

# Ahead of the Senegalese Presidential Elections : Taking the Temperature from Twitter Mining

*By Ihssane Guennoun and Zainab Adel*

## Summary

This Policy Brief focuses on the Senegalese elections from a Twitter Mining perspective. The authors gathered data from November 2018 to February 2019 about two presidential candidates. The goal was to provide some insights about Sunday's presidential election. The first part presents a Sentiment analysis as well as a word cloud, while the second part emphasis on most frequent words that came up during the analysis. The authors also looked at the influential users who tweet about the two presidential candidates.

## Introduction

As Senegalese population are due to join the polls on Sunday February 24th, 2019 to elect their next president, several voters are turning to social networks to express their thoughts. While social networks penetration rates are not public information in Senegal, looking at the interactions online can be interesting. For this paper, our focus will be on Twitter where most of the action happens ahead of the elections. Our analysis will put the emphasis on two candidates: Ousmane Sonko and Macky Sall. The reason for us restraining our analysis to these two candidates finds its justification in a few elements. First, we obviously had to consider the outgoing president who has the advantage of his current position. He is also present on Twitter, which provided us with an interesting amount of data to analyze. Second, we chose to focus on Ousmane Sonko as the recent political newborn in Senegal. He surprised many observers during the last legislative elections. In addition, he breaks away from traditional rules by importing the political debate on Twitter, which is not common in Senegal.

Based on data mining conducted from November 24, 2018 to February 14, 2019, we tried to draw the main tendencies from how candidates tweet about themselves and how others tweet about them. Given the time range of the data

collection, all numbers are exact at the end of the collection date. As Senegal is a democratic country when it comes to freedom of speech, the tweets we have used in our analysis are not censored. Our objective is not to say which of the two candidates is the most influential but rather, to analyze their interactions with the other users. We will essentially use two models to conduct our analysis. The first one is a sentiment analysis while the second one is a word cloud.

We will start by presenting the two candidate's profiles on Twitter, which will, in turn, help us understand how they compare.

Ousmane Sonko has been on Twitter for less than a year (341 days) and has 20,006 Followers while Macky Sall has 8.83 years of Twitter presence with 843,782 Followers. When it comes to their tweets, Macky Sall has 2,116 and Ousmane Sonko has 356 tweets. Based on those numbers, there is indeed an initial difference between both candidates. Later on, we will see how this difference translates into perceptions from Twitter users. When it comes to the number of tweets analyzed about every candidate, we used 7707 tweets mentioning "Ousmane Sonko" and 35,264 mentioning "Macky Sall." Hence, the percentages obtained in the following analysis are based on these last numbers of tweets. In other words, 1% of tweets mentioning "Ousmane Sonko" is equal to 77,07 tweets, while 1% of tweets mentioning "Macky Sall" account for 352,64 tweets.

## I. Emotions and Words: a general perspective

### A) Sentiment Analysis

This tool helps us look at the various emotions conveyed in different tweets. The library in R<sup>1</sup> that we are using has ten different emotions: Anger, Anticipation, Trust, Positive, Negative, Fear, Joy, Sadness, Surprise and Disgust. In the first part, we will analyze the emotions that come out of every candidate's tweets. In the second part, we will contrast it with emotions that come out from Twitter users speaking about both candidates.

1. R is a programming language for statisticians and data scientists

**Table 1: Sentiment Analysis Results for both Ousmane Sonko and Macky Sall**

	Ousmane Sonko		Macky Sall	
	Emotions from Tweets about Him	Emotions from his own tweets	Emotions from Tweets about Him	Emotions from his own tweets
Anger	5.33%	8.63%	9.03%	5.33%
Anticipation	10.67%	8.74%	7.56%	10.67%
Disgust	2.09%	3.80%	4.54%	2.09%
Fear	5.68%	7.11%	7.94%	5.68%
Joy	8.28%	5.81%	5.84%	8.28%
Sadness	6.56%	7.17%	7.39%	6.56%
Surprise	3.65%	4.61%	3.87%	3.65%
Trust	16.76%	14.55%	13.86%	16.76%
Negative	12.79%	14.98%	17.37%	12.79%
Positive	28.19%	24.59%	22.62%	28.19%
<b>Total number of tweets</b>	<b>7707</b>	<b>356</b>	<b>35264</b>	<b>2116</b>



Figure 3: Word cloud of tweets about “Macky Sall”



Figure 4: Word cloud of tweets about “Ousmane Sonko”



The previous word cloud show some interesting trends. “Senegal” obviously appears in the four word clouds. Yet, the next section will come up with explanations on how the country’s name actually ranks differently in both candidates’ word cloud. Interestingly, we notice that the word “Presidentielle” is present in three out of four word clouds. In fact, the word almost never appears in Macky Sall’s own tweets as if it is not an important word to highlight. When we correlate the absence of “Presidentielle” from the his own tweets with the “anticipation” emotion ranking 9.94% in the sentiment analysis (Table 1), we may have the feeling that he is quite confident about his reelection. In addition, the use of “J’ai”<sup>3</sup> in figure 2 adds to this confidence. When it comes to Ousmane Sonko’s word cloud, both of them have mentioned “Macky Sall”, which reveals that the outgoing president is very much present in Sonko’s discourse. It is particularly the case since Ousmane Sonko has been criticizing the tenant of the 'Palais de la République' mainly about his management of the country’s oil resources. The fact that the word “cartes sur table”<sup>4</sup> comes often from Sonko’s tweet reflect his several calls for a live debate between the five presidential candidates. However, the initiative failed short after the National Council for Audiovisual Regulation disapproved the initiative<sup>5</sup>.

## II. Analysis of most powerful words and most influential users

### A) Top twenty words used by and about every candidate

Based on the previous word cloud, we wanted to look at the top 20 words used by every candidate and about every candidate. Looking at these tables below (Table 2 and Table 3) provides us with interesting insights. The first one, the name of the country is the top one word in tweets about “Macky Sall” and tweets by the outgoing president. Whereas for Ousmane Sonko, the country’s name comes in the second place after two other words.

3. The French equivalent of « I ».

4. The French equivalent of « laying all cards on the table »

5. Agence Ecofin. “Sénégal : Le Régulateur Des Médias Met Fin Aux Espoirs D'organisation D'un Débat Présidentiel.” Agence Ecofin, 20 Feb. 2019, [agenceecofin.com/regulation/2002-64145-senegal-le-regulateur-des-medias-met-fin-aux-espoirs-d-organisation-d-un-debat-presidentiel](http://agenceecofin.com/regulation/2002-64145-senegal-le-regulateur-des-medias-met-fin-aux-espoirs-d-organisation-d-un-debat-presidentiel).

Table 2 : Top twenty words in tweets by and about “Macky Sall”

Words from his timeline's tweets	Total%	Words from tweets about Him	Total%
senegal	1.82%	senegal	2.02%
jai	1.20%	president	1.51%
president	0.96%	presidentielle	0.74%
meeting	0.55%	candidat	0.64%
facebook	0.51%	sonko	0.60%
publie	0.48%	video	0.53%
pays	0.46%	wade	0.51%
visite	0.42%	mackysall	0.39%
senegalais	0.41%	senegalais	0.39%
lafrique	0.39%	campagne	0.35%
photos	0.38%	fait	0.35%
chers	0.33%	politique	0.34%
merci	0.33%	pays	0.34%
paix	0.33%	ousmane	0.33%
sommet	0.33%	fevrier	0.32%
developpement	0.31%	madicke	0.29%
communaute	0.30%	tour	0.26%
dakar	0.30%	issa	0.26%
souhaite	0.28%	dakar	0.26%
remercie	0.28%	sunu	0.26%
<b>Total Words</b>	<b>21480</b>	<b>Total Words</b>	<b>466724</b>

Table 3 : Top twenty words in tweets by and about “Ousmane Sonko”

Words from Tweets from his timeline	Total%	Words From tweets about Him	Total%
sonkopresident	2.40%	sall	2.42%
senegal	1.97%	senegal	2.14%
jotna	1.16%	macky	1.83%
presidentielle	0.97%	video	1.05%
cartessurtable	0.93%	presidentielle	1.03%
senegalais	0.83%	candidat	1.03%
politique	0.70%	president	0.93%
objectionsudfm	0.52%	wade	0.89%

chers	0.48%	youtube	0.85%
compatriotes	0.48%	seck	0.59%
sall	0.46%	issa	0.55%
president	0.41%	idrissa	0.53%
dec	0.39%	pastef	0.51%
directstv	0.39%	abdoulaye	0.48%
coalition	0.37%	niang	0.44%
pays	0.37%	madicke	0.42%
pastef	0.37%	politique	0.39%
fait	0.35%	senegalais	0.39%
macky	0.33%	campagne	0.38%
bokknaa	0.33%	senego	0.35%
<b>Total words</b>	<b>4824</b>	<b>Total words</b>	<b>83557</b>

If we compare the two candidates' original tweets, we can say that, on the one hand, Macky Sall's predominant words refer to action words such as "publie", "visite", "meeting", "sommet". On the other hand, words relating to the elections themselves dominate Ousmane Sonko's original tweets. He often uses words such as "sonkopresident", "jotna", "presidentielle", "senegalais". It is quite surprising to see, however, that during the time range of our data mining, Ousmane Sonko did not refer to oil issues in his tweets while being aware that it is an essential component of Senegal's future.

When we look at tweets about both candidates, there are a few differences to take into consideration. Twitter users mentioning "Ousmane Sonko" speak about "Sall" at the first place, followed by "Senegal" then by "Macky". It is only at the fifth and sixth rank that "Presidentielle" and "candidat" comes in, which could reveal that speaking about Ousmane Sonko has to be done in opposition to his main rival. However, users mentioning "Macky Sall" use "Senegal," "President," "Presidentielle" and "Candidat" as their top words. It is worth noting that "Sonko" ranks fifth amongst the words used when mentioning "Macky Sall".

Both Tables 2 and 3 provide us with additional information that we can compare. The word cloud provides us with interesting trends to better understand the stakes of Sunday 24 February's elections.

## B) Top thirty followers of each candidate

Yet, our work would not be complete without answering the following questions: Who are the Twitter users mentioning both candidates? Based on their number of followers, can we say that they are influential? Where do they tweet? How many tweets or re-tweets did they have with mentions to one of the two candidates? Which main emotions do they convey from their tweets about our candidates?

While we did have access to their public profiles, we will preserve their anonymity and use numbers to refer to them. Our purpose is to assess the influence of the users speaking about both Macky Sall and Ousmane Sonko. In fact, a very influential account can only tweet once and have more impact than a less influential account who could be tweeting more.

The following tables (Table 4 and Table 5) aims at bringing the previous analysis to a more pragmatic proportion. Far from pretending to provide exact analysis, we try to look at the main emotions an influential account can convey. For this purpose, we chose to focus on 30 most influential users (based on their followers) mentioning each of the two candidates.

**Table 4 : Ousmane Sonko followers' analysis**

Users	Followers Count	Type of users	Number of tweets/re-tweets	Emotions expressed
Users 1	967 061 8	Press	1	Anger, Negative
Users 2	810 561 2	Press	6	Trust, Positive
Users 3	512 953 1	Press	4	Positive
Users 4	694 070 1	Press	1	Positive, trust and Anticipation
Users 5	958 612	Press	2	None
Users 6	405 194	Press	1	Negative, Anger, anticipation
Users 7	830 124	Press	133	Positive, Trust, Negative+ Fear
Users 8	176 119	Press	3	None
Users 9	639 100	Press	2	surprise
Users 10	523 88	Press	5	Joy, Positive, Fear, Anger
Users 11	676 87	Individual	1	Positive
Users 12	765 80	Press	1	None
Users 13	145 71	Press	1	Positive, Trust
Users 14	669 61	Press	131	Positive, Negative, Trust, Anger
Users 15	819 57	Press	1	Positive
Users 16	007 47	Press	1	Trust
Users 17	040 43	Individual	1	Positive, trust, Surprise
Users 18	793 38	Individual	1	Positive, Anticipation, joy
Users 19	521 38	Press	37	Positive, Trust, Anger, Disgust
Users 20	998 36	Press	1	None
Users 21	357 36	individual	1	Positive, Trust Disgust
Users 22	249 36	Press	143	Negative, anger, fear, trust and positive
Users 23	162 35	Press	5	Positive, Sadness, Negativity
Users 24	354 33	Press	2	Negative, Positive

Users 25	551 31	Individual	1	Negative, Fear
Users 26	428 31	Individual	2	Negative
Users 27	062 31	Individual	1	Positive
Users 28	452 27	Individual	5	Positive, Trust, Anticipation
Users 29	807 25	Individual	3	Positive, Negative, Surprise
Users 30	951 23	Individual	1	Positive, Trust, Anticipation

Table 5: Macky Sall followers' analysis

Users	Followers Count	Type of users	Number of /tweets re-tweets	Emotions expressed
Users 1	14104048	Press	1	Positive, Trust, Anticipation
Users 2	8061957	Press	2	Positive, Trust, Anticipation
Users 3	3163468	Press	3	Negative, Positive, Disgust
Users 4	2901003	Press	3	None
Users 5	2561801	Press	11	Negative, Anger, Fear
Users 6	1965586	Press	7	Negative, Positive, Anticipation
Users 7	1080322	Press	3	Positive, Trust, Anticipation
Users 8	972048	Press	1	Positive, Trust
Users 9	872269	Individual	1	Positive, Joy
Users 10	716018	Press	1	Positive, Trust, Anticipation
Users 11	632098	Press	1	Positive, Trust, Anticipation
Users 12	548799	Press	1	Negative, Surprise, Positive
Users 13	434297	Press	1	Negative, Anger, Fear
Users 14	207094	Press	1	Positive
Users 15	197571	Press	1	None
Users 16	194405	Press	4	Positive, Trust, Anticipation
Users 17	168174	Individual	1	Negative, Anger
Users 18	162582	Press	1	Positive, Trust, Anticipation
Users 19	146278	Individual	1	None
Users 20	136846	Press	1	Negative, Sadness
Users 21	124830	Press	263	Positive, Negative, Trust
Users 22	119176	Press	4	Positive, Trust, Anticipation
Users 23	108291	Press	1	Positive, Trust
Users 24	106073	Press	1	Negative, Sadness
Users 25	106008	Press	2	Negative, Sadness
Users 26	100637	Press	9	Negative, Fear, Anger
Users 27	98636	Individual	1	Negative, Surprise, Anger
Users 28	92297	Individual	1	Positive, Trust, Anticipation
Users 29	87697	Press	1	Negative, Sadness
Users 30	80765	Press	2	Negative, Fear, Anticipation

We classified users based on two types: press and individual accounts. What we can see is that, out of the 30 most influential accounts, five of them are individual accounts following APR's candidate. On the opposite, ten individual accounts follow Ousmane Sonko out of the 30 most influential accounts. It is not surprising to see the important place of Press on Twitter since freedom of the press in Senegal is not an illusion. Looking at emotions conveyed by those influential accounts is interesting. In fact, even if an influential user tweets only once about one of the two candidates, his tweet can have an impact given the big number of followers. In other words, if an influential account tweets one positive tweet about one of the candidates, it will have a strong impact in comparison with a less influential user who would be tweeting more with, for example, negative emotions.

Both Tables 4 and 5 provide us with the emotions that come out the most from the various tweets by every user. There are in fact mixed emotions for both candidates and it would not be relevant to come up with a specific analysis. We leave it to the appreciation of the reader to compare how most influential users speak about every candidate.

## Limitations

As much as we try to bring in trends ahead of the Senegalese presidential elections, there are some limitations to our data-mining and analysis model. The first limitation relates to the Twitter penetration rate in Senegal. Twitter does not actually publish official statistics about the use of this social network. Hence, it is difficult to compare the number of Twitter users to the ones engaged in the virtual debate about both candidates. The information that we have is that there are 9.6 Million people with internet access in Senegal<sup>6</sup>. We do not believe all of those people have Twitter and even if they do, a few of them actually interact on Twitter to express their thoughts about “Ousmane Sonko” and “Macky Sall”. In addition to that, most of the Senegalese electorate resides in rural areas with maybe less internet access than the urban electorate.

The second one relates to sentiment analysis. In fact, the library of emotion that we use does not recognize sarcasm that can be misleading. In addition, it does not recognize the Wolof language. Consequently, we were not able to carry out an emotion analysis based on Wolof words.

The last limitation lies in the fact that the number of tweets analyzed for every candidate is different. Furthermore, depending on the reader's lenses, he can interpret the data in different ways. Hence, our aim is not to come up with a prediction about the outcome of the presidential election but to provide the reader with the temperature on Twitter ahead of the elections.

---

6. Vidzraku, Sylvain. “Sénégal : Le Nombre D'utilisateurs D'Internet a Atteint 9,6 Millions De Personnes.” La Tribune, La Tribune Nouvelle, 8 May 2018, [afrique.latribune.fr/africa-tech/2018-05-08/senegal-le-nombre-d-utilisateurs-d-internet-a-atteint-9-6-millions-de-personnes-777869.html](http://afrique.latribune.fr/africa-tech/2018-05-08/senegal-le-nombre-d-utilisateurs-d-internet-a-atteint-9-6-millions-de-personnes-777869.html).

## Conclusion

As a conclusion, it is interesting to see that Twitter can be a metaphor for Election Day. In fact, one of the key indicators where a question mark hangs is the expected participation rate. Indeed, since Abdoulaye Wade came back to Dakar on February 7, 2019, he has been actively calling on voters to boycott the elections<sup>7</sup>. He believes the elections should not take place since his son, Karim Wade, was not able to run for the presidency. It is true that Abdoulaye Wade, former Senegalese president, does have some influence in the country, especially, amongst the Mouridiya religious community. However, the participation rate will reveal whether his influence still holds strongly or not. It is unlikely that his call for boycotting will have a major influence. Nonetheless, the participation rate will be a major indicator to assess the next president's weight amongst the population. If the next president is elected with a high percentage but with a low participation rate, it could question his legitimacy as few people actually voted for him. In opposition to that, if the polls elect the next president with an average percentage but with a reasonable participation rate (around 50%), it would give him more legitimacy during his mandate.

To conclude on a final thought, there is an interesting parallel to draw between Twitter and the real-life of the Senegalese electorate. Let us take as a starting point the number of people with internet access and consider that they refer to the people who registered to vote for the elections. The second element is the number of people who actually participate in the political debate about both candidates on Twitter who refers to the people who will effectively go to the polls to vote. The participation rate in real-life equals to the percentage of those who registered to vote and who will join the polls on Sunday. While the participation rate on Twitter is the percentage of those who have internet access and who speak about one of the two candidates on Twitter. In both cases, we will see that there is a gap in the participation in the political life whether in real or online. The number of tweets that we were able to analyze reveals how little people engage online compared to the number of people who have internet access in the country. As we recall from the last presidential elections in 2012, the participation rate was at 55% for the second round, which is slightly above half of the electorate. For this year's election, there is a chance that the participation rate could be similar to that of the previous election.

---

7. AFP, Jeune Afrique avec. "Présidentielle Au Sénégal : Abdoulaye Wade De Retour à Dakar, Réitère Son Appel Au Boycott Du Scrutin – JeuneAfrique.com." JeuneAfrique.com, Jeune Afrique, 8 Feb. 2019, [www.jeuneafrique.com/731903/politique/presidentielle-au-senegal-abdoulaye-wade-de-retour-a-dakar-reitere-son-appel-au-boycott-du-scrutin/](http://www.jeuneafrique.com/731903/politique/presidentielle-au-senegal-abdoulaye-wade-de-retour-a-dakar-reitere-son-appel-au-boycott-du-scrutin/).

## About the Authors, Ihssane Guennoun and Zainab Adel

**Ihssane Guennoun** is an International Relations Specialist at the Policy Center for the New South. She contributes to the Geopolitics and International Relations research program by focusing on West Africa. Her research also covers security in the Sahel region as well as recent developments of Asian players in Africa.

Prior to joining the Policy Center in 2015, she spent six months at the German Marshall Fund of the United States within the Wider Atlantic program. Ihssane has a double degree in International Relations from the School of Governance and Economics of Rabat (Morocco) and the Institute of Political Studies of Aix-en-Provence (France).

**Zainab Adel** is a Data Analyst Intern at the Policy Center for the New South. She works with the Geopolitics and International Relations department with a focus on data analysis. She is an Ex - member of the Association for Computing Machinery (ACM) and represented Morocco in the Arab Collegiate Programming Contest (ACPC) for 2 successive years. She graduated from the International University of Rabat (UIR) with a Bachelor's degree in Computer Science with first class honors and a Master's degree in Big Data. She conducted a research thesis on prediction of irradiance using Deep Learning.

## About Policy Center for the New South

Policy Center for the New South, formerly OCP Policy Center, is a Moroccan policy-oriented think tank based in Rabat, Morocco, striving to promote knowledge sharing and to contribute to an enriched reflection on key economic and international relations issues. By offering a southern perspective on major regional and global strategic challenges facing developing and emerging countries, the Policy Center for the New South aims to provide a meaningful policy-making contribution through its four research programs: Agriculture, Environment and Food Security, Economic and Social Development, Commodity Economics and Finance, Geopolitics and International Relations.

The views expressed in this publication are the views of the author.



## Policy Center for the New South

Suncity Complex, Building C, at the Angle of Addolb Boulevard and Albortokal Street, Hay Riad, Rabat, Morocco

Email : [contact@ocppc.ma](mailto:contact@ocppc.ma)

Téléphone : +212 5 37 27 08 08 / Fax : +212 5 37 71 31 54

Site : [www.policycenter.ma](http://www.policycenter.ma)