Yammer SQL Project: Investigating a Drop in User Engagement

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Overview:

[Yammer](#) is a social network for communicating with coworkers. Individuals share documents, updates, and ideas by posting them in groups. Yammer has a centralized analytics team. Their primary goal is to drive better product and business decisions using data.

Problem:

On September 2, 2014, the head of the product team asked my opinion about the latest activity on the user engagement dashboards. 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"). The chart below shows the number of engaged users each week. 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." From this chart, we can easily see a dip occurred between July 28, 2014 and August 11, 2014.
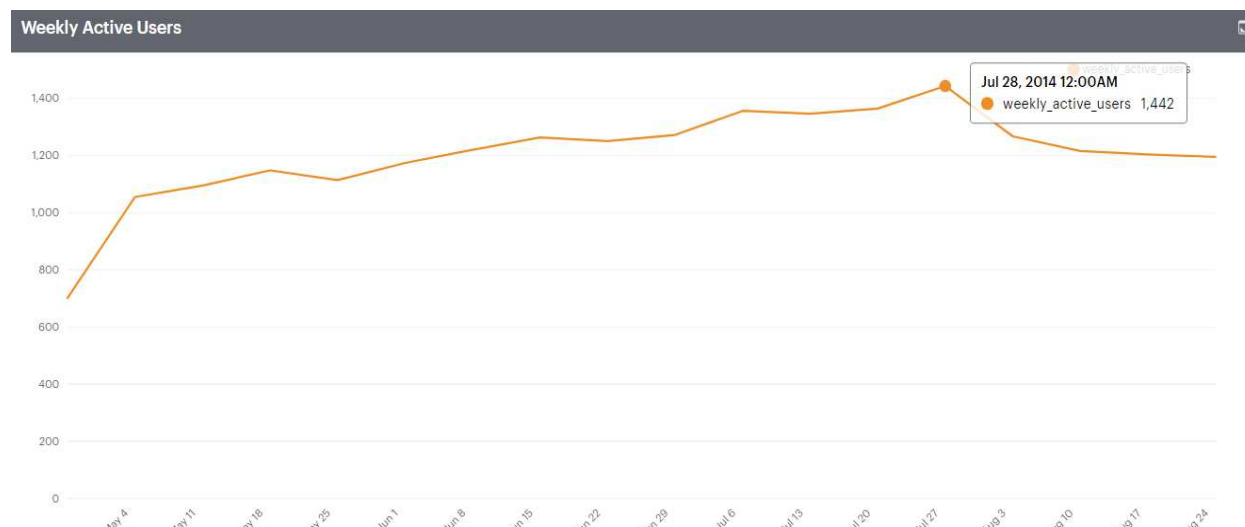
In this project, our goal is to determine what caused the dip at the end of the chart shown above and, if appropriate, recommend solutions for the problem.

Analysis:

Here is the list of my hypotheses for the drop in user engagement.

- **Marketing Events:** This could be easily determined by asking someone in the Marketing department if anything big happened during that time. Therefore, this part is not discussed in this project.

- **Product Satisfaction:** Users may not like using Yammer and move to other competitors. One possible reason might be that users were tired of using the web service. For this part, we would like to check the user growth and the user engagement.

- **Email Functions:** In this project, we checked the weekly email functions that bring users back to the product and also the users email click-through.

- **Broken Features:** It's impossible for people to use if there is something in the application is broken. For example, if something in the signup flow broke, preventing new users from joining Yammer, growth would

also be down. If a mobile app was unstable and crashed, engagement would be down for only that device type. Here, we checked the users engagement based on the device type.

- **Country Holidays or Vacation:** People using a work application like Yammer might engage at a lower rate on holidays or when a company's server is down. We checked this cause by examining if one country or one company has much lower engagement than others.

❖ **Product Satisfaction:**

In this part, one thing easily to check is the user growth. Below is the chart of "Daily Signups" from June 1, 2014 to September 1, 2014. I noticed that nothing has really changed about the growth rate. It continues to be high during the week and low on the weekend.

Daily Signups
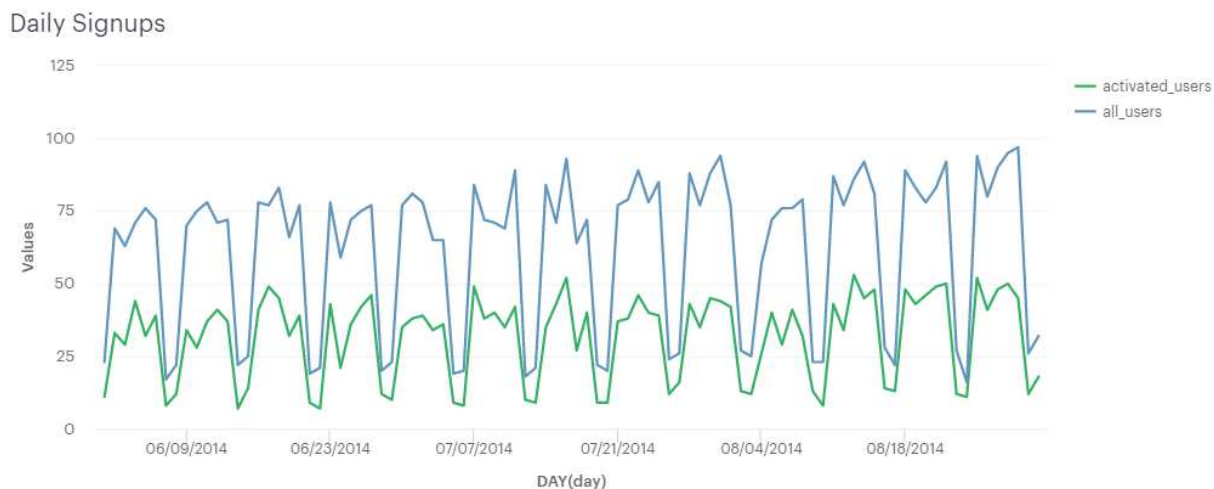
Because the user growth is normal, one possible reason of the dip is that some users are tried about using Yammer. Here, I checked the user engagement (weekly active users) by dividing users into groups based on their age of usage (from the time a user signed up for the product/how long a user has been used Yammer). The chart below shows a big decrease in engagement among users who signed up more than 10 weeks prior. When I checked the chart carefully, this big sharp decrease happened in June, 2014.


Weekly Active Users by Age of Usage
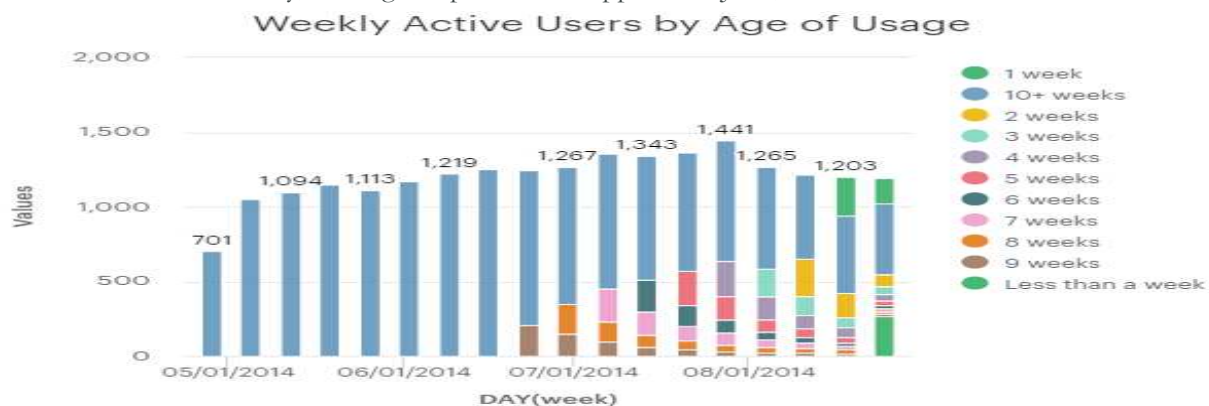
Therefore, I switched to the line chart as below. Here, I found that there is a sharp decrease of each user group happened at different time-period. And I checked the average age of usage weekly. It's almost time-consistency. Therefore, this leads me to believe that the problem of the drop of user engagement occurred between July 28, 2014 and August 11, 2014 is not related to the product satisfactions or the loss of interest.

Weekly Active Users by Age of Usage
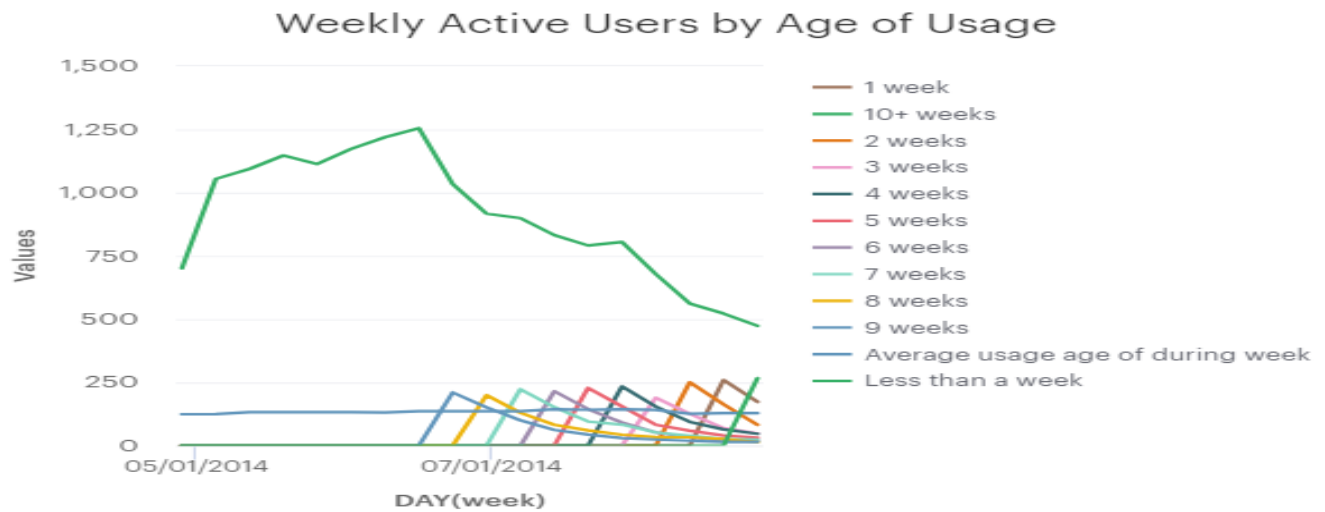

❖ **Broken Email System:**

In this part, I checked the email actions from the email event table to see if there is any problem in the weekly digest emails.

Email Actions

Email Open and CTR rate
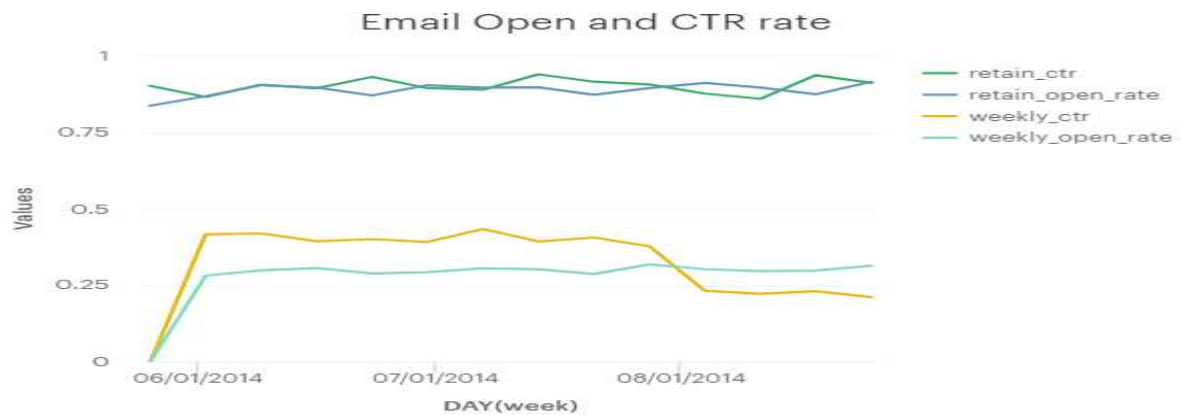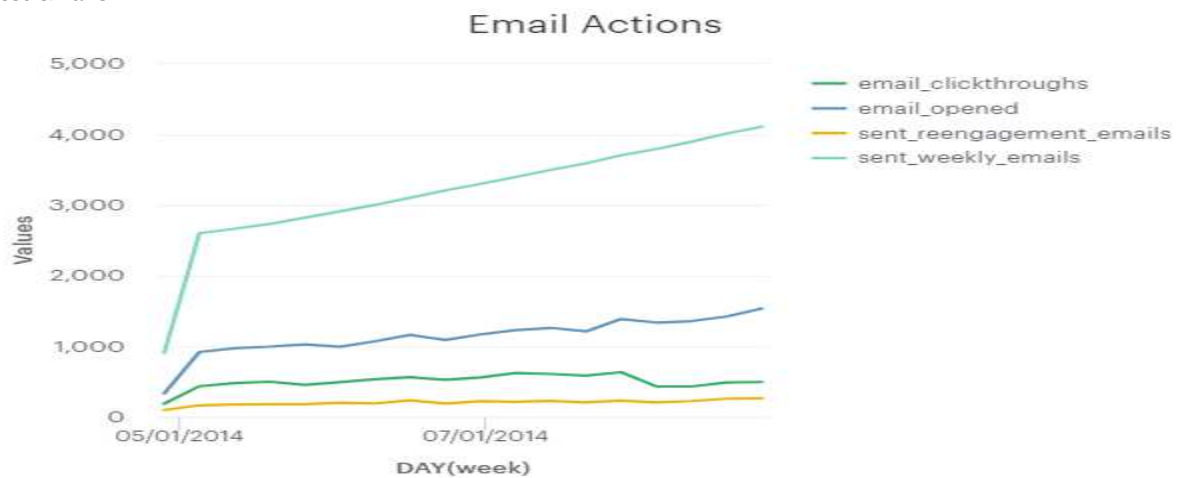
From two plots above, we can see the digest email system had been sent weekly digest emails normally. However, there is a dip in emails click rate. This made me think if there are things that block users accessing certain features or certain pages of the website.

❖ Broken Features or Apps:

The user engagement (weekly active users) is checked here to see if the problem is localized to any particular devices. From the chart below, we can notice that there's a notable drop in either computer or phone or tablet between July 28, 2014 and August 11, 2014. Therefore, we can assume that the using device types are irrelevant to the cause of the drop of users engagement happened at July 28, 2014 and August 11, 2014. Also, the user engagement from phones and tablets had bigger decreases than from computers.

Weekly Active Users by Device Category
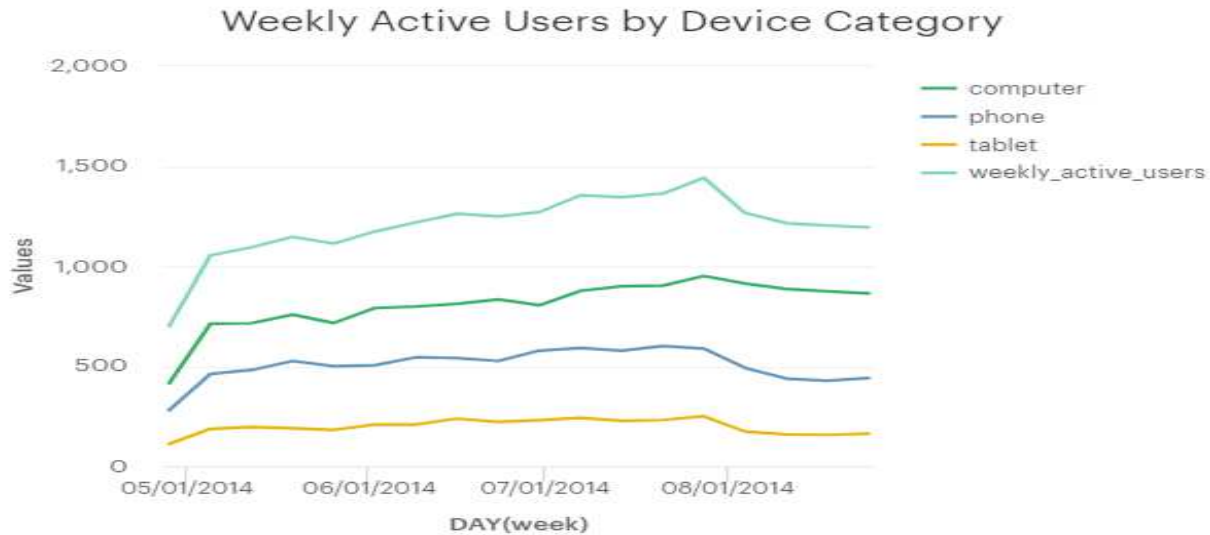
❖ Holidays or Vacations:

In this part, I checked the user engagement based on country around the big drop (from July 15, 2014 to August 15, 2014). From the chart below, we can see that the number of weekly active users in United States shown a sharp decrease, and the number of active users in lots of other countries (e.g., United Kingdom, France, Mexico, Brazil, Spain) also had similar trends.

Weekly Active Users by Country
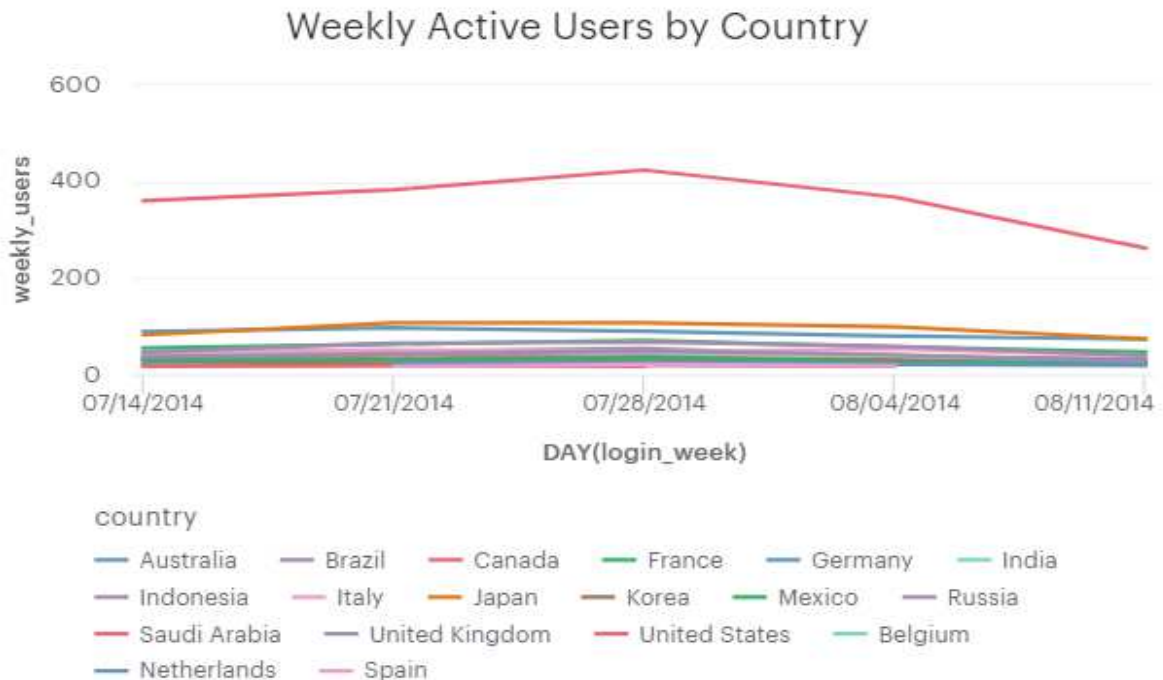
However, the plots of user engagement from some countries (e.g. Italy, Canada, Sweden, Turkey, Denmark) are quite different (with no big drop in the week of July 28, 2014), as shown below.

Weekly Active Users by Country (Selected)
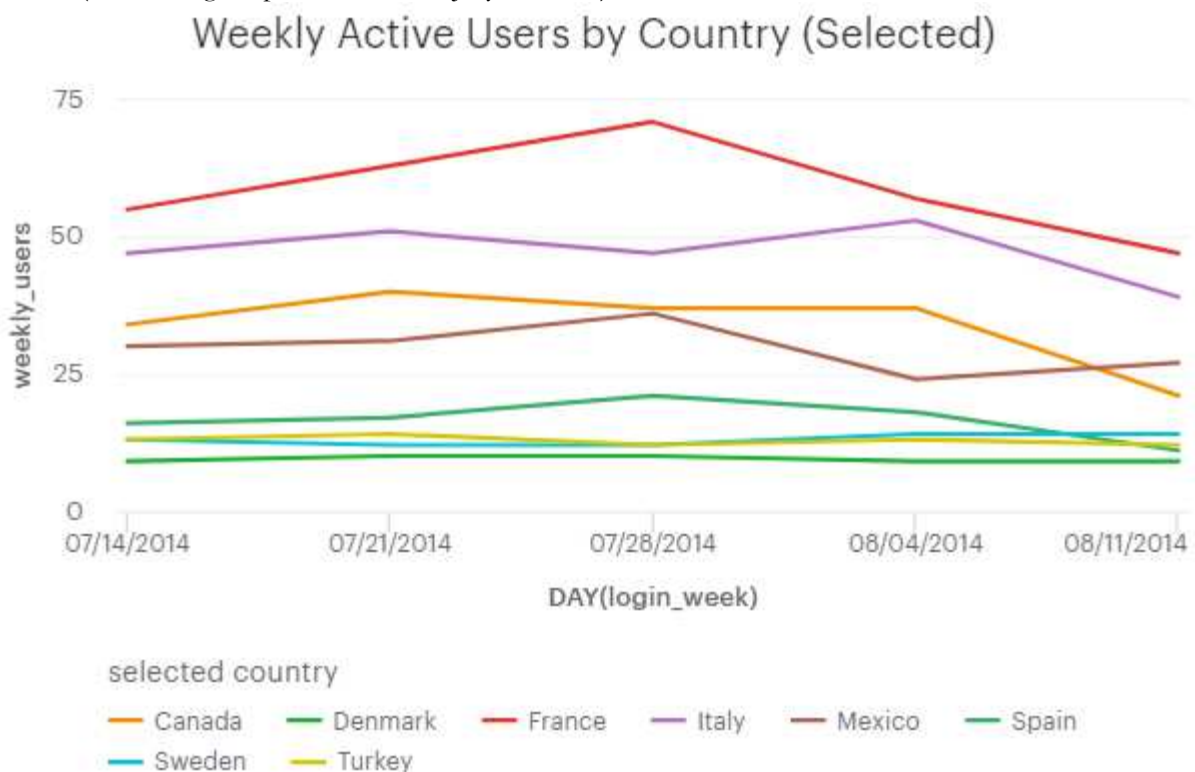
To check if this issue happened with certain company, I plotted the user engagement based on company from July 15, 2014 to August 15, 2014.

Weekly Active Users by Company
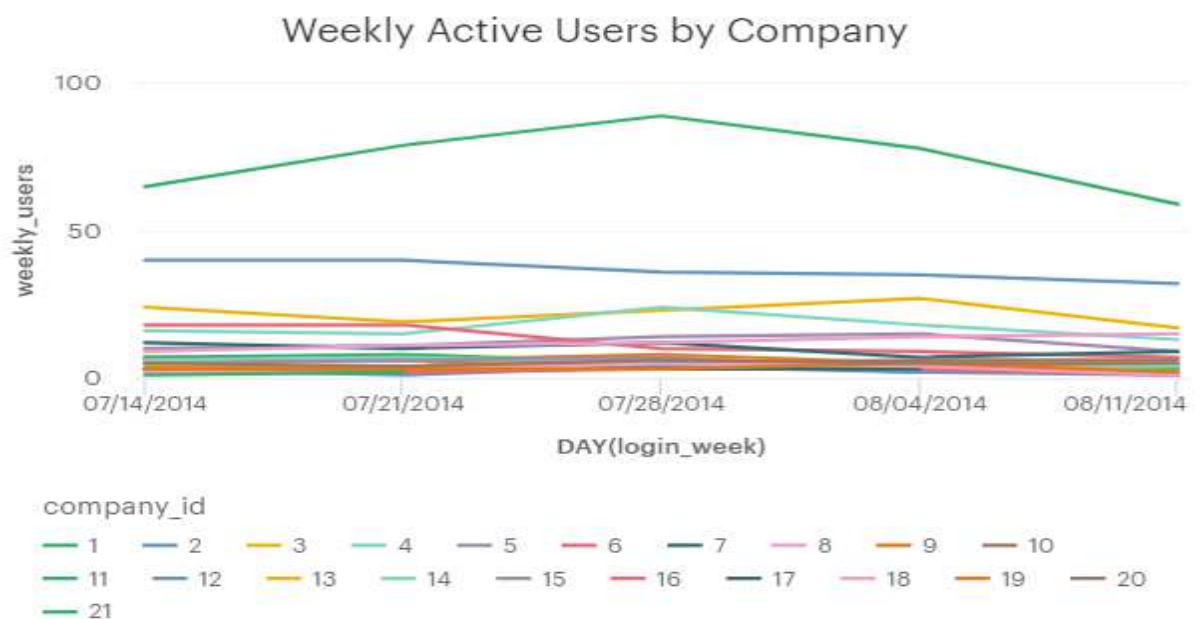
We can notice that some companies' (e.g. company 1, company 4) user engagement curves are similar to the total user engagement curve (weekly active users), which shows a dip occurred between July 28, 2014 and August 11, 2014. However, the user engagement curves for some companies (e.g., company 2, company6) don't have such big drops in the week of July 28, 2014.

Conclusions:

From the analysis above, we know the daily growth of Yammer is normal. That means the service satisfaction of Yammer didn't change much. However, there is a dip of user engagement occurred between July 28, 2014 and August 11, 2014, which means the number of users logged in dropped during this period. By checking the curves based on the device types, all curves had a drop during this period. It leads me to think that this drop is device irrelevant and is not caused by any broken features of Yammer website. Next, we can see that the weekly digest email system worked normally. It kept sending emails during this period. But the email click-through. Therefore, my assumption for the cause of the drop of user engagement is the summer vacation. Most users don't want to use a work application such as Yammer during their summer vacation. To verify this, the user engagement is plotted based on country and also based on company. We can see that some countries where most users were from (e.g. United States, Japan, United Kingdom) all had this big drop of user engagement between July 28, 2014 and August 11, 2014. In addition, two companies, that majority of users worked for, had this dip of user engagement. All of these made me believe that the cause of big drop of user engagement between July 28, 2014 and August 11, 2014 is that most users in many countries prefer to have summer vacation during this time. However, people in some countries may have different summer vacation days, and some small companies may encourage workers to take summer break during other time period. This also explained the drop of email click-through and also why the user engagement via computer shown smaller decrease than user engagement from computer. (Users at the office may access Yammer using their computers).

Tables & Charts: https://modeanalytics.com/cecil0111/reports/6664898fb6b9