



**BREXIT**

**Who Is Winning the Brexit Wars on Twitter?**

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## Executive Summary

This report explores Brexit related Twitter activity, which occurred between 1<sup>st</sup> May 2019 and 31<sup>st</sup> October 2019. Using Citispotter's proprietary API, we investigated the Pro and Anti-Brexit stance of 3,378,009 tweets. Our aim was to detect trends on each side of the Brexit debate over a six-month period. Data were collected from Twitter, pre-processed for stop-words and special characters such as 'The', 'on' '.', '@', '!' which have no significance in determining stance. This data was further depicted through visualizations. We also identified clusters of words that featured prominently as part of stance detection on both sides of the debate through a word cloud.

It would appear that the pro-Brexit tweets are more forceful in tone and volume. If the silent “minority” want to be heard, they need to up their game.

## Introduction

Brexit, as a term, was coined to express the outcome of a referendum in June 2016 when 51.9% of voters decided to leave the European Union. While this result represents a majority, one of the effects of the narrow margin has been to split sentiments in the country and in Parliament.

In this project, we studied the public's views towards Brexit during and after the European Elections of 26 May 2019.

### Research Aims:

- Understand the Public Stance towards Brexit on Twitter.
- Identify volume trends of Pro-Brexit and Anti-Brexit stance.
- Examine stance trends over the six months – were there any changes?
- Identify Brexit associated Hashtags.

### Methodology:

We have used Citispotter API (Proprietary Artificial Intelligence Algorithm) to analyse tweets scraped from Twitter on the classification of Pro-Brexit and Anti-Brexit stance.

- 1. Data Collection:**  
For data collection, we have written and deployed an in-house **Twitter Scraper and used it over the period of** May to October 2019.
- 2. Data Pre- Processing:**  
Data were pre-processed for unwanted or special symbol URLs and stop words that were in our dataset. For stop-words (which add no value to the text during analysis) removal, Spacy Library was used.
- 3. Tweets Classification:**  
We used Citispotter APIs, for stance classification of the tweets. API categorised stances into four classes: Irrelevant, Leave, Stay, No-sentiment.
- 4. Visualize data:**  
Plots from matplotlib in Python are used to visualize data.
- 5. Conclusion:**  
After analysing the visualizations in detail, we concluded our analysis.

## Flowchart of Stance Detection Case Study Approach

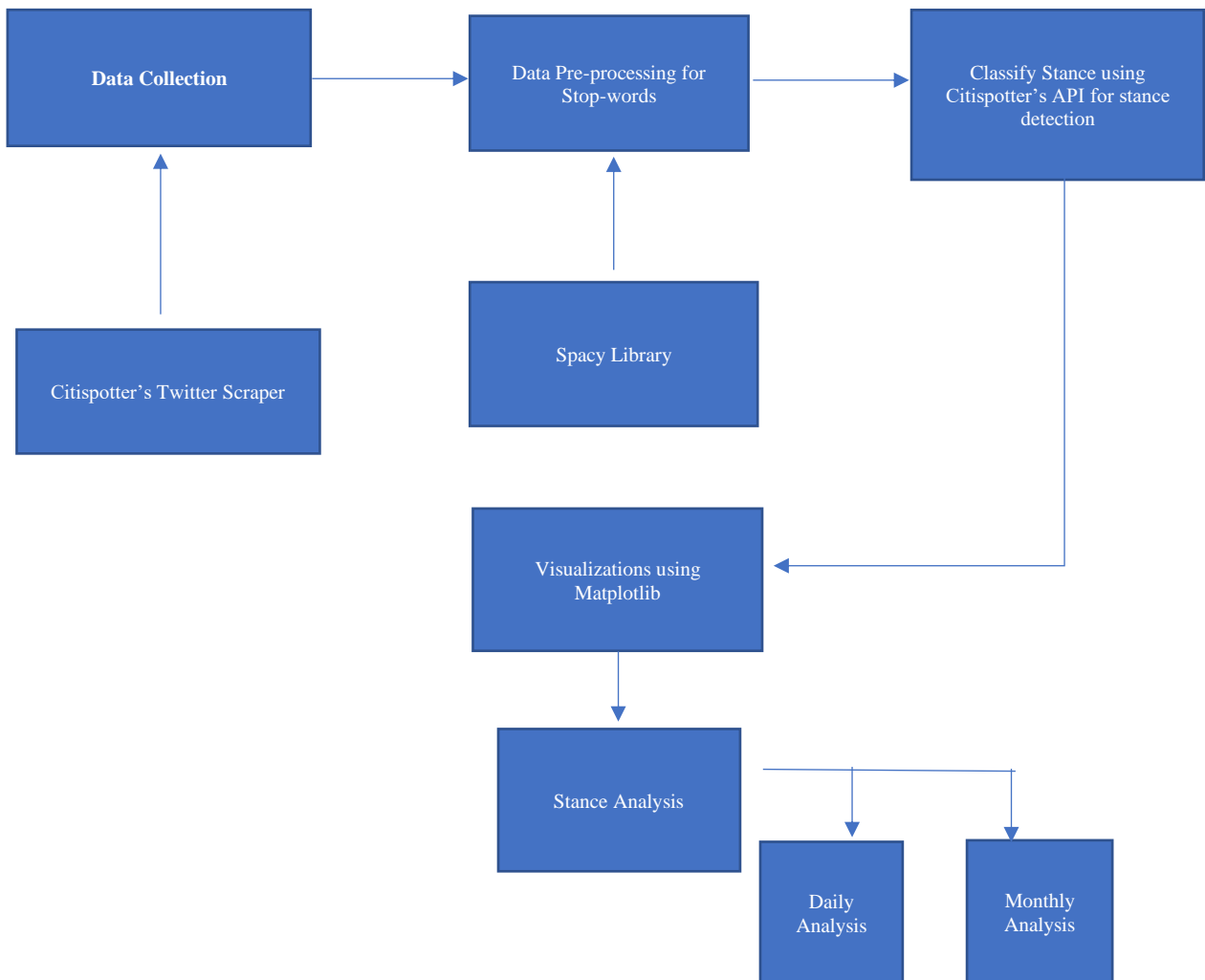


Fig 1: Flowchart Depicting methodology

## Datasets details

For data collection, 3,378,009 tweets corresponding to various 'pro' and 'anti' hashtags were downloaded into CSV files, considered only Pro-Brexit (Leave) and Anti-Brexit (Stay) Tweets which are shown in Fig 2. In this “Irrelevant” signifies the group which mentions Brexit related keywords in their tweets to gain exposure on Twitter. However, these tweets do not add to the Brexit discourse in any significant way and hence considered spam in our study of stance detection. While “No-sentiment” meaning the group, which does not care about Brexit but make a comment on Brexit and avoid taking any side or showing interest in the pros and cons of Brexit.

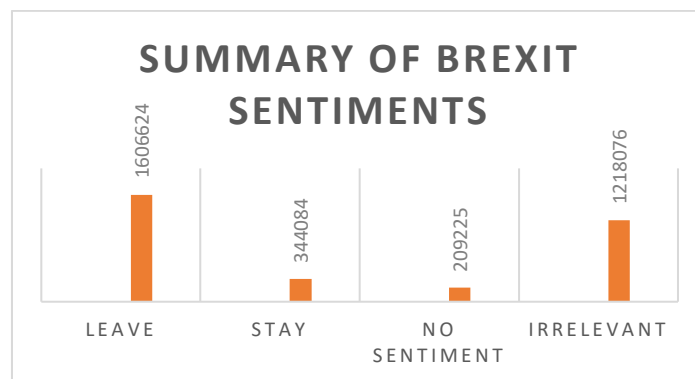


Fig 2: Summary of Tweets Stances

### List of Pro-Brexit (Leave) Hashtags:

#LeaveOct31st', '#StandUp4Brexit', '#LeaveEU', '#VoteLeave', '#No2EU', '#BetterOffOut', '#EUreferendum', '#EUref', '#Leave', '#probrexit', '#BrexitParty', '#BrexitBetrayal', '#britishindependence', '#conservativeparty', '#checkchequers', '#PlanAPlus', '#backboris', '#LetsGetBrexitDone', '#Brexit', '#Brexitcast', '#BorisJohnsonPM', '#PeoplesVoteMarch', '#Brexiteers', '#BrexiteersUnite', '#LeaveOct31', '#BrexiteersUnite', '#ProRemain', '#MarchToLeave', '#BrexitDay', '#WithdrawalAgreement', '#ProRemain

### List of Anti-Brexit (Stay) Hashtags:

#antibrexit, #antiTory, #PROEUROPEANUNION, #PROIMMIGRATION, #proEuropean, #StopBrexit, #StopBrexitSaveDemocracy, #StopBrexitSaveLives, #StopBrexitSaveNHS, #BrexitDeal, #BrexitExtension, #EuropeanUnion, #EU, #wisdom, #stopbrexitnow, #nobrexit, #stopbrexit, #brexitsucks, #cancelbrexit, #StopBrexitSaveBritain, #StopBrexitSaveDemocracy, #RevokeA50, #RevokeA50Now, #Remain, #ProEU, #BrexitIsABadIdea, #BrexitBluffAndBullshit, #Resist, #WeareEurope, #BrexitShambles, #RemainDay, #StopTheBrexitCoup

## Word Clouds for Pro-Brexit and Anti-Brexit.

Word Cloud is a data visualization technique used for representing text data in which the size of each word indicates its frequency or importance. **Significant Keywords are highlighted using word cloud.**

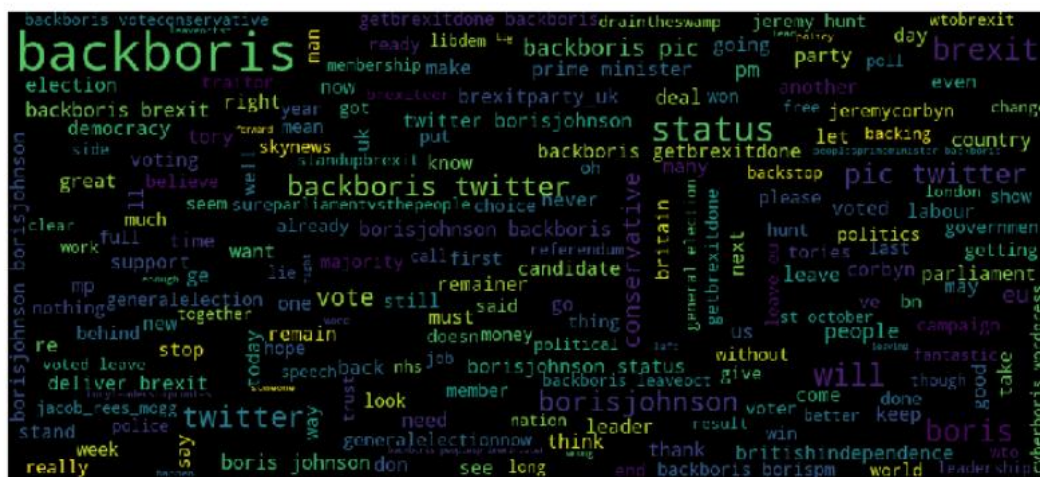


Fig 3: Pro-Brexit Word Cloud



Fig 4: Anti-Brexit Word Cloud

From the above word cloud, we can see the most important words from our collected dataset, the significant textual data points that shape public opinion for both Pro-Brexit and Anti-Brexit tweets.

We observe that words that shaped Pro-Brexit opinion are 'backboris', 'boris johnson' and the overall message is clearly repeated, while Anti-Brexit words are 'stopbrexit' and 'antibrexit'. But, the rest of the messaging is diffused with giletsjaunes and other words that are not "on point".

## Six Month Trend Analysis for Pro-Brexit and Anti- Brexit Stance Determined by Citispotter's API.

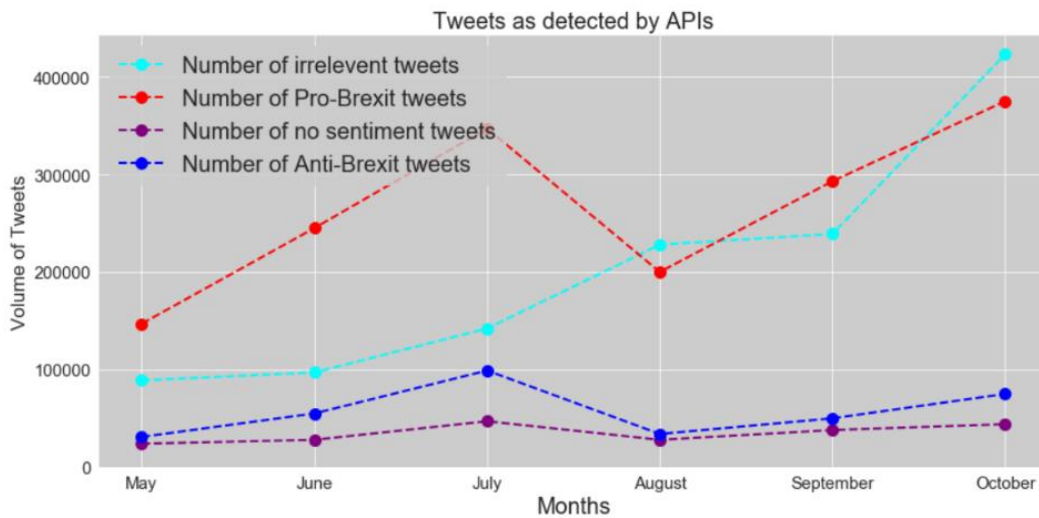


Fig 5: Six Month Trend Analysis for Pro-Brexit and Anti-Brexit Stance

From Fig 5, we can see the frequency of each stance in our dataset and observe that both Pro-Brexit and anti-Brexit tweets increase from May to July; with a drop in August, followed by a rise in September and October. The increase in the number of Pro-Brexit tweets is substantial compared to Anti-Brexiters. **This means we can say that in the upcoming month, both anti and pro tweets will rise, but the effect of rising numbers will be more pronounced in Pro-Brexit tweets.**

### Data Visualisation (for Stance Analysis) from May to October 2019

We present a month by month report on the pro and anti-Brexit stance for the six months from May to October. This is the period from when Theresa May offered to resign after three failed attempts to get Brexit through Parliament to when Boris Johnson began to struggle with getting Brexit done and just before announcing the December 2019 elections. During this period Parliament was prorogued and in recess.

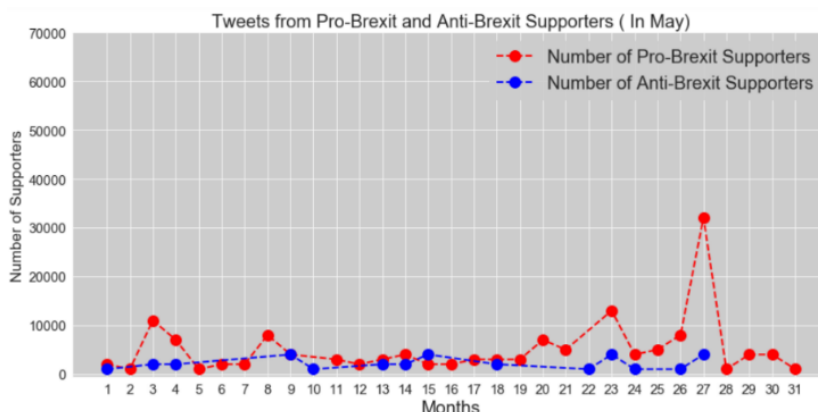


Fig 6: Shows Stances for Pro- Brexit And Anti-Brexit (In May 2019)

It is evident from Fig 6 that that Pro-Brexit tweets far outnumber Anti-Brexiters in May 2019. The Anti-Brexit supporters were less active other than for a few days. Although, Pro-Brexiters were quite aggressive when it comes to their cause, "Britain leaving European Union". Public with Anti-Brexit stance barely reached 5000 on

any particular day of the month. Meanwhile, Pro-Brexit camps hit 10,000 mark on the 3<sup>rd</sup> day, 23<sup>rd</sup> day and reaching 33,000 at the peak after the resignation of Theresa May.

Part of the explanations of the differences between the pro and Anti-Brexit volumes may well be that the Pro-Brexit is leading the debate. The peaks are related to critical events in the month, for example, the resignation announcement of Theresa May on 24<sup>th</sup> of May, effective 7<sup>th</sup> June. This had been preceded by several votes on the “deal with the EU” in Parliament that had not succeeded. This may have resulted in the Pro-Brexit supporters leading the charge by playing the “blame game” while the Anti-Brexit supporters remained somewhat silent.

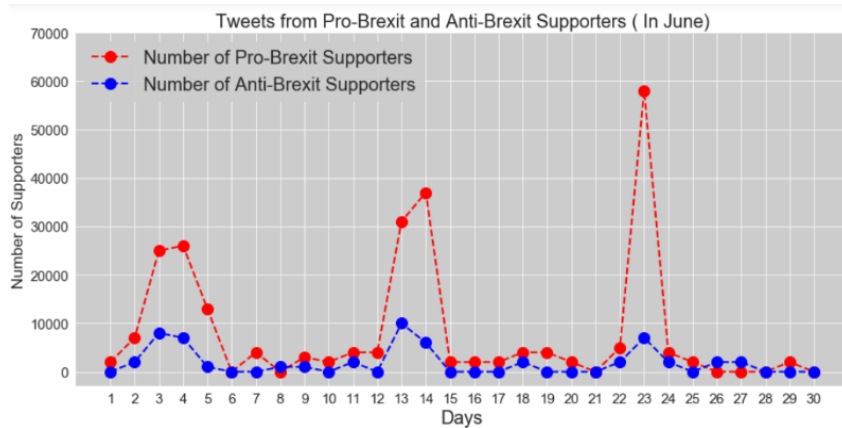


Fig 7: Shows Stances for Pro- Brexit And Anti-Brexit (In June 2019)

We continue to see the increase in volume of tweets on both sides of the debate. There are three significant spikes which we interpret as the activity around the selection of the new Prime Minister.

The Pro-Brexit supporters have sustained a high volume of tweets compared to the Anti-Brexit supporters. We begin to see the massive difference in energy on the two sides.

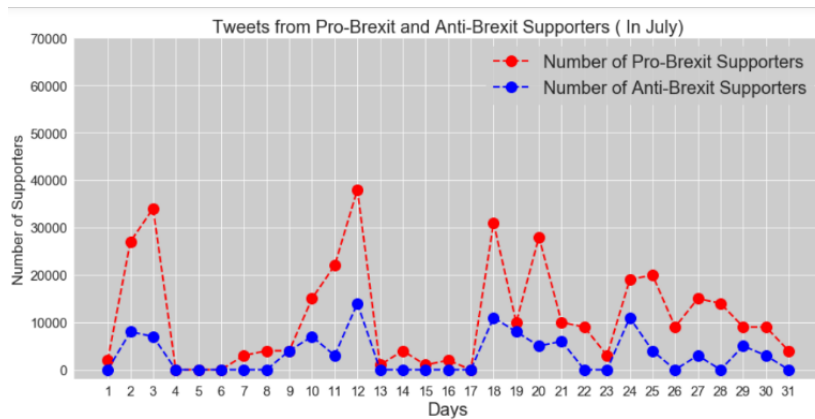


Fig 8: Shows Stances for Pro- Brexit And Anti-Brexit (In July 2019)

In July (Fig 8), Pro-Brexit is still ruling on Twitter. The Brexiteers remained active throughout July, compared with the previous two months' data. We see activity on 17 days and that too with higher volumes than the anti-Brexiters who mustered a bit of energy for 14 days.

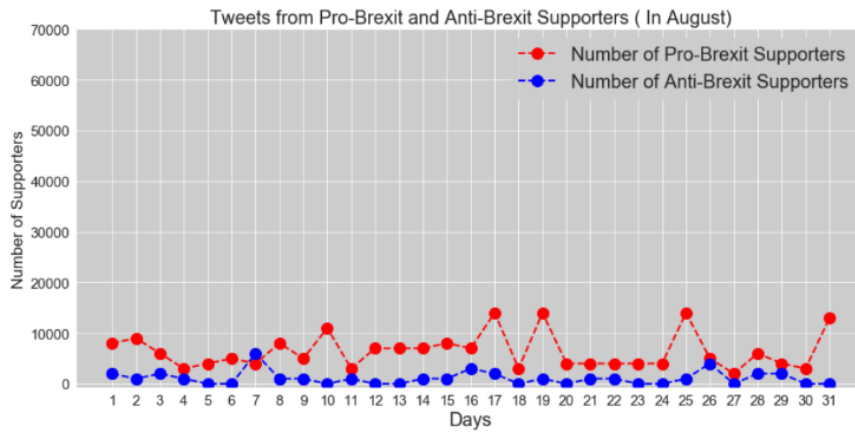


Fig 9: Shows Stances for Pro-Brexit And Anti- Brexit (In August 2019)

Fig 9 illustrates that both sides were relatively quiet as both Houses of Parliament went into summer recess from 25 July until 3 September. The trend is dominated by Pro-Brexit Supporters.

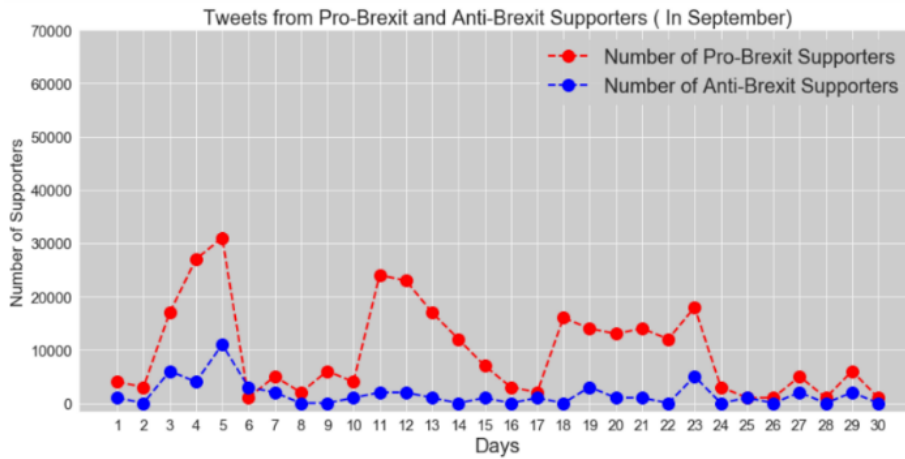


Fig 10: Shows Stances for Pro-Brexit And Anti-Brexit (In September 2019)

Pro-Brexit tweets were restarted in September (Fig 10) with three major periods of activity. We can see that the pro-Brexiters exceeded 10,000 tweets per day on 13 days of the month, while the anti-Brexiters only just went above 10,000 on one day. Perhaps they are not taking their arguments on to social media?

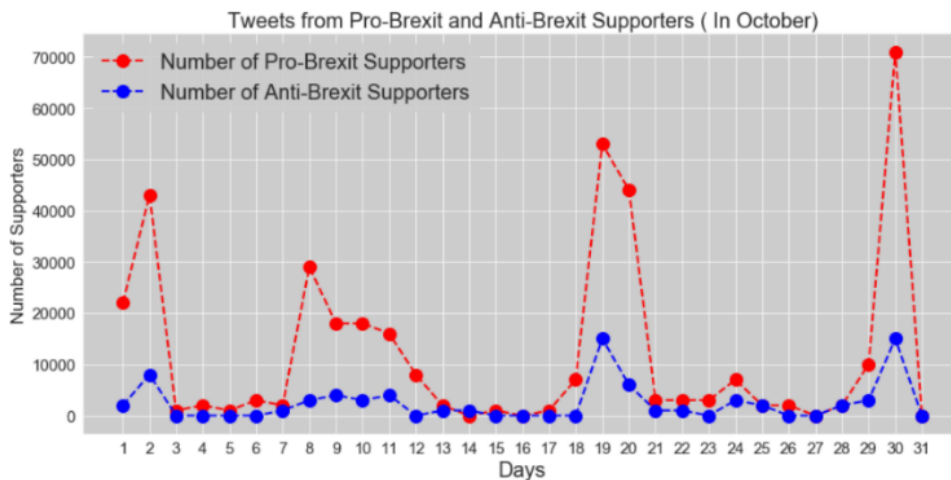


Fig 11: Shows Stances for Pro-Brexit And Anti-Brexit (In October 2019)



The number of Pro-Brexit and Anti-Brexit rose to a maximum in late October, possibly, due to the deadline of 31 October for Brexit. Continuous support was seen in favour of Brexit while Anti-Brexit supporters are nowhere near. On nine days of the month, the pro-Brexit tweets were well above 10,000 while the anti-Brexit lobby managed only two days above 10,000 and that too – only just.

Pro-Brexit and Anti-Brexit activity increased in October because on 14 October Parliament returned for the Queen's Speech. On the same day Prime minister Boris Johnson sent two letters to the president of the European Council, Donald Tusk: one, which is stated to be from the UK prime minister but is not signed, refers to the requirements of the Benn Act and requests an extension until 31 January 2020; the other, signed personally by Johnson and copied to all Council members, states that it is his own belief that a delay would be a mistake and requests support from the president and Council members for his continuing efforts to ensure withdrawal without an extension. The letters are delivered by the British permanent representative in Brussels, together with a cover note signed by himself, which affirms that the first letter complies with the Benn Act.

## Conclusion:

- Pro-Brexit supporters continuously remained active throughout the analysis period
- Anti-Brexit support was also active but far less when compared with Pro-Brexit
- The Pro-Brexit camp saw an upward trend from May to Oct, slightly stalling in August
- Anti-Brexit group stances witnessed a somewhat similar trend across the 6-month period, which was relatively low when compared with Pro-Brexit group stances.

After filtering out the “noise” of irrelevant, and No Sentiment – the most visible observation is that the Pro-Brexit supporters are far more active than the Anti-Brexit supporters.

On social media (Twitter) it seems that the Anti-Brexit supporters are sleep-walking towards their stance.

On month by month basis and even on daily analysis of the six months, the trend indicates more and more people joining the "twitter wars", but again it is evident that the Pro-Brexit supporters outnumber the Anti-Brexit supporters.

On examining the dominant words in the Word Cloud – it also appears that the debate from the Pro-Brexit side is both personal and built on simple sound bites such as “BackBoris”. This is in contrast to a puzzling array of words and phrases that appear unconnected such as names of countries and events outside the UK. The Pro-Brexit machine provides very clear, simple messaging, while the Anti-Brexit supporters appear to be distracting their audiences.

In Laymen's language, the Pro-Brexit campaign is gaining a foothold among the British audiences and is gaining massive support from people on Twitter when compared with the Anti-Brexit Stance. Pro-Brexit Stance is increasing on a monthly basis, and it suggests people are more inclined towards “Britain leaving Europe”. It seems leaders supporting Brexit are more articulate and engaged.

## Future Scope

As we develop our APIs and understanding, our next report will be on the timelines and hate speech that has resulted in the exit of several MPs from British politics.

The contention would be that both the volume of social media traffic and the nature of negative language is affecting British politics. Our intent is to provide the evidence while testing our technology and processes and becoming a real-time source of public opinion.

We hope to have engaged you in this report and would be happy to receive your feedback, questions or indeed support for future work.

## Acknowledgements

The author would like to acknowledge the immense speed, energy, enthusiasm and technical skills of our interns that enabled the API to be applied and used for this report.

### Contact:

For further information about the report and the capabilities of Citispotter to help solve challenges faced by your organisation in terms of Click-bait, Sentiment analysis, Fact-checking, Stance analysis please get in touch with Pallav Sethiya, Founder and CEO of Citispotter.

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