A Drop In Engagement Case Study

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Springboard Data Science Career Track - Data Wrangling

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:
https://modeanalytics.com/modeanalytics/reports/cbb8c291ee96/runs/7925c979521e/viz/cfcdb6b78885
(https://modeanalytics.com/modeanalytics/reports/cbb8c291ee96/runs/7925c979521e/viz/cfcdb6b78885)
The above chart shows the number of engaged users each week. Yammer defines engagement as having made some type of server call by interacting with the product (shown in the data as events of type "engagement"). Any point in this chart can be interpreted as "the number of users who logged at least one engagement event during the week starting on that date."
You are responsible for determining what caused the dip at the end of the chart shown above and, if appropriate, recommending solutions for the problem.

What could go wrong?

A list of possible causes for the dip in retention shown in the chart above.

1. The Yammer app on some devices might not work as they were supposed to after the week 7/28/2014
2. Some companies might block the access to Yammer or switched to another similar service after the week 7/28/2014
3. Some countries might block the access to Yammer after the week 7/28/2014

For hypothesis 1, I can examine the number of log-ons from different devices (phone, tablet and computer), to see if there's a significant dip of log-on numbers from a particular device starting the week 7/28/2014

For hypothesis 2, I can examine the number of companies that engaged in Yammer events each week, if there's a dip in that number after 7/28/2014, that means some companies stopped using Yammer.

For hypothesis 3, I can examine the number of countries that engaged in Yammer events each week, if there's a dip in that number after 7/28/2014, that means that country might blocked Yammer on some kind of devices.

The reason I order the hypothesis is based on the practicability of fixing the problem if the hypothesis is true. For example, it's easier to fix Yammer app's log-on problem on iPad than to asking a particular county to unblock Yammer.

Digging in

Hypothesis 1:

I ran a SQL query to see the number of user log-ins from different devices of each week.

We can see that, starting from the week 7/28/2014, all three devices have had dips to some degree similar to Weekly User Engagement chart, but the ones from phones are most severe, to the level lower than 05/05/2014, which means the degree of user engagement decline from phones is greater than the degree of all of the users, so it might be a good idea to investigate if the app devs have implemented some kind of updates around 7/28/2014.

Weekly User Engagement from Different Devices
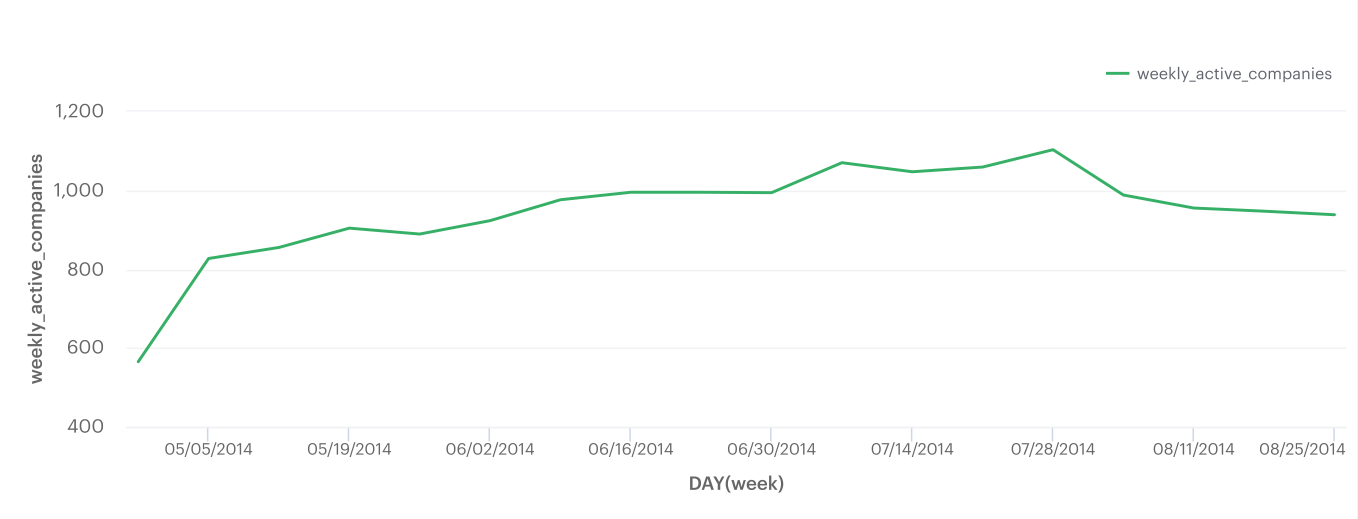

Weekly User Engagement
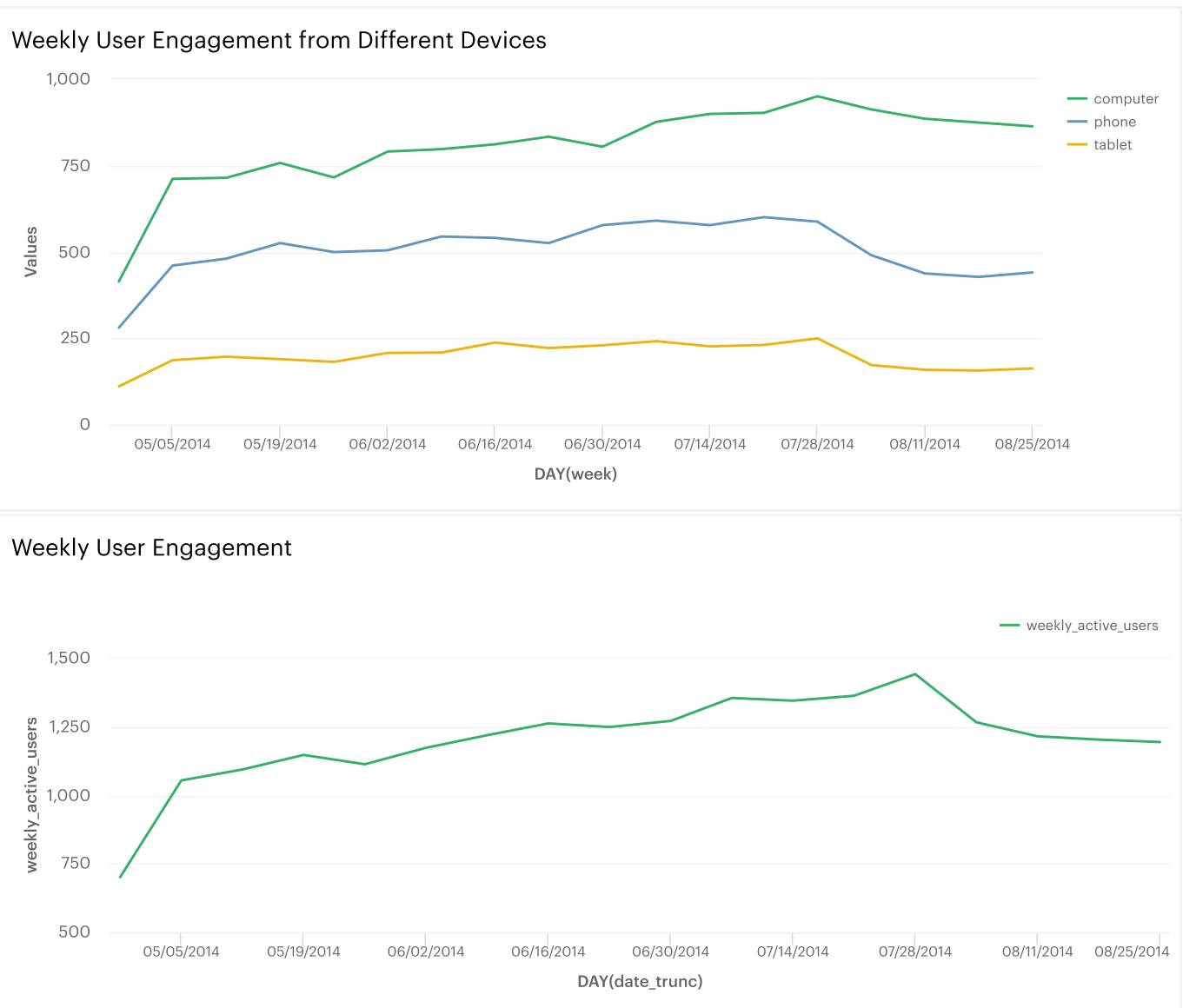
Hypothesis 2:

I ran a SQL query to see the number of companies that have had users logged on Yammer from each week.

We can see that, starting from the week 7/28/2014, the number of companies that has users logged on Yammer has declined, and yet to be recovered as of the week of 08/25/2017. It is worth investigating to see which companies stopped using Yammer and why. However, the decline does not seem to be as significant as the decline from mobile user engagement, so investigating the Yammer mobile app is still the top priority.

**Weekly Number of Companies with User Logged on Yammer**

Hypothesis 3:

I ran a SQL query to see the number of countries that have had users logged on Yammer from each week.

We can see that the number remained consistent across each week, even after the week of 07/28/2014, so it's unlikely any country has blocked the access of Yammer.

Weekly Number of Countries with User Activities
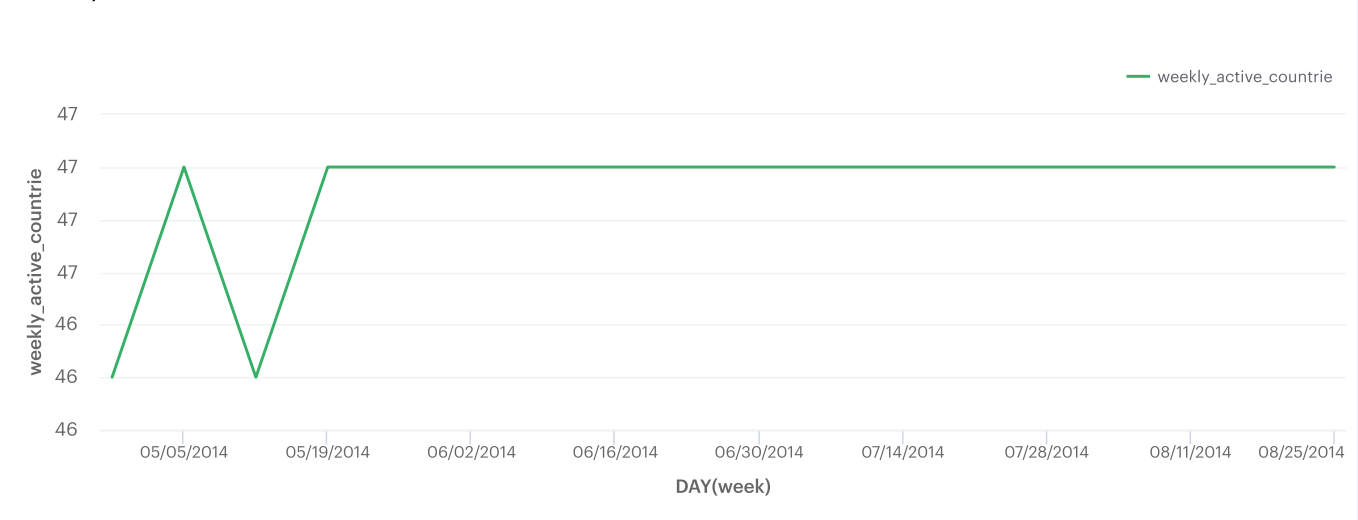
Making a recommendation

Overall, the user experience on mobile devices seems like the most likely cause of the engagement dip.

For Hypothesis 1, it would be beneficial to have more data on update logs, mobile Yammer statistics to see exactly went wrong with Yammer's user experience on mobile devices that caused a huge user engagement dip like that.

For Hypothesis 2, it would be a great idea to explore which companies stopped using Yammer and find out things like if they have switched to another service or blocked the Yammer service, we can try to find the data of user engagement of Yammer's competitors, or send out surveys to the companies that stopped using Yammer.