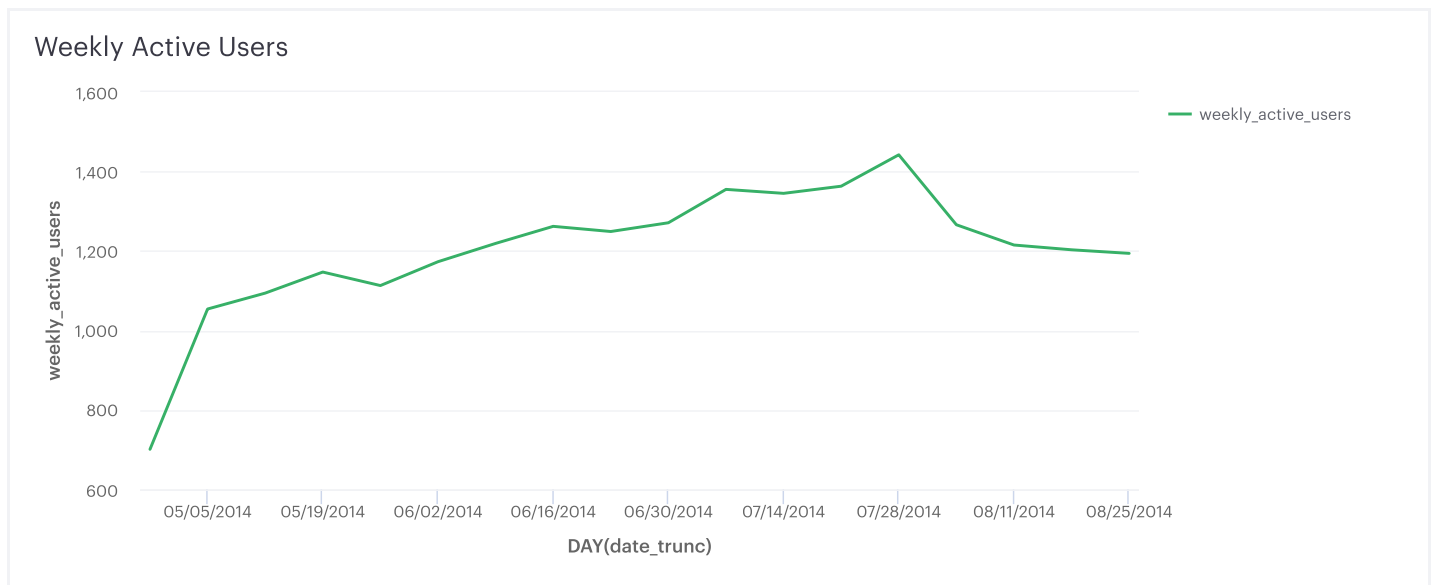# Investigating a Drop in User Engagement

The problem :

You show up to work Tuesday morning, September 2, 2014. The head of the Product team walks over to your desk and asks you what you think about the latest activity on the user engagement dashboards. You fire them up, and something immediately jumps out:


Weekly Active Users

List of hypothesis for the observed dip in active users :

1. Possible error in the code that tracks user activity
2. Application and/or website has some broken features that has caused a noticeable reduction in active users
3. Users overwhelmed by email actions

To test each hypothesis, the following will be done :
1. Check if number of active users fall to 0 ? (Zero active users for a popular app will indicate faulty user tracking code)
2. Check user engagement across all platforms - computer, phone and tablets (Drop should indicate a possible bug)
3. Check the weekly email statistics to evaluate if users are overwhelmed by weekly email digest.

Daily user sign-ups
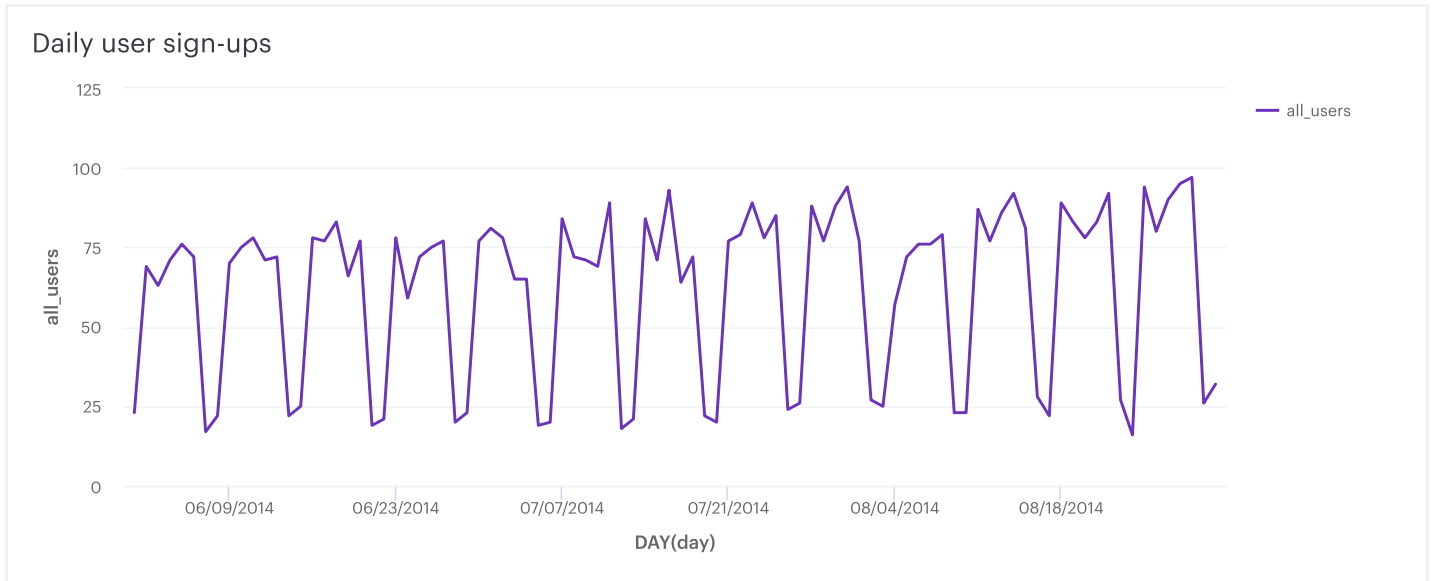
The figure above shows that number of users never goes down to absolute zero. Therefore we can rule out the possibility of an issue with the user tracking code that is responsible for logging user activity.

User engagement by device
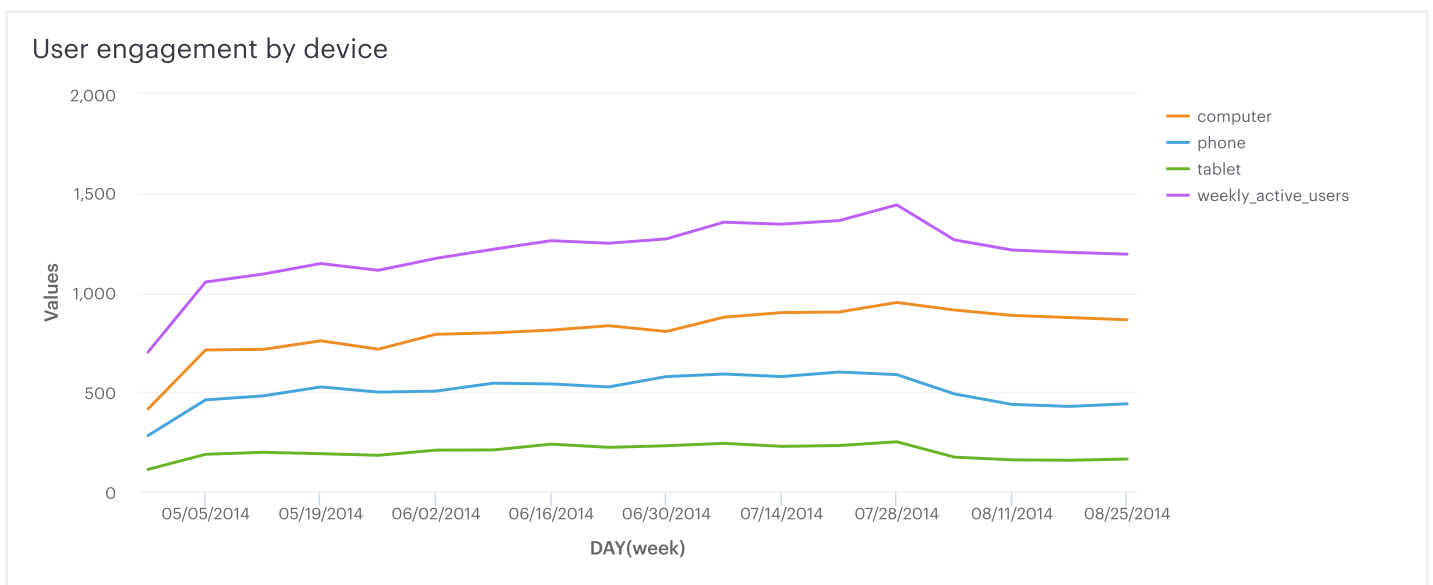
By investigating the chart above, we can clearly see there's been a drop in the active users engaging with via all devices, but a substantial drop is visible in engagement through cell phones and tablets. This supports the second hypothesis that " the application has a broken feature "

Email data
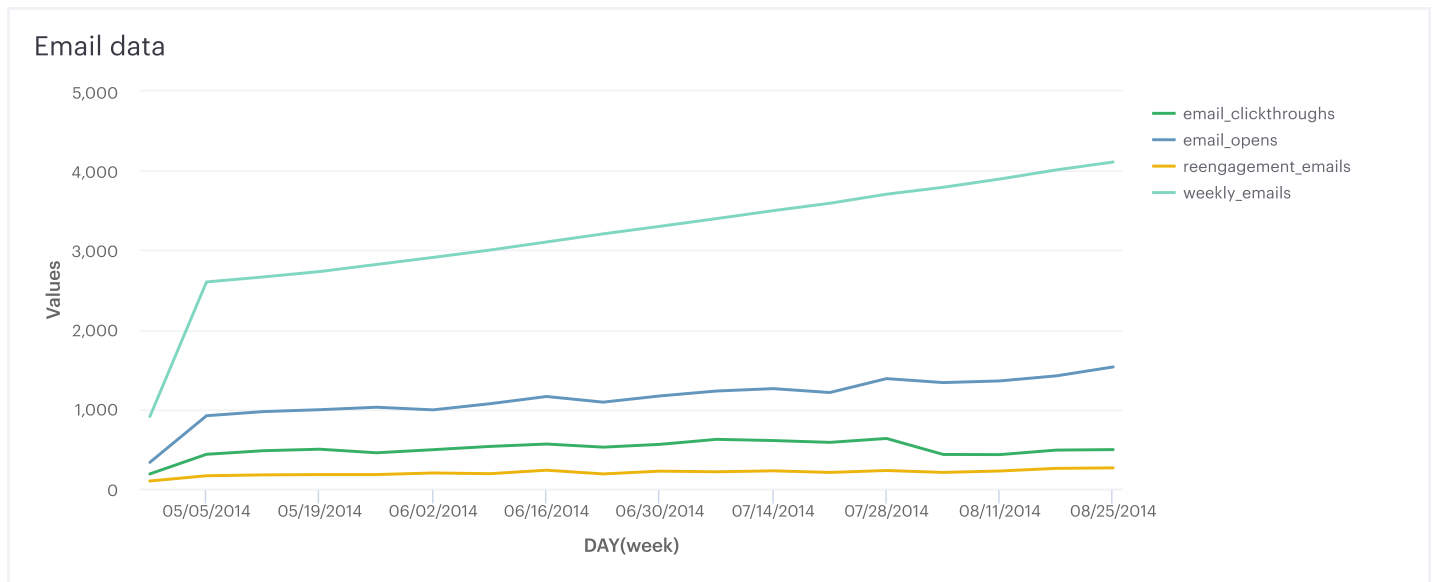
Let's also evaluate the effect of the email campaign on the user activity. The plot above details a users activity towards the weekly emails sent by Yammer to its users. Everything seems to be normal until 28/07/2014 when a visible drop is noticed in the email_clickthrough by users. The issue at hand is that even though a user is opening the email, there has been a drop in the click through to the attached link. This could be due to many reasons but I guess it can be because the users are inundated with useless information in the weekly email digest that has had a negative impact on the user engagement with the application.

Although the analysis is not exactly able to pin point the issues in entirety, this analysis has narrowed down the problem to two specific sources.

Conclusion :
1. The user engagement by device plot suggests something wrong with the application. Notifying the product lead should be the first step
2. There's also a problem with the weekly email digest. Someone needs to look into that.