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## Yellow jacket (gilet jaune CHA): an analysis throughout Python dictionaries and media theory

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**Abstract.** This paper presents an analysis of the French social movement of the *gilet jaune* (yellow vests, YV) in three parts. The first part focuses on observing and identifying the importance of web content, influencers and users. From the observation of discontent (*colère*, anger at French), representative words of the movement were identified and stored in an arrangement (array\_1). The second part takes the information generated in the first part to perform an analysis of the contents of the social network Twitter through natural language processing (NLP) to identify new adjectives or highlight concepts already observed in array\_1 for the creation of a dictionary. The third and last part builds the array\_2, which contains words resulting from an enumerative search of adjectives on the news website FranceInfo. In this work, a graphic mapping was generated on the number of times and correlations in which a word is linked with other words that describe a YV movement. For this purpose, the content proposed in array\_1 and the content of array\_2 were considered in their entirety. Both the NLP dictionaries and the two arrays match in a high percentage with the initial words, which implies that these three independent procedures allow us to compare the results and interpret the public's anger at the YV movement and its possible implications.

**Keywords:** Dictionaries, NLP, Twitter, *Colère*, yellow vest

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## 1 Introduction

In this work, we developed a comparative semantic and natural language processing (NLP) study on the social movement of the yellow vests (YV) that was conceived against the government of French President Macron in May 2018 and that, prepared mainly on the social network Facebook, it manifested *offline* for the first time on Saturday, November 17 of that year and, from then on, the movement existed permanently on Facebook and Twitter, and intermittently, every Saturday, in the streets until the second half of 2019.

An antecedent of this work is Bernábe's analysis in 2018 regarding the candidates of the last Mexican presidential election [1]. A couple of methods from this reference have been used for this article as support in the process of extracting the information for the case of analysis of the movement of the YV, which, due to the impossibility of accessing the Facebook analytics, is focused on the social network Twitter and the FranceInfo site considering the period from October 1, 2018, to October 30, 2019 [2]. From this period, photographic images, words used that conceptually circumscribe movement and adjectives that express the emotions associated with YV were observed. The precedent for this is the concept of e- communication developed by Carrillo in 2018 [3]. Examining the contents of the different sources in the indicated period, a list of concepts about attitudes of rejection and anger expressed during the movement was constructed. This list, called array\_1, has given rise to the entire development of the work and consists of a set of nouns and adjectives that describe the themes and some emotions of YV. Considering arrangement 1 and under tools for the creation of dictionaries in NLP, an analysis was developed to find out the

ideas of the YV and their leaders through Twitter, which also includes opinions from the public that was not necessarily part of the movement, since that there is no way to separate the messages from each other.

At the same time, we obtained another set of words consistent and similar to array\_1. This list was achieved by applying a traditional analysis of visual mapping and text search. Such words were incorporated into array\_2. The array\_2 is the result of reviewing FranceInfo news content dedicated to the movement. Consequently, and to compare the resulting words, the dictionaries generated by NLP and the array\_1 and array\_2 are taken.

The YV movement has the particularity, compared to others, that it was prepared and sustained for a year and a half based on social networks, lacking and avoiding any institutionalization and the word that centered its 42 demands and its Saturday mobilizations was *Colère*, that beginning with discontent is also equivalent to anger, rage and also rage, in Spanish. This work is organized as follows: This introduction is in section 1. Section 2 deals with the general aspects of the movement and how it was articulated with social networks. To describe the problem from the computational approach, in section 3 the mechanism for the creation of dictionaries [4, 5] is exposed. In section 4, an enumerative approach is used to obtain a set of words about themes called arrangement 2, through mapping and manual reading. Finally, section 5 discusses the results.

## 2 Preliminary concepts

The YV movement was from the beginning of May to November 16, 2018, a purely online movement, on social networks and in traditional media referring to these as its source. On Saturday, November 17, the movement went from the virtual to the real, offline, with the mobilization of nearly 300 thousand French people in all the large cities of France, many intermediate and small cities and at the road crossings formed by the famous French roundabouts. On which they made camp, establishing very militant camps. From that moment on, the movement alternated its existence purely online with, additionally, offline on Saturday. Of course, in the Saturday demonstrations, the participants remained very active connected on social networks from their cell phones, with which, in addition to coordinating, they filmed the event and distributed it via live streaming on different platforms, including YouTube.

In the first weeks starting on November 17, 2018, up to four out of five French people support the YV movement, whose immediate trigger was the increase in fuel tax, but in less than a month, through a wide Participation in Facebook groups, among which the count of the YV group registered more than three million members. The leaders made a catalogue of 42 very varied demands and among which appeared rejection of the general tax policy of the president's government Macron as well as many others related to regional disparities, but it was also demanded that "the causes of migration be addressed." From the beginning, an anti-institutional bias was evident, specifically against the governmental apparatus: "These territories have suffered a decrease in public services in recent years. Its inhabitants feel abandoned by the public powers and ignored by politicians" [6]. In anti-institutional level, the most important demand was the RIC (referendum citizens' initiative), on the basis that they, the YV, considered "the people" demanded that above the government as a whole and especially the National Assembly with only collect 700 thousand signatures citizens could vote on what they wanted, without limit [7].

The movement was characterized by A) large daily traffic of content on social networks, especially Facebook, which served as the instrument of organization and mobilization based on the integration of various "groups", which is one of the traffic options of contents of said network. B) Demonstrations and occupation actions every Saturday, called through Facebook groups, coordinated there and presented in live streaming both on Facebook and YouTube. The movement, then, had a dual character real, virtual, in such a way that between Saturday and Saturday there was a great activity - digital mobilization - on the social network Facebook and, to a lesser extent, on Twitter. Despite this, for our analysis. We focus on Twitter since Facebook does not allow access to Python libraries.

It is important to analyze the discontent (*la colère*) of the YV not only through the manual collection of documents, but it is also necessary to use computational tools to study the information to present and classify the words that expressed said disagreement to associate them and organize them by means of algorithms of NLP.

### 2.1 Virtual media

In general, the dynamics of digital information has led to the mandatory transfer to the Web of data for scientific, economic, educational, entertainment purposes, etc. To this must be added the additional phenomenon of social networks, through which, spontaneously, independently, decentralized and also without any qualification or responsibility, millions of users generate or

recycle content on their initiative, according to their taste, their interests and humour, *ad libitum*. For institutions - governments, state departments, hospitals, mayors, political parties, unions, companies of all kinds, universities and schools, sports teams, civil associations, etc. - the presence on the web has become an inescapable necessity. The same is true for professional media and individuals in terms of a very strong tendency to interconnect with each other on social media of all kinds. In this context, it should not be overlooked that, in particular, traditional media and emerging platforms depend to a great extent on being present on social networks, which gives them great traffic. In this scenario, research about the interests, desires, tastes and/or concerns of individuals, both in normal situations and in extraordinary situations that include widespread dissatisfaction (*colère*) - as in the case of YV -, is not possible, in any way, to dispense with the examination of the content that users circulate on social networks. Such content will have an increasingly broad value not only for publicists, but for anthropologists, sociologists and political scientists, among many other specialists.

It is important to underline the fact that the content that the user of a social network generates or circulates has the characteristic of the spontaneity of using the smartphone locally and in real-time. In this sense, if we are particularly interested in the desires and moods of people both in everyday life and in the exceptional situation of mass movements, we can say that their spontaneous, direct expression, less filtered by reflection, is found in the content of social networks, so it is beneficial that this work uses Twitter as a data source to discover information about the YV. The fact is that, without being the subject of any interview or survey, the Twitter user, completely voluntarily and spontaneously, makes public not only thoughts but in particular attitudes and emotions regarding hot topics that make up "the present." Additionally, such spontaneity for self-publishing is conditioned by mobile devices, in particular the smartphone. In a sense, we can say that there is a marriage between the smartphone and personalized software in the form of social networks that presents us in real-time the best and most authentic manifestation of humour and social passions [8]. This is the advantage that the analysis of a social network such as Twitter offers us, which is designed not for the expression of the user's daily life but, for their positions regarding social events of "political" order, that is, of "public" interest that makes up "the present."

A decisive factor regarding the importance of Twitter for analysis is that the social network in question is not only a passive medium. It is because its structure enhances the emotionality of users. It is an indication that tweets with moral or emotional words of any kind generate more retweets, no less than 20% more for each one of those words. [9] For example, a tweet with 4 moral or emotional words generates 80% more retweets on average than one that contains none. It is worth noting that this is a general effect for all social networks in which users can deal with the issues of the dimension of "the political" understood as "the public", and say everything that causes a sensation, scandal and, most especially, *colère*. Thus, Facebook posts exhibiting "outraged disagreement" receive almost twice the attention, likes, and shares than other types of content. [10] This tendency towards what we could call the emotional bellicosity of Twitter and Facebook content is, as we suggested above, conditioned by the very structure of these networks, since it lends itself to the expression of la *colère* (discontent, indignation, the wrath). Twitter added its option to retweet in 2009 and from then on, users no longer had to copy-paste previous tweets, that is, such option, a simple structural element of the social network, allowing the dispersion of content without any friction, which, favored in particular the dispersion of the emotionally bellicose contents. Shortly after, in 2012, Facebook introduced its version of the smartphone the equivalent of the retweet option such as the "share" option, share. [11] With this, years before the appearance of the YV, the appropriate technological environment not for the simple expression of the *colère* but its empowerment was defined by the structure of the social networks Facebook and Twitter as applications for the smartphone with their dispersion generalized as an individual gadget and its delocalized usage not conditioned by time or location.

It is still worth expressly pointing out that another structural technological element, live streaming, both on Facebook and YouTube, allowed the YV and their leaders to transmit content in real-time and delocalized, which was also key for the increase of the *colère*. The Saturday offline movement was followed in the very mobilizations, in such a way that the well-known phenomenon of emotionality occurred in knowing that they were part of a large number, just as McLuhan refers to "the mystical experience of being in very large crowds." [8]. Those who were demonstrating in a small city like Chambéry, let's say, could see from the demonstration itself the great actions of Paris, Lyon or Marseille, and many others, and vice versa. This vision of the movement of itself in real-time was particularly significant for the increase of the *colère* when what was "uploaded to the network", both with YouTube and with Facebook, were the very violent confrontations between the YV and the worth still expressly noted that another technological element structural, live streaming both Facebook and YouTube, allowed the YV and its leaders transmission of content in real and delocalized time, which was also key to increasing *colère*. Saturday's move offline was followed in the very mobilizations, so that occurred well known that from emotionality in knowing part of a large number and McLuhan refers to "the mystical experience of being in large crowds' phenomenon." [8]. Those who were demonstrating in a small town like Chambéry, say, could be seen from the demonstration itself the great deeds of Paris, Lyon or Marseille, and many others, and vice versa. This view of the movement itself in real-time was particularly significant for

increasing *colère* when what is "up to the network", both YouTube and Facebook, were very violent clashes enter the YV and the forces of the order or the destruction and burning of shops, banks, cars, destroying street furniture, etc.

Not only did the Saturday offline movement boost its *colère* thanks to the real-time transmission, but the same thing happened in the purely online movement, as the leaders of the movement, particularly Eric Drouet and Maxime Nicole, significantly both truckers, broadcast harangues about the march, from their truck on the roads of France, when they wanted and from where they wanted [12]. In other words, live streaming, another purely structural element of social networks, became auto-live streaming, in such a way that emotional bellicosity was also self-generated thanks to this other technological capacity of social networks.

The double alternative to develop this work consisted of resorting to the FranceInfo public site, which daily presented informative notes on the YV movement while it had a real, offline, notable presence before dissolving in increasingly less numerous, less relevant Saturday demonstrations. On the other hand, there is the option of approaching said movement through traffic on Twitter. Two types of characters related to the YV were observed: 1) professional politicians and 2) influencers (born in and in the heat of the movement); therefore, some of these characters were chosen for our analysis using Twitter.

### 3. Creation of dictionaries on Twitter for the yellow Jackets movement

This paper focuses on identifying the presence of words and associations between them in the social network Twitter for the YV movement through the use of a tagging algorithm to create dictionaries of themes and emotions [2, 15]. The social network Twitter has the particularity that in it the traffic of the content is in clusters since the tweets are very strongly concentrated around the messages of influencers. This means that the best possibility to locate the interests and emotions of users is to focus on examining the traffic around messages from these influencers. In the case of the YV, the messages are very well defined regarding the leaders of the movement. Certainly, politicians and official personalities also expressed themselves widely regarding the YV movement and are influencers in general, not only regarding the movement. But alongside them are, first and foremost, totally ordinary people, who do not have any institutional or media presence before the movement but who became its leaders, these are the influencers specifically associated with the YV phenomenon and practically outside of it. They have no presence whatsoever, especially institutional. It can be said with absolute certainty that anyone who has an institutional role, especially in a party, union or state institution, cannot be a YV leader. At this point and for the analysis of this work, nine leaders have been chosen, proceeding to examine the traffic through their Twitter accounts. Christophe Castaner, @CCastaner, appears because being the interior minister during the review period, he was necessarily very active tweeting.

The algorithm used for traffic analysis consists of separating the words related to *colère* from the tweet comments. The titles of the different tables of the article are those that correspond to the list that has been called array\_1, which is the origin of the development of this work. In tables 1-14, the user column indicates the names of the leaders that correspond to the hashtags.

**Table 1.** Representative words of the movement of the CHA and its leaders related to the word citizen.

User	habitant (habitant)	person (personne)	man (homme)	nation (national)	personage (personnage)	single (Individu)	particular (particulier)	mortal (mortel)
@alancelin	1	70	2	6	0	0	0	0
@anatolium	0	1092	15	0	3	0	0	2
@BouloGiletJaune	9	48	7	4	0	0	0	0
@CCastaner	50	188	54	1529	3	60	3	0
@drouet_eric	0	8	0	0	0	0	6	0
@FaouziLellouche	0	2	1	0	1	1	0	0
@FlyRiderGjGRAL	3	9	4	0	0	2	3	0
@GiletsJaunesFr_	0	7	0	14	0	0	0	0
@J_Rodrigues_Off	1	41	48	1	3	3	3	0
@PLudosky	0	30	17	19	2	1	3	0

After locating these characters, we proceeded to download tweets and made the construction of the dictionaries. In this case, the tweets of interest are downloaded with all the information (ID, author, message, date, language, etc.). The developed algorithm uses a Python clip library that allows the extraction of comments in a personalized way, so it is possible to mark from a word in a sentence with the relevant semantic content. Comments taken from Twitter have a special variable called Unicode, intractable

as a string variable. At this point, the information is stored in a CSV (comma separated values) file, and then encoded as UTF8 to support special characters that include accent marks. That is, once the downloads have been stored, the words related to the leaders are separated and they are counted by linear search to create the dictionaries. The processed information comprises 2000 random tweets per day and 500 comments were selected for each candidate. For the analysis of tweets, use tracking techniques to trace and extract information from well-identified words for movement [11].

### 3.1 YV word selection procedure

The first approach to discovering the information on the YV issue focused on getting through Twitter downloads the information on the relationship between the leaders of the YV social movement (+ Christophe Castaner) and the representative identified words in the initial observation. This process is carried out by an algorithm programmed in Python that returns tweets with the information that the user wrote in hashtag, tags that are indicated in table 1. The download periods were 5 of 10 days each with a two-day interruption between each period, an iterative process for two months. For this problem, a previously designed NLP algorithm was fitted for a similar search for electoral purposes [5].

#### 3.1.1 Synonyms tables

The second step was to generate a dictionary whose probability weight was almost zero since it was made with proposed words (discontent, anger, wrath, rage), in such a way that this array\_1 was extended to form the first dictionary. The process was repeated to find synonyms for the words in this first dictionary and form the following dictionaries. The search was syntactic by counting the number of times that each of the words was repeated. The results are shown in the following tables. Tables 2-14 show the frequency of appearance of words related to anger, justice, mistrust, people, fatigue, hope, humiliation and indignation. The words found are presented in parentheses in their original language.

**Table 2.** Frequency of words related to anger (*colère*)

User	<i>anger (colère)</i>	<i>abhorrence (haine)</i>
@alancelin	4	15
@anatolium	0	19
@BouloGiletJaune	0	20
@CCastaner	0	114
@drouet_eric	0	4
@FaouziLellouche	0	1
@FlyRiderGjGRAL	0	1
@GiletsJaunesFr_	0	2
@J_Rodrigues_Off	0	13
@PLudosky	6	4

**Table 3.** Frequency of words related to justice (*justice*)

	<i>law (loi)</i>	<i>right (droit)</i>	<i>act (acto)</i>	<i>code (code)</i>
@alancelin	97	43	5	1
@anatolium	40	0	6	12
@BouloGiletJaune	51	24	10	0
@CCastaner	151	353	143	120
@drouet_eric	2	4	12	2
@FaouziLellouche	0	2	0	0
@FlyRiderGjGRAL	18	19	4	1
@GiletsJaunesFr_	3	2	11	0
@J_Rodrigues_Off	9	11	34	21
@PLudosky	2	11	2	23

**Table 4.** Frequency of words related to mistrustfulness (*méfiance*)

	shadow ( <i>ombre</i> )	doubt ( <i>dout</i> )	prudence ( <i>prudence</i> )	vigilance ( <i>vigilance</i> )
@alancelin	2	0	0	0
@anatolium	13	295	0	0
@BouloGiletJaune	13	2	0	0
@CCastaner	32	18	31	6
@drouet_eric	2	0	0	0
@FaouziLellouche	0	2	0	0
@FlyRiderGjGRAL	12	2	0	0
@GiletsJaunesFr_	6	0	0	0
@J_Rodrigues_Off	8	4	0	0
@PLudosky	5	5	0	0

**Table 5.** Frequency of words related to village (*peuple*)

	public ( <i>public</i> )	hurry ( <i>presse</i> )	world ( <i>monde</i> )	mass ( <i>masse</i> )	name ( <i>nombre</i> )	flow ( <i>flot</i> )	crowd ( <i>foule</i> )	assistance ( <i>assistance</i> )
@alancelin	3	17	13	4	1	0	0	0
@anatolium	297	8	51	1	11	1	0	0
@BouloGiletJaune	6	4	14	0	10	0	11	0
@CCastaner	101	88	52	5	29	0	3	1
@drouet_eric	0	0	2	4	2	0	0	0
@FaouziLellouche	0	85	0	0	0	0	0	0
@FlyRiderGjGRAL	3	1	512	4	11	0	0	0
@GiletsJaunesFr_	5	0	1	0	6	0	0	0
@J_Rodrigues_Off	2	86	18	3	7	0	0	0
@PLudosky	3	83	13	0	5	0	0	0

**Table 6.** Frequency of words related to fatigue (*fatigue*)

user	discomfort ( <i>malaise</i> )	sadness ( <i>tristesse</i> )	abandonment ( <i>abandon</i> )	pain ( <i>souffrance</i> )	scary ( <i>effrayant</i> )	weak ( <i>faibles</i> )
@alancelin	0	0	1	0	0	0
@anatolium	0	3	0	0	0	0
@BouloGiletJaune	1	3	649	0	0	1
@CCastaner	0	1	0	3	2	40
@drouet_eric	0	0	0	0	0	0
@FaouziLellouche	0	0	0	0	0	0
@FlyRiderGjGRAL	0	0	0	0	0	0
@GiletsJaunesFr_	0	0	0	0	0	1
@J_Rodrigues_Off	0	0	0	0	1	2
@PLudosky	0	0	0	0	0	33

**Table 7.** Frequency of words related to hope -Part 1 (*spoir*)

User	understand ( <i>comprendre</i> )	support ( <i>soutenir</i> )	pacifist ( <i>pacifiste</i> )	understand ( <i>comprends</i> )	change ( <i>change</i> )	honor ( <i>honneur</i> )
@alancelin	0	0	0	1	1	0
@anatolium	6	0	0	7	45	2
@BouloGiletJaune	3	5	2	2	13	1
@CCastaner	16	11	0	13	105	3
@drouet_eric	4	0	0	0	0	0
@FaouziLellouche	0	0	0	1	0	0
@FlyRiderGjGRAL	2	0	0	3	6	0
@GiletsJaunesFr_	0	4	0	2	0	1

@J_Rodrigues_Off	3	5	0	2	2	2
@PLudosky	0	0	0	3	5	1

Table 8 presents the continuation of table 7, both related to hope.

**Table 8.** Frequency of words related to hope -Part 2 (*spoir*)

User	miracle ( <i>miracle</i> )	faith ( <i>foi</i> )	offer ( <i>tendre</i> )	happiness ( <i>bonheur</i> )	reassure ( <i>rassure</i> )	grab ( <i>saisir</i> )
@alancelin	0	2	1	0	0	0
@anatolium	0	1076	4	0	0	0
@BouloGiletJaune	0	13	6	0	0	0
@CCastaner	3	128	147	0	8	70
@drouet_eric	0	4	0	0	0	0
@FaouziLellouche	1	2	0	0	0	0
@FlyRiderGjGRAL	0	9	86	2	1	0
@GiletsJaunesFr_	0	4	0	0	0	0
@J_Rodrigues_Off	1	19	84	1	0	0
@PLudosky	1	8	85	0	0	0

**Table 9.** Frequency of words related to humiliation (*humiliation*)

user	shame ( <i>honte</i> )	fear ( <i>peur</i> )	Fools ( <i>cons</i> )	criminals ( <i>criminels</i> )
@alancelin	3	0	104	0
@anatolium	15	5	981	0
@BouloGiletJaune	0	8	66	0
@CCastaner	523	200	301	1
@drouet_eric	4	0	28	0
@FaouziLellouche	1	0	1	0
@FlyRiderGjGRAL	7	0	28	0
@GiletsJaunesFr_	0	1	4	0
@J_Rodrigues_Off	3	1	25	0
@PLudosky	4	1	20	0

**Table 10.** Frequency of words related to indignation – Part 1 (*indignation*)

user	satiety ( <i>ras-le-bol</i> )	injustice ( <i>injustice</i> )	victims ( <i>victimes</i> )	load ( <i>charger</i> )	hypocrisy ( <i>hypocrisie</i> )
@alancelin	0	0	0	0	0
@anatolium	0	0	4	0	0
@BouloGiletJaune	0	1	2	0	0
@CCastaner	1	6	22	0	4
@drouet_eric	0	0	0	8	0
@FaouziLellouche	0	0	0	0	0
@FlyRiderGjGRAL	0	0	2	0	0
@GiletsJaunesFr_	0	1	0	0	0
@J_Rodrigues_Off	0	1	1	0	0
@PLudosky	0	0	1	0	0

**Table 11.** Frequency of words related to indignation – Part 2 (*indignation*)

user	protesters ( <i>manifestants</i> )	treason ( <i>trahis</i> )	mobilization ( <i>mobilisation</i> )	movement ( <i>mouvement</i> )	oligarchy ( <i>oligarchie</i> )
@alancelin	0	0	0	66	0
@anatolium	2	40	0	5	1
@BouloGiletJaune	1	1	1	65	0
@CCastaner	8	0	4	12	1
@drouet_eric	0	0	0	0	0
@FaouziLellouche	0	0	0	0	0
@FlyRiderGjGRAL	2	0	149	6	0
@GiletsJaunesFr_	0	0	1	31	0
@J_Rodrigues_Off	1	0	0	7	0
@PLudosky	0	1	0	12	1

**Table 12.** Frequency of words related to justice -Part 1 (*justice*)

user	demands ( <i>demandes</i> )	impartial ( <i>impartial</i> )	rigour ( <i>rigueur</i> )	justice ( <i>justice</i> )	depres sion ( <i>crise</i> )
@alancelin	0	0	0	7	0
@anatolium	0	1	1	1	0
@BouloGiletJaune	0	0	0	79	0
@CCastaner	6	0	0	222	24
@drouet_eric	0	0	0	2	0
@FaouziLellouche	0	0	1	0	0
@FlyRiderGjGRAL	0	1	0	75	0
@GiletsJaunesFr_	0	0	0	6	3
@J_Rodrigues_Off	0	0	1	80	0
@PLudosky	0	0	1	127	0

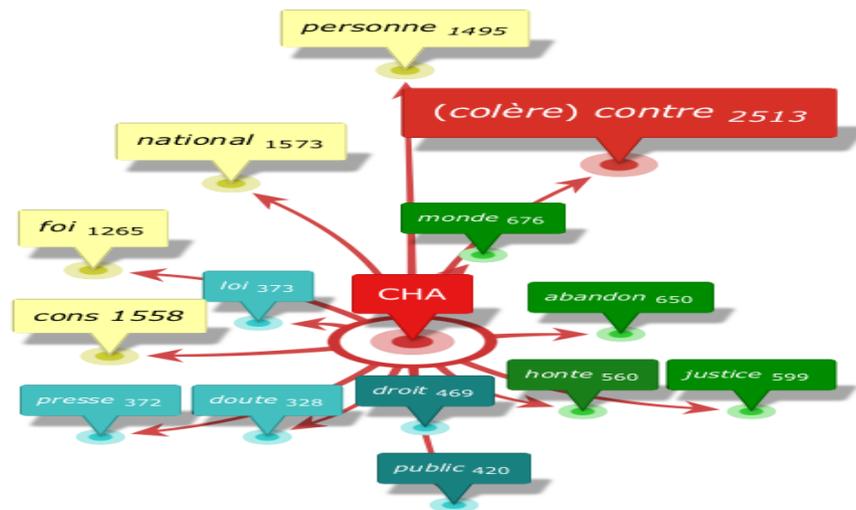
**Table 13.** Frequency of words related to justice -Part 2 (*justice*)

user	vindication ( <i>revendication</i> )	unacceptable ( <i>inacceptable</i> )	against ( <i>contre</i> )	manifest ( <i>manifeste</i> )
@alancelin	0	0	9	0
@anatolium	0	8	56	0
@BouloGiletJaune	7	0	378	1
@CCastaner	5	4	1702	1
@drouet_eric	0	0	8	0
@FaouziLellouche	0	0	87	0
@FlyRiderGjGRAL	4	0	17	3
@GiletsJaunesFr_	3	0	21	1
@J_Rodrigues_Off	7	0	118	6
@PLudosky	42	8	117	1

**Table 14.** Frequency of words related to anger (*colère*)

user	tension ( <i>tension</i> )	want ( <i>veulent</i> )	shit ( <i>chier</i> )	force ( <i>force</i> )	danger ( <i>danger</i> )	rampage ( <i>saccage</i> )	violence ( <i>violence</i> )	broken ( <i>casse</i> )	clamor ( <i>clamer</i> )
@alancelin	0	4	0	2	0	0	6	2	0
@anatolium	0	1	1	17	2	0	1	0	0
@BouloGiletJaune	0	10	1	29	3	0	22	4	5
@CCastaner	7	56	19	207	165	3	67	11	0
@drouet_eric	0	0	0	0	0	0	0	0	0
@FaouziLellouche	0	0	0	0	0	1	0	0	0
@FlyRiderGjGRAL	0	2	0	1	0	0	11	6	3
@GiletsJaunesFr	0	2	0	3	0	0	14	4	0
@J_Rodrigues_Off	1	10	0	2	0	2	22	5	0
@PLudosky	0	34	0	2	2	2	13	2	3

We generated a map for a better visualization of the information, that presents the words that appear most frequently in the study. The word *colère contre* (anger against / cholera) stands out with 2513 appearances, followed by *cons* (idiots) and *national* (national).



**Fig. 1.** Map of words most frequently used in the study of YV on Twitter

### 3.2 Synonyms Relationships

A relationship and grouping of words in the dictionaries created by the NLP algorithms, generated new groups of words. For this purpose, the information was taken from the dictionaries created and the synonymy link between the words was established. Consequently, new groups of words were produced to be able to describe the relationship that exists between them as shown in the following tables.

**Table 15. Feelings**

<i>haine</i>	<i>excédés</i>	<i>répressive</i>	<i>ressenti</i>	<i>mortes</i>	<i>impartial</i>	<i>tendre</i>	<i>dépassés</i>
<i>tension</i>	<i>désespoir</i>	<i>infâmes</i>	<i>énerve</i>	<i>choqués</i>	<i>impartial</i>	<i>bonheur</i>	<i>Emmerdez</i>
<i>colere</i>	<i>ras-le-bol</i>	<i>hypocrisie</i>	<i>fait mal</i>	<i>force</i>	<i>l'indignation</i>	<i>solidarité</i>	<i>faibles</i>
<i>émotion</i>	<i>inefficace</i>	<i>peur</i>	<i>réclamer</i>	<i>danger</i>	<i>traître</i>	<i>fierté</i>	
<i>sincère</i>	<i>insensée</i>	<i>dégoût</i>	<i>profonde</i>	<i>saccage</i>	<i>inacceptable</i>	<i>tristesse</i>	
<i>calmer</i>	<i>manipulabl</i>	<i>dégâts</i>	<i>combatif</i>	<i>violence</i>	<i>contre</i>	<i>désespère</i>	
<i>veulent</i>	<i>fierté</i>	<i>sacrifice</i>	<i>chier</i>	<i>périlleuse</i>	<i>beauté</i>	<i>désespérant</i>	
<i>exprimée</i>	<i>honneur</i>	<i>déçus</i>	<i>vandalisé</i>	<i>clamer</i>	<i>foi</i>	<i>souffrance</i>	

**Table 15.1 Action**

<i>acte</i>	<i>abandon</i>
<i>vigilance</i>	<i>criè</i>
<i>presse</i>	<i>profané</i>
<i>assistance</i>	
<i>apaisera</i>	
<i>rassure</i>	
<i>saisir</i>	
<i>décolèrent</i>	

**Table 15.2 People**

<i>public</i>	<i>homme</i>	<i>criminels</i>	<i>victimes</i>	<i>justicier</i>
<i>monde</i>	<i>national</i>	<i>inoffensive</i>	<i>manifestants</i>	
<i>masse</i>	<i>personnage</i>	<i>pacifiste</i>	<i>trahis</i>	
<i>nombre</i>	<i>individu</i>	<i>fatigué</i>	<i>cons</i>	
<i>flot</i>	<i>particulier</i>	<i>malaise</i>	<i>déplorables</i>	
<i>foule</i>	<i>effrayant</i>	<i>douloureux</i>	<i>prédatrice</i>	
<i>habitant</i>	<i>d'exaspération</i>	<i>déception</i>	<i>salauds</i>	
<i>personne</i>	<i>intenable</i>	<i>résignés</i>	<i>détruire</i>	

**Table 15.3 Government**

<i>loi</i>	<i>pilles</i>
<i>droit</i>	<i>intérêts</i>
<i>code</i>	<i>oligarchie</i>

**Table 15.4 Death**

<i>mortel</i>
<i>suicidez-</i>
<i>vouz</i>
<i>abattus</i>

To complete the process, a manual search was performed by reading relevant articles on the FranceInfo site, where more significant words were found in the analysis. We built another dictionary named *array\_2* constructed that contains the words found in the articles and was compared with the words from the Twitter downloads and PLN dictionaries.

#### 4. FanceInfo and Twitter news

In addition to Twitter's traffic, the activity of the yellow vests on the web has been followed by the French news on the FranceInfo channel. Franceinfo is dedicated to the publication of uninterrupted news accessible worldwide on its website [francetvinfo.fr](http://francetvinfo.fr) [ 2]. The publications of the site show the position of columnists, political actors, which allow an overview of the content of the news about the YV in France. The newspaper notes as a daily and changing record are an expression of today's society, their importance in the understanding and emotional reaction of the public on the issues is crucial; hence the initiative to design a first dictionary that represents the use of expressive words in the notes, although it must be taken into account that they are defined by the context of their use, in this case, the journalistic one, but that they can be the basis for a more nuanced study of content on social networks.

The work was to find related concepts to the word *colère* and determining the relationship of these concepts with what is said about the YV movement. Within a specific type of Web content which is the news of the site FranceInfo. The dates used for this purpose were between March 16 and October 20, 2019. The purpose is to recognize the patterns of use of concepts that express themes and emotions of the YV movement. After a detailed review of 1200 notes published by FanceInfo within the established period, 213 mentions of the word *colère* were found [13]. The close associations that accompany the word *colère* that are located within the paragraph were extracted to construct a table with grouping in themes. The words that appear most frequently were placed in the dictionary. For the study, before presenting the map, a table is shown divided by a second relationship that the words found have with the six predominant themes: anger, justice, indignation, humiliation, hope and fatigue; as shown in figure 2.

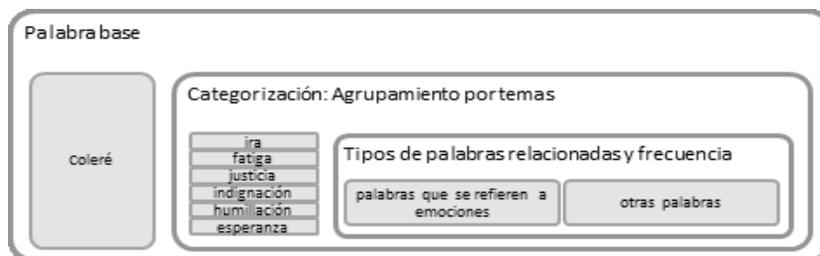


Fig. 2. array\_2 construction scheme.

The words that appear most frequently related to *colère* in the France Info news are violence, force, against, protesters and movement. While the feelings of the most talked-about are embarrassment, emotion and fatigue, followed by misunderstanding, discomfort and sadness (array\_2).

Table 16. Representative words of the YV in anger problem categories and justice.

ANGER				JUSTICE			
Emotion	R	Other	R	Emotion	R	Other	R
<i>émotion</i>	4	<i>violence</i>	33	<i>intérêts</i>	2	<i>(colère) contre</i>	2
<i>calme</i>	4	<i>force</i>	21	<i>l'indignation</i>	1	<i>crise</i>	8
<i>calmer</i>							
<i>veulent</i>	4	<i>casse</i>	9			<i>revendication</i>	6
<i>exprimée</i>	2	<i>problèmes</i>	6			<i>justice</i>	5
<i>tension</i>	1	<i>pilles</i>	4			<i>manifeste</i>	5
<i>sincère</i>	1	<i>clamer</i>	3			<i>incompréhension</i>	3
<i>fait mal</i>	1	<i>réclamer</i>	2			<i>légitime</i>	2
<i>ressenti</i>	1	<i>profonde</i>	2			<i>révolution</i>	2
		<i>chier</i>	2			<i>justicier</i>	1
		<i>saccage</i>	2			<i>dénoncer</i>	1
		<i>combatif</i>	1			<i>demandes</i>	1
		<i>vandalisé</i>	1			<i>impartial</i>	1
		<i>mortes</i>	1			<i>rigueur</i>	1
		<i>choqués</i>	1			<i>traître</i>	1
		<i>danger</i>	1			<i>inacceptable</i>	1
		<i>périlleuse</i>	1				

Table 17. Representative words of the problem YV in the categories outrage and humiliation

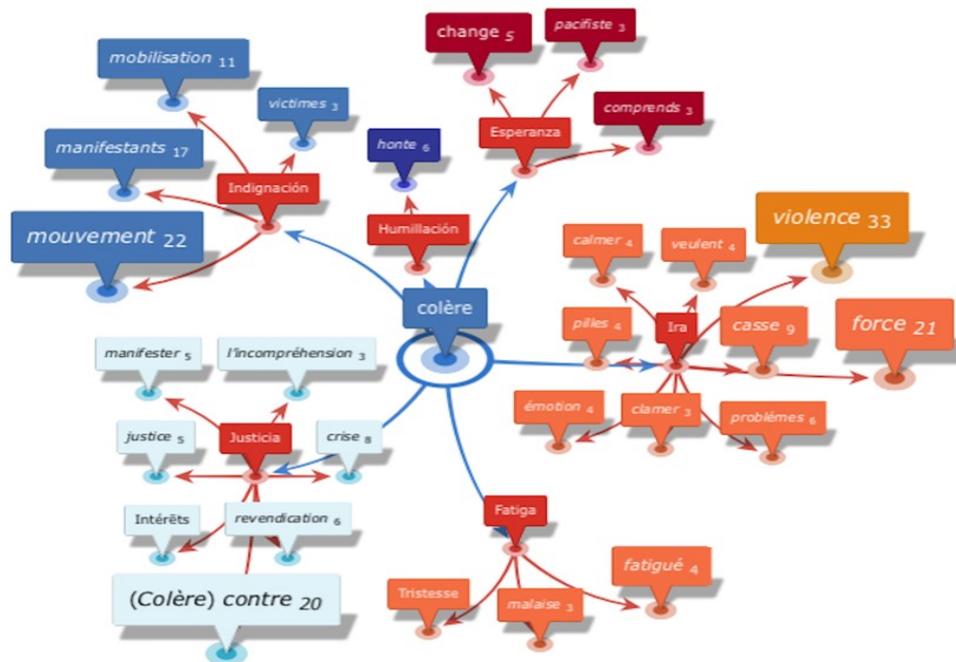
INDIGNATION				HUMILIATION			
Emotion	R	Other	R	Emotion	R	Other	R
<i>ras-le-bol</i>	2	<i>mouvement</i>	22	<i>honte</i>	6	<i>déçus</i>	2
<i>excédés</i>	1	<i>manifestants</i>	17	<i>peur</i>	1	<i>criminels</i>	2
<i>désespoir</i>	1	<i>mobilisation</i>	11	<i>dégoût</i>	1	<i>sacrifice</i>	1
<i>inefficace</i>	1	<i>victimes</i>	3	<i>dégâts</i>	1	<i>cons</i>	1
		<i>hypocrisie</i>	2			<i>déplorabl</i>	1
		<i>débordements</i>	2			<i>es</i>	
		<i>insensée</i>	1			<i>prédatrice</i>	1
		<i>manipulabl</i>	1			<i>salauds</i>	1
		<i>injustice</i>	1			<i>détruire</i>	1
		<i>charger</i>	1				
		<i>trahis</i>	1				
		<i>répressive</i>	1				
		<i>infâmes</i>	1				
		<i>confrontation</i>	1				

*oligarchie* 1  
*périlleuse* 1

**Table 18.** Representative words of the problem in the hope YV categories and fatigue

HOPE				FATIGUE			
Emotion	R	Other	R	Emotion	R	Other	R
<i>inoffensive</i>	1	<i>change</i>	5	<i>fatigué</i>	4	<i>intenable</i>	1
<i>comprendre</i>	1	<i>pacifiste</i>	3	<i>malaise</i>	3	<i>faibles</i>	1
<i>fierté</i>	1	<i>comprends</i>	3	<i>tristesse</i>	3	<i>criè</i>	1
		<i>honneur</i>	2	<i>douloureux</i>	2	<i>profané</i>	1
		<i>rêve</i>	2	<i>déception</i>	2	<i>suicidez-vous</i>	1
		<i>tendre</i>	2	<i>abandon</i>	2	<i>abattus</i>	1
		<i>apaisera</i>	2	<i>souffrance</i>	2	<i>dépassés</i>	1
		<i>saisir</i>	2	<i>décolèrent</i>	1	<i>emmerdez</i>	1

For a better visualization of the words and the previously proposed scheme, we created a map (Figure 3) where the central word is *colère* and the relationships are grouped into the six main themes. You can see the words with a higher frequency of appearance in a larger size than those that have a lower frequency but still stand out.



**Fig. 3** Map of words with a higher frequency in FranceInfo

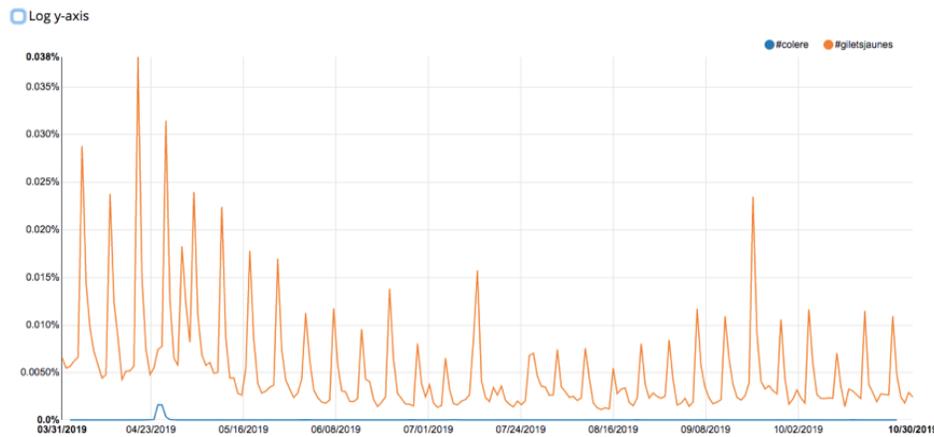
In arrangements 1 and 2, the words with the higher frequency were compared in table 18. From the comparison between the arrangements, it is noticed that the words most used in the Franceinfo site are not very emotional, mainly due to the content of the site it is written by professionals who are observers exposing the movement to the information level. Written notes are YV descriptive texts and are guided by objectivity. On the other hand, the members of the movement who express themselves on Twitter do so on an emotional level, with the use of emotional words where subjectivism is shown. It is interesting that the emotional word that connects the two arrangements and that has more repetition is anger. The reason is that on Twitter, unlike FranceInfo is mostly express the YV and its language, emotional trend, is not that clusters around the word well-educated "person", but instead of these words are used such as "colleagues", "colleagues", "idiots", "collaborators", etc. This, linked to the broad negative mood of the YV suggests that "personne" is rather the negation "no" in usages like no one believes, no one accepts, etc.)

**Table 19.** YV representative words of the movement on Twitter and France Info

TWITTER			FRANCE INFO	
<i>Colère</i>	<i>contre</i>	2513	<i>Colère contre</i> (anger against)	20
<i>Persone</i> (no one)		1495	<i>Mouvement</i> (movement)	22
<i>National</i> (nacional)		1573	<i>Violence</i> (violence)	33
<i>Cons</i> (idiots)		1557	<i>Force</i> (strength)	21
<i>Foi</i> (faith)		1265	<i>Manifestants</i> (protesters)	17

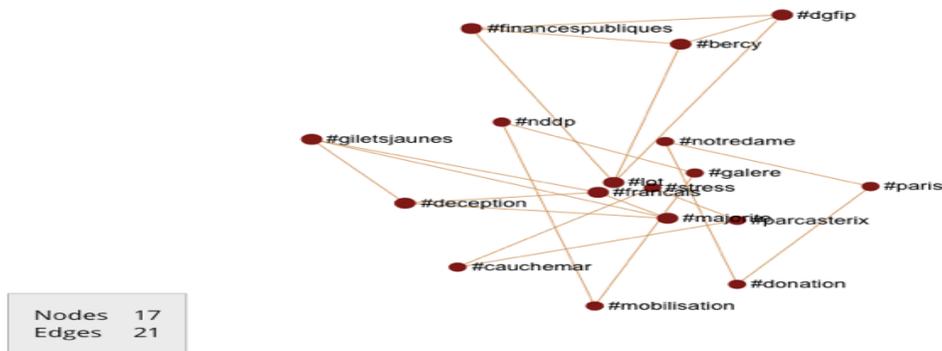
**Coléré on Twitter, trends and co-occurrences**

Complementing the study, we add the analysis of Twitter co-occurrences and trends to observe how information about YV spread on that network. The observatory of social media at the University of Indiana OSoMe with its API on trends in Twitter allows us to have an overview of the co-occurrences of hashtag propensities. This tool was used to follow #Colere [14]. The co-occurrence is the ratio of use of a hashtag with another, in the case of the occurrence of #Colere in #giletsjaunes set occurs more frequently on Twitter in April 2019. However, we see that in the months January, February, May and October 2019 #Colere appears on maps correlations of what is being discussed on Twitter with the tag #giletsjaunes.



**Fig. 4.** #Colere graph trends and #giletsjaunes, the highest correlation is observed in April 2019. The orange line and the blue line #giletsjaunes #colere follows the number of tweets containing the hashtag

Map, product Osome API, below shows the co-occurrences of #Colere during April 2019. The node #giletsjaunes is primarily associated with #deception and #français. It is understood that the hashtag is searched based on the map, in this case, #Colere.



**Fig. 5** #Colere and #giletsjaunes trend chart for April 2019

The concurrence of #Colere and #giletsjaunes is also presented in October 2019. #Colere has a co-occurrence with #giletsjaunes and with #expression, #rouen, #demission, #pollution, #ubrizon, #macron and #politique. This latest study verifies that the colère

is the emotion that characterizes the YV movement and is the only emotive word that keeps direct co-occurrence with #giletsjaunes.

## 5 Conclusions

Throughout the text, we have attempted to understand the desires, moods and positions taken from and on the yellow vest movement based on the analysis of content in two specific media: Twitter and FranceInfo. The authors of the content studied are journalists, opinion leaders and influencers.

The development of the research was carried out from the first arrangement of words obtained from empirical observation, later, these expressions were evaluated with an NLP algorithm developed specifically for that purpose and that analyzes the relationships between the words of array\_1, Twitter content and its authors. In addition, a study of the news content published by FranceInfo was carried out, which resulted in a second arrangement of words and themes.

As a result of the intersection and comparative study of the arrangements and developed dictionaries we found:

1. That the words *colère contre* (anger against, outrage over), *justice* (justice) and *honte* (shame) show the main themes of the movement because they are found more frequently in all the contents studied. These expressions are compatible with the initial guide word *colère*. This is important because anger or rage (*colère*) is dominant in stark contrast to the fact that the movement had 42 demands, since no concept as "injustice", "inequality", "wages", "hospital", " lubricants ", " referendum ", etc. *colère* often competes in such a way that despite all the particular reasons for movement, *colère* seems, the independent motor restlessness, agitation: a movement of *colère* by *colère* same.
2. It was found that the concepts that are repeated in the studies are related to states of mind, emotions and complex themes. The majority negative, dissatisfied and with a high content of discomfort, describes the movement in terms of social unrest in which certain abstract concepts such as justice or mobilization are compatible with emotional words such as *honte* (shame) or *peur* (fear) and negatively as *bonheur* (joy) as something missing or aspired to.
3. The words most frequently repeat are: *malaise, tristesse, faibles, comprendre, soutenir, pacifiste, comprends, change, honneur, miracle, foi, tendre, bonheur, rassure, saisir, peur, cons. criminels, injustice, victimes, charger, hypocrisie, manifestants, trahis, mobilisation, mouvement, oligarchie, demandes, impartial, rigueur, justice, crise, revendication, inacceptable, manifester, tensión, veulent, chier, force, danger, violence, casse, clamer. (Inquietud, tristeza, debilidad, comprensión, apoyo, pacifismo, comprensión, cambio, honor, milagro, fe, ternura, felicidad, tranquilidad, comprensión, miedo, idiotas. criminales, injusticia, víctimas, acusación, hipocresía, manifestantes, traicionados, movilización, movimiento, oligarquía, demandas, imparcial, minuciosidad, justicia, crisis, demanda, inacceptable, demostrar, tensión, querer, mierda, fuerza, peligro, violencia, rotura, gritar).*

Computational tools are useful for analyzing web content to expose positions taken and understanding of social phenomena such as the yellow vest movement.

The results of the semantic analysis of the yellow vest movement show a structure as a set of relationships between abstract concepts (such as justice or injustice, abandonment, inequality, etc.) and concepts of emotions (anger, suffering, sadness, shame, etc.). These relationships are independent of the concepts that define the specific themes of the movement (fuel, taxes, wages, etc.), that is, such independence will be the hypothesis to be tested by comparing the semantic structure of other movements of social discontent; Such relationships should reveal what is the pattern or form of the movements of discontent. If this is true, then, knowing the form or structure of social discontent, it is possible to use traffic studies in a not only formal but also a quantitative way to determine not only the formal structure of discontent but the magnitude or degree of it. In other words, we must assume that there is a pattern or form of social discontent, and that given this, there is also the degree of discontent specific to each movement, which can be quantitatively studied. This opens a formal and quantitative research program on social movements. If studies of the digital trace of web users show repetitive patterns of behaviour, it seems reasonable to assume that the study of mass emotions in the networks must show equally repetitive patterns.

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