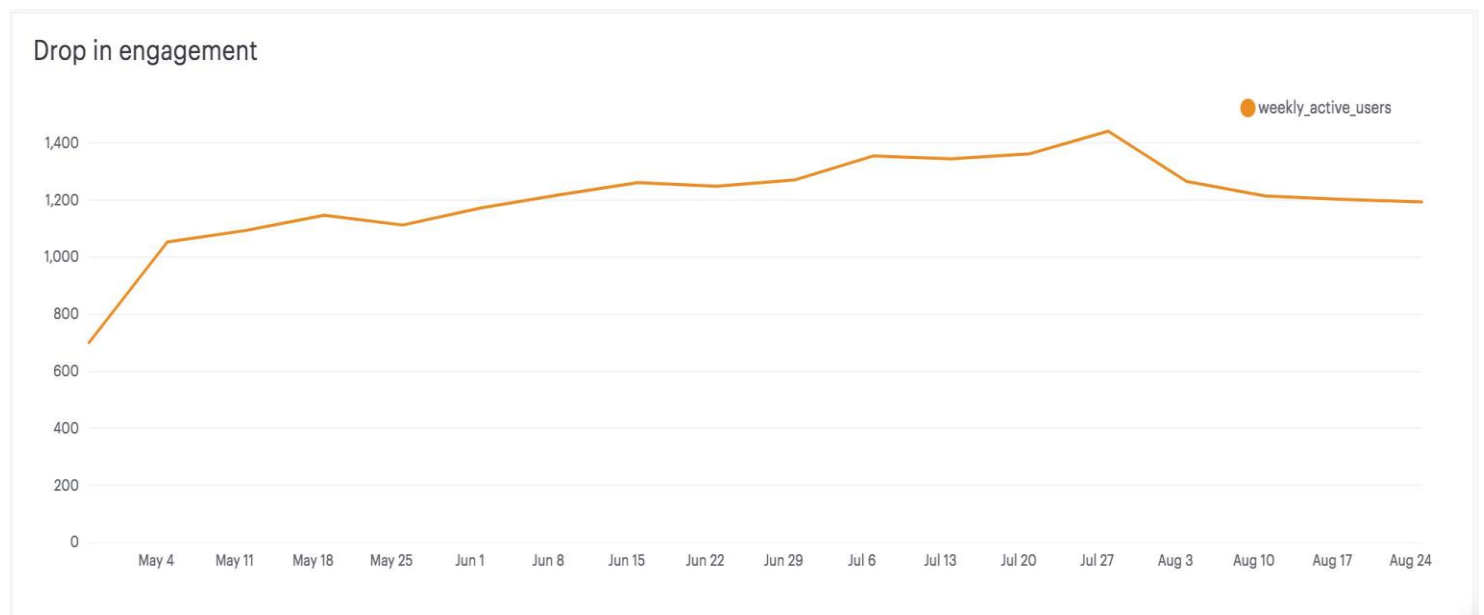


Case Study of drop in User Engagement

Using data set provided by YAMMER, we can analyse that there is a drop in user engagement in recent weeks. We will be using data gathered from the codes to visualize every case.

Analysis 1: Drop in User Engagement

```
SELECT DATE_TRUNC('week', events.occurred_at),  
COUNT(DISTINCT events.user_id) AS weekly_active_users  
FROM tutorial.yammer_events events  
WHERE events.event_type = 'engagement'  
AND events.event_name = 'login'  
GROUP BY 1  
ORDER BY 1
```



	date_trunc	weekly_active_users
1	2014-04-28 00:00:00	701
2	2014-05-05 00:00:00	1054
3	2014-05-12 00:00:00	1094
4	2014-05-19 00:00:00	1147
5	2014-05-26 00:00:00	1113
6	2014-06-02 00:00:00	1173
7	2014-06-09 00:00:00	1219
8	2014-06-16 00:00:00	1262
9	2014-06-23 00:00:00	1249
10	2014-06-30 00:00:00	1271
11	2014-07-07 00:00:00	1355
12	2014-07-14 00:00:00	1345
13	2014-07-21 00:00:00	1363
14	2014-07-28 00:00:00	1442
15	2014-08-04 00:00:00	1266
16	2014-08-11 00:00:00	1215

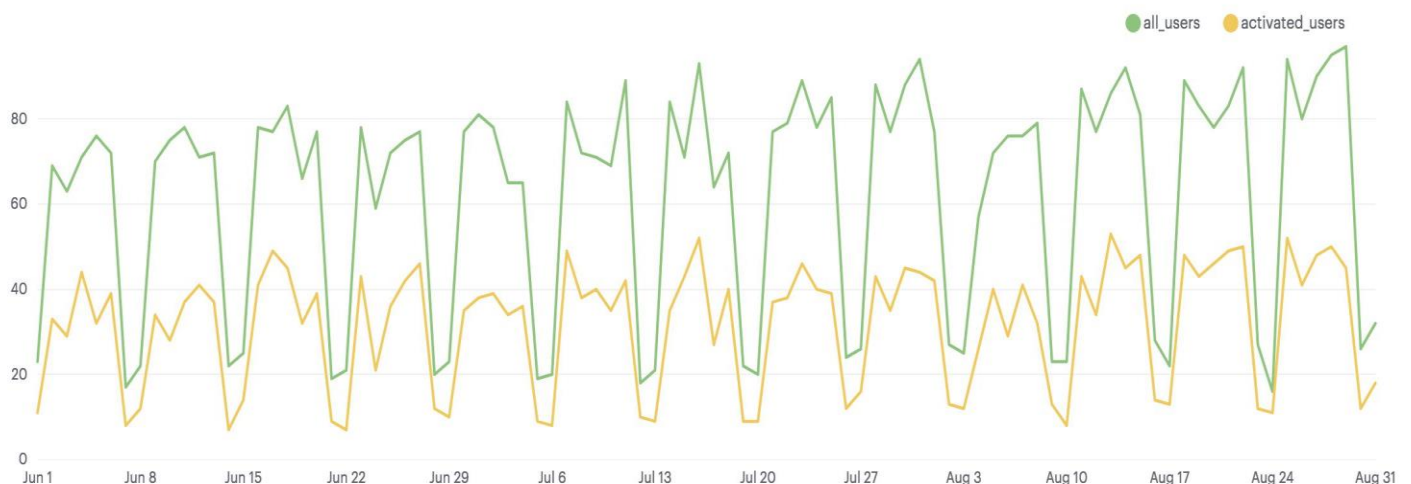
Analysis 2: User engagement by weeks

We can see that user engagement throughout the weeks is still normal. Engagement continues to be high during weeks and low on weekends. Nothing unusual in this trend

--We'll write a query to check the user growth rate

```
SELECT date_trunc('day',created_at) as day,
COUNT (*) as all_users,
COUNT(case when activated_at IS NOT NULL THEN users.user_id ELSE NULL END) AS
activated_users
FROM tutorial.yammer_users users
WHERE created_at >= '2014-06-01'
AND created_at < '2014-09-01'
GROUP BY 1
ORDER BY 1
```

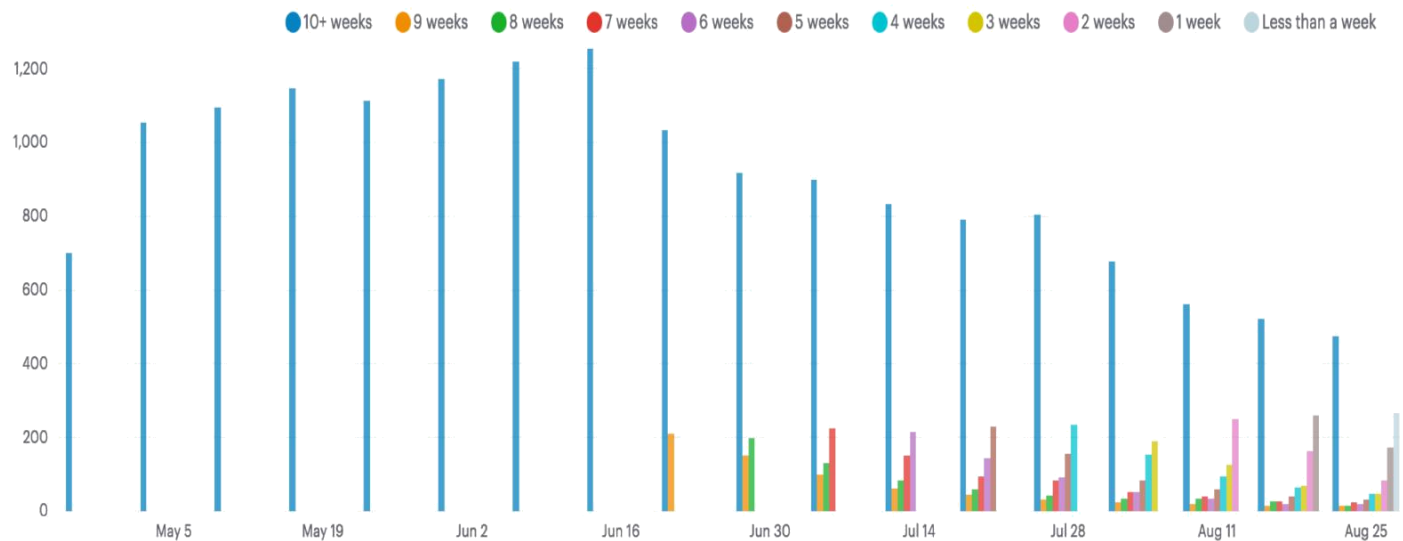
User growth



Analysis 3: Engagement by User Age Cohort

```
SELECT DATE_TRUNC('week',x.occurred_at) AS "week",
avg(x.age_at_event) AS "Average age during week",
COUNT(DISTINCT CASE WHEN x.user_age > 70 THEN x.user_id ELSE NULL END) AS "10+ weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 70 AND x.user_age >= 63 THEN x.user_id ELSE
NULL END) AS "9 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 63 AND x.user_age >= 56 THEN x.user_id ELSE
NULL END) AS "8 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 56 AND x.user_age >= 49 THEN x.user_id ELSE
NULL END) AS "7 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 49 AND x.user_age >= 42 THEN x.user_id ELSE
NULL END) AS "6 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 42 AND x.user_age >= 35 THEN x.user_id ELSE
NULL END) AS "5 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 35 AND x.user_age >= 28 THEN x.user_id ELSE
NULL END) AS "4 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 28 AND x.user_age >= 21 THEN x.user_id ELSE
NULL END) AS "3 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 21 AND x.user_age >= 14 THEN x.user_id ELSE
NULL END) AS "2 weeks",
COUNT(DISTINCT CASE WHEN x.user_age < 14 AND x.user_age >= 7 THEN x.user_id ELSE NULL
END) AS "1 week",
COUNT(DISTINCT CASE WHEN x.user_age < 7 THEN x.user_id ELSE NULL END) AS "Less than a
week"
FROM ( SELECT events.occurred_at, users.user_id, DATE_TRUNC('week',users.activated_at) AS
activation_week,
EXTRACT('day' FROM events.occurred_at - users.activated_at) AS age_at_event,
EXTRACT('day' FROM '2014-09-01'::TIMESTAMP - users.activated_at) AS user_age
FROM tutorial.yammer_users users
JOIN tutorial.yammer_events events
ON events.user_id = users.user_id
AND events.event_type = 'engagement'
AND events.event_name = 'login'
AND events.occurred_at >= '2014-05-01'
AND events.occurred_at < '2014-09-01'
WHERE users.activated_at IS NOT NULL
) x
GROUP BY 1
ORDER BY 1
```

Engagement by user age



	week	Average age during week	10+ weeks	9 weeks	8 weeks	7 weeks	6 weeks	5 weeks	4 weeks	3 weeks	2 weeks	1 week	Less than a week
1	2014-04-28 00:00:00	124.007238883	701	0	0	0	0	0	0	0	0	0	0
2	2014-05-05 00:00:00	124.381690845	1054	0	0	0	0	0	0	0	0	0	0
3	2014-05-12 00:00:00	131.938644236	1094	0	0	0	0	0	0	0	0	0	0
4	2014-05-19 00:00:00	132.326628352	1147	0	0	0	0	0	0	0	0	0	0
5	2014-05-26 00:00:00	132.345363409	1113	0	0	0	0	0	0	0	0	0	0
6	2014-06-02 00:00:00	131.831109066	1173	0	0	0	0	0	0	0	0	0	0
7	2014-06-09 00:00:00	131.042582418	1219	0	0	0	0	0	0	0	0	0	0
8	2014-06-16 00:00:00	136.480565371	1255	0	0	0	0	0	0	0	0	0	0
9	2014-06-23 00:00:00	136.27890556	1034	210	0	0	0	0	0	0	0	0	0
10	2014-06-30 00:00:00	136.419297466	917	151	199	0	0	0	0	0	0	0	0
11	2014-07-07 00:00:00	135.888750519	899	100	130	223	0	0	0	0	0	0	0
12	2014-07-14 00:00:00	143.448815737	832	62	82	152	215	0	0	0	0	0	0
13	2014-07-21 00:00:00	141.702780049	791	44	60	95	144	228	0	0	0	0	0
14	2014-07-28 00:00:00	144.078660436	805	30	43	83	91	155	234	0	0	0	0
15	2014-08-04 00:00:00	140.732238011	678	24	34	52	52	82	154	189	0	0	0
16	2014-08-11 00:00:00	125.9943101	562	19	33	39	33	59	94	126	250	0	0

From the graph we can see that there is dip in engagement from old users and the problem is particular to old users only therefore we can say that it is not a one time hike. Looking into the type of device to see if there's any particular product that gives an anomaly.

Analysis 4: Engagement by device

```
SELECT DATE_TRUNC('week', occurred_at) AS week,
COUNT(DISTINCT events.user_id) AS weekly_active_users,
COUNT(DISTINCT CASE WHEN events.device IN ('macbook pro','lenovo thinkpad','macbook
air','dell inspiron notebook',
'asus chromebook','dell inspiron desktop','acer aspire notebook','hp pavilion desktop','acer aspire
desktop','mac mini'))
```

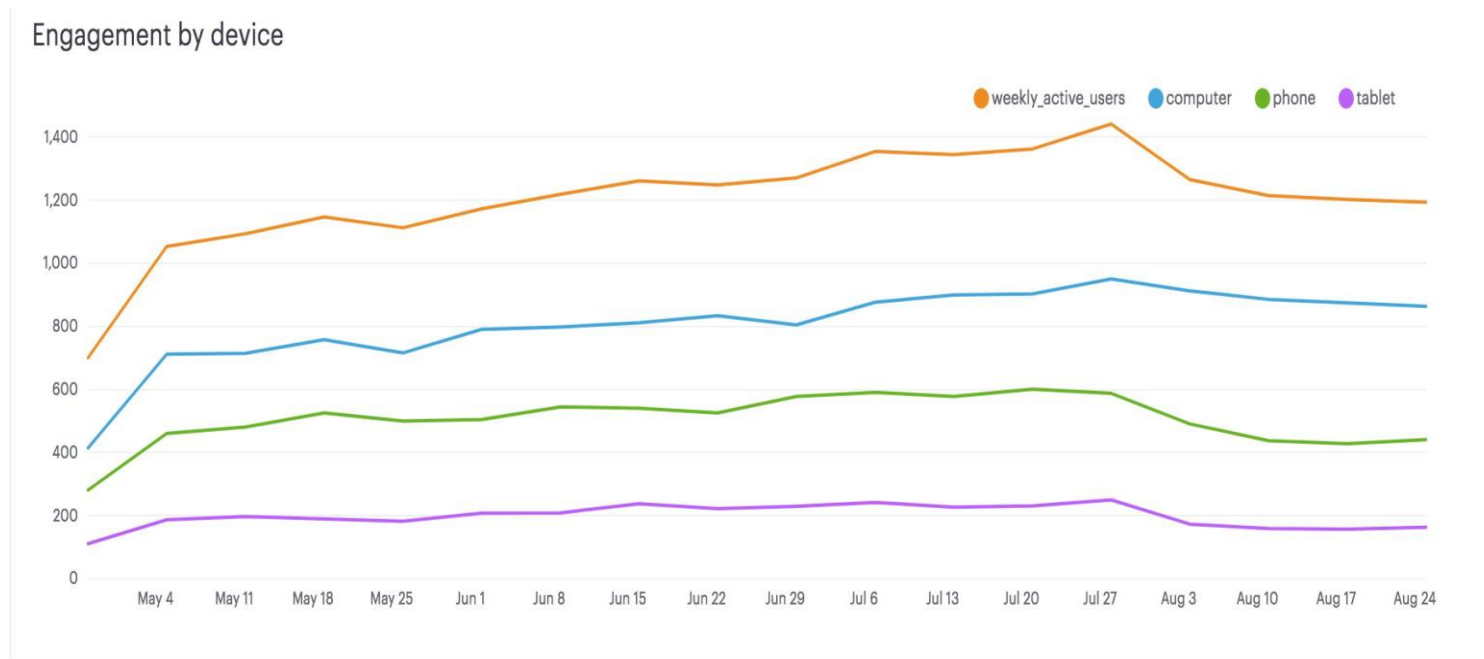
```

THEN events.user_id ELSE NULL END) AS computer,
COUNT(DISTINCT CASE WHEN events.device IN ('iphone 5','samsung galaxy s4','nexus
5','iphone 5s','iphone 4s','nokia lumia 635',
'htc one','samsung galaxy note','amazon fire phone') THEN events.user_id ELSE NULL END)
AS phone,
COUNT(DISTINCT CASE WHEN events.device IN ('ipad air','nexus 7','ipad mini','nexus
10','kindle fire','windows surface',
'samsung galaxy tablet') THEN events.user_id ELSE NULL END) AS tablet

FROM tutorial.yammer_events events
WHERE events.event_type = 'engagement'
AND events.event_name = 'login'

GROUP BY 1
ORDER BY 1

```



	week	weekly_active_users	computer	phone	tablet
1	2014-04-28 00:00:00	701	415	281	111
2	2014-05-05 00:00:00	1054	712	461	187
3	2014-05-12 00:00:00	1094	715	481	197
4	2014-05-19 00:00:00	1147	758	526	190
5	2014-05-26 00:00:00	1113	716	500	182
6	2014-06-02 00:00:00	1173	791	505	208
7	2014-06-09 00:00:00	1219	798	545	209
8	2014-06-16 00:00:00	1262	812	541	238
9	2014-06-23 00:00:00	1249	834	526	222
10	2014-06-30 00:00:00	1271	805	578	230
11	2014-07-07 00:00:00	1355	877	591	242
12	2014-07-14 00:00:00	1345	900	578	227
13	2014-07-21 00:00:00	1363	903	601	231
14	2014-07-28 00:00:00	1442	951	588	250
15	2014-08-04 00:00:00	1266	913	491	173

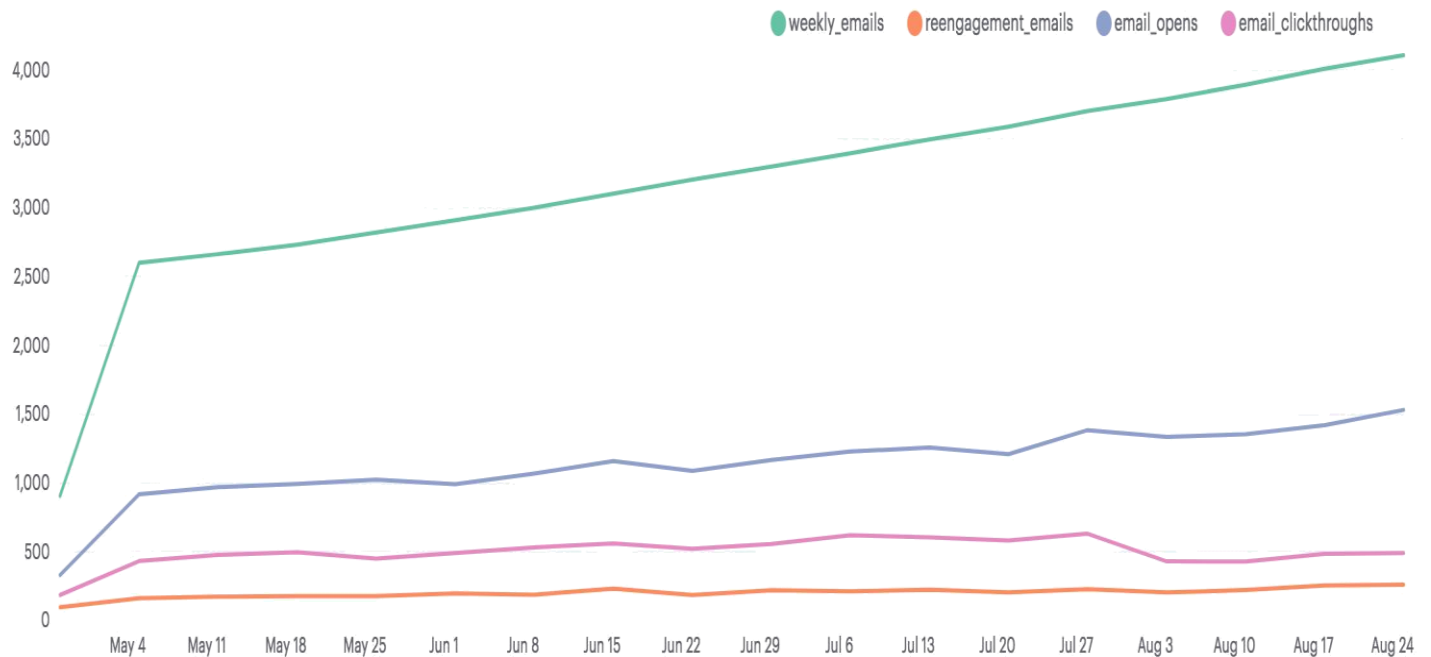
Now by looking at the graph for the devices, we can see that phone devices are where the drop is. Which may mean that maybe there's some issue with the mobile app.

You might also think about what causes people to engage with the product. The purpose of the digest email mentioned is to bring users back into the product. Since we know this problem relates to the retention of long-time users, it's worth checking out whether the email has something to do with it:

Analysis5: Email Actions

```
SELECT DATE_TRUNC('week', occurred_at) AS week,
COUNT(CASE WHEN emails.action = 'sent_weekly_digest' THEN emails.user_id ELSE NULL
END) AS weekly_emails,
COUNT(CASE WHEN emails.action = 'sent_reengagement_email' THEN emails.user_id ELSE
NULL END) AS reengagement_emails,
COUNT(CASE WHEN emails.action = 'email_open' THEN emails.user_id ELSE NULL END)
AS email_opens,
COUNT(CASE WHEN emails.action = 'email_clickthrough' THEN emails.user_id ELSE NULL END) AS
email_clickthroughs
FROM tutorial.yammer_emails emails
GROUP BY 1
ORDER BY 1
```

Weekly email actions



From the graph that shows weekly email actions, even when the weekly emails have increased significantly by YAMMER we can see that the clickthroughs are much lesser than the

Others and there is also a dip in clickthroughs recently. So we can identify that the problem of drop in user engagement is related to email actions on clickthroughs particularly on mobile phone.

The exact reason as to why there's a dip can't be known from the data itself but now we have an understanding as of where the root of the problem lies. This can be reported to the head of the department to further drill down the cause and how it can be resolved to tackle the dip the user engagement.

