of each group and determine whether or not the result is significant
- The T-Test generated a **P-Value of 0.06**. Given that our confidence interval was set at 95%, this **result is not significant** (the P-Value is greater than 0.05 or 5%)
- Therefore, this result could have occurred purely by chance and Click'd should **not reject the null hypothesis** and should continue to use the traditional left/right swipe model
- If the A/B test were run for longer, we may have seen different results

Conclusion

- Users on Click’d are mainly males although **targeted advertising towards females** could make the gender mix more balanced
- Most users are in the 30-39 age group although there are also users in the 50+ age group indicating that Click’d has **a wide user base**
- Females are more likely to swipe left whilst males are more likely to swipe right. However both genders tend to **interact with the app on a daily basis** on average
- Females generally spend slightly more time on the app than males and therefore also have a higher swipe activity level
- The Cohort analysis shows that although users are very active on the app on the day of registration, this **activity declines with time**. Click’d can address this by **offering promotions** to existing users that come with a limited window
- The A/B test results showed that Group B interacted with the app more than the control group. However the **results were not significant** and could have happened by chance (e.g. Group B may have interacted with the app more frequently simply due to the novelty of a new swipe direction)
- The A/B test was only run for five days and may have produced different results if it was run over a longer period

Thank you

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