

Student Loan Twitter Data

2022-12-10

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This script's input data uses 5 annotators. Preliminary EDA on the variables are in `explore.Rmd`.

```
tweets = read.csv("data/master_annotated_2.csv")
```

Research Questions:

A) Are the opinions more polarized when they are engaging/associating with conservative sources (Fox) or liberal sources (CNN, MSNBC, NPR, NYTimes)?

Polarization regarding topic

```
# install.packages("reshape2")
library(reshape2)
c <- tweets %>%
  group_by(opinion_label, ego_involvement_label) %>%
  summarize(n = n())
```

```
## 'summarise()' has grouped output by 'opinion_label'. You can override using the
## '.groups' argument.
```

```
p <- dcast(c , opinion_label~ego_involvement_label)
```

```
## Using n as value column: use value.var to override.
```

```
p <- p[c(1, 4, 3, 2),]
p
```

```
##              opinion_label cannot judge importance Not important at all
## 1 AGAINST student loan forgiveness                1                5
## 4              NEUTRAL support                    4                8
## 3      FOR student loan forgiveness                1                6
## 2      cannot judge support                      NA                2
## Somewhat important Very important
## 1              58                46
## 4              125               76
## 3              62                54
## 2              13                7
```

The topic of student loan:

BASELINE

- Very Important against : 46
- Somewhat important against : 58
- Not at all important against : 5
- Neutral : 213

- Not at all important for : 6
- Somewhat important for : 62
- Very important for : 54

On aggregate, the population discussion student loan is not polarized. There are more neutrals (213) than support and opposition, and as we go towards the extreme ends, the totals decrease (58→ 46 support, 62→ 54 opposition)

We will use the information above as our base. Next, we focus in on the liberal and conservative sources.

```
tweets %>% group_by(politics) %>% summarize(n = n(), pct = n/nrow(tweets))
```

```
## # A tibble: 3 x 3
##   politics      n    pct
##   <chr>      <int> <dbl>
## 1 conservative  408 0.872
## 2 controlled     6 0.0128
## 3 liberal       54 0.115
```

For context, in our 468 data points on student loan tweets, conservative accounts has over 7 times the engagement than liberal accounts. 87% address the conservative source (@FoxNews) and 12% are from our 4 liberal sources. In short, when it comes to Student Loan Forgiveness, more tweeters engage with the conservative media. (With this knowledge, potential interventions of the conversation could on interventions with accounts engaging with conservative news.)

Conservative opinion

```
c <- tweets %>% filter(politics == "conservative") %>%
  group_by(opinion_label, ego_involvement_label) %>% summarize(n = n())
```

```
## 'summarise()' has grouped output by 'opinion_label'. You can override using the
## '.groups' argument.
```

```
p <- dcast(c , opinion_label~ego_involvement_label)
```

```
## Using n as value column: use value.var to override.
```

```
p <- p[c(1, 4, 3, 2),]
p
```

```
##               opinion_label cannot judge importance Not important at all
## 1 AGAINST student loan forgiveness                1                    5
## 4               NEUTRAL support                    4                    8
## 3      FOR student loan forgiveness                1                    5
## 2               cannot judge support              NA                    2
##   Somewhat important Very important
## 1                   55             41
## 4                   109            63
## 3                   52             45
## 2                   12             5
```

CONSERVATIVE ENGAGEMENT - Very Important against : 41 - Somewhat important against : 55
 - Not at all important against : 5 - Neutral : 180 - Not at all important for : 5 - Somewhat important for :
 52 - Very important for : 45

Similar to the polarization of the topic overall, within conservative engagement, majority lays within the “neutral”, and as we move out towards the two ends, opposition decreases from 55 to 41 and support decreases from 52 to 45.

LIBERAL ENGAGEMENT

```
c <- tweets %>% filter(politics == "liberal") %>%
  group_by(opinion_label, ego_involvement_label) %>% summarize(n = n())
```

```
## 'summarise()' has grouped output by 'opinion_label'. You can override using the
## '.groups' argument.
```

```
p <- dcast(c , opinion_label~ego_involvement_label)
```

```
## Using n as value column: use value.var to override.
```

```
p <- p[c(1, 4, 3, 2),]
p
```

```
##              opinion_label Not important at all Somewhat important
## 1 AGAINST student loan forgiveness             NA              3
## 4              NEUTRAL support                 NA             15
## 3      FOR student loan forgiveness              1              8
## 2      cannot judge support                     NA              1
##   Very important
## 1              5
## 4             10
## 3              9
## 2              2
```

LIBERAL ENGAGEMENT - Very Important against : 5 - Somewhat important against : 3 - Not at all important against : N/A - Neutral : 25 - Not at all important for : 1 - Somewhat important for : 8 - Very important for : 9

Other EDA Notes

```
c <- tweets %>% filter(politics == 'conservative')
c <- c %>% group_by(opinion_label) %>% summarize(n = n(), pct = n/nrow(c))
c
```

```
## # A tibble: 4 x 3
##   opinion_label          n    pct
##   <chr>          <int> <dbl>
```

```
## 1 AGAINST student loan forgiveness    102 0.25
## 2 cannot judge support                 19 0.0466
## 3 FOR student loan forgiveness         103 0.252
## 4 NEUTRAL support                     184 0.451
```

Based on the annotations, 45% are neutral in support for Student Loan Forgiveness plan. This dataset holds ambiguous tweets as well as those where opinion are only extractable if the annotators understand the social context of the sarcastic Ambiguous tweets on this subject does populate the dataset. Here are some examples: “@FoxNews So that’s why they can’t afford their student loans.”, “@FoxNews I don’t believe there’s going to be any student loan forgiveness.”, “@FoxNews My mortgage identified as a student loan.”

Those engaging with FoxNews are both equally in support and against the policy according to the annotators.

Democrats are more polarized

Polarizing: neutral vs. non-neutral; low ego involvement vs. high ego involvement. The more people care a lot about a answer, and if within that population, the both answers (yes and no).

If total population -

E) Are there non-US-based accounts engaging in the student loan conversation.

- Does not support. 66% of the tweets do not have a location tag. 10% of the 66% are meaningless locations (“where ever there’s oil”, “My house”, “in your head, MIA, etc.”). One account is under “Durban, South Africa”. However, it is obvious that the location variable is unreliable.

```
(tweets %>% mutate(has_profile_loc = ifelse(nchar(location) == 0, 0, 1)) ) %>% group_by(has_profile_loc)
```

```
## # A tibble: 2 x 2
##   has_profile_loc agg_profile_loc
##           <dbl>         <int>
## 1             0             312
## 2             1             156
```

```
location <- tweets %>% filter((nchar(location) > 0)) %>% select(location) # 156
# data.frame(table(location))
```

```
# 16 non-sense
# the world , 1
# where ever there's oil , 1
# Podunk Misery, 1
# MIA, 1
# my house, 1
# in your head, 1
# By By 1
# Earth (3 different versions), 5 people
# God's Earth Country/ God's Green Earth, 2
# cucina povera, 1
# Frenchmens Bayou, 1

# Durban, South Africa
```

Liberal opinion

```
l <- tweets %>% filter(politics == 'liberal')
l <- l %>% group_by(opinion_label) %>% summarize(n = n(), pct = n/nrow(l))
l
```

```
## # A tibble: 4 x 3
##   opinion_label          n    pct
##   <chr>          <int> <dbl>
## 1 AGAINST student loan forgiveness      8 0.148
## 2 cannot judge support                 3 0.0556
## 3 FOR student loan forgiveness         18 0.333
## 4 NEUTRAL support                     25 0.463
```

Liberal sources have 46% in neutral support, very close to conservative sources (45%). Generally, Republicans are against the forgiveness plan, and Democrats are either for it or the topic isn't important in their voting decision. Our hypothesis is that tweets associated with Democratic news sources would have more polarization in support; we would see more neutral or lack of support. However, against our hypothesis, Democratic sites have less polarizing opinion. 33% are in support of student loan forgiveness and only 15% are against the plan.

Controlled opinion

```
nu <- tweets %>% filter(politics == 'controlled')
nu <- nu %>% group_by(opinion_label) %>% summarize(n = n(), pct = n/nrow(nu))
nu
```

```
## # A tibble: 2 x 3
##   opinion_label          n    pct
##   <chr>          <int> <dbl>
## 1 FOR student loan forgiveness      2 0.333
## 2 NEUTRAL support                 4 0.667
```

Department of Education, our neutral source, has 6 tweets total where 4 of which are neutral, and none of them are against student loan forgiveness. This makes sense since those engaging with the Dept of Edu tend to request more information on when they can expect information. Some of the tweets are:

- “@usedgov why are my student loans not transferring from Nelnet to Mohela? I got approved for PSLF months ago and haven't heard a word since July. Can someone please do their job??”
- “@usedgov Wait times for customer service @MOHELA are currently 4 HOURS. This organization does not have the capacity to provide federal student loan service. Please investigate.”

```
tweets %>% filter(politics == 'controlled') %>% select(text)
```

```
##
## 1
## 2
## 3
## 4
## 5
## 6
```

```
@usedgov @usesgov @potus #studentloanforgiveness #ppploans it should be brought before
@usedgov @SecCardona @usesgov @potus #studentloanforgiveness #ppploans it should be brought before
```

Some multi colored bar plot here

visual ideas, neutral get 3 bars, which is averaged out..

B) Is there consistency in opinion across tweets that include the 3 groups in their conversation?

C) Is there consistency in polarization across tweets that include the 3 groups in their conversation?

D) Does one page get more engagement over the other?

- Yes, Fox News dominates with 87% of the tweets addressing them.

F) What concentrations of replies are by authors who engage with both new sources?

- Only 9 tweeters posted twice in this dataset. Only one engages with both liberal and conservative sources (RogerWPetersen1). From his tweets, this account appears to not support the plan while the annotators believe that his opinion is neutral. We learn that only about 0.2% would “cross-tweet” about this topic, although his opinion is consistent.

```
dup_sn <- tweets[duplicated(tweets$screen_name) ,] %>% select( screen_name)
(tweets %>% filter(screen_name %in% as.vector(dup_sn$screen_name))) %>% select(screen_name, politics, exp
```

```
##      screen_name      politics experiment_group
## 1    DahlmanCarl conservative      foxnews
## 2    DahlmanCarl conservative      foxnews
## 3      fabulosi_t controlled      usedgov
## 4      fabulosi_t controlled      usedgov
## 5 jackSpa81774793      liberal      nytimes
## 6 jackSpa81774793      liberal      cnn
## 7   johnbutler410 conservative      foxnews
## 8   johnbutler410 conservative      foxnews
## 9 michael_favreau      liberal      msnbc
## 10 michael_favreau      liberal      msnbc
## 11 PCopposition conservative      foxnews
## 12 PCopposition conservative      foxnews
## 13 RogerWPetersen1      liberal      msnbc
## 14 RogerWPetersen1 conservative      foxnews
## 15   thomaslew13 conservative      foxnews
## 16   thomaslew13 conservative      foxnews
## 17 Vincent08571545      liberal      cnn
## 18 Vincent08571545      liberal      cnn
```

```
tweets %>% filter(screen_name == 'RogerWPetersen1') %>% select(screen_name, text, opinion_label)
```

```
##      screen_name
## 1 RogerWPetersen1
```

```

## 2 RogerWPetersen1
##
## 1 @MSNBC @MaddowBlog Nothing simple about it this Student loan forgiveness is UNCONSTITUTIONAL.
## 2 @FoxNews I heard that Student Debt forgiveness can not be passed as it is Un-Constitutional
## opinion_label
## 1 NEUTRAL support
## 2 NEUTRAL support

```

##Brainstorm notes for analysis: A) Is the engagement opinions more polarized when they are engaging/associating with conservative sources or liberal sources CNN?

- The opinion on student loan forgiveness is more polarized on liberal sources than on conservative sources.

D) Does one page get more engagement over the other?

- Yes. Although our data only has 1 conservative source, 87% of the tweets are engaging with conservative sources. That is over 7 times the amount of foot traffic of the 4 liberal sources combined. With this knowledge, potential interventions of the conversation could focus on accounts that tweet @FoxNews.

E) Are there non-US-based accounts engaging in the student loan conversation.

- Does not support. 66% of the tweets do not have a location tag. 10% of the 66% are meaningless locations ("where ever there's oil", "My house", "in your head, MIA, etc.). One account is under "Durban, South Africa". However, it is obvious that the location variable is unreliable.

F) What concentrations of replies are by authors who engage with both news sources?

- 9 tweeters posted twice in this dataset, and one engages with both liberal and conservative sources (RogerWPetersen1). We learn that only about 0.2% would "cross-tweet" about this topic, although his opinion is consistent. This tells us that individuals discussing student loan forgiveness on Twitter in less of an intellectual back and forth discourse. In other words, many of these posts are "to tell" rather than "to listen".