# SQL Case Study

SQL Case Study for Springboard

I believe the the first question that needs to be addressed is whether or not this is a problem of product or a problem of service. A problem of product would be an issue with website or app that may be working incorrectly, and this leads us to believe that if we fix the product, the usage should return to normal. A problem of service would resemble issues with Yammer that fail clients, both current and potential, and their expectations. This could take the form of poor customer service, negative press, or lacking particular features. This problem entails figuring our how customer needs are being neglected and rectifying that.

In first tackling this problem, we want to determine if this has to do with service or product which we can test by examining Yammer's growth. We can do this in a few different ways each that might provide further insight as to where to look to address this issue. The first step we take is by examining any anomalies in the number of new active users joining Yammer. A substantial drop in the number of active users could provide evidence that Yammer has become a metaphorical plague in that established users are moving away via the drop in weekly engagement and few users are joining via a drop in the number of new users. However, the Growth of Active Users chart does indicate some drop in the number of new users, the recovery means that Yammer was able to recover and that this was just a temporary issue.


Growth of Active Users

The drastic fall in the number of new users oddly corresponds to the time when user engagement experienced the initial drop. It should be worth continuing to understand if there were any differences in regards to user's joining since the drop in new users could stem from issues signing up. Difficulty in signing up could correlate with less use from newer users who otherwise could be spending time learning each feature. If we examine the proportion between the number of new active users against the number of new pending users, we notice that the conversion rate does remain fairly constant even with the fluctuation around August 4. This is corroborated when we examine the decrease in user activity occurs with a stagnant number of signup events.

Active Users against Pending Users

Engagement and Signup Events
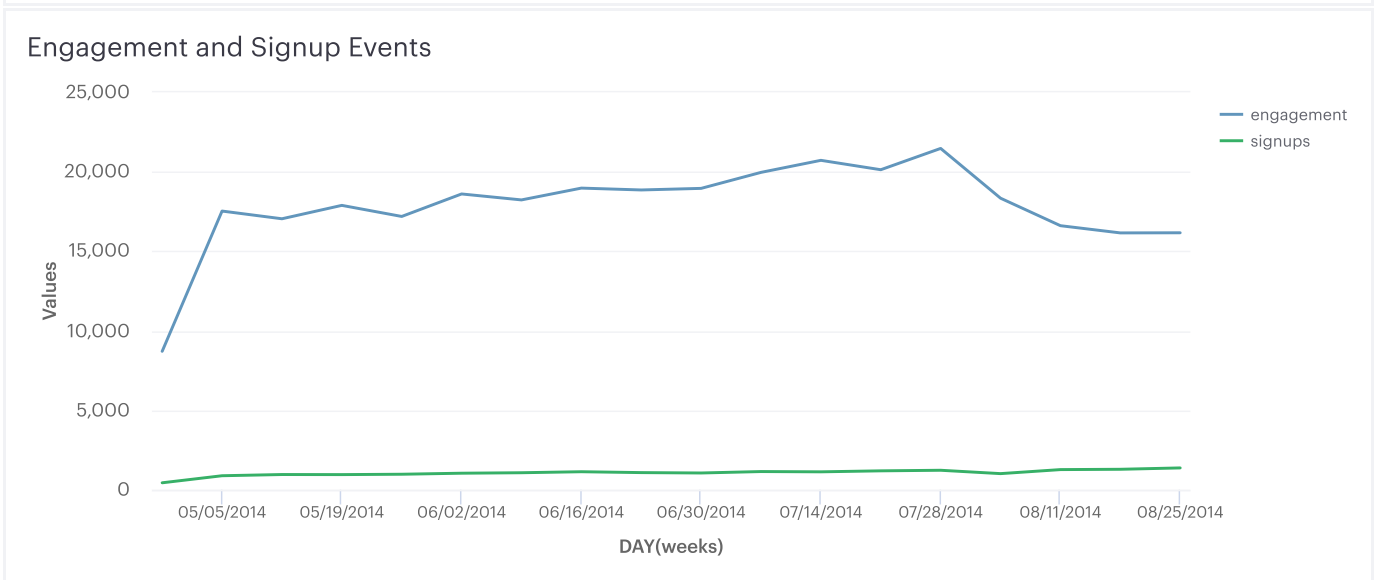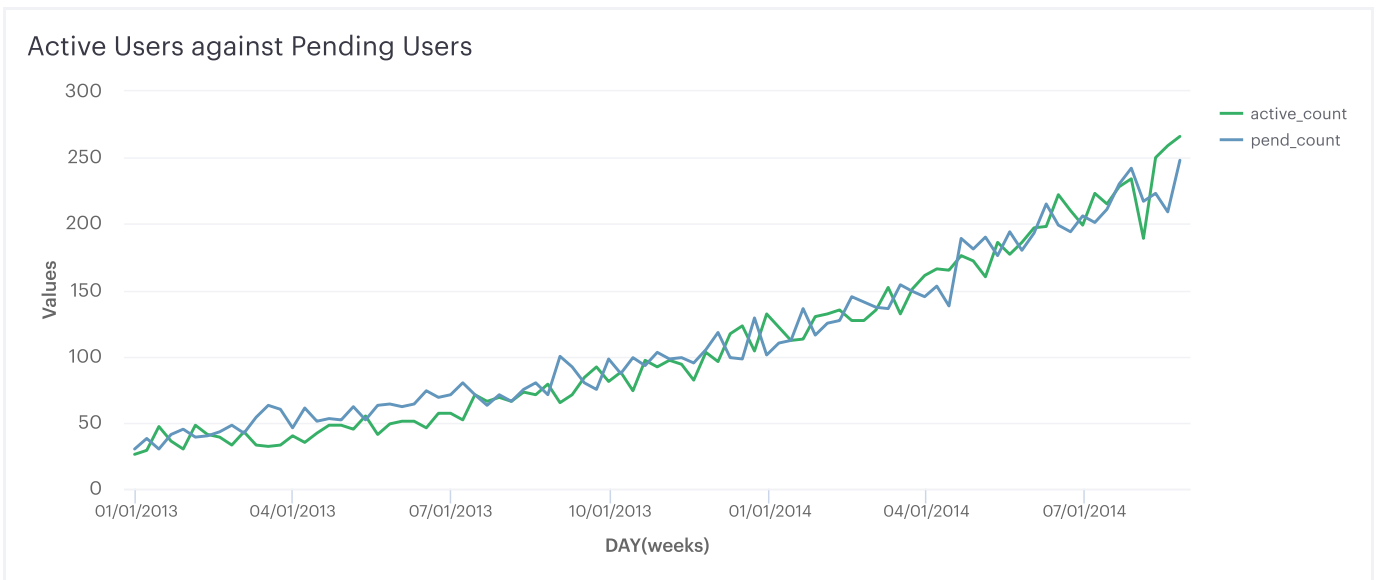
We have narrowed the decrease in events down to issues regarding the product. We now need to figure out the specifics of the particular event in question. We can examine whether it is a particular event or a group of events that are not being used, a particular region that is experiencing decreased activity, or a particular platform that users may not be using as much.

When we look at the distinct number of users who performed a particular event, we notice across the board decreases. Similarly to the engagement graph above, we notice the tails beginning to plateau which could be signs for a persistent issue if not addressed. One last thing to notice is that both the "view inbox" and "send message" events do not continue over to the following weeks with the other events. This may be a sign of faulty data collection, however, since all events demonstrate the same pattern, we can hypothesize that this is not necessarily the issue.

Engagement Event breakdown across Events
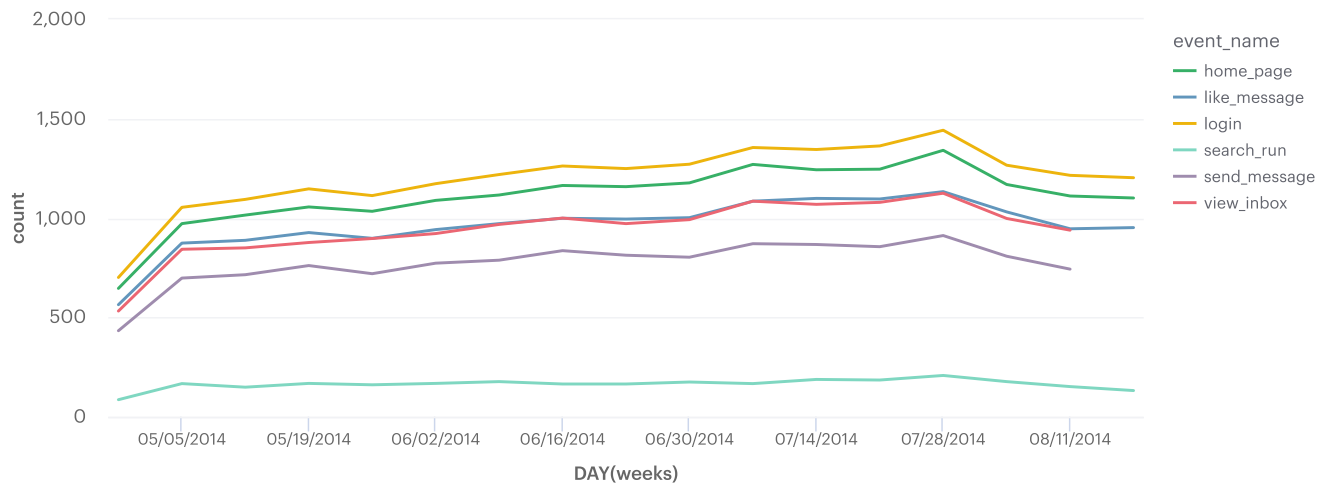
Since we were unable to determine if a specific feature of the product was responsible for the decrease in usage, we can move onto examining whether a particular country or population is behind the decrease in usage. Yammer has users across the world which make it extremely difficult to interpret the graph with each country included. We decided to pull out the top five countries with the highest usage and map their usage over time. Once more, the pattern persists where we see a universal decline beginning in late July. Up until that point, most countries seem to operate independently as event usage fluctuates individually for each country.

## Usage across the Top Five Countries with the Highest Traffic
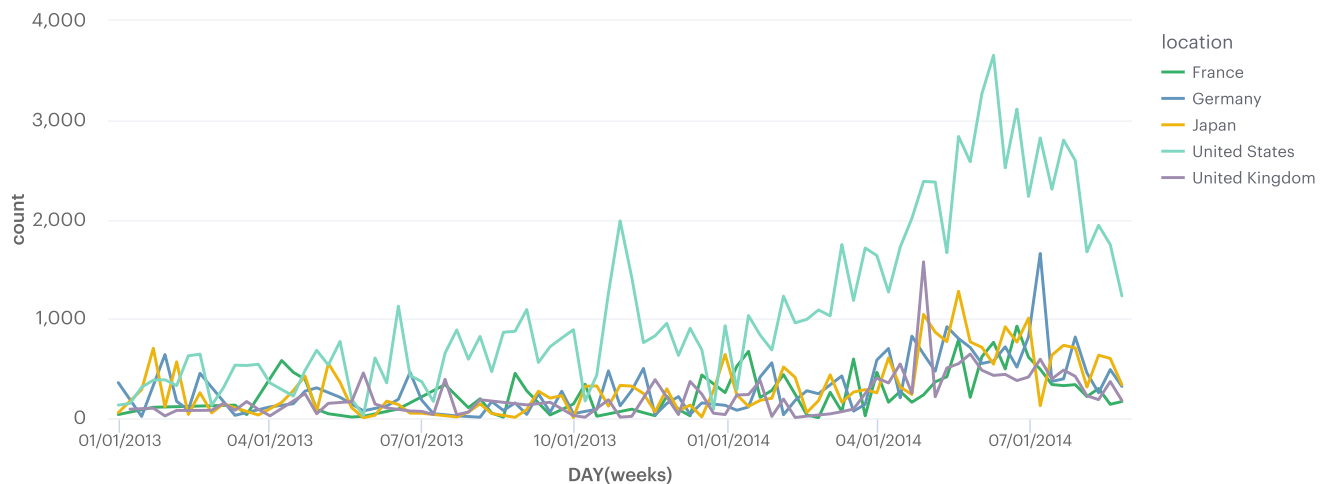
With the location and event not producing any insight as to what may have caused the drop in user engagement, we now turn to platform as possible explanation. When divided among device type, we notice that the event that occurred at the end end of July that caused the dip in user engagement led to a decrease across platforms. However, there are two noticeable differences in how this event affected the three different platforms. The impact on computers was significantly less than compared to phones or tablets. In addition, the mobile platforms did not recover as well, if at all. We now know that something might be occurring on the mobile platform that is affecting user engagement.

Engagement across Devices
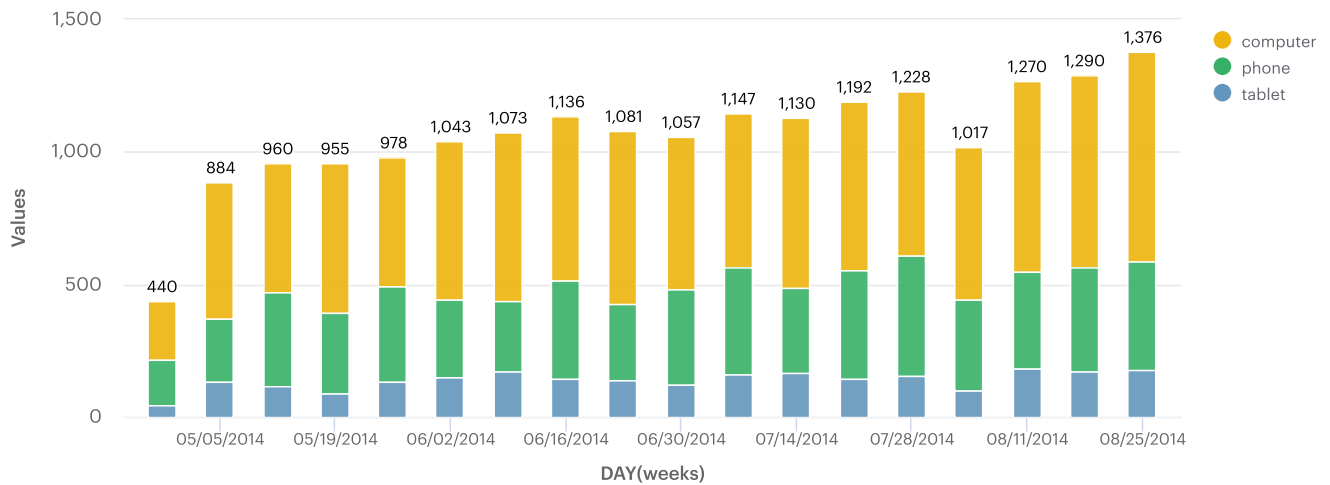
We can now further subdivide engagement activities via device to see if there is a particular event that is performing sub-optimally. When we examine the events on tablet devices, we notice that all engagement across events is down.

User Activity on Tablet Devices
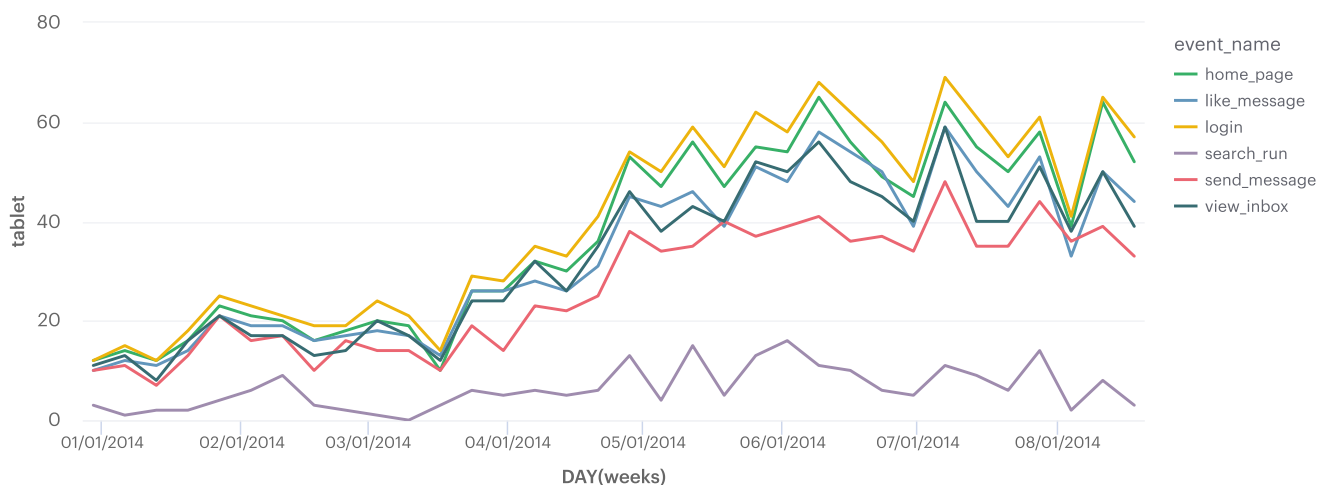
When we examine the usage of events on phones, we notice that events such as viewing a user's inbox and sending a message are recovering from the event in late July while the rest of events such as clicking on the home page, logging in, and liking a message are continuing to subtely decrease or plateau.

User Activity on Phones
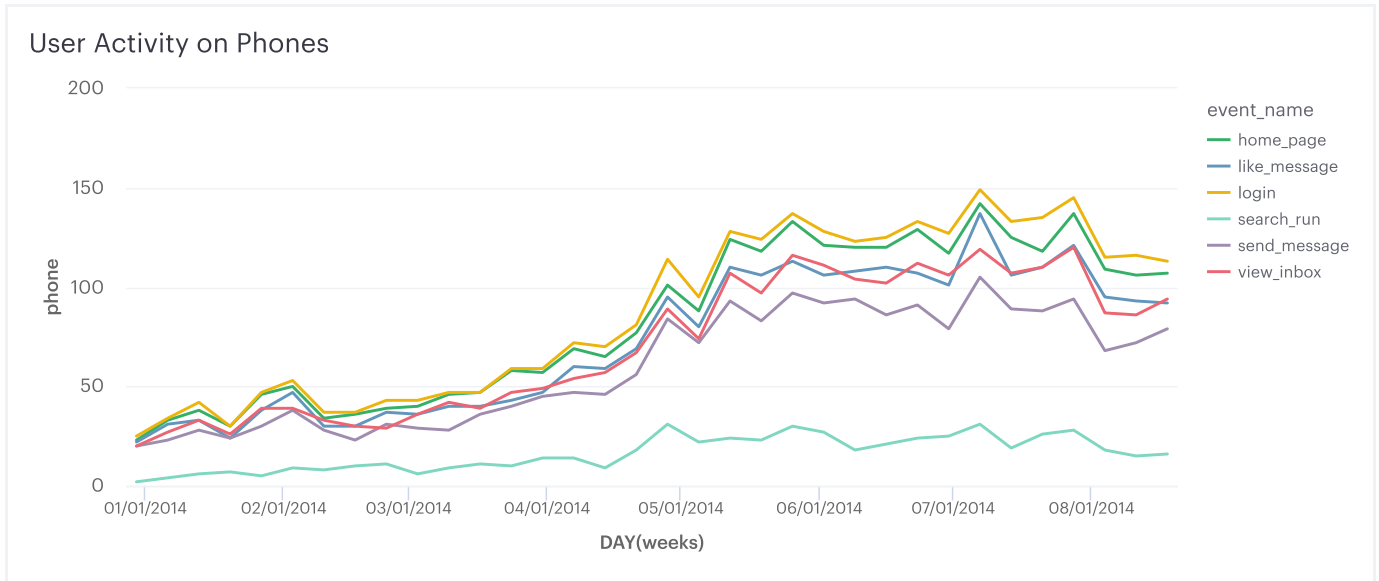
Without any qualitative evidence to support this narrative, I cannot, with complete confidence, explain the drop in user engagement. However, the data points to the possibility of Yammer updating their mobile platform/app. With the update going into effect at the end of July, users are either learning how to engage with the new features/layout while Yammer is also trying to fix any performance issues that may have occurred with the new update. It may be that the new mobile platform remembers user's devices, and may not require them to physically login upon other things.