# For the Longest Time: Continuity and Change in One Teaching-Related Subreddit

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*12/12/2019*

## Contents



## Get set up

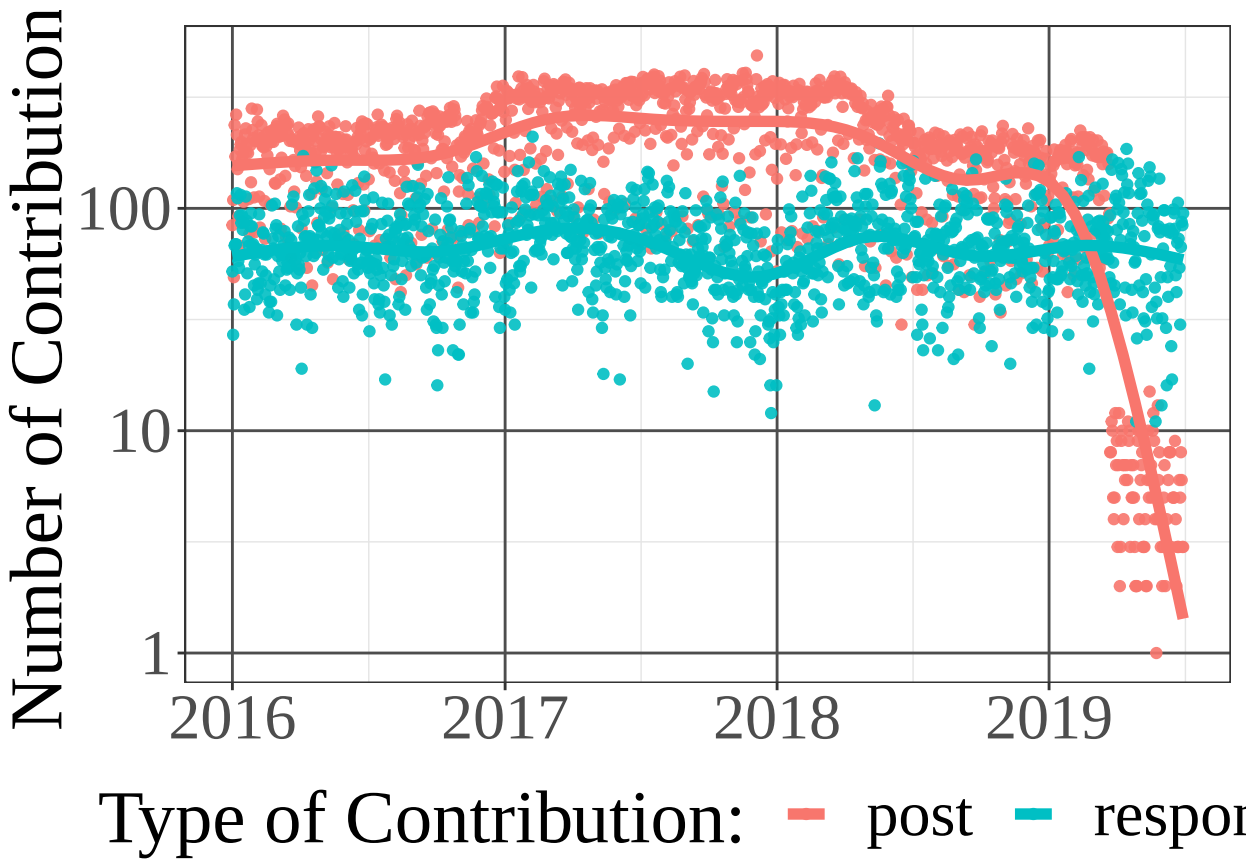
This section loads the data and packages and starts to process the data, but doesn't calculate any statistics or create any results.

1. Load packages
2. Set up settings for sharing
3. Set timeframe
4. Load subreddit posts
5. Load subreddit responses
6. Create a merged dataframe of both posts and responses.

## Analysis and Results

### Figure 1. Contributions over time

```
## [1] "In total, we collected 339618 contributions from 43709 contributors"
## [1] "dated between 2016-01-01 and 2019-06-30 (41.98 months),"
## [1] "a total of 252340 posts and 87278 responses to those posts,"
## [1] "to one teaching-related subreddit: r/Teachers."
## `geom_smooth()` using method = 'gam' and formula 'y ~ s(x, bs = "cs")'
```




```
## [1] "The slope of the `post` linear regression is -0.08 (p=0),"
## [1] "and the slope of the `response` linear regression is 0 (p=0.68000597)."
```

**Table 1. Overall contributions in r/Teachers**

| Year | Contributors | Posters | Responders | Multiple Posts | Multiple Responses | Posters with Self Responses |
|---|---|---|---|---|---|---|
| 2016 | 15719 | 12322 | 5738 | 45.06 | 45.43 | 17.24 |
| 2017 | 18153 | 14702 | 6133 | 49.02 | 46.03 | 16.62 |
| 2018 | 13301 | 9488 | 5219 | 52.35 | 50.99 | 12.65 |
| 2019 | 5026 | 2529 | 3058 | 57.97 | 51.60 | 19.30 |

**Table 2. Descriptive Statistics of Posts per Poster and Responses per Responder**

| Year | Mean | SD | Median | Min | Max | Mean | SD | Median | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 7.01 | 32.80 | 1 | 1 | 1274 | 4.43 | 14.59 | 1 | 1 | 445 |
| 2017 | 7.95 | 40.67 | 1 | 1 | 2820 | 4.07 | 14.43 | 1 | 1 | 492 |
| 2018 | 9.74 | 46.62 | 2 | 1 | 2540 | 4.75 | 15.68 | 2 | 1 | 473 |
| 2019 | 9.39 | 28.66 | 2 | 1 | 720 | 3.96 | 9.45 | 2 | 1 | 204 |

**Table 3. Content Interaction by Posts, Threads, and Responses**

| Year | Posts | Threads | Responses | Response Rate | Responses per Thread | Words per Post | Words per Response |
|---|---|---|---|---|---|---|---|
| 2016 | 67718 | 6740 | 25443 | 9.95 | 3.77 | 16.86 | 58.78 |
| 2017 | 99999 | 8130 | 24940 | 8.13 | 3.07 | 16.50 | 57.22 |
| 2018 | 71747 | 4102 | 24776 | 5.72 | 6.04 | 18.19 | 62.40 |
| 2019 | 12876 | 1258 | 12119 | 9.77 | 9.63 | 56.96 | 63.76 |

**Table 4. Descriptive Statistics of Voting Scores of Posts and Responses**

| Year | Mean | SD | Median | Min | Max | Mean | SD | Median | Min | Max |
|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 1.87 | 8.22 | 1 | 0 | 369 | 2.90 | 5.91 | 1 | -127 | 151 |
| 2017 | 1.66 | 8.00 | 1 | 0 | 505 | 2.94 | 6.80 | 1 | -104 | 171 |
| 2018 | 2.02 | 10.83 | 1 | 0 | 402 | 3.48 | 7.78 | 2 | -74 | 159 |
| 2019 | 3.16 | 15.71 | 1 | 0 | 368 | 3.54 | 7.86 | 2 | -51 | 150 |

**Table 5. Social Interaction: Network Statistics by Year**

| Year | Nodes | Edges | Transitivity | Reciprocity | Mean | SD | Median | Min | Max |
|---|---|---|---|---|---|---|---|---|---|
| 2016 | 6328 | 25093 | 2.10 | 0.25 | 2.25 | 9.07 | 1 | 0 | 246 |
| 2017 | 6748 | 24634 | 1.04 | 0.47 | 2.13 | 12.39 | 1 | 0 | 793 |
| 2018 | 5804 | 24244 | 1.28 | 0.10 | 2.78 | 11.58 | 1 | 0 | 671 |
| 2019 | 3351 | 11804 | 1.05 | 0.21 | 2.78 | 6.23 | 1 | 0 | 103 |

**Table 6. High-Mutuality Threads**

```
## [1] "There are 19316 self-responses (6.05%) written by original posters."
```

We theorized *high-mutuality threads* as those posts with at least **10 responses** and where the original poster contributed not just a single response but also did not overly dominate the conversation (i.e., **20-50% self-responses**). Table 6 depicts a summary of these high-mutuality threads in terms of threads with self-responses.

| Year | Threads n | Threads p | Mean n | SD n | Median n | min n | max n | Mean p | SD p | Median p | min |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2016 | 96 | 0 | 19.69792 | 13.22925 | 14 | 10 | 95 | 34.21719 | 8.211260 | 33.33 | 20 |
| 2017 | 100 | 0 | 18.25000 | 10.38586 | 15 | 10 | 67 | 32.52070 | 9.222497 | 30.86 | 20 |
| 2018 | 128 | 0 | 18.99219 | 15.02203 | 15 | 10 | 131 | 33.22016 | 8.973282 | 30.77 | 20 |
| 2019 | 102 | 1 | 21.95098 | 14.59172 | 17 | 10 | 106 | 33.66471 | 9.208699 | 33.33 | 20 |

## Sample posts for qualitative content analysis

Finally, we took a sample of 100 posts from the *high-mutuality threads* for further examination.

# Version/dependencies

```
sessionInfo()
```

```
## R version 3.5.2 (2018-12-20)
## Platform: x86_64-apple-darwin15.6.0 (64-bit)
## Running under: macOS Mojave 10.14.6
##
## Matrix products: default
## BLAS: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRblas.0.dylib
## LAPACK: /Library/Frameworks/R.framework/Versions/3.5/Resources/lib/libRlapack.dylib
##
## locale:
## [1] en_US.UTF-8/en_US.UTF-8/en_US.UTF-8/C/en_US.UTF-8/en_US.UTF-8
##
## attached base packages:
## [1] stats     graphics  grDevices utils     datasets  methods   base
##
## other attached packages:
##  [1] ggraph_1.0.2    igraph_1.2.4.1  lubridate_1.7.4 anytime_0.3.3
##  [5] forcats_0.4.0   stringr_1.4.0   dplyr_0.8.0.1   purrr_0.3.2
##  [9] readr_1.3.1     tidyr_0.8.3     tibble_2.1.1    ggplot2_3.1.1
## [13] tidyverse_1.2.1 knitr_1.22
##
## loaded via a namespace (and not attached):
##  [1] ggrepel_0.8.0      Rcpp_1.0.1         lattice_0.20-38
##  [4] clisymbols_1.2.0   assertthat_0.2.1   rprojroot_1.3-2
##  [7] digest_0.6.18      ggforce_0.2.2      R6_2.4.0
## [10] cellranger_1.1.0   plyr_1.8.4         backports_1.1.4
## [13] RApiDatetime_0.0.4 evaluate_0.13      highr_0.8
## [16] httr_1.4.0         pillar_1.3.1       rlang_0.4.2
## [19] lazyeval_0.2.2     readxl_1.3.1       rstudioapi_0.10
## [22] Matrix_1.2-17      rmarkdown_1.12     splines_3.5.2
## [25] polyclip_1.10-0    munsell_0.5.0      broom_0.5.2
## [28] compiler_3.5.2     modelr_0.1.4       xfun_0.6
## [31] pkgconfig_2.0.2    mgcv_1.8-28        htmltools_0.4.0
## [34] tidyselect_0.2.5   gridExtra_2.3      viridisLite_0.3.0
## [37] crayon_1.3.4       withr_2.1.2        MASS_7.3-51.4
## [40] grid_3.5.2         nlme_3.1-139       jsonlite_1.6
## [43] gtable_0.3.0       magrittr_1.5       scales_1.0.0
## [46] cli_1.1.0          stringi_1.4.3      farver_1.1.0
## [49] viridis_0.5.1      fs_1.2.7           xml2_1.2.0
## [52] generics_0.0.2     tools_3.5.2        glue_1.3.1
## [55] tweenr_1.0.1       hms_0.4.2          yaml_2.2.0
## [58] colorspace_1.4-1   rvest_0.3.3        haven_2.1.0
## [61] usethis_1.5.0
```