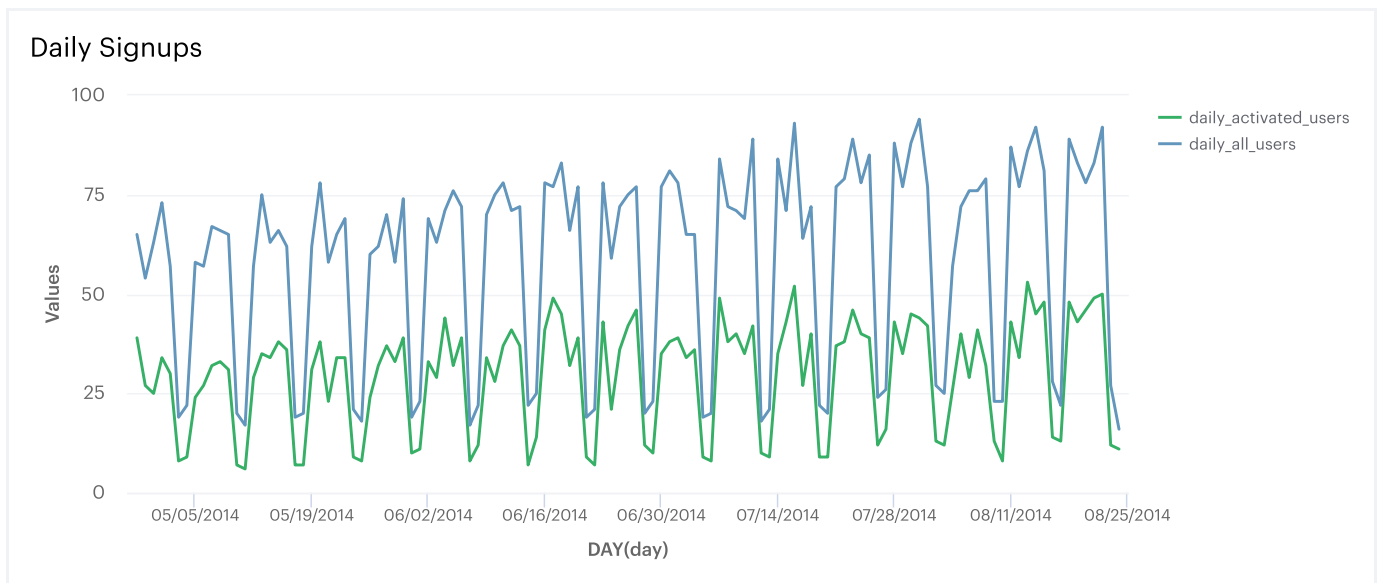


CaseStudy_YammerEngagementsDrop

In the problem presented, there was a drop of user engagements at the very end of study period. To investigate what might have caused the drop, the following analysis were carried out.

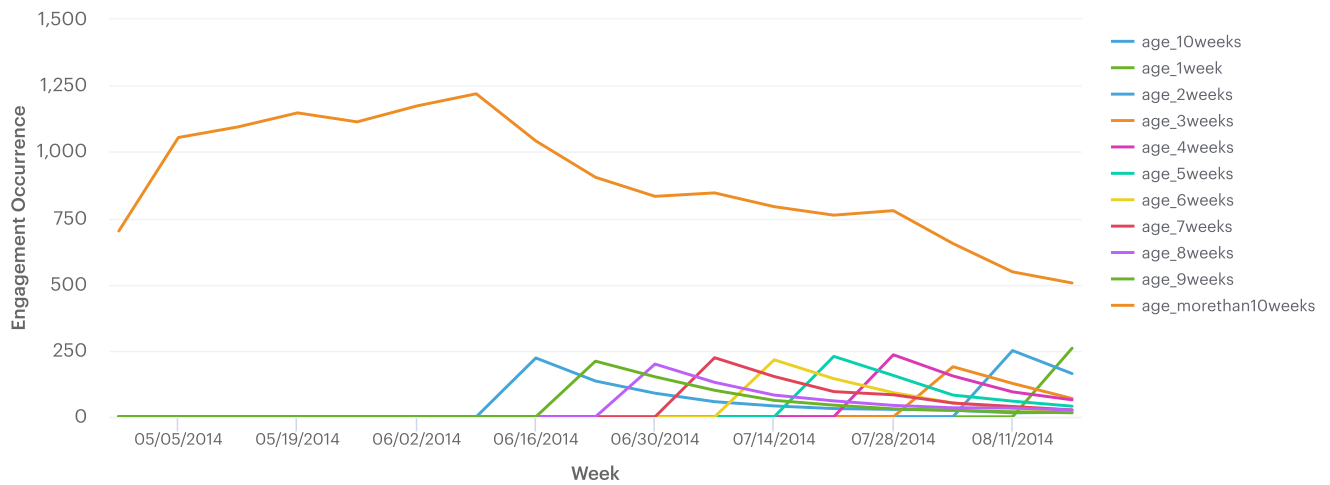
First, we took a look at whether there were any significant marketing campaigns in the beginning of the period that caused more people to be involved in Yammer in the first place.



The graph above showed all users as well as newly activated users on a daily basis. As can be seen from the graph, all users as well as activated users didn't fluctuate much throughout the period. As a matter of fact, there was a slight increase at the very end for both, which means that the drop didn't come from the drop in the signups. And therefore it happened among the existing users.

Next we were looking at whether the user age was associated with the engagement drop. Naturally, people might engage less when they have longer user experience. So, we used the end of period (08/25/2014) as one reference point, and activated time as another to calculate user age, and then examined how they engaged in Yammer throughout the period.

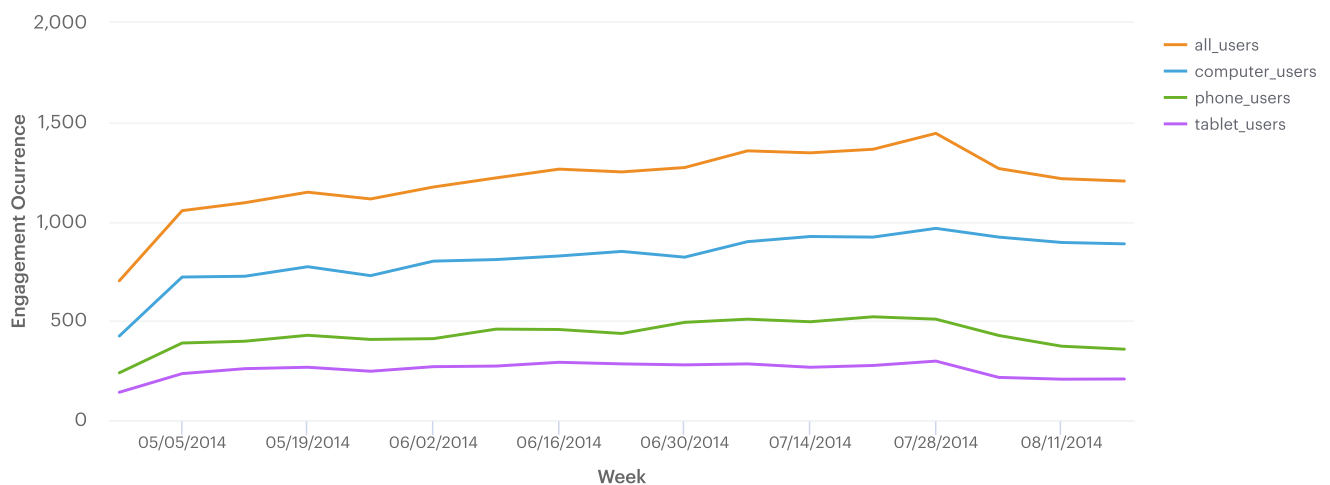
Engagement vs Week by User Age(as of 2014-08-24)



So the graph showed a general trend of less engagements as time past by, which confirmed our hypothesis.

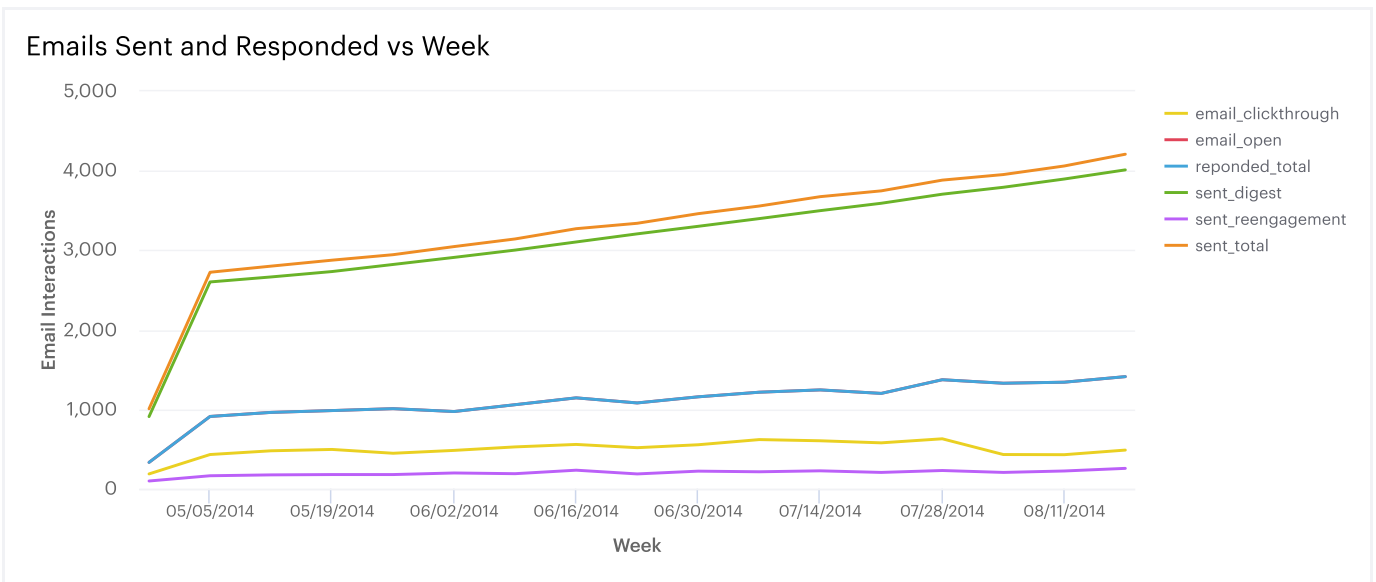
Then, we divided the user devices into 3 categories: computers, tablets, and phones to see if the drop had associations with experiences in different devices.

Engagement vs Week by Different Device



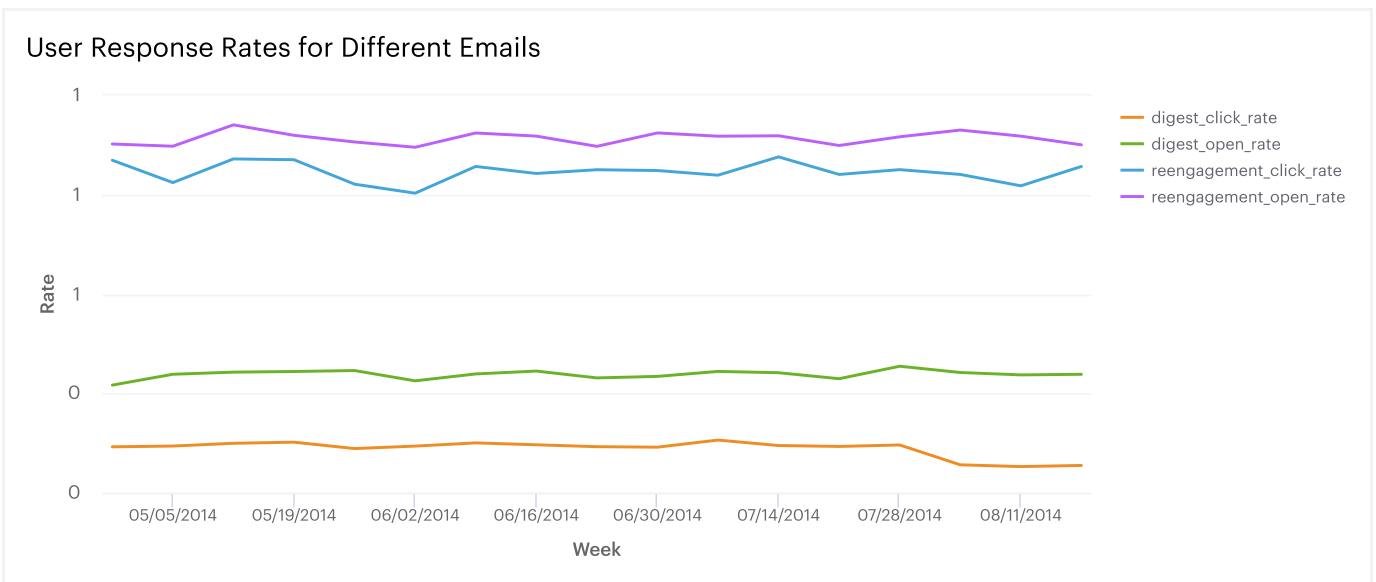
From the graph we can see, as compared to tablet and computer users, the drop of engagement in phone users was more significant, implying that there might be something related to phone apps that caused the drop, for example: certain non user-friendly features, or malfunctions in apps.

We then took another look from emails to see if it offered another perspective. We counted the weekly emails sent by Yammers as well responded by users.



Here we can see, the weekly emails sent for reengagement stayed relatively same, while for the digests went up, and therefore the whole emails sent went up. At the same time, the total responses equalled the user engagement with opening the emails, which stayed steady and increased a bit at the end. However, emails clickthrough dropped, indicating that the contents of emails sent might be the cause that led to the drop.

Since there were 2 types emails involved, we could further investigate which type of emails was majorly associated with the drop in the user clickthrough by calculating email opening rate and email clickthrough rate for digest emails and reengagement emails separately.



The graph showed us that email opening rate for digest emails and reengagement emails, and clickthrough rate for reengagement emails stayed relatively same throughout the period, while the clickthrough rate for digest emails dropped.

In conclusion, the drop in user engagement might be caused by user age, some features/malfunctions in phone app, or the weekly digest emails didn't work in terms of receiving user clickthroughs. However these are all preliminary conclusions drawn from the available data, we need more information in order to get more comprehensive analysis.

Query 1

	day	daily_all_users	daily_activated_users
1	2014-04-28 00:00:00	65	39
2	2014-04-29 00:00:00	54	27
3	2014-04-30 00:00:00	63	25
4	2014-05-01 00:00:00	73	34
5	2014-05-02 00:00:00	57	30
6	2014-05-03 00:00:00	19	8
7	2014-05-04 00:00:00	22	9
8	2014-05-05 00:00:00	58	24
9	2014-05-06 00:00:00	57	27
10	2014-05-07 00:00:00	67	32
11	2014-05-08 00:00:00	66	33
12	2014-05-09 00:00:00	65	31
13	2014-05-10 00:00:00	20	7
14	2014-05-11 00:00:00	17	6
15	2014-05-12 00:00:00	57	29
16	2014-05-13 00:00:00	75	35
17	2014-05-14 00:00:00	63	34
18	2014-05-15 00:00:00	66	38
19	2014-05-16 00:00:00	62	36
20	2014-05-17 00:00:00	19	7
21	2014-05-18 00:00:00	20	7
22	2014-05-19 00:00:00	62	31
23	2014-05-20 00:00:00	78	38
24	2014-05-21 00:00:00	58	23
25	2014-05-22 00:00:00	65	34
26	2014-05-23 00:00:00	69	34
27	2014-05-24 00:00:00	21	9
28	2014-05-25 00:00:00	18	8
29	2014-05-26 00:00:00	60	24
30	2014-05-27 00:00:00	62	32
31	2014-05-28 00:00:00	70	37
32	2014-05-29 00:00:00	58	33
33	2014-05-30 00:00:00	74	39
34	2014-05-31 00:00:00	19	10
35	2014-06-01 00:00:00	23	11
36	2014-06-02 00:00:00	69	33
37	2014-06-03 00:00:00	63	29
38	2014-06-04 00:00:00	71	44
39	2014-06-05 00:00:00	76	32

40	2014-06-06 00:00:00	72	39
41	2014-06-07 00:00:00	17	8
42	2014-06-08 00:00:00	22	12
43	2014-06-09 00:00:00	70	34
44	2014-06-10 00:00:00	75	28
45	2014-06-11 00:00:00	78	37
46	2014-06-12 00:00:00	71	41
47	2014-06-13 00:00:00	72	37
48	2014-06-14 00:00:00	22	7
49	2014-06-15 00:00:00	25	14
50	2014-06-16 00:00:00	78	41
51	2014-06-17 00:00:00	77	49
52	2014-06-18 00:00:00	83	45
53	2014-06-19 00:00:00	66	32
54	2014-06-20 00:00:00	77	39
55	2014-06-21 00:00:00	19	9
56	2014-06-22 00:00:00	21	7
57	2014-06-23 00:00:00	78	43
58	2014-06-24 00:00:00	59	21
59	2014-06-25 00:00:00	72	36
60	2014-06-26 00:00:00	75	42
61	2014-06-27 00:00:00	77	46
62	2014-06-28 00:00:00	20	12
63	2014-06-29 00:00:00	23	10
64	2014-06-30 00:00:00	77	35
65	2014-07-01 00:00:00	81	38
66	2014-07-02 00:00:00	78	39
67	2014-07-03 00:00:00	65	34
68	2014-07-04 00:00:00	65	36
69	2014-07-05 00:00:00	19	9
70	2014-07-06 00:00:00	20	8
71	2014-07-07 00:00:00	84	49
72	2014-07-08 00:00:00	72	38
73	2014-07-09 00:00:00	71	40
74	2014-07-10 00:00:00	69	35
75	2014-07-11 00:00:00	89	42
76	2014-07-12 00:00:00	18	10
77	2014-07-13 00:00:00	21	9
78	2014-07-14 00:00:00	84	35
79	2014-07-15 00:00:00	71	43
80	2014-07-16 00:00:00	93	52
81	2014-07-17 00:00:00	64	27
82	2014-07-18 00:00:00	72	40
83	2014-07-19 00:00:00	22	9
84	2014-07-20 00:00:00	20	9
85	2014-07-21 00:00:00	77	37

86	2014-07-22 00:00:00	79	38
87	2014-07-23 00:00:00	89	46
88	2014-07-24 00:00:00	78	40
89	2014-07-25 00:00:00	85	39
90	2014-07-26 00:00:00	24	12
91	2014-07-27 00:00:00	26	16
92	2014-07-28 00:00:00	88	43
93	2014-07-29 00:00:00	77	35
94	2014-07-30 00:00:00	88	45
95	2014-07-31 00:00:00	94	44
96	2014-08-01 00:00:00	77	42
97	2014-08-02 00:00:00	27	13
98	2014-08-03 00:00:00	25	12
99	2014-08-04 00:00:00	57	26
100	2014-08-05 00:00:00	72	40
101	2014-08-06 00:00:00	76	29
102	2014-08-07 00:00:00	76	41
103	2014-08-08 00:00:00	79	32
104	2014-08-09 00:00:00	23	13
105	2014-08-10 00:00:00	23	8
106	2014-08-11 00:00:00	87	43
107	2014-08-12 00:00:00	77	34
108	2014-08-13 00:00:00	86	53
109	2014-08-14 00:00:00	92	45
110	2014-08-15 00:00:00	81	48
111	2014-08-16 00:00:00	28	14
112	2014-08-17 00:00:00	22	13
113	2014-08-18 00:00:00	89	48
114	2014-08-19 00:00:00	83	43
115	2014-08-20 00:00:00	78	46
116	2014-08-21 00:00:00	83	49
117	2014-08-22 00:00:00	92	50
118	2014-08-23 00:00:00	27	12
119	2014-08-24 00:00:00	16	11

Query 2

	week	age_1week	age_2weeks	age_3weeks	age_4weeks	age_5weeks	age_6weeks	age_7weeks	age_8weeks	age_9weeks
1	2014-04-28 00:00:...	0	0	0	0	0	0	0	0	0
2	2014-05-05 00:00:...	0	0	0	0	0	0	0	0	0
3	2014-05-12 00:00:...	0	0	0	0	0	0	0	0	0
4	2014-05-19 00:00:...	0	0	0	0	0	0	0	0	0
5	2014-05-26 00:00:...	0	0	0	0	0	0	0	0	0
6	2014-06-02 00:00:...	0	0	0	0	0	0	0	0	0
7	2014-06-09 00:00:...	0	0	0	0	0	0	0	0	0
8	2014-06-16 00:00:...	0	0	0	0	0	0	0	0	0
9	2014-06-23 00:00:...	0	0	0	0	0	0	0	0	0
10	2014-06-30 00:00:...	0	0	0	0	0	0	0	199	0
11	2014-07-07 00:00:...	0	0	0	0	0	0	223	130	0
12	2014-07-14 00:00:...	0	0	0	0	0	215	152	82	0
13	2014-07-21 00:00:...	0	0	0	0	228	144	95	60	0
14	2014-07-28 00:00:...	0	0	0	234	156	91	83	43	0
15	2014-08-04 00:00:...	0	0	189	154	82	52	52	34	0
16	2014-08-11 00:00:...	0	250	126	94	59	33	39	33	0
17	2014-08-18 00:00:...	259	163	69	64	40	19	26	26	0

Query 4

	week	sent_total	reponded_total	sent_digest	sent_reengagement	email_open	email_clickthrough
1	2014-04-28 00:00:00	1006	332	908	98	332	187
2	2014-05-05 00:00:00	2724	910	2602	164	910	431
3	2014-05-12 00:00:00	2801	961	2665	175	961	478
4	2014-05-19 00:00:00	2876	984	2733	179	984	495
5	2014-05-26 00:00:00	2945	1008	2822	179	1008	447
6	2014-06-02 00:00:00	3047	972	2911	199	972	483
7	2014-06-09 00:00:00	3143	1058	3003	190	1058	527
8	2014-06-16 00:00:00	3272	1144	3105	234	1144	558
9	2014-06-23 00:00:00	3340	1080	3207	187	1080	517
10	2014-06-30 00:00:00	3461	1157	3302	222	1157	554
11	2014-07-07 00:00:00	3557	1215	3399	214	1215	619
12	2014-07-14 00:00:00	3675	1244	3499	226	1244	604
13	2014-07-21 00:00:00	3748	1200	3592	206	1200	578
14	2014-07-28 00:00:00	3883	1372	3706	230	1372	629
15	2014-08-04 00:00:00	3953	1328	3793	206	1328	431
16	2014-08-11 00:00:00	4061	1341	3897	224	1341	429
17	2014-08-18 00:00:00	4209	1411	4012	257	1411	487

Query 5

	week	digest_open_rate	digest_click_rate	reengagement_open_rate	reengagement_click_rate
1	2014-04-28 00:00:00	0.270925110132	0.11563876652	0.877551020408	0.836734693878
2	2014-05-05 00:00:00	0.298232129131	0.117601844735	0.871951219512	0.780487804878
3	2014-05-12 00:00:00	0.303564727955	0.124577861163	0.925714285714	0.84
4	2014-05-19 00:00:00	0.305159165752	0.127332601537	0.899441340782	0.837988826816
5	2014-05-26 00:00:00	0.307583274274	0.111268603827	0.882681564246	0.776536312849
6	2014-06-02 00:00:00	0.281690140845	0.117485400206	0.869346733668	0.753768844221
7	2014-06-09 00:00:00	0.299034299034	0.125541125541	0.905263157895	0.821052631579
8	2014-06-16 00:00:00	0.306280193237	0.12077294686	0.897435897436	0.803418803419
9	2014-06-23 00:00:00	0.289055191768	0.115996258185	0.871657754011	0.812834224599
10	2014-06-30 00:00:00	0.292852816475	0.114778921866	0.905405405405	0.810810810811
11	2014-07-07 00:00:00	0.305383936452	0.132686084142	0.897196261682	0.799065420561
12	2014-07-14 00:00:00	0.302086310374	0.118891111746	0.898230088496	0.845132743363
13	2014-07-21 00:00:00	0.287026726058	0.116648106904	0.873786407767	0.800970873786
14	2014-07-28 00:00:00	0.318402590394	0.120345385861	0.895652173913	0.813043478261
15	2014-08-04 00:00:00	0.302662799895	0.0703928288953	0.912621359223	0.800970873786
16	2014-08-11 00:00:00	0.296638439826	0.0659481652553	0.897321428571	0.772321428571
17	2014-08-18 00:00:00	0.298105682951	0.0687936191426	0.875486381323	0.821011673152