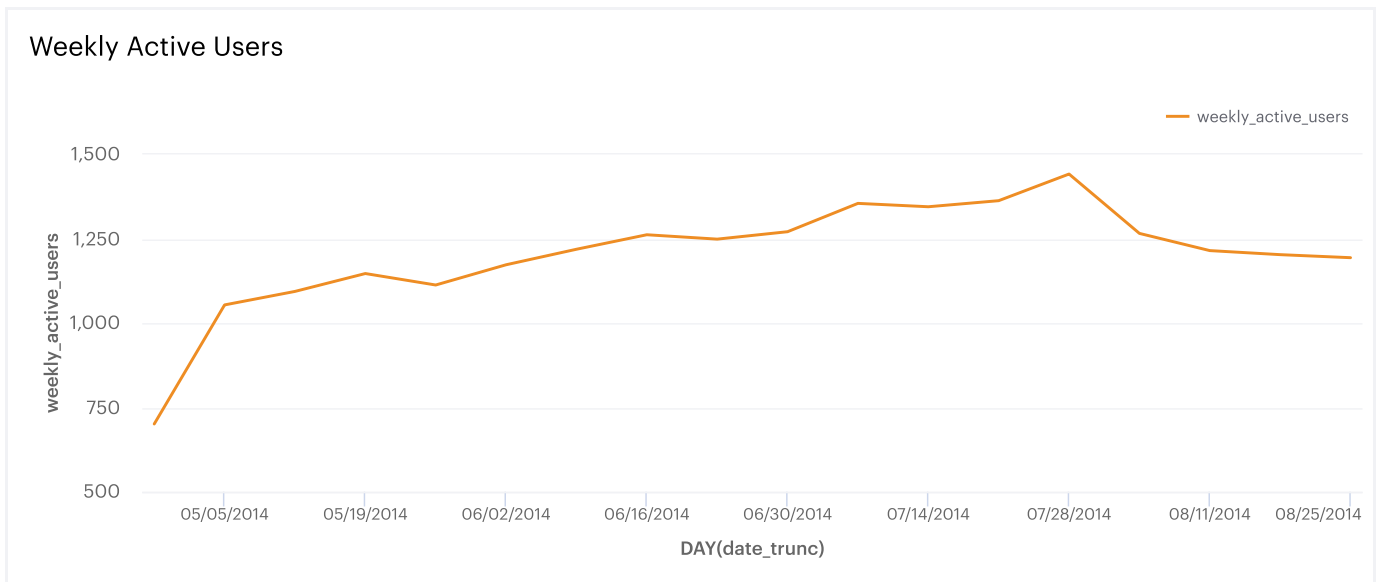


# Investigating a Drop in User Engagement

## 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:"



"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."

## Getting oriented

"Before you even touch the data, come up with a list of possible causes for the dip in retention shown in the chart above."

The list I make is:

- 1.Holiday: People from certain countries simply take their days off office or work. (check country data)
- 2.Broken services: Our service has some bugs or delays that annoyed people due to increasingly large usage. (check login data and other useful data)
- 3.Finished Project/Closed Company: People from certain companies or groups finished what they did and do not use our service that often. (check companies data)
- 4.Marketing Event: Due to advertisement, a wave of new users came in and registered their account, but they stop using it after a while. (check new registered user data)

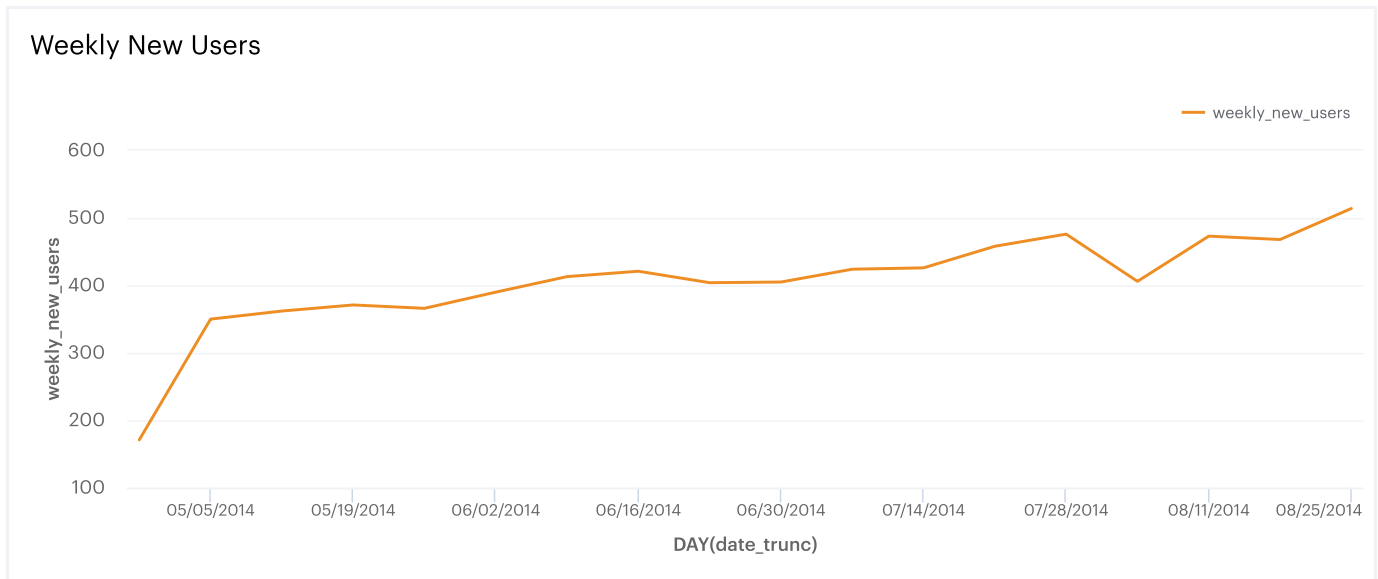
# Digging in

## Check new user related issue

Because the dip can come from a large wave of new users (and then never use the service), I decide to check number of newly created accounts first.

The search is performed by SQL Query "New\_User\_Register", combined with the result from the query "Problem". This search simply outlist the number of new users created on each week.

The result is as follows: The new user number is very much constant during the whole period and as a matter of fact drops a little bit at early August. Given this, it is safe to say that this dip does not come from new users.

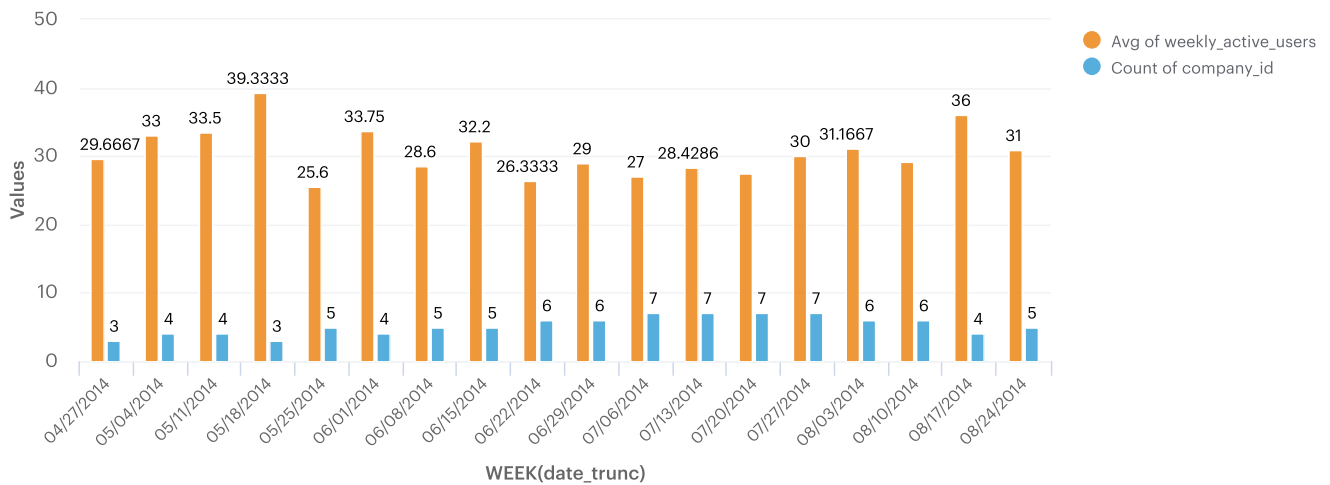


## Check the activity of people from different states and companies

It is now time to check for any companies are on holiday. The search is carried out by SQL Query "Companies". This search lists companies that has at least 10 unique members using Yammer, and group them by week.

The result is as follows: Again it does not look like any company is on holiday at early August. Company 5 and 8 disappeared in mid August. While Company 8 returns after one week break, Company 5 is yet to return.

Weekly Company Number and Average Active Users



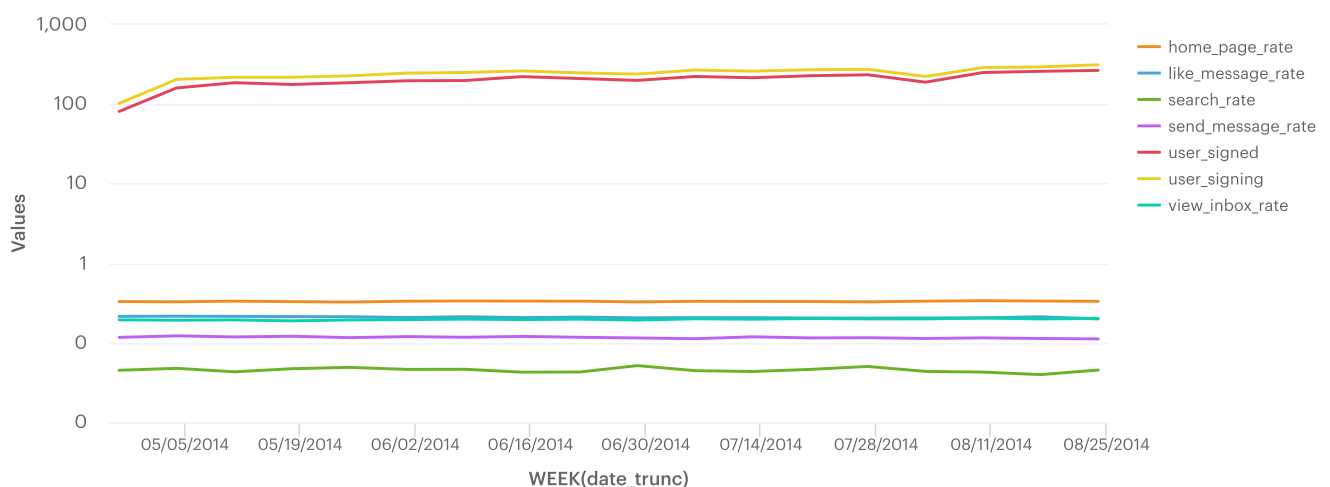
## Check general services

So the problem does not come from new user growth or companies on holiday. I need to go on and check if there is any specific service that cause this issue.

I carry out a search using SQL Query "General\_Service". It lists users signing vs users signed to see if sign-up process have some problems. It also lists service usage rate calculated by the number of service used within 5 hours of log in over the number of total log in.

The result is as follows: There is no problem in signing. The service rate is pretty much constant except for search service. However, considering the search usage rate has high variance throughout the whole timeline, it is unlikely to be the reason for the dip.

General Service



## Check email service

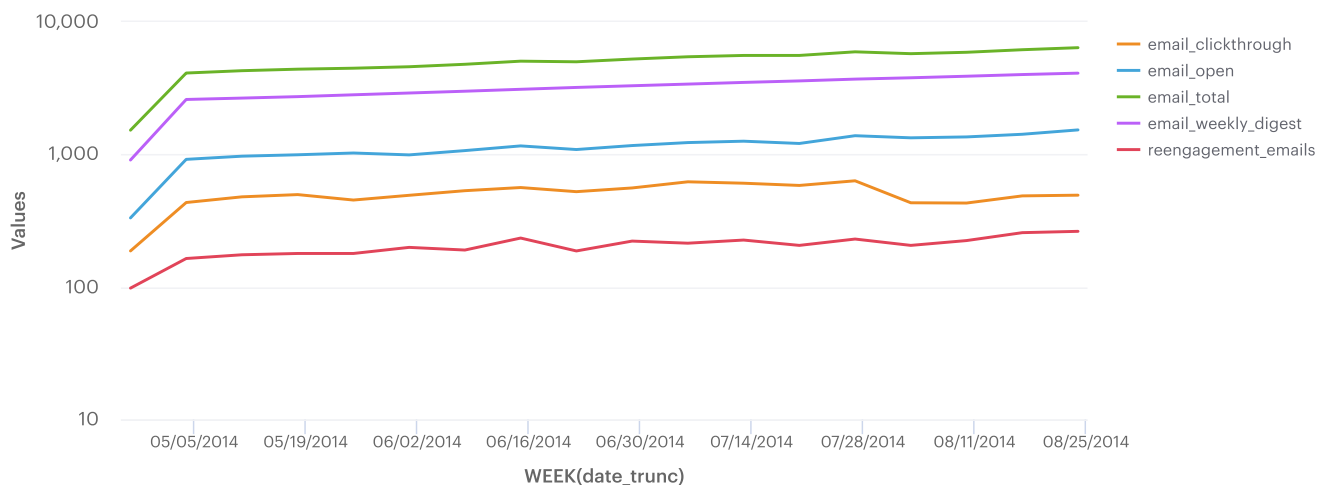
It is time to check for email service. The search is carried out by SQL Query "Email\_Service" and "Deeper".

"Email\_Service" is a general search for the actions taken on email, while "Deeper" looks at a further detail after the action "click through" looks a bit weird.

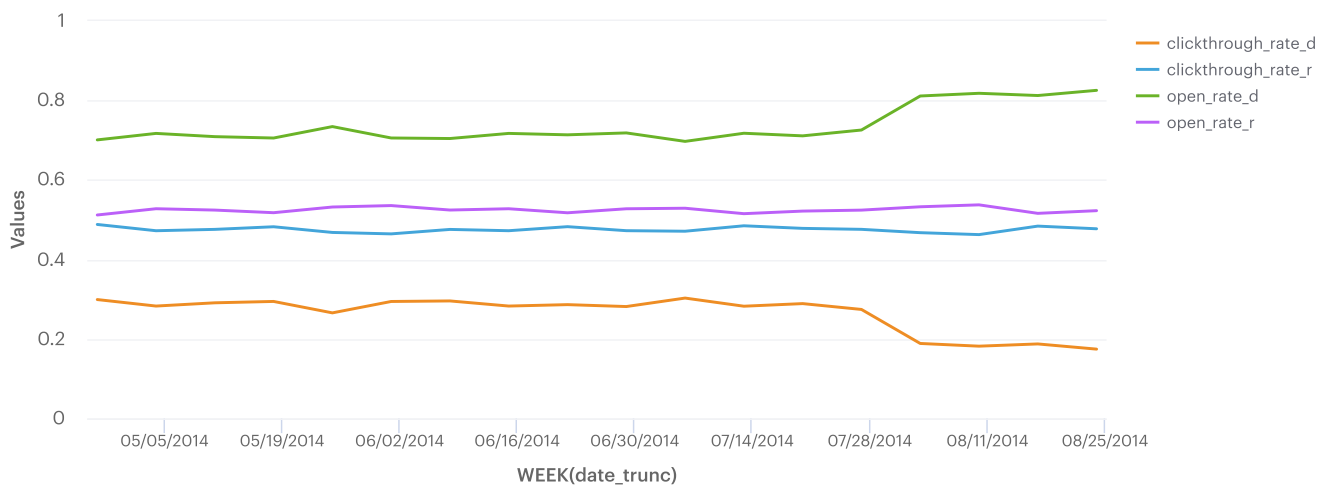
The results are as follows: The click through action is significant lower, and combined with result from "Deeper", it seems that after people receive the weekly digest email they will open it (the open rate is quite high), but somehow they will not click through the link.

On the other hand, the open rate and click through rate of re-engagement email remains quite constant.

### Email Service



### Deeper Look: Email open/clickthrough Rate



# Making a recommendation

The reason for the dip is most likely from low clickthrough rate of digest emails. The reason for this is still not clear. It can be link is broken itself, or it can be some problem in the function counting the click through times. Or, it can be the digest email is not appealing enough to let people open it.

However, the high open rate of digest email suggests the email itself may be appealing enough. Therefore the most likely reason is that there is something wrong with the link in digest email.