**Validating A/B Test Results: SQL Analytics Training**

Yammer not only develops new features, but is continuously looking for ways to improving existing ones. Like many software companies, Yammer frequently tests these features before releasing them to all of their customers. These A/B tests help analysts and product managers better understand a feature’s effect on user behavior and the overall user experience.

This case focuses on an improvement to Yammer’s core “publisher”—the module at the top of a Yammer feed where users type their messages. To test this feature, the product team ran an A/B test from June 1 through June 30. During this period, some users who logged into Yammer were shown the old version of the publisher (the “control group”), while other other users were shown the new version (the “treatment group”).

**SQL:**

Joined yammer\_experiments and yammer\_events with occurred dates between June 1 and June 30, 2014.

Make use of the functions stddev\_samp for calculating the standard deviation and aggregate functions sum and average (avg) to get the total users and average per experimental groups respectively.

Link: <https://github.com/anonyXmous/CapstoneProject/blob/master/Mode_sql.sql>

**T-Test:**

Below t-test statistic is done via Excel. Data is taken from the result of the sql above.

Below events has produced a highly significant difference between treated and control groups.

Highly significant: Home page, Login, like message, Search click result 2, send messages and view inbox

Meanwhile, below events do not have a difference

Not significant: Search autocomplete, the rest of search click result (except result 2) and search run

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Experiment**  **group** | **event\_name** | **eventtype** | **users** | **total** | **Ave.** | **Rate**  **Diff** | **rate**  **lift** | **stdev** | **t-stat** | **df** | **p-value** | **significance** |
| control\_group | home\_page | engagement | 1,593 | 12,791 | 8.03 | 3.056419 |  | 4.95323 |  |  |  |  |
| test\_group | home\_page | engagement | 804 | 9,221 | 11.47 | 3.48163 | 0.43 | 5.586318 | 14.77 | 1451 | 0.0000 | Highly significant |
| control\_group | like\_message | engagement | 1,437 | 7,995 | 5.56 | 2.472378 |  | 4.004421 |  |  |  |  |
| test\_group | like\_message | engagement | 732 | 5,841 | 7.98 | 2.826864 | 0.44 | 4.488615 | 12.30 | 1332 | 0.0000 | Highly significant |
| control\_group | login | engagement | 1,694 | 5,549 | 3.28 | 1.589478 |  | 2.637724 |  |  |  |  |
| test\_group | login | engagement | 826 | 3,363 | 4.07 | 1.806834 | 0.24 | 2.902688 | 6.60 | 1504 | 0.0000 | Highly significant |
| control\_group | search\_autocomplete | engagement | 851 | 2,485 | 2.92 | 1.546701 |  | 2.041632 |  |  |  |  |
| test\_group | search\_autocomplete | engagement | 473 | 1,442 | 3.05 | 1.64281 | 0.04 | 2.266268 | 1.04 | 893 | 0.3006 | Not significant |
| control\_group | search\_click\_result\_1 | engagement | 118 | 221 | 1.87 | 1.127516 |  | 1.156964 |  |  |  |  |
| test\_group | search\_click\_result\_1 | engagement | 63 | 116 | 1.84 | 1.086542 | -0.02 | 1.234067 | 0.16 | 120 | 0.8738 | Not significant |
| control\_group | search\_click\_result\_10 | engagement | 60 | 74 | 1.23 | 0.653086 |  | 0.755381 |  |  |  |  |
| test\_group | search\_click\_result\_10 | engagement | 38 | 46 | 1.21 | 0.759565 | -0.02 | 0.901821 | 0.11 | 69 | 0.9098 | Not significant |
| control\_group | search\_click\_result\_2 | engagement | 132 | 206 | 1.56 | 0.966936 |  | 1.114544 |  |  |  |  |
| test\_group | search\_click\_result\_2 | engagement | 71 | 154 | 2.17 | 1.259176 | 0.39 | 1.297044 | 3.35 | 126 | 0.0011 | Highly significant |
| control\_group | search\_click\_result\_3 | engagement | 98 | 166 | 1.69 | 1.04757 |  | 1.070889 |  |  |  |  |
| test\_group | search\_click\_result\_3 | engagement | 61 | 109 | 1.79 | 1.227524 | 0.06 | 1.209167 | 0.53 | 116 | 0.5975 | Not significant |
| control\_group | search\_click\_result\_4 | engagement | 106 | 173 | 1.63 | 0.958569 |  | 1.074751 |  |  |  |  |
| test\_group | search\_click\_result\_4 | engagement | 68 | 116 | 1.71 | 0.981262 | 0.05 | 1.137835 | 0.46 | 137 | 0.6445 | Not significant |
| control\_group | search\_click\_result\_5 | engagement | 97 | 137 | 1.41 | 0.847412 |  | 0.951697 |  |  |  |  |
| test\_group | search\_click\_result\_5 | engagement | 61 | 104 | 1.7 | 1.175824 | 0.21 | 1.118414 | 1.68 | 113 | 0.0960 | Not significant |
| control\_group | search\_click\_result\_6 | engagement | 61 | 87 | 1.43 | 0.860638 |  | 0.905379 |  |  |  |  |
| test\_group | search\_click\_result\_6 | engagement | 46 | 65 | 1.41 | 0.864651 | -0.01 | 0.979208 | 0.11 | 93 | 0.9142 | Not significant |
| control\_group | search\_click\_result\_7 | engagement | 76 | 104 | 1.37 | 0.779458 |  | 0.935399 |  |  |  |  |
| test\_group | search\_click\_result\_7 | engagement | 33 | 51 | 1.55 | 0.891154 | 0.13 | 0.942413 | 0.92 | 61 | 0.3622 | Not significant |
| control\_group | search\_click\_result\_8 | engagement | 74 | 94 | 1.27 | 0.776904 |  | 0.850654 |  |  |  |  |
| test\_group | search\_click\_result\_8 | engagement | 53 | 78 | 1.47 | 0.89394 | 0.16 | 0.914019 | 1.25 | 107 | 0.2135 | Not significant |
| control\_group | search\_click\_result\_9 | engagement | 72 | 99 | 1.38 | 0.798575 |  | 0.839672 |  |  |  |  |
| test\_group | search\_click\_result\_9 | engagement | 46 | 76 | 1.65 | 1.007877 | 0.20 | 1.094701 | 1.43 | 78 | 0.1578 | Not significant |
| control\_group | search\_run | engagement | 393 | 1,909 | 4.86 | 1.915925 |  | 2.256372 |  |  |  |  |
| test\_group | search\_run | engagement | 210 | 1,103 | 5.25 | 2.004415 | 0.08 | 2.413476 | 1.93 | 403 | 0.0539 | Not significant |
| control\_group | send\_message | engagement | 1,211 | 4,486 | 3.7 | 1.908894 |  | 3.031016 |  |  |  |  |
| test\_group | send\_message | engagement | 661 | 3,353 | 5.07 | 2.187573 | 0.37 | 3.427373 | 8.60 | 1222 | 0.0000 | Highly significant |
| control\_group | view\_inbox | engagement | 1,412 | 7,559 | 5.35 | 2.437499 |  | 3.912454 |  |  |  |  |
| test\_group | view\_inbox | engagement | 739 | 5,444 | 7.37 | 2.714228 | 0.38 | 4.381849 | 10.53 | 1359 | 0.0000 | Highly significant |

**Conclusion:** Since most of the important features of the website have resulted to significant difference compared to control group, we can conclude that the website has improved user engagement when using these new features.