

LSE Works: Department of Methodology

The Brexit Debate through Social Media: deliberative discussion, or deliberate dysfunction?

Professor Kenneth Benoit

Head, Department of Methodology, LSE
(@kenbenoit)

Professor Sara Hobolt

Chair in European Institutions,
European Institute, LSE
(@sarahobolt)

Dr Jennifer Jackson Preece

Associate Professor in Nationalism,
European Institute, LSE

Dr Jean-Christophe Plantin

Chair, LSE
(@JCPlantin)

EVENTS

Hashtag for Twitter users: #LSEworks

@lsepublicevents

lse.ac.uk/events

The Brexit Debate Through Social Media

Deliberative Discussion, or Deliberate Dysfunction?

Kenneth Benoit
Department of Methodology, LSE



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■



Research Team

LSE Department of Methodology

- EUENGAGE: Dr. Akitaka Matsuo, Research Officer (<http://amatsuo.net>)
- quanteda (the R package for managing and analyzing text)
 - Dr. Haiyan Wang, Research Officer
 - Kohei Watanabe, Ph.D Candidate (<http://koheiw.net>)

Imperial College London, Data Science Institute

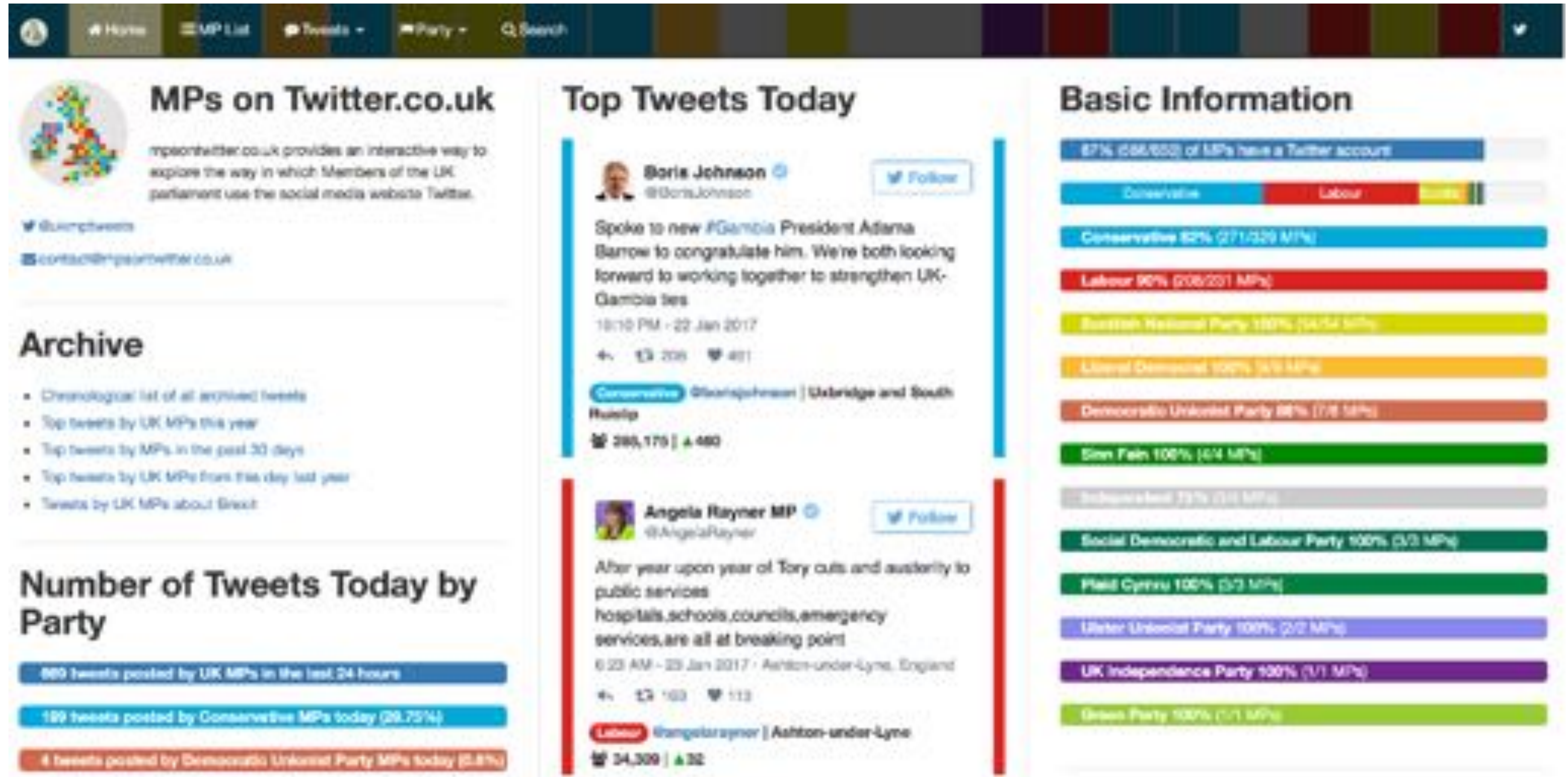
- Dr. Julio Amador Díaz López, Research Associate
- David Birch, Research Associate
- Prof. Mark Kennedy, Professor



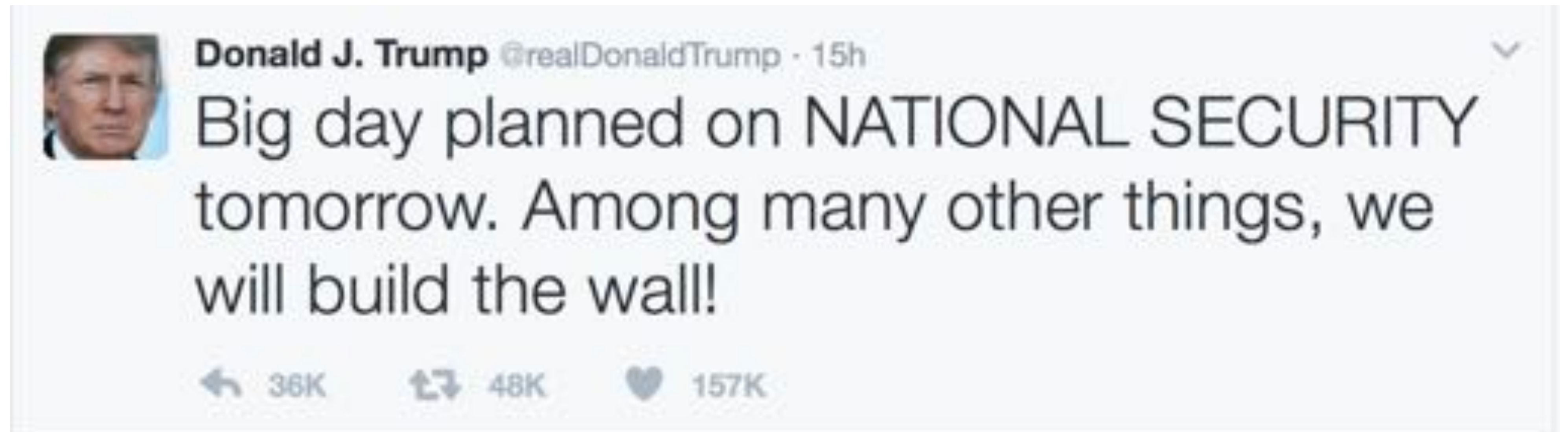
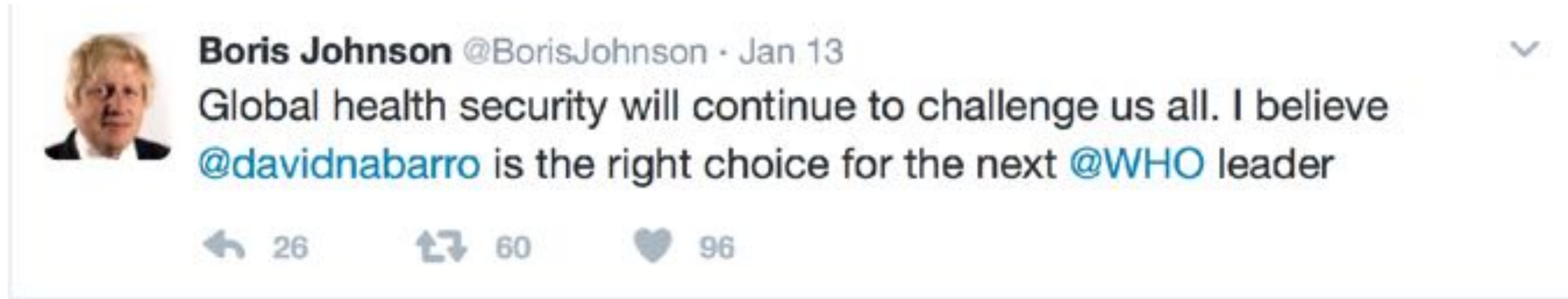
social media in political communications

- approximately 400-450 million Tweets per day
- 29.2% of US population are active users
- 20% of UK population (13.1 million in 2016)
- 563 UK MPs have Twitter accounts

87% of UK MPs have Twitter accounts



How Twitter is used for political communication: to send a message



to call attention to an event or report

 Nigel Farage Retweeted



Sky News @SkyNews · Jan 20

UK-US trade deal could be struck 'within 90 days', says Nigel Farage



UK-US trade deal 'within 90 days' of Brexit

The former UKIP leader says the Trump team are offering Britain a "great gift" and hailed their "can-do attitude".

news.sky.com

 99

 571

 1.2K

@mentions

 Michael Gove Retweeted



Henry Dimbleby @HenryDimbleby · Jan 18

Must read. The transcript of @michaelgove 's Trump interview is the gift that keeps giving. Worth the subscription to @thetimes on its own.

days

we'll want to have other people coming in
ing their country and you know in this case
I very strong borders from the day I get in.
orders I'm gonna sign - day one - which I
to be Monday as opposed to Friday or Sat-
mean my day one is gonna be Monday bec-
me to be signing and get it mixed up with
ion, but one of the first orders we're gonna
e gonna be strong borders.

I want people coming in from Syria who w-

Henry Dimbleby @HenryDimbleby

Day one is Monday, right? Not Friday or Saturday.
[thetimes.co.uk/edition/news/f...](https://www.thetimes.co.uk/edition/news/f...)



#hashtags

European Institute and 8 others follow



Richard Corbett @RCorbettMEP · 2h

Hammond admits '#Brexit fog' impact on investment in #Britain. No hiding the negative impact of #brexitshambles



Brexit: Philip Hammond warns deal 'will take years' - BBC News

The chancellor warns the process of exiting the EU is likely to last much longer than two years.

[bbc.com](https://www.bbc.com)



6



108



86

“Retweets”



President Trump Retweeted



Donald J. Trump @realDonaldTrump · 15h

If Chicago doesn't fix the horrible "carnage" going on, 228 shootings in 2017 with 42 killings (up 24% from 2016), I will send in the Feds!



35K



47K



163K

Current project: Brexit-related Tweets

- some 35 million since January
- present analysis: Through end of June (26 million)
- capture based on #hashtags, @usernames, and search terms

Search terms

Hashtags:

#betterdealforbritain
#betteroffout
#brexit
#euref
#eureferendum
#eusummit
#getoutnow
#leaveeu
#no2eu
#notoeu
#strongerin
#ukineu
#voteleave
#wewantout
#yes2eu
#yestoeu

brexit

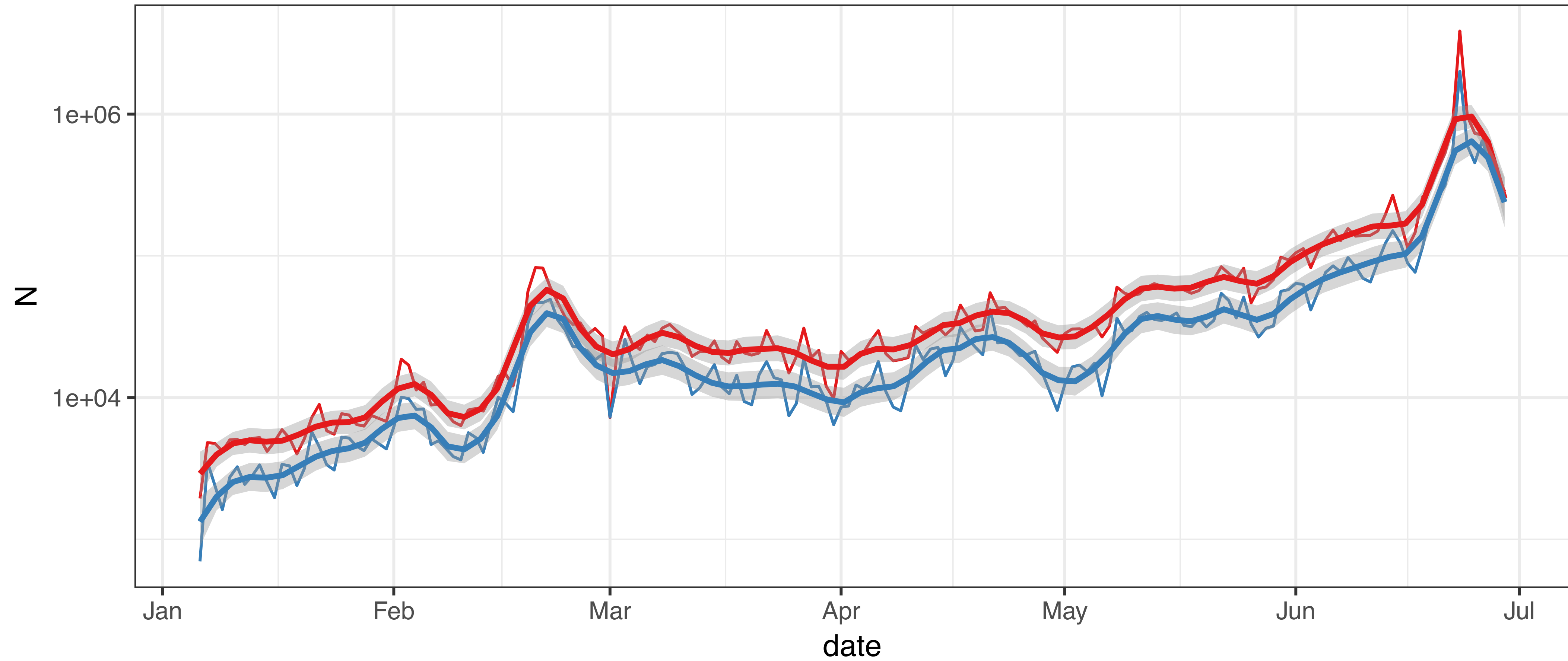
Username:

@vote_leave
@brexitwatch
@eureferendum
@ukandeu
@notoeu
@leavehq
@ukineu
@leaveeuofficial
@ukleave_eu
@strongerin
@yesforeurope
@grassroots_out
@stronger_in

Capture platform



Frequencies of Tweets



verb — share — post

Users in data

- 3.6M unique users
- number of tweets:
 - average: 7.2
 - median: 1 (more than 50% had only one tweet)
 - max: 81.1K

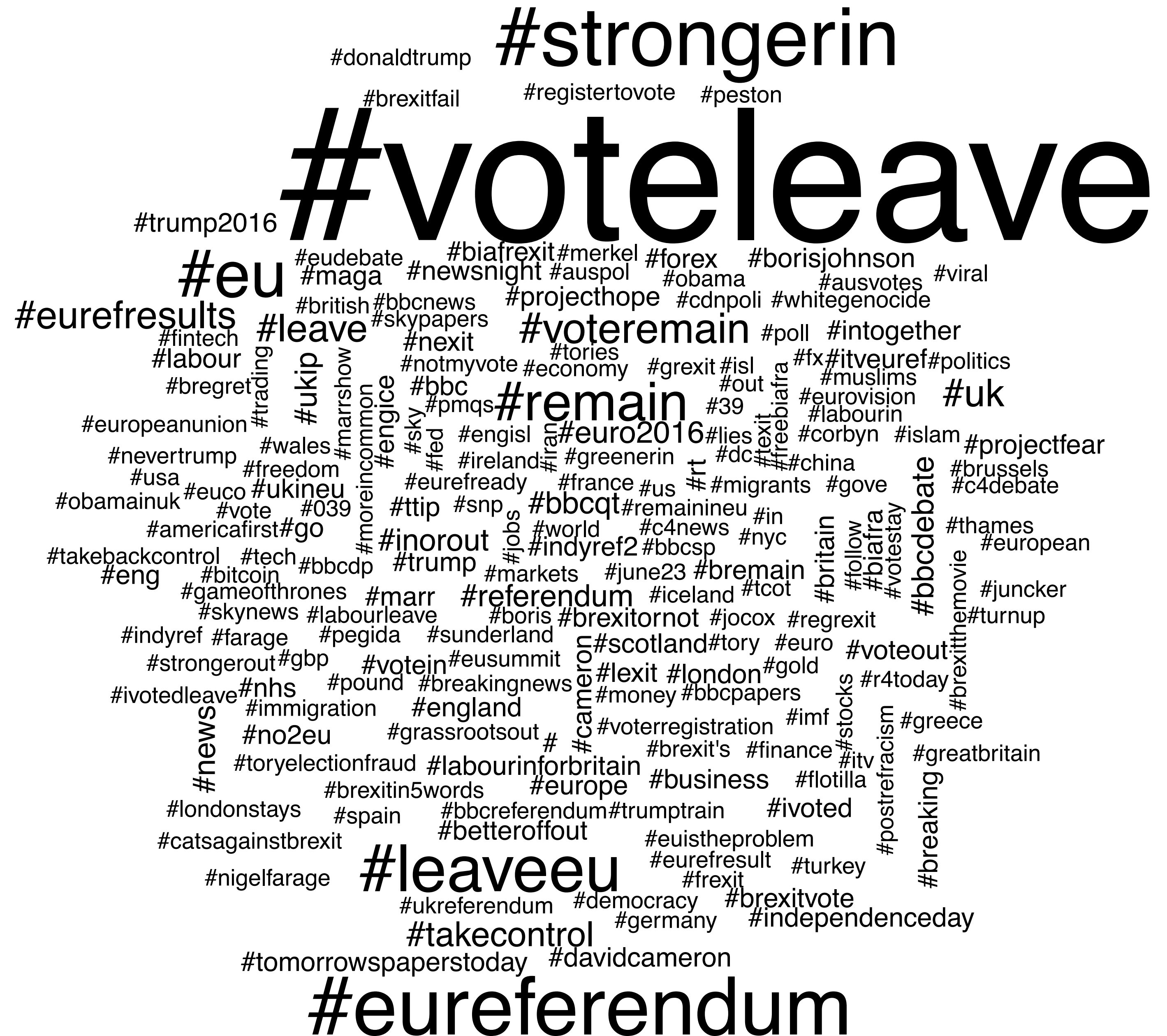
Heavy users

| username | share | post | N |
|-----------------|-------|-------|-------|
| iVoteLeave | 81101 | 3 | 81104 |
| iVoteStay | 57615 | 1 | 57616 |
| Col_Connaughton | 0 | 21451 | 21451 |
| brexitmarch | 0 | 20873 | 20873 |
| MikkiL | 18850 | 1407 | 20257 |
| Fight4UK | 13785 | 4777 | 18562 |
| JodieActy | 13837 | 1021 | 14858 |
| SaraPadmore | 14692 | 20 | 14712 |
| Brndstr | 0 | 13449 | 13449 |
| marie52d | 12884 | 349 | 13233 |
| RoyalNavyNews | 2648 | 10382 | 13030 |
| ukleave_eu | 9890 | 2589 | 12479 |
| mwengway | 10072 | 2183 | 12255 |

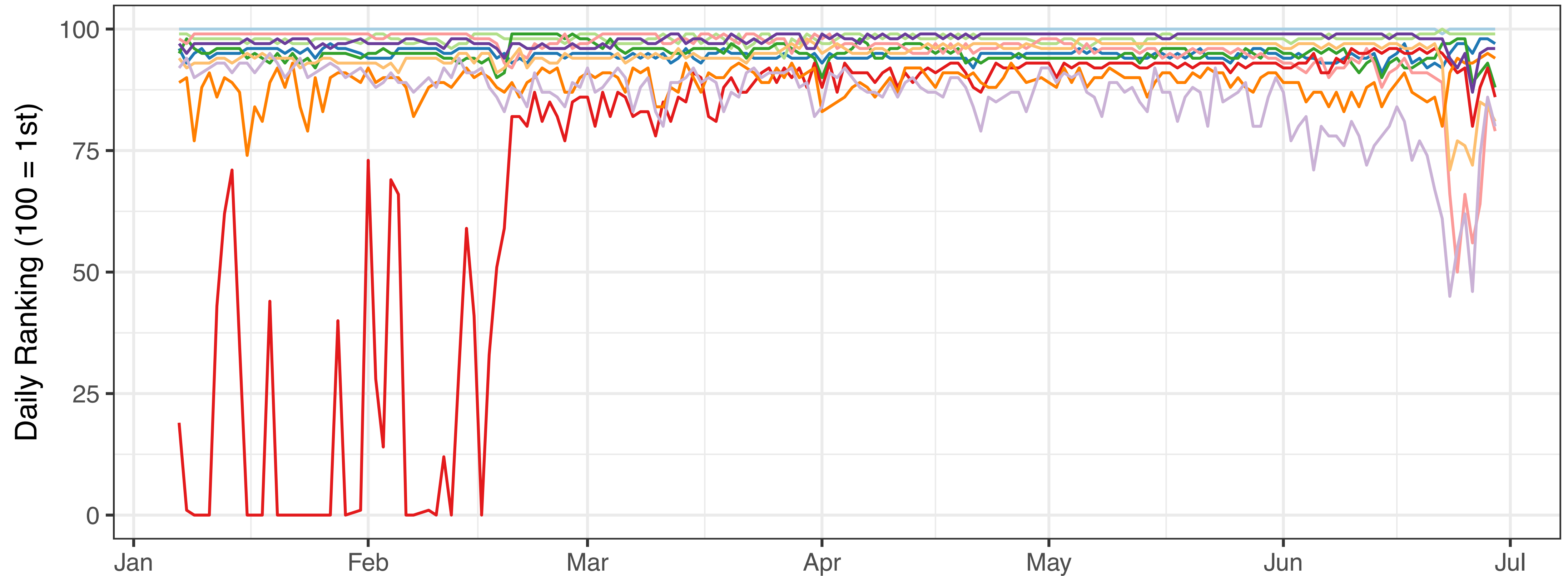
Main hashtags

- List of hashtags
http://rpubs.com/amatsuo/top_hashtags_10000
- c.f List of mentions
http://rpubs.com/amatsuo/top_mentions_10000

Main hashtags



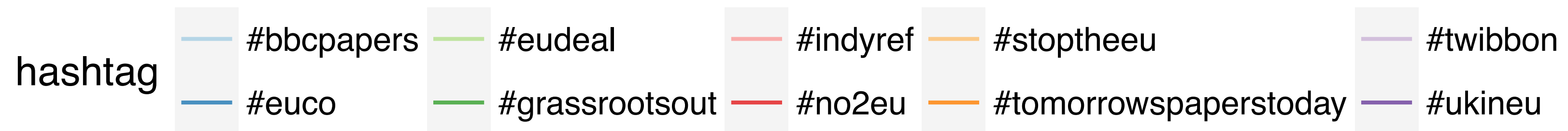
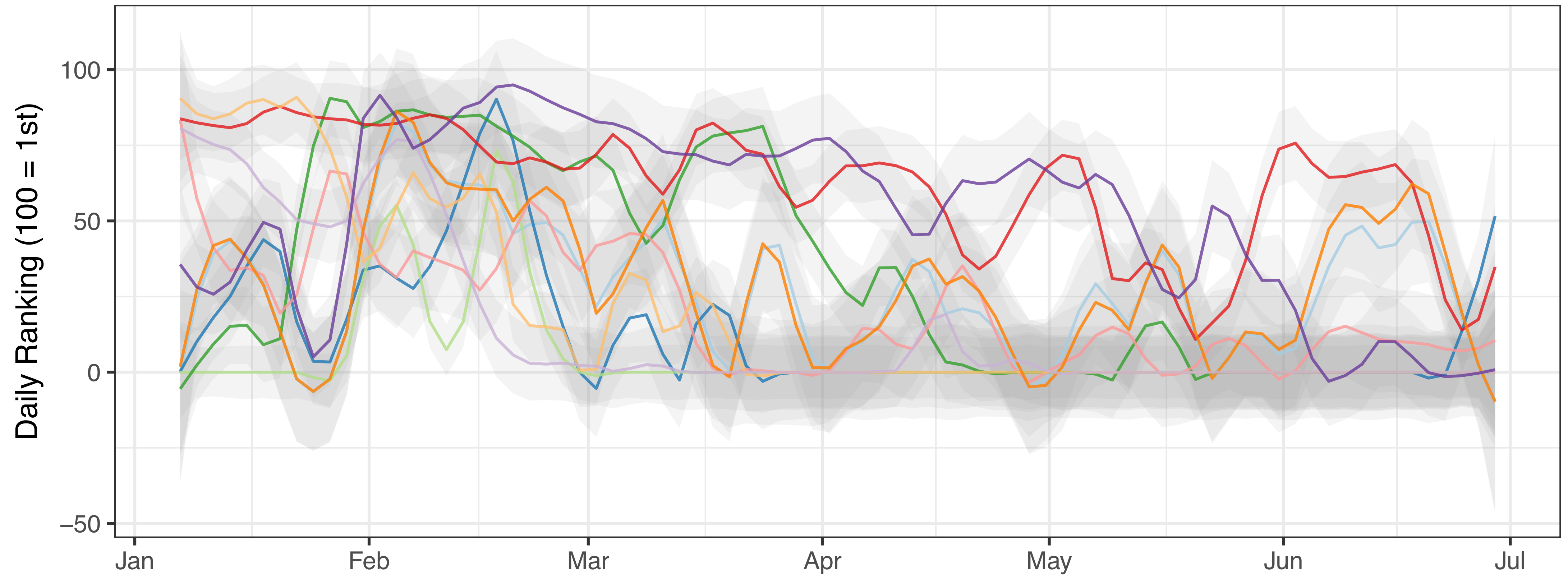
Evolution of hashtags (ranking)



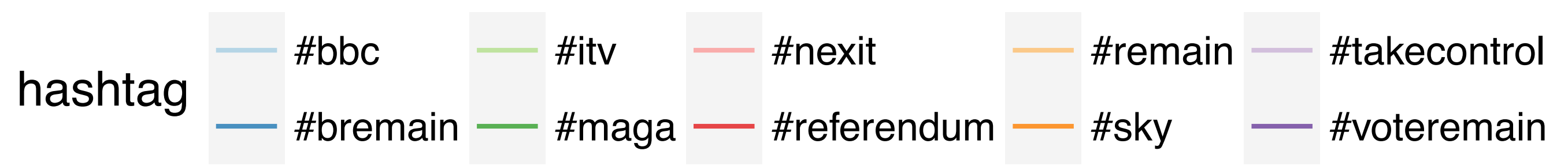
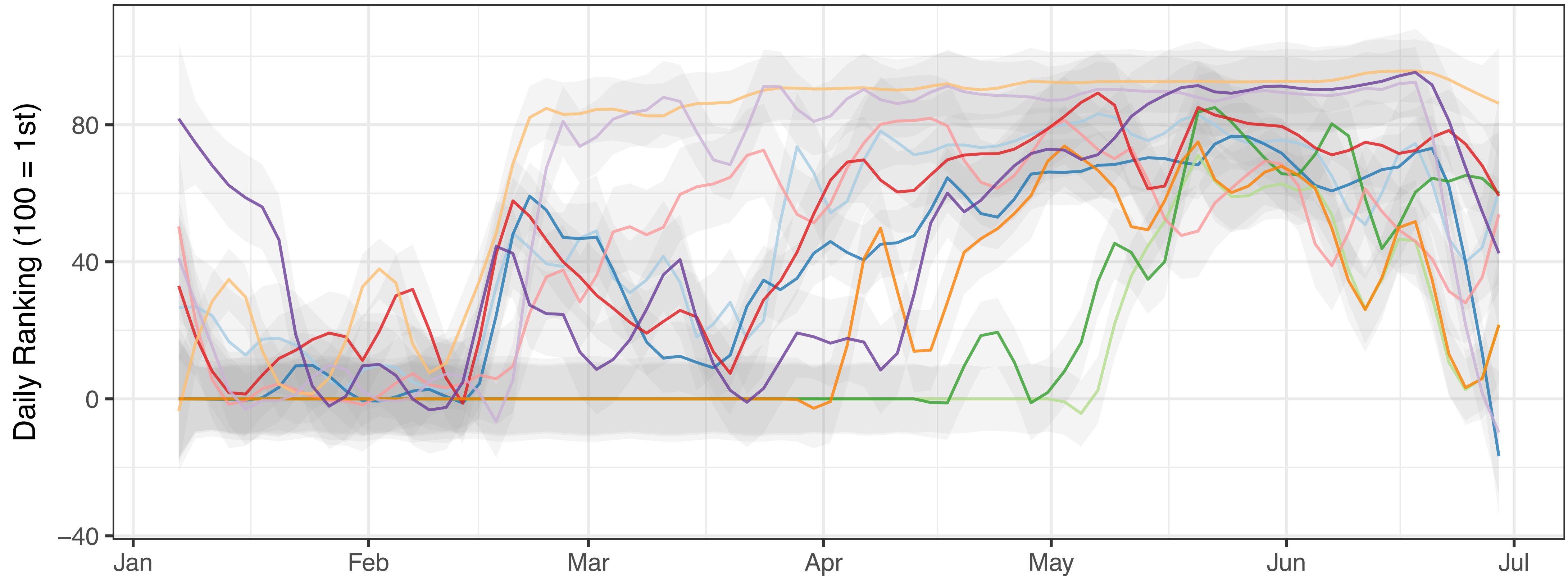
hashtag

| | | | | |
|---------|---------------|----------|-------------|------------|
| #brexit | #euref | #leaveeu | #strongerin | #ukip |
| #eu | #eureferendum | #remain | #uk | #voteleave |

Evolution of hashtags (ranking)



Hashtags surging popularity



Predicting Leave v. Remain

- Method: Naive Bayes classifier, also Support-Vector Machines (SVM)
- Data source: combined tweet corpus at user level
- Creating training data
 - Select “power-users” (more than 100 tweets in the corpus, 15K users)
 - Check the use of pre-determined set of “leave” and “remain” hashtags
 - Calculate the difference in the use of leave and remain hashtags. Construct training data from top and bottom 10% of power users
- Features
 - Use bag of words method (unigrams, remove features used less than 20 users)

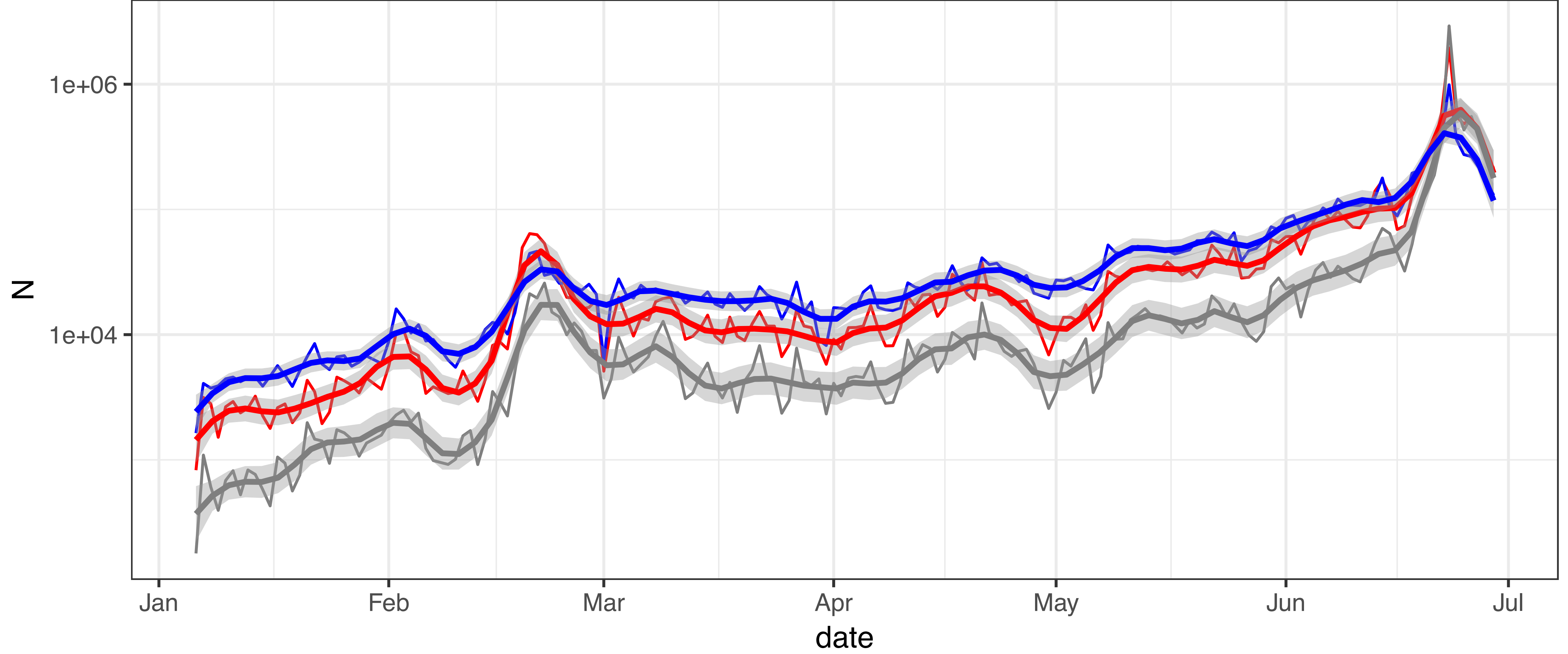
Predicting Leave v. Remain (Feature Selection)

- Models are evaluated through
 - Split training data into training and test sets
 - Check the prediction accuracy for test sets
- Three models are tested (prediction accuracy for test set in parentheses)
 - All words (49.4%)
 - Only hashtags (82.8%)
 - Hashtags and mentions (88.2%)

Predicting Leave v. Remain

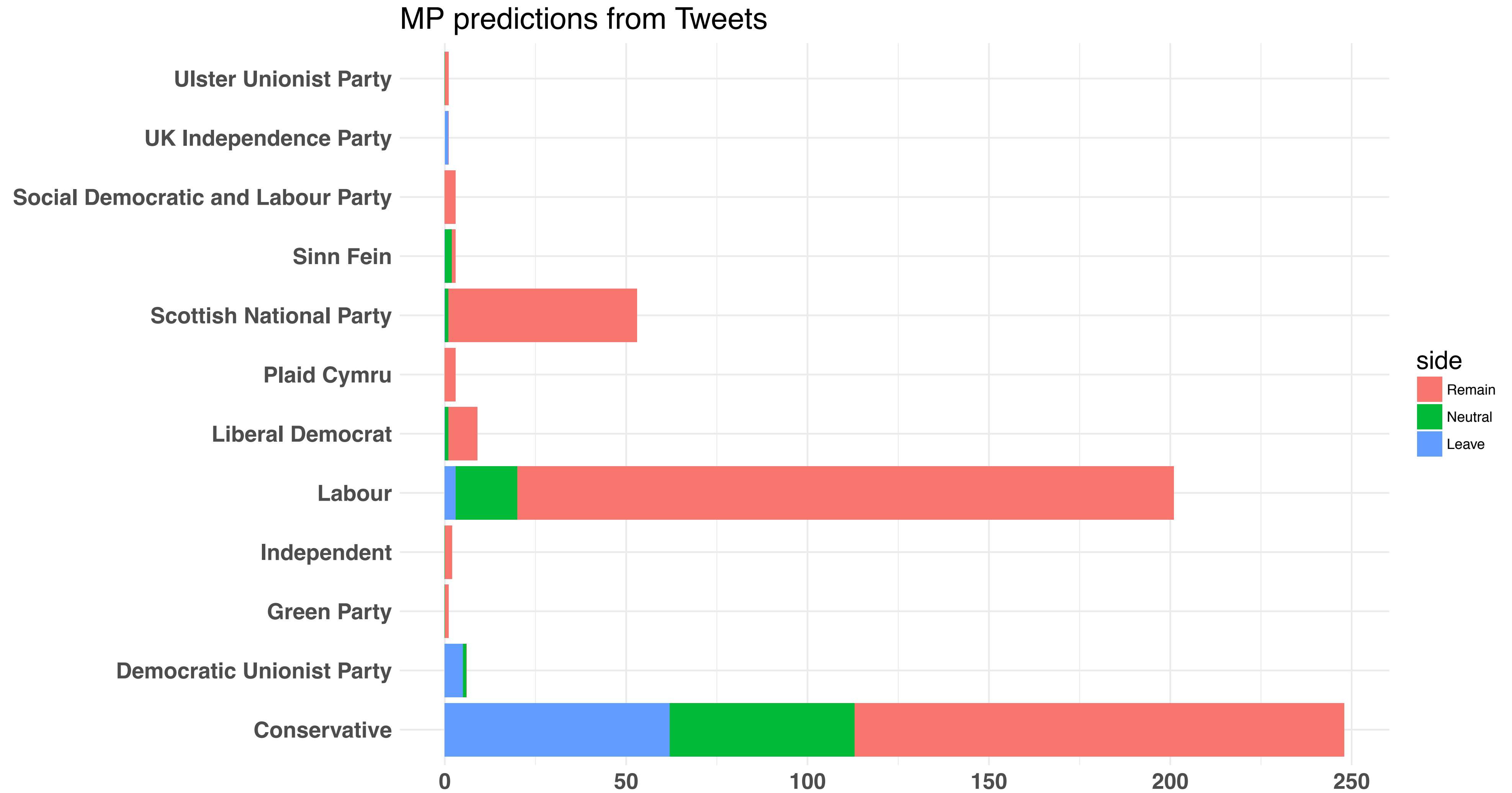
| | N | % |
|---------|-----------|--------|
| Remain | 9,780,223 | 36.93% |
| Neutral | 7,786,297 | 29.40% |
| Leave | 8,914,207 | 33.66% |

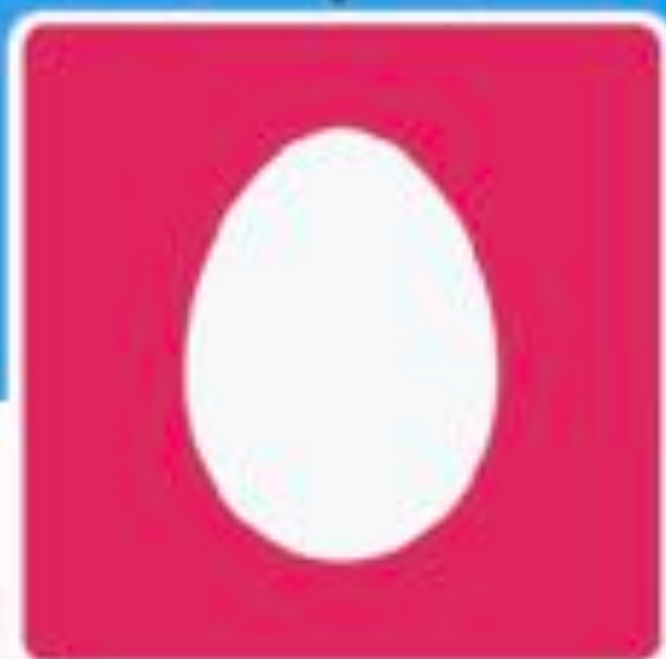
Patterns of posts, Leave v. Remain



side — Remain — Neutral — Leave

MP side predictions by party





TWEETS 4,078 FOLLOWING 232 FOLLOWERS 123 LIKES 3,376

Follow

linda seekford

@lseekford

Joined October 2012

Tweet to linda seekford

40 Photos and videos



Tweets Tweets & replies Media

linda seekford @lseekford · Jan 20
Sad liberals spewing hate

AJ+ @ajplus
#inauguration2017: We're in DC showing you everything going down on this historic day. periscope.tv/w/a1DIKzQzNDk5...

linda seekford @lseekford · Jan 20
Thank God we survived the last 8 yrs

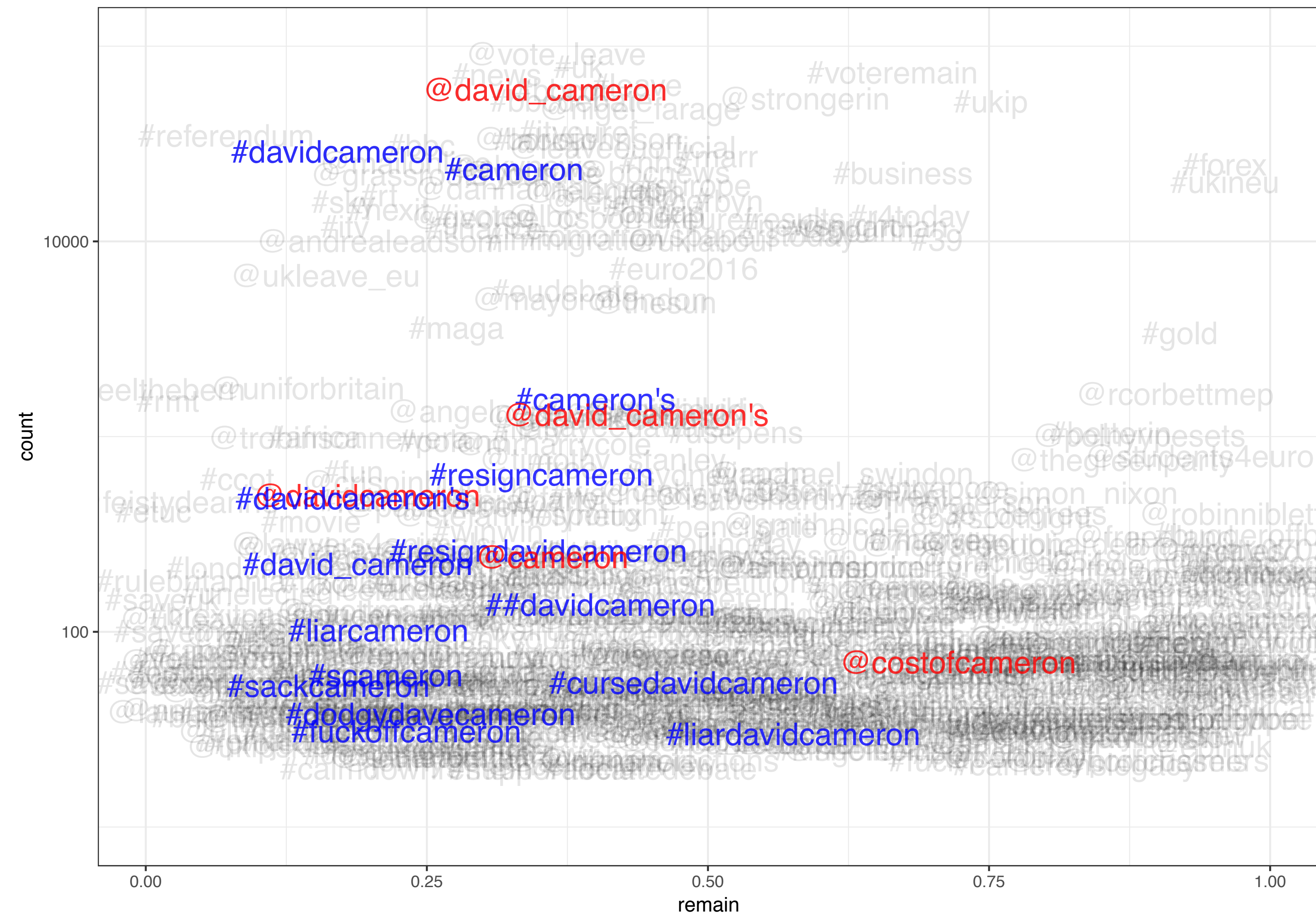
linda seekford @lseekford · Jan 17
John McCain is, a snake. Go away you old goat

linda seekford @lseekford · Jan 20
Mass impeachment for the traitor democracts

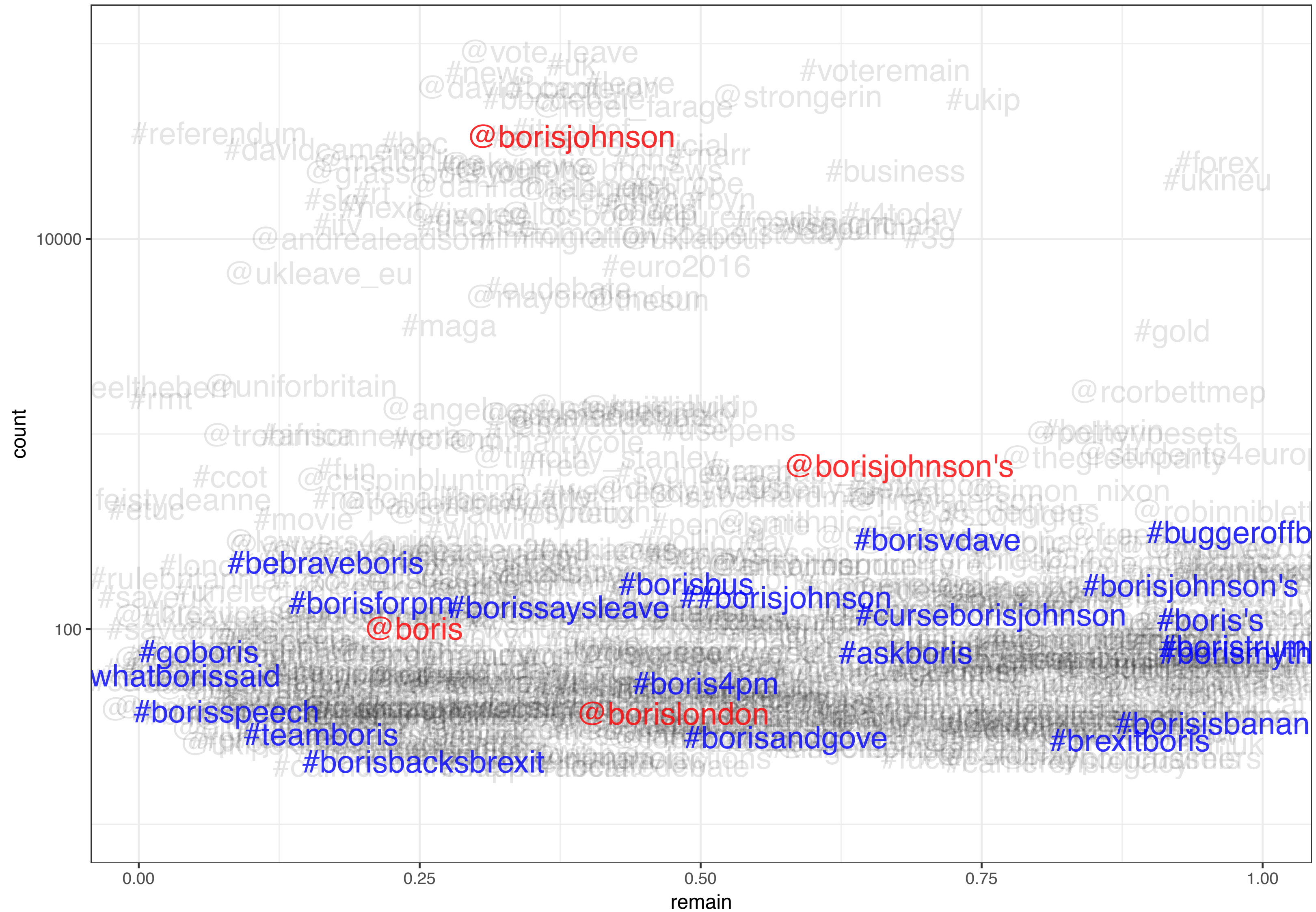
Leave and Remain Features

http://rpubs.com/amatsuo/feature_scores

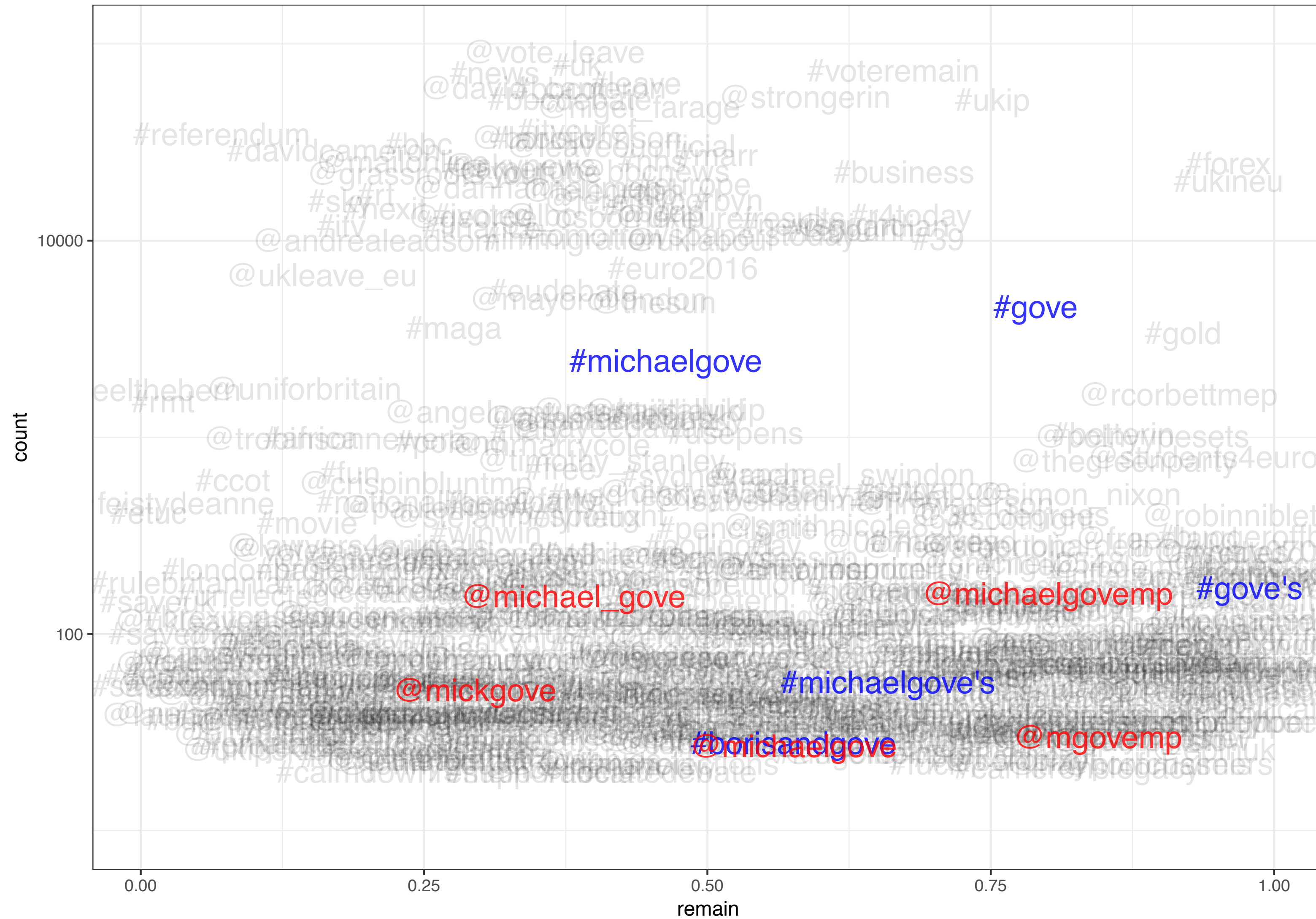
Leave and Remain Hashtags (Cameron)



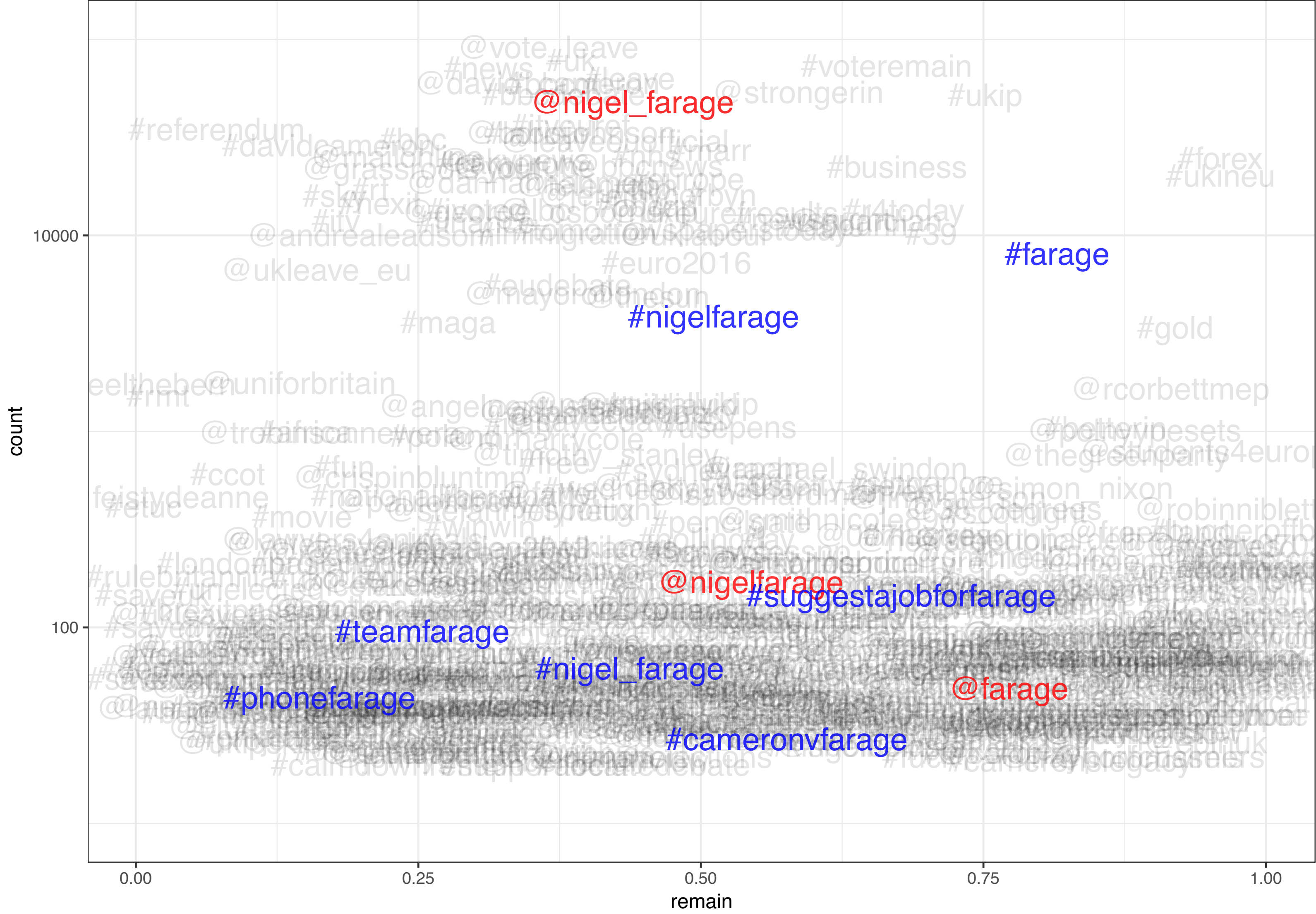
Leave and Remain Hashtags (Boris Johnson)



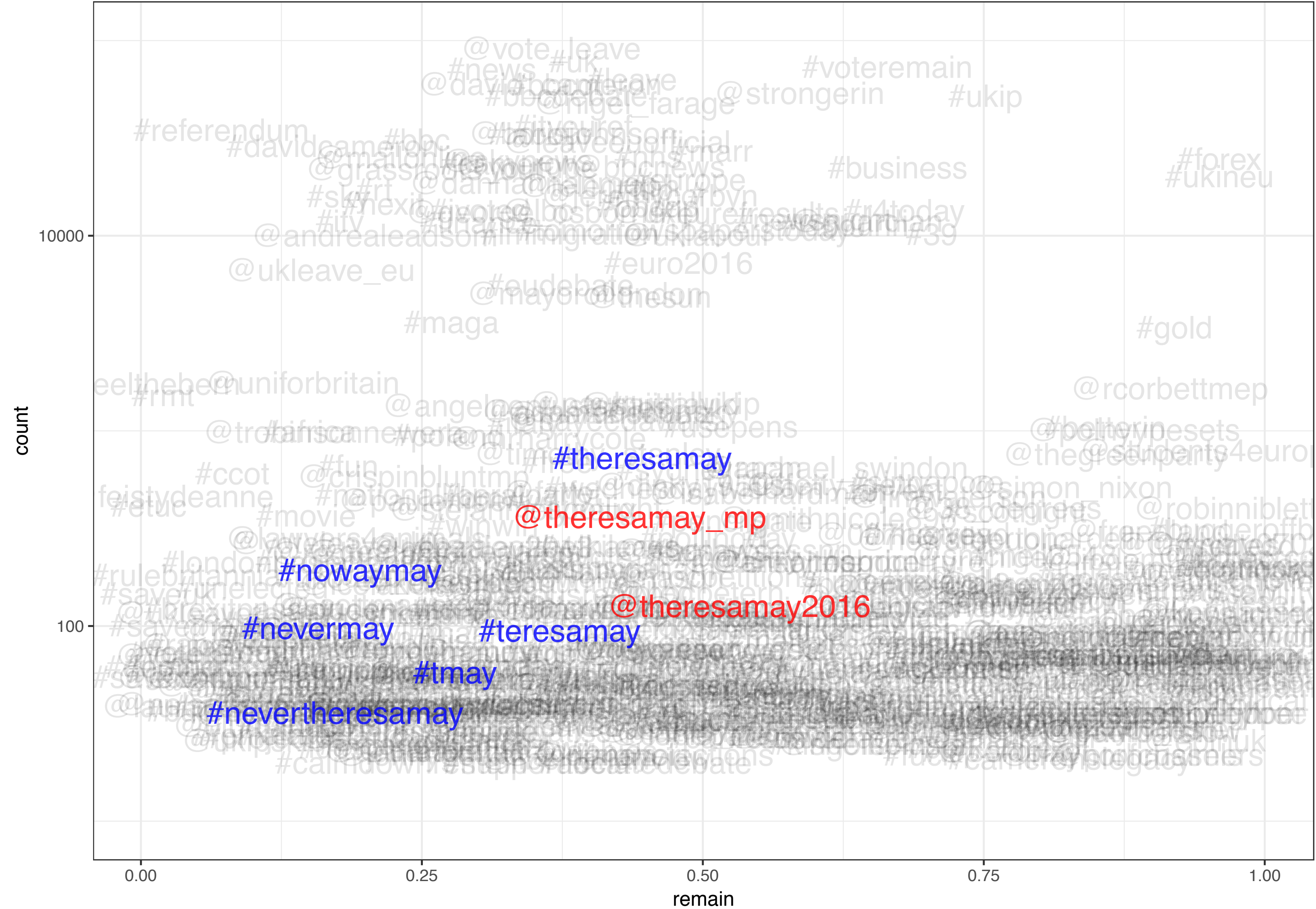
Leave and Remain Hashtags (Gove)



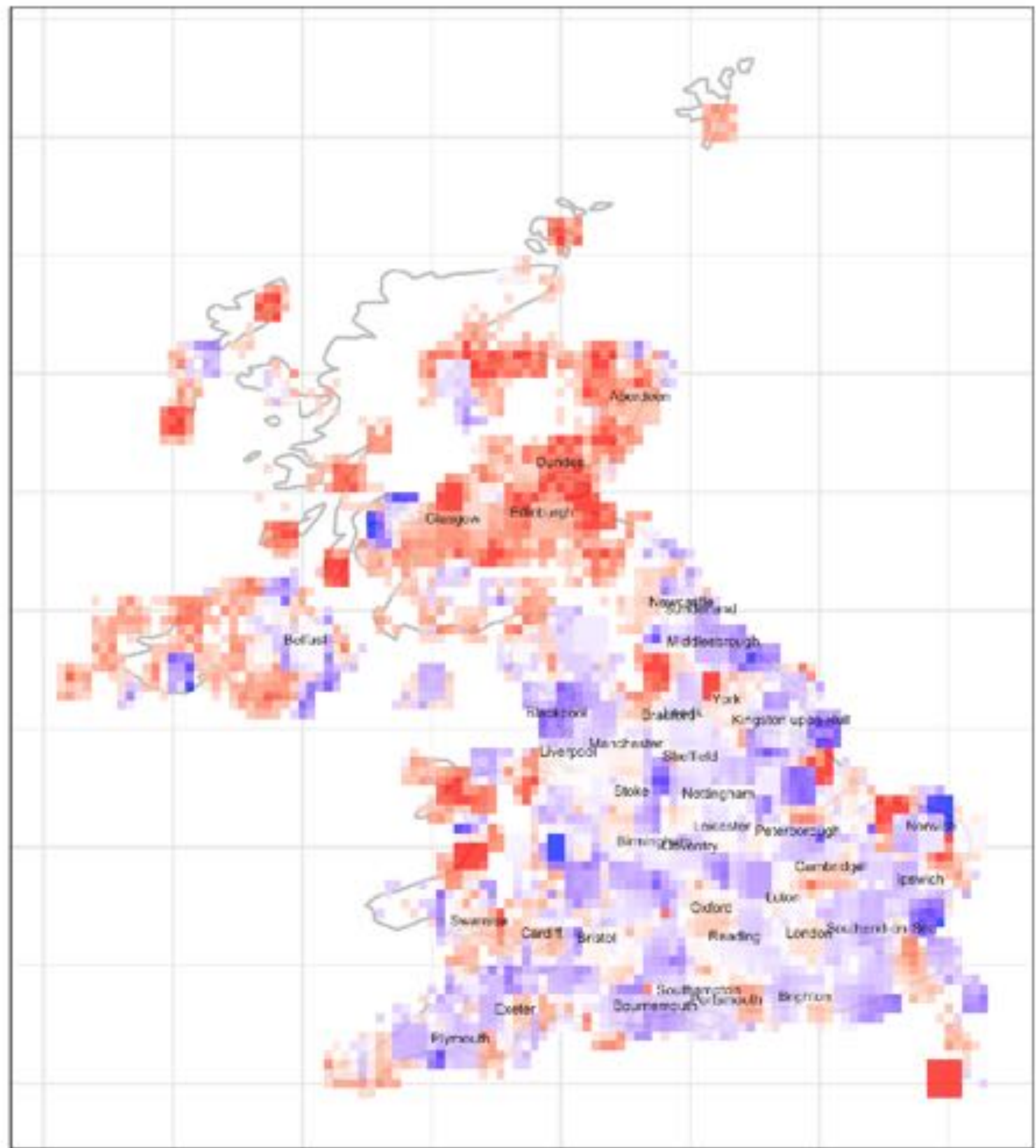
Leave and Remain Hashtags (Farage)



Leave and Remain Hashtags (LSE)



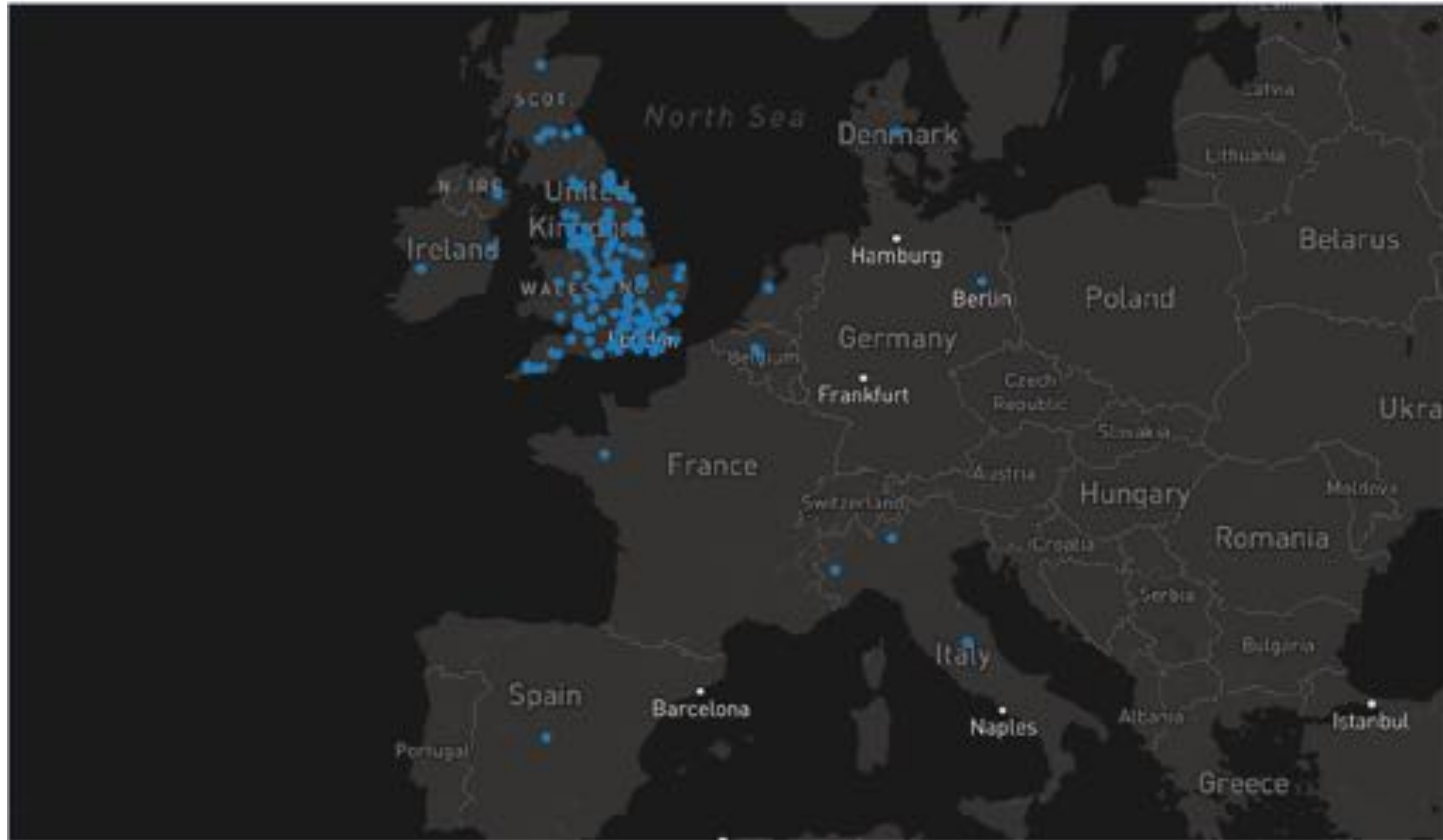
Leave v.
Remain
Hashtags



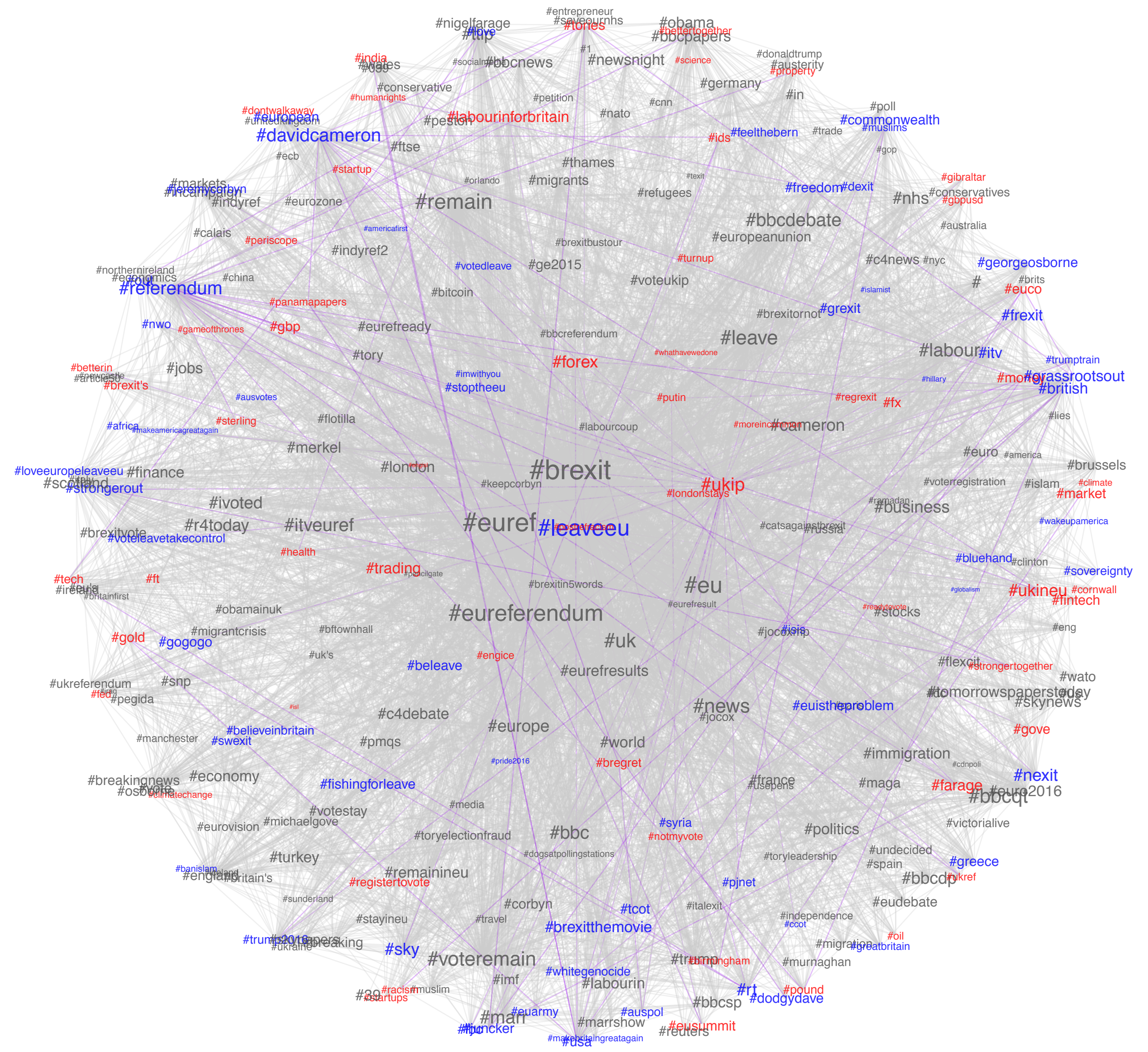
SVM classification Europe-wide: Remain



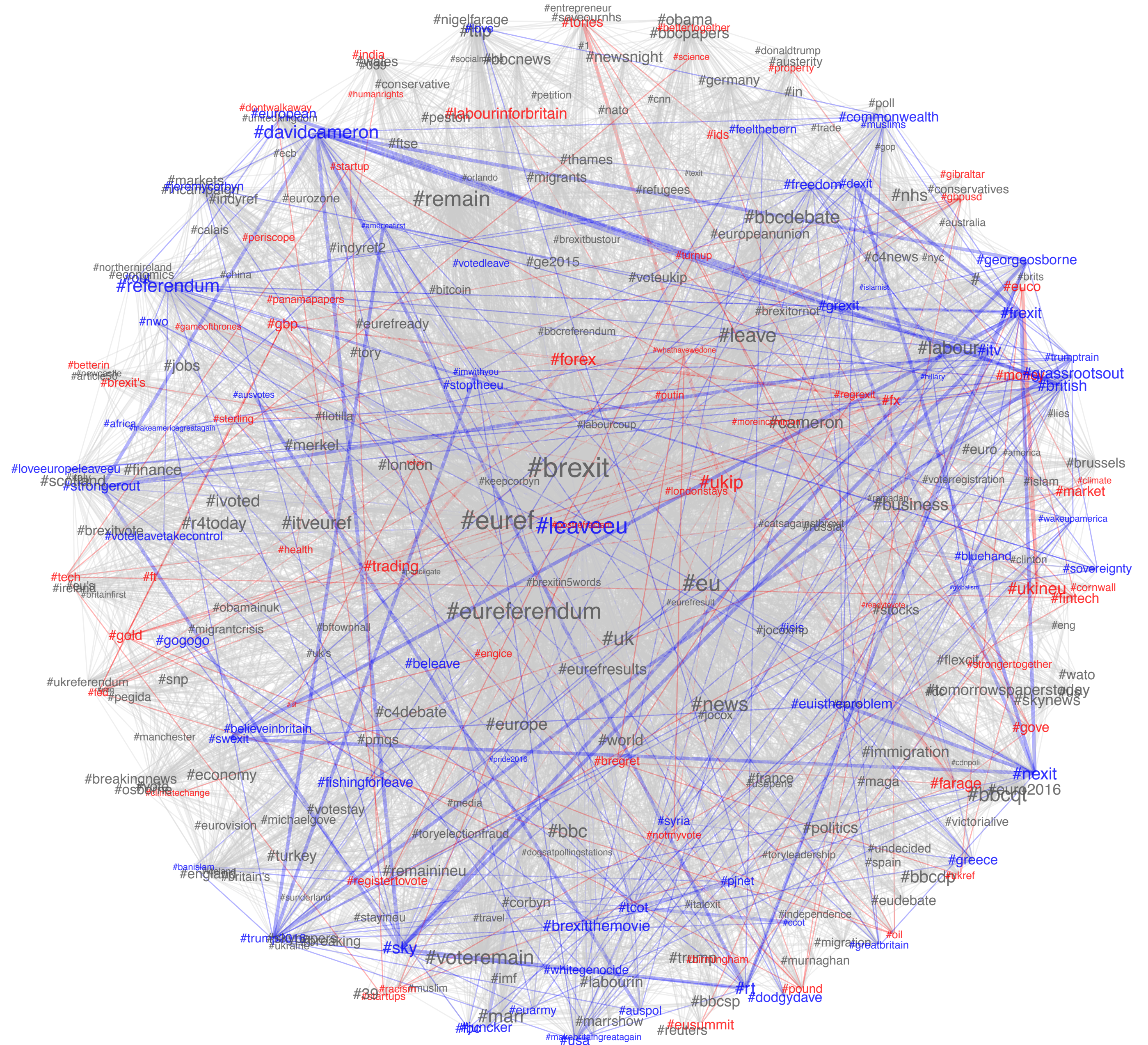
SVM classification Europe-wide: Leave



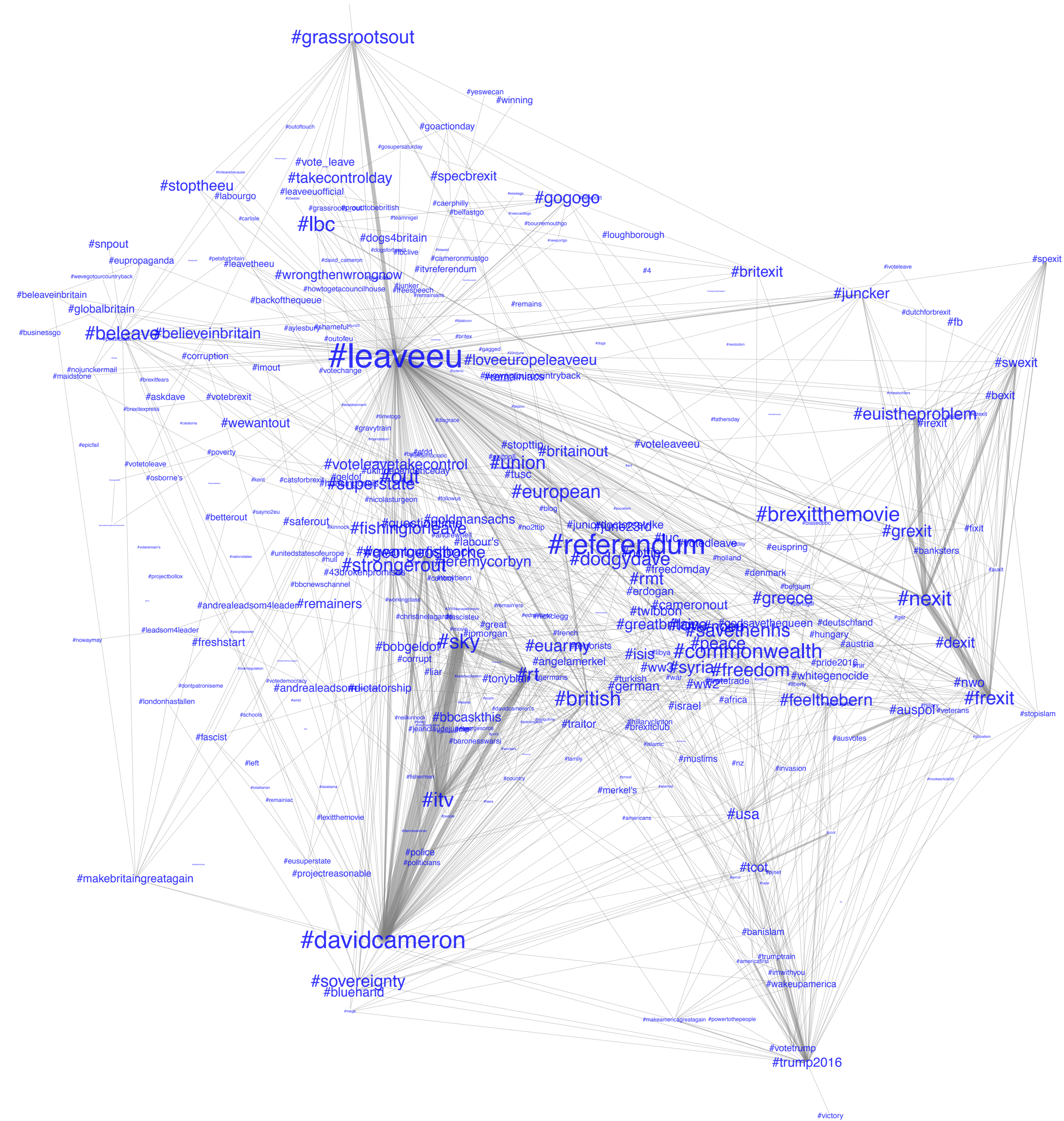
Hashtag Networks (Top 300, across sides)



Hashtag Networks (Top 300, across sides)



Hashtag Networks (Leave)





bury #shameful #jun23

#outofeu

#leaveeu

#loveeu

#votechange

#voteno

#liblabcon

#britex

#scotlandgo

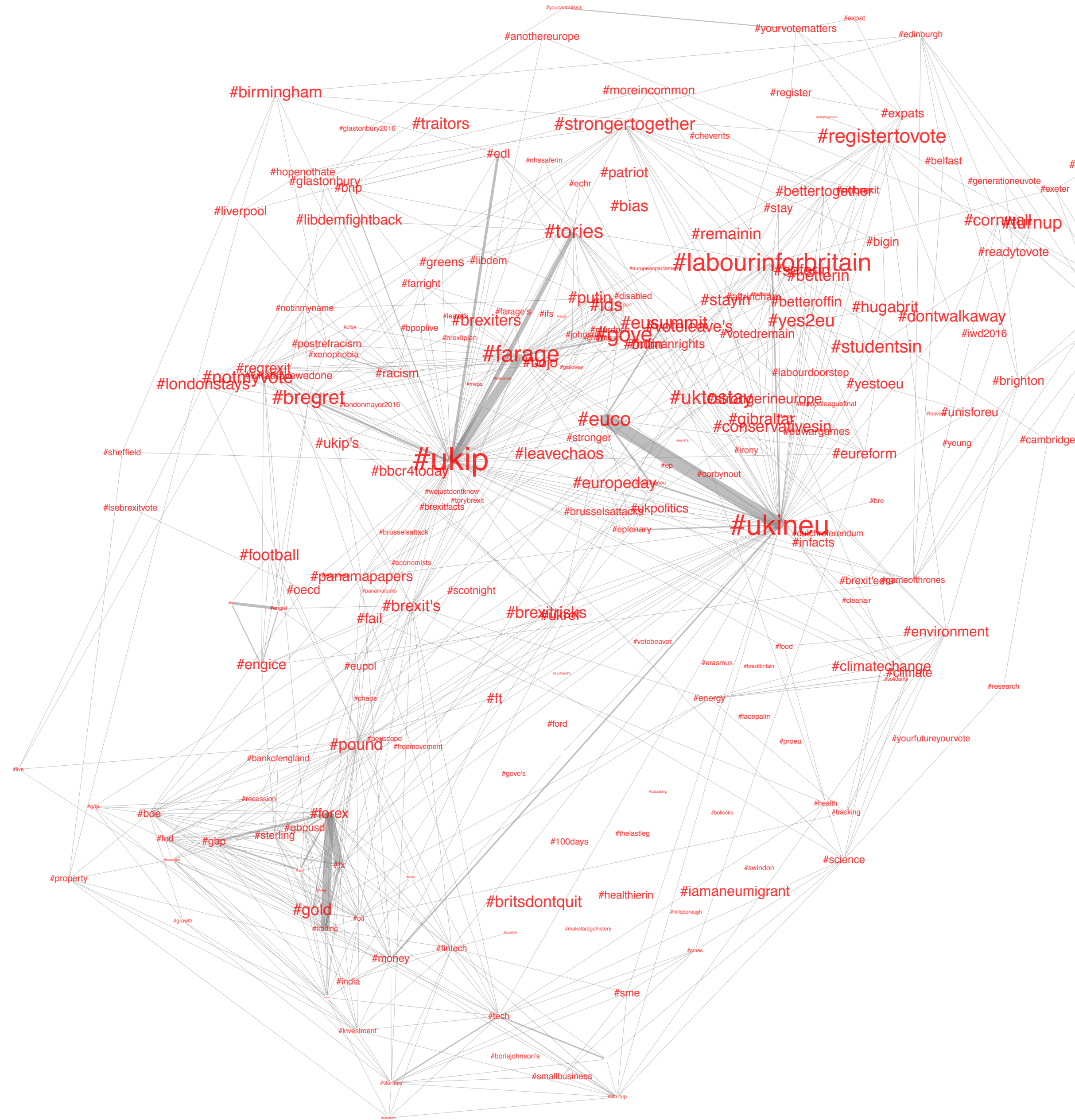
#gagged

#may
#time

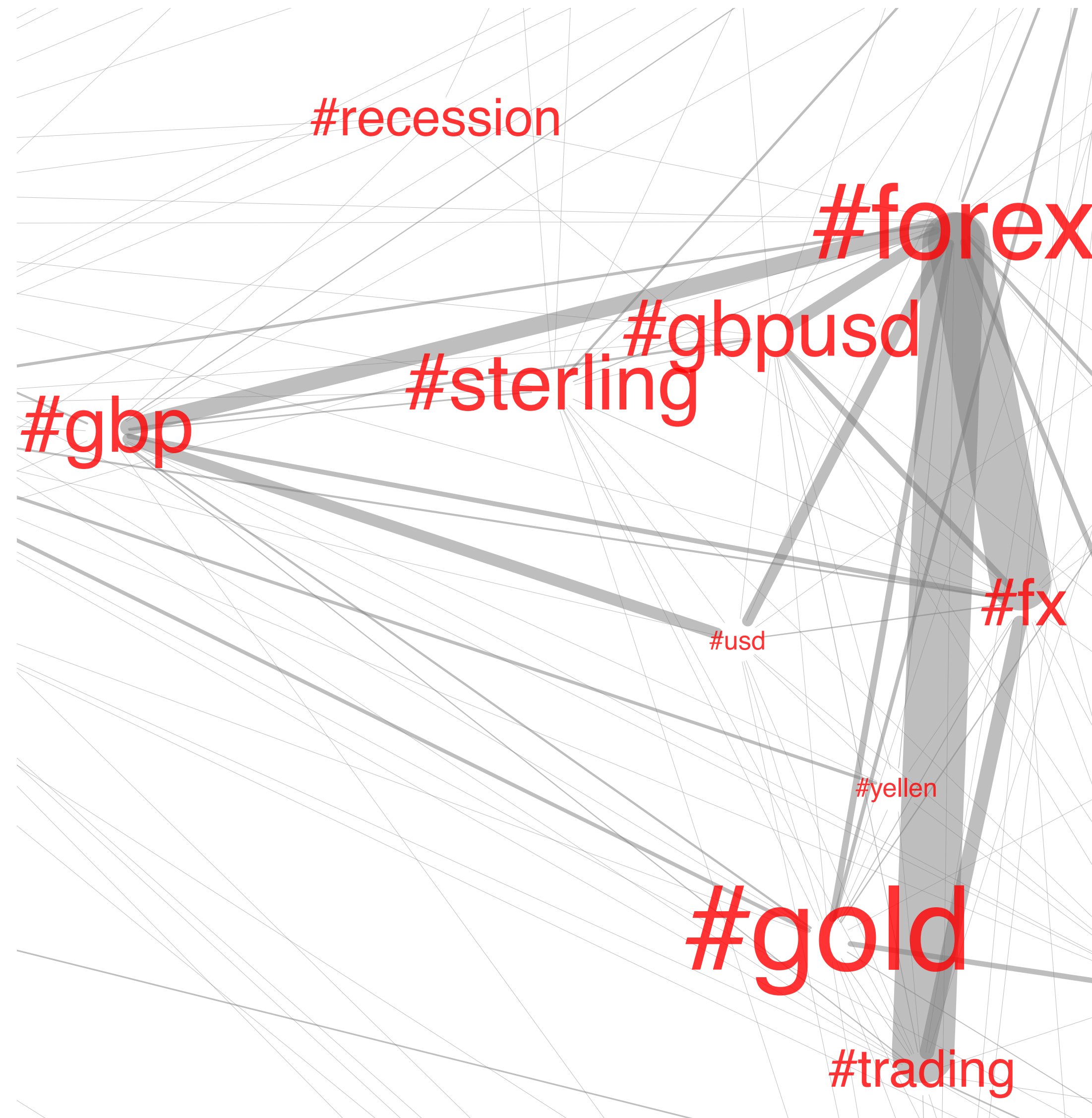
Hashtag Networks (Leave, anti-EU)



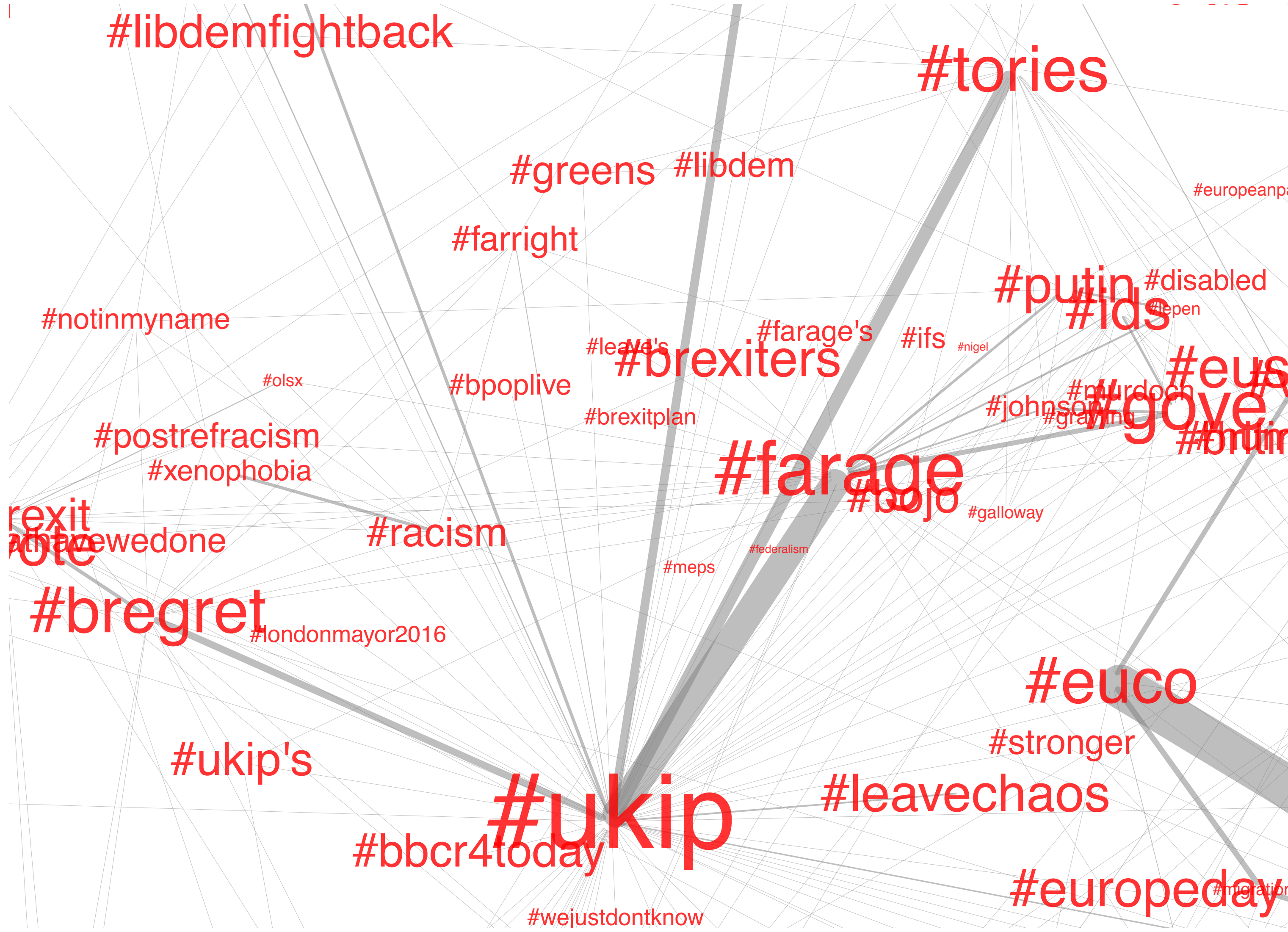
Hashtag Networks (Remain)



Hashtag Networks (Remain, economic concerns)



Hashtag Networks (Remain, parties and political figures)





Data Science Institute
Twitter Observatory

A Set of Tools to Explore Twitter
C Snowden, D Birch

The Twitter Observatory

Chris Snowden, Dr David Birch

Data Science Institute
Imperial College London

Data Kindly Provided by Prof Ken Benoit

**Imperial College
London**

Visual Analytics tools for Exploring Twitter

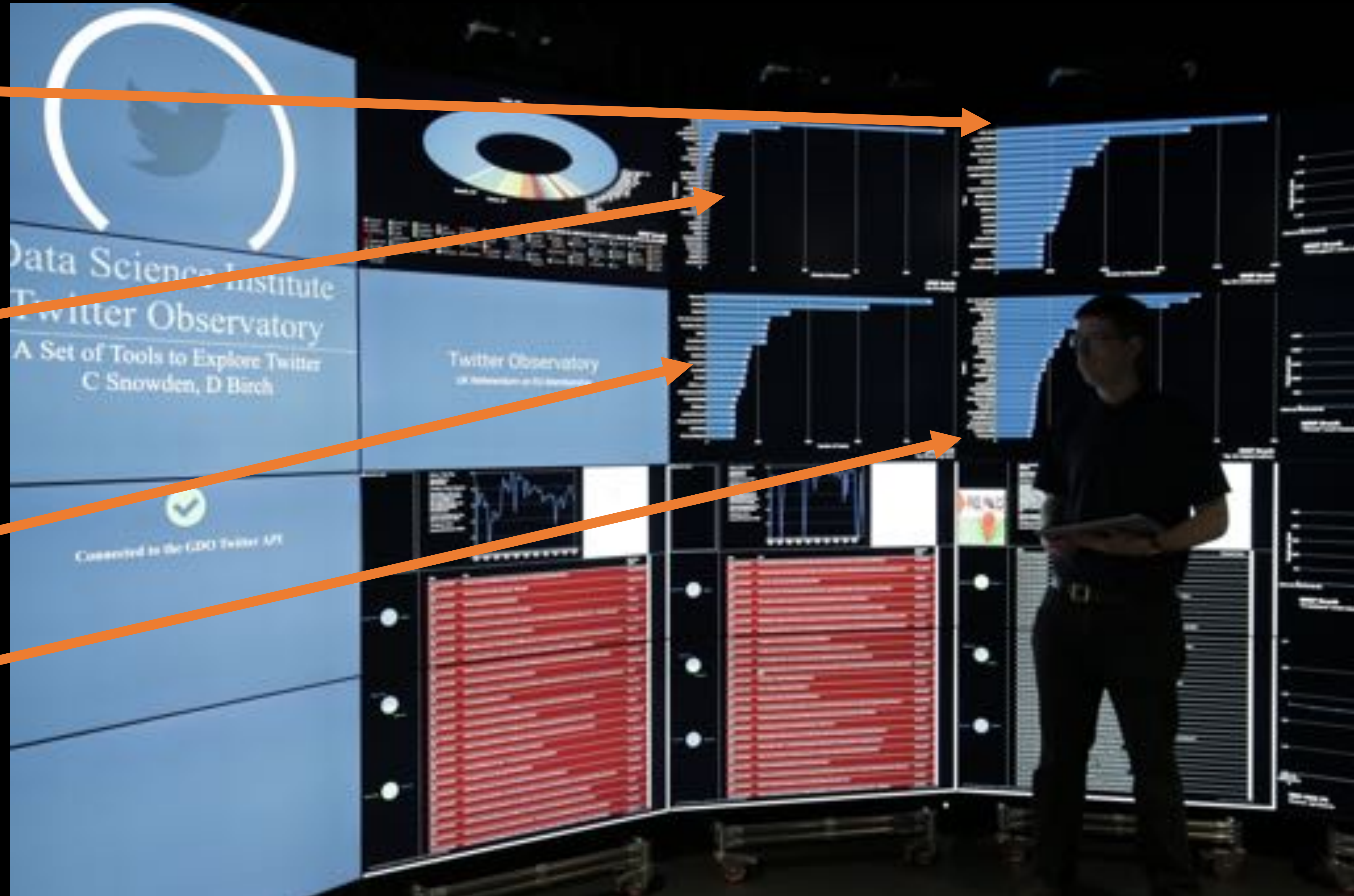
- We use the KPMG Data Observatory a 64 screen immersive visualisation environment
- To create an immersive social discussion environment driven by data.
- Interactive queries can be run on the data and displayed in real time to support multi-disciplinary discussion
- 132million pixels allows us to display huge amounts of data for detailed discussion

Most mentioned users

Most popular Hashtags

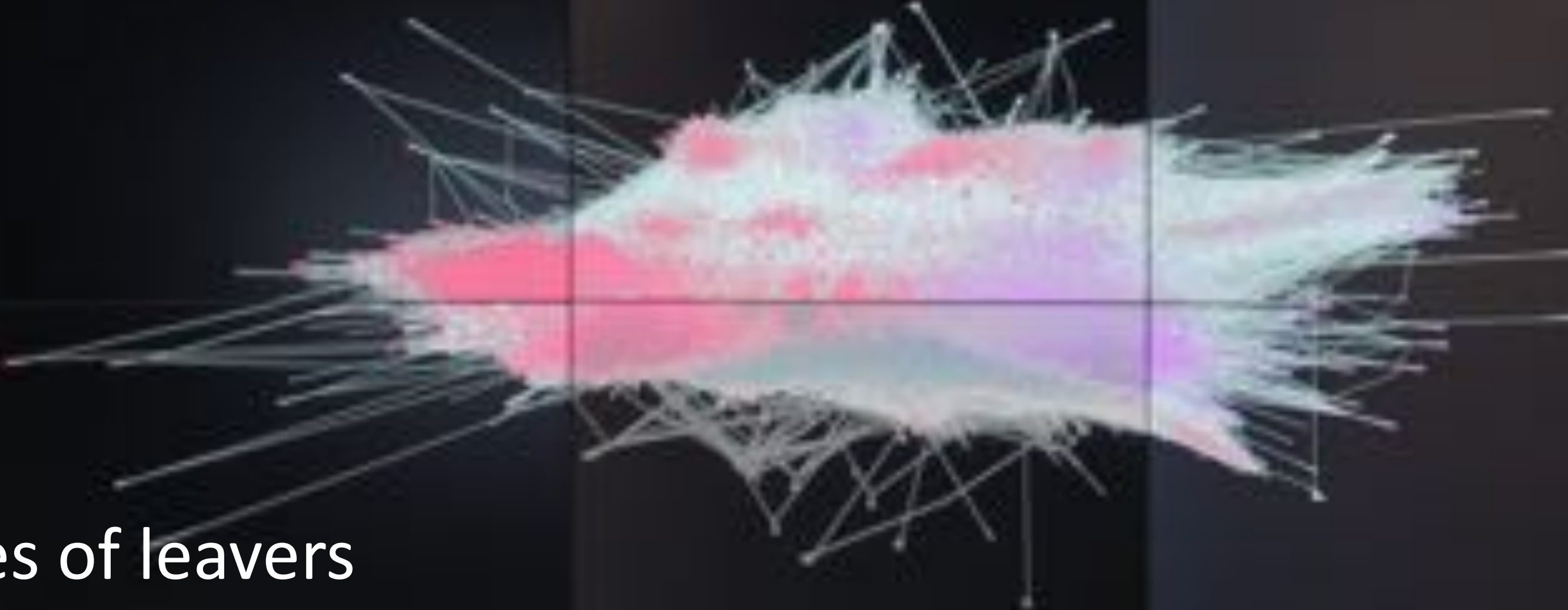
Most popular tweeters

Most original tweets



Community detection

Leave (red)
Remain (purple)



Several communities of leavers
Only one strong remain community

Clear “echo chamber” of leavers



Sentiment Analysis

- Looks up terms from the Linguistic Inquiry and Word Count, a psychological dictionary
- Contains categories about:
 - positive and negative emotion
 - politics
 - power
 - quantitative language
 - tentative language
 - sadness
 - future v. past orientation

example: "reward" language

```
> data_dictionary_liwc[["reward"]]
 [1] "access*"      "accrue*"      "accumul*"     "achievable"  "achieve*"    "achievi*"
 [7] "acquir*"      "add"          "added"        "adding"      "adds"        "advanc*"
[13] "advantag*"    "adventur*"    "amass*"       "approach"    "approached"  "approaches"
[19] "approaching" "award*"       "benefit"      "benefits"    "best"        "bet"
[25] "bets"         "better"       "betting"      "bold"        "bonus*"      "confidence"
[31] "confident"    "confidently" "crave"        "craving"     "dare"        "dared"
[37] "dares"        "daring"       "desir*"       "eager"       "eagerly"     "eagerness"
[43] "earn"         "earned"       "earning"      "earnings"    "earns"       "enthus*"
[49] "excite"       "excited"      "excitedly"   "excitement"  "exciting"    "fearless*"
[55] "fulfill*"     "gain*"        "get"          "gets"        "getting"     "goal*"
[61] "good"         "got"          "gotten"       "great"       "greed*"      "invigor*"
[67] "jackpot*"     "luck"         "lucky"        "obtain"      "obtainable"  "obtained"
[73] "obtaining"    "obtains"      "opportun*"    "optimal*"    "optimism"    "optimistic"
[79] "perfect"     "perfected"    "perfecting"   "perfection"  "perfectly"   "plus"
[85] "positive"     "positively"   "positives"    "positivi*"   "prize*"      "profit*"
[91] "promot*"     "reward*"      "score*"       "scoring"     "seize*"      "snag*"
[97] "steal*"       "stole"        "succeed*"     "success"     "successes"   "successful"
[103] "successfully" "surpass*"     "take"         "taken"       "takes"       "taking"
[109] "took"         "triumph*"    "victor*"      "wager"       "wagered"     "wagering"
[115] "wagers"       "willing"     "win"          "winn*"       "wins"        "won"
```

Reward Language

Remain



Neutral



Leave



0.000

0.002

0.004

0.006

Positive v. Negative Emotion Language

Remain



Neutral



Leave



0.0

0.4

0.8

1.2

Sad Language

Remain



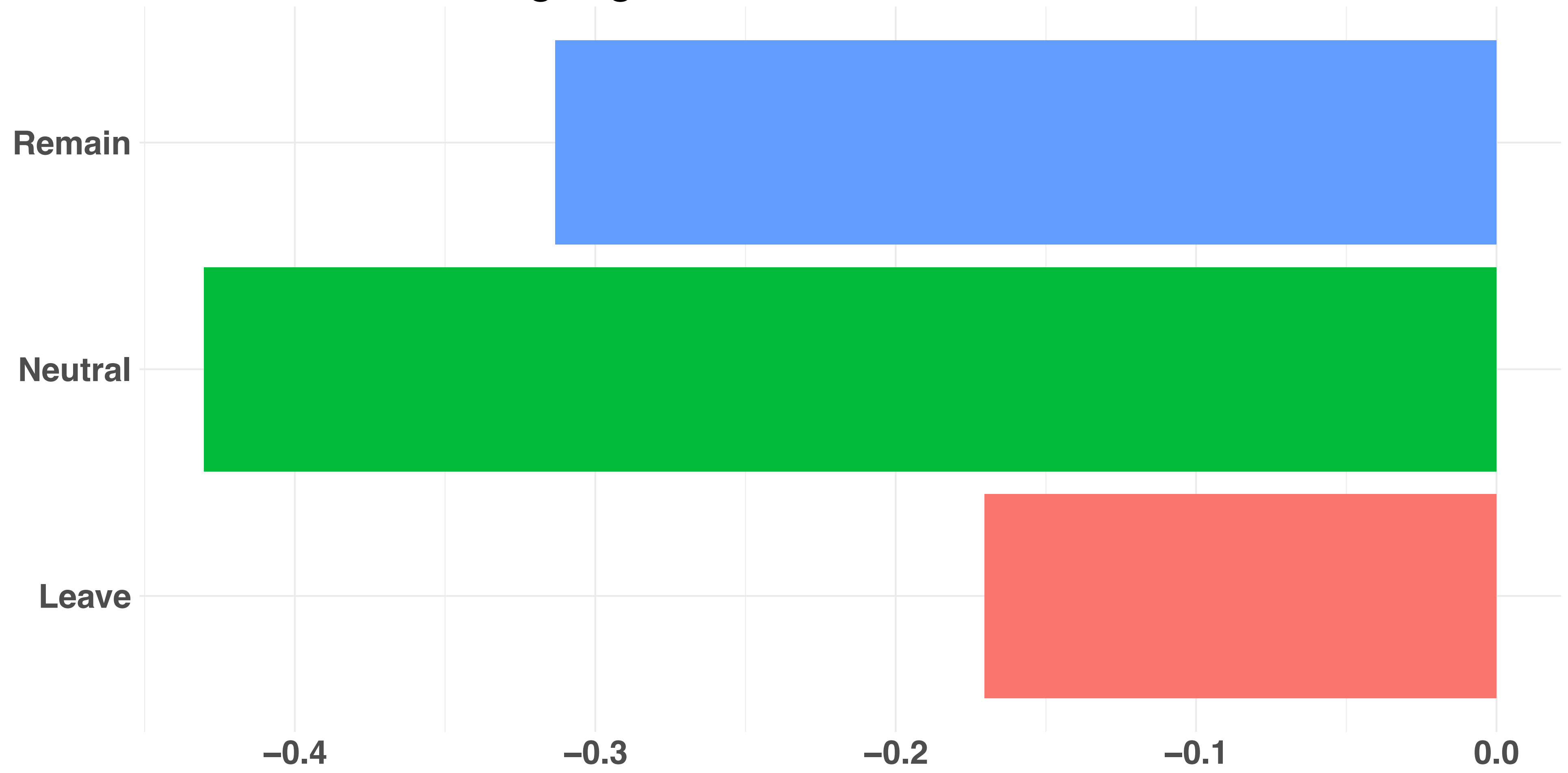
Neutral



Leave



Future v. Past Language



Tentative Language

Remain



Neutral



Leave



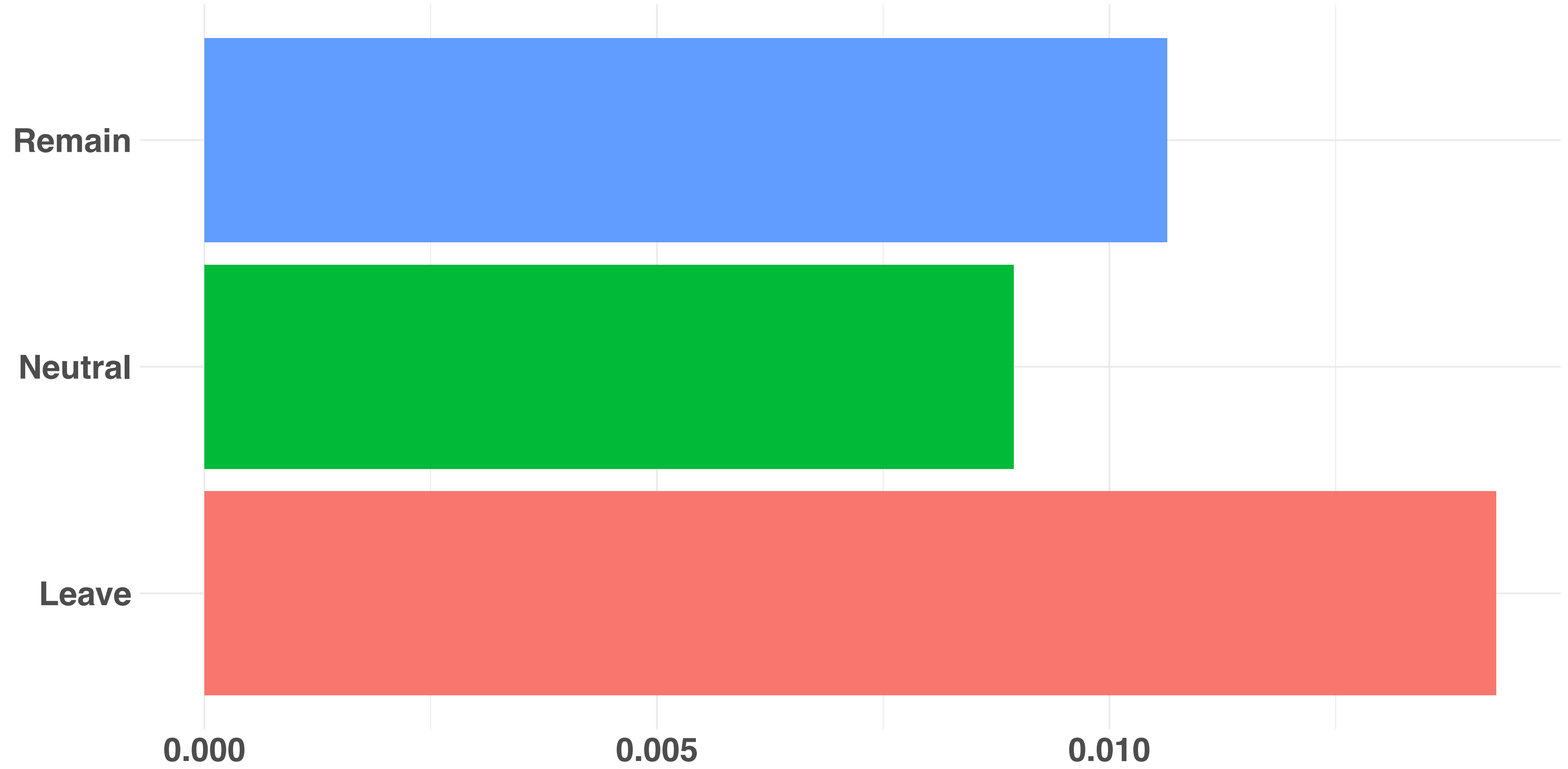
0.000

0.002

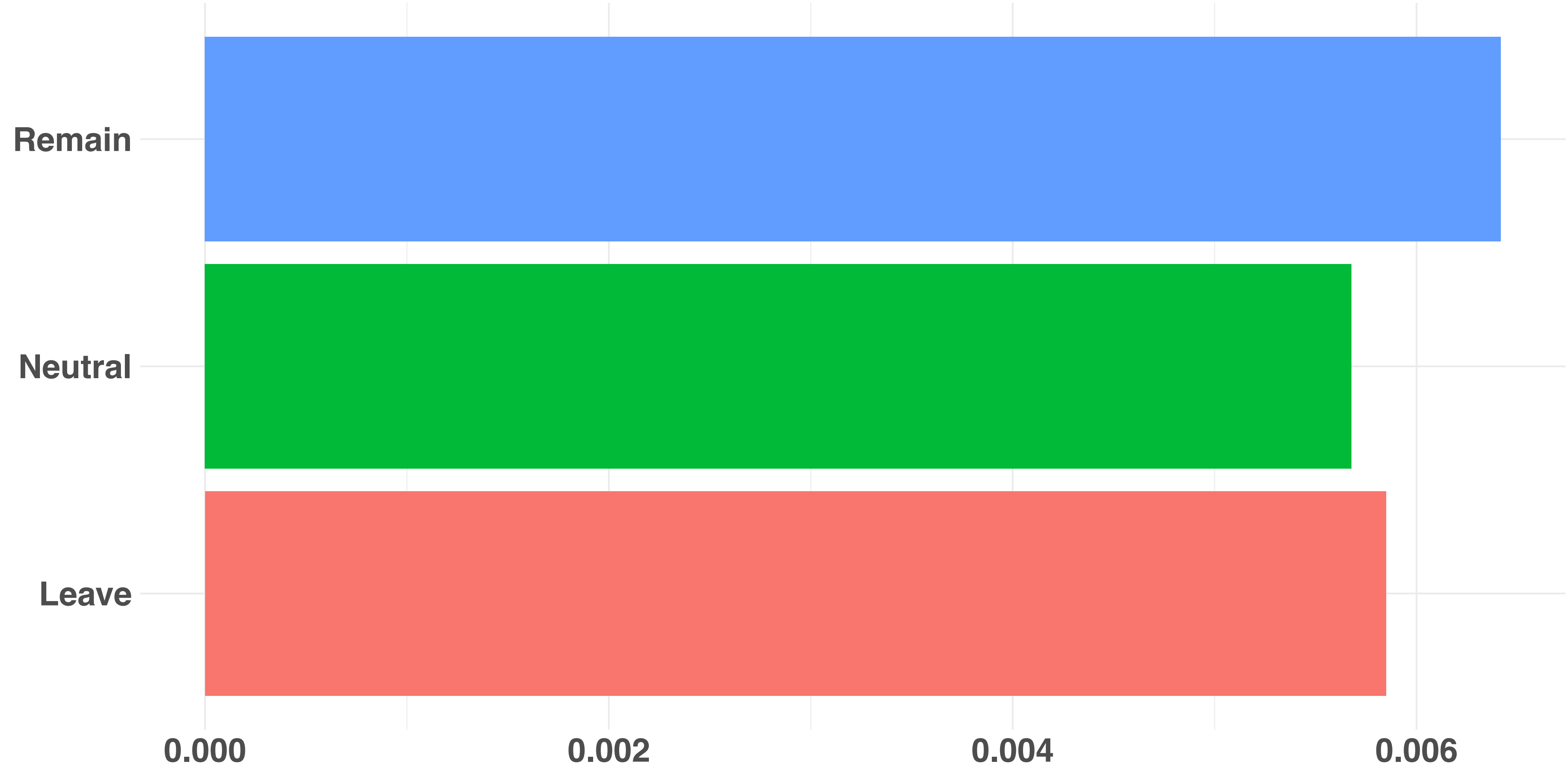
0.004

0.006

Power Language



Quantitative Language



LSE Works: Department of Methodology

The Brexit Debate through Social Media: deliberative discussion, or deliberate dysfunction?

Professor Kenneth Benoit

Head, Department of Methodology, LSE
(@kenbenoit)

Professor Sara Hobolt

Chair in European Institutions,
European Institute, LSE
(@sarahobolt)

Dr Jennifer Jackson Preece

Associate Professor in Nationalism,
European Institute, LSE

Dr Jean-Christophe Plantin

Chair, LSE
(@JCPlantin)

EVENTS

Hashtag for Twitter users: #LSEworks

[@lsepublicevents](https://twitter.com/lsepublicevents)

lse.ac.uk/events