

Using Advanced Analytics of Social Media Content to understand Rape in Nigeria

October, 2020

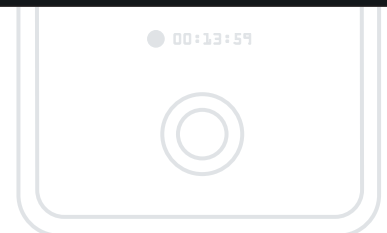
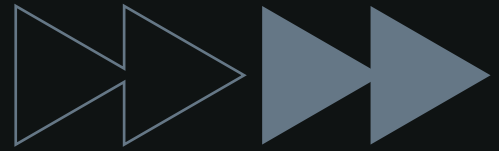


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Introduction



Rape is a worldwide epidemic which stands on the same pedestal with the offence of murder and has been largely characterized by a culture of impunity. The definition of rape is inconsistent between governmental health organizations, law enforcement, health providers, and legal professions. It has varied historically and culturally. The World Health Organization (WHO) defines rape as a form of sexual assault, while the Centers for Disease Control and Prevention (CDC) term rape a form of sexual violence.

Rape according to Hornby, A.S. (2006)¹ is the crime of forcing somebody to have sex with one especially using violence. It is the crime of forcefully having sex with someone against the person's wish (Chiedu, 2012)². According to Brigneti and Egbonimali (2002)³, rape is an act of sexual violence that involves intercourse without consent or against someone being willing to engage in the act. It is posited that rape could even happen “Without the use of force” (Ayonrinde, 1984)⁴. By this, it is meant, that if for instance an adult of any age range tactfully seduces a child of a tender age for either marriage or sex with an enticing gift and the child after collecting same willingly give in for it with the adult, it is said to be rape as well. This form of rape is viewed as “A sex crime carried out by pathological men who were unable to control their own sexual desires”⁵.

Over the past year, there has been mass mobilization against these forms of abuse. From #MeToo and #TimesUp in Hollywood, to #IBelieveHer in Northern Ireland and #Cuéntalo in Spain, women around the world including Nigeria are sharing their stories on social media, organizing protests and expressing their frustration with the criminal justice systems of their respective jurisdictions.

In recent times, the incidence of rape as well as the conversation on it has significantly increased in Nigeria. The Minister of Women Affairs, Mrs. Pauline Tallen said cases of rape have escalated geometrically in the country. Some have even attributed the astronomical increase in this heinous crime to the lockdown occasioned by the Covid-19 pandemic, though experts say the problem had been with us long before the lockdown.

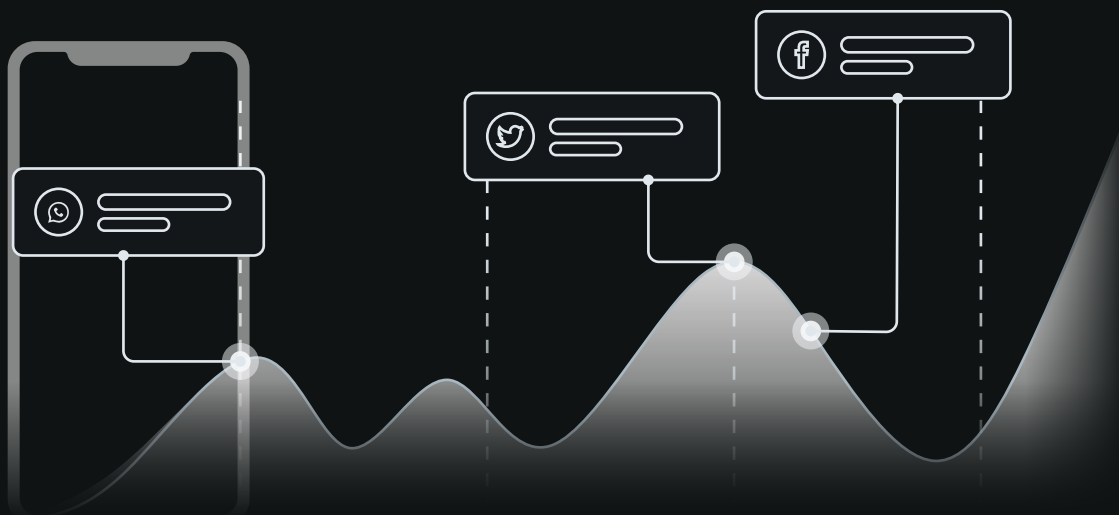
The Social Media space become particularly saturated when there is a high-profile crime involving a well-known victim or offender, or when there is an especially gruesome aspect of the crime. Whenever these crimes are reported, the public becomes riveted to every salacious detail of what happened; much like a reality TV show, these events can be both captivating and repulsive at the same time.

However, the problem with rape and the sexual offense is far more complex than just the terrible nature of the crimes themselves and the fear they bring to many. It is the combination of the crime and the community's reaction, coupled with the many myths and victim stereotypes that make this type of crime so difficult to investigate and even more difficult to prosecute. Perpetrators often go unpunished even if the victims dare to report the incident. The court



acquits most of the rape offenders on account of the lack of evidence or because the victim has a 'questionable' character. Owing to this, rape victims suffer in silence due to the stigma and humiliation attached to the public acknowledgment of rape.

In light of the growing expression on social media, it is important to understand the sentiment and explores the context of the use of the word 'RAPE' on the internet. This study analyzes the sociogram of node connection to see how 'RAPE' is associated with words like court, judgment, celebrity, penalty, protest, justice, law, lawmaker, constitution, police, victim, church, religion, and other related words.



Overview of Rape in Nigeria

The rise in rape cases in Nigeria is scary, worrisome and an ugly phenomenon, especially the sexual abuse and exploitation of minors, that is under-aged girls. It is nothing short of impunity, and is being perpetrated with such rampancy and violence that has left many wondering and asking what is really amiss? It is becoming clearer that we are not just fighting the Coronavirus pandemic in Nigeria, but also the rape epidemic happening upon the Covid-19 pandemic.

On 26th June, the Katsina Police Command reported arrests of 40 suspected rapists within this period of the Covid-19 lockdown, between April and June 2020. In the same vein, on 24th June 2020, the Akwa-Ibom Police Command in a press briefing, informed the public about how they have arrested within seven days another Pastor and 11 others, for rape and defilement. Investigation further revealed that, the said Pastor, who lives with eight other girls between the ages of 13 and 16 in his so-called deliverance center at the said address, severally had unlawful carnal knowledge of one of the minors who is a 15-year-old. The Akwa-Ibom Police's arrest included two fathers who committed incest with their daughters. It also revealed the violence rapists deploy these days, to coerce or force sex on their victims. In two cases out of the 11, a gun and a machete were used, and a deep cuts and grievous bodily harm were meted out on one of the victims.

In Enugu, in one of the nine cases that was reported and handled this June by Women's Aid Collective (WACOL), a gun was also used to intimidate a 16-year-old girl at Nsukka, to succumb to the rapist's unwarranted sexual attack. In another case, WACOL received in April, a report that a father started to have unlawful sex with the daughter as a minor, and it continued to her adulthood, and she had been impregnated by this father and forced to abort two pregnancies until she ran away and reported to us through our online services in April, 2020.

Rape is alarmingly common in Nigeria. It probably has been in existence in the traditional society and only became public knowledge with the advent of electronic and print media at the wake of modern Pentecostalism in Nigeria sometimes in the 1970s. Its baffling prevalent upsurge is reported to have gone up in recent past from 12.5 percent to 80 percent in Nigeria (Chiedu, 2012)². Rape is a global problem with women and children being mostly vulnerable (Onah, 2010)⁶.

According to Chiedu (2012): There are several cases, which are very irritating. Now and then, it is reported that a teacher has raped a student. A religious leader has raped his flock. Robbers have raped a victim. A man has raped a sister-in-law or daughter-in-law. A master has raped a housemaid. A security man has raped his master's wife. A boss has raped his staff. A father has raped his daughter. A young man has raped a grandmother. A matured individual has raped a minor or a baby. A traditional ruler has raped a subject. An 80-year-old man has raped an 8-year-old girl. From this lengthy assertion, it is quite glaring that rape cases are a shocking reality in the Nigerian society. It appears that everyday girls and boys, women and men are sexually being abused even by persons known to the victim, who perhaps shamefully takes due advantage of

Overview of Rape in Nigeria

such familiarity (Udekwe, 2013)⁷. According to Ejim (2013)⁸, “The incidence of baby and child rape has currently hit a statistic of up to 70 percent of the total rape cases in Nigeria”. As discovered, children molestation is indeed becoming a sad reality which must be grappled with and which also must be nabbed in the bud otherwise it will, make Nigeria appear dishonorable to other nations. As the situation truly is in Nigeria nowadays, girls and women, sometimes even men too are sexually harassed by rapists on the streets, markets, and institutions of learning. Several of such cases are reported in the courts, radio stations and newspapers and more engaging social media platforms almost daily in Nigeria.

The legislations on rape in Nigeria are outlined below

- **The Criminal Code Act:** The Criminal Code Act (Criminal Code) is applicable in the southern states of the country. Each of the said states has its own criminal code law. Section 357 of the Criminal Code defines rape this way:

“Any person who has unlawful carnal knowledge of a woman or girl, without her consent or with her consent, if the consent is obtained by force or by means of threats or intimidation of any kind, or by fear of harm, or by means of false and fraudulent representation as to the nature of the act or in the case of a married woman, by personating her husband, is guilty of an offence which is called rape”

An attempt to commit rape is also an offence under the Criminal Code and it is a felony, punishable with imprisonment for fourteen years, with or without caning. - Section 359 of the Criminal Code. Section 358 of the Criminal Code provides imprisonment for life, with or without caning as punishment for rape. It is worthy to note that from the definition of rape in section 357 of the Criminal Code does not recognize men or boys as victims of rape. The Criminal Code doesn't also recognize marital rape. The provisions of the Criminal Code indicate that rape can only be committed by persons of the male gender.

- **The Penal Code Act:** The Penal Code Act (Penal Code) is applicable in the Northern states of Nigeria. Section 282 of the Penal Code provides that Rape is said to occur where a man has sexual intercourse with a woman in any of the following circumstances:
 - (a) against her will
 - (b) without her consent
 - (c) With her consent, when her consent has been obtained by putting her in fear of death or hurt.
 - (d) With her consent when the man knows that he is not her husband and that her consent is given because she believes that he is another man to whom she is or believes herself to be lawfully married.
 - (e) With or without her consent, when she is under fourteen years of age or of unsound mind.

Overview of Rape in Nigeria

The punishment for rape is fourteen years. The Penal Code doesn't recognize men or boys as victims of rape. It also doesn't recognize marital rape where the woman has attained the age of puberty and it is specifically stated in Section 282 (2). The provisions of the Penal Code indicate that rape can only be committed by persons of the male gender. Section 283 of the Penal Code provides imprisonment for life or for any less term and or a fine punishment for rape.

- **Child Rights Act 2003:** The Child Rights Act (CRA) is a Federal Law which was enacted to protect the rights of children. It has been domesticated in a number of states in Nigeria. Section 31 (1) & (2) of the CRA provides that any person who shall have sexual intercourse with a child commits an offence of rape and is liable on conviction to imprisonment for life. The CRA provides that it is immaterial that- (a) the offender believed the person to be of or above the age of eighteen years; or (b) the sexual intercourse was with the consent of the child. The CRA does not restrict victims of rape to the female gender. It also recognizes that the offence of rape could be committed either by a man or woman
- **Violence against Persons (Prohibition) Act, 2015:** The Violence Against Persons (Prohibition Act) 2015 (VAPP) prohibits all forms of violence against people in private and public life. It is applicable in the Federal Capital Territory (FCT). Section 1 (1) of the VAPP provides that a person commits the offence of rape if;
 - (a) He or she intentionally penetrates the vagina, anus, or mouth of another person with any other part of his body or anything else;
 - (b) The other person does not consent to the penetration; or
 - (c) The consent is obtained by force or means of threat or intimidation of any kind or by fear of harm or by means of false or fraudulent representation as to the nature of the act or the use of any substance or additive capable of taking away the will of such person or in the case of a married person by impersonating his or her spouse.

Section 1(2) provides life imprisonment as punishment for the offence. Where the offender is less than 14 years, the punishment is a maximum term of 14 years imprisonment. In other cases, a minimum of 12 years imprisonment is provided by the Act and for gang rape, the offenders are liable jointly to a minimum term of 20 years without an option of fine. The Act also recommends the award of appropriate compensation to the victim by the court.

Section 1(4) VAPP mandates that a register of sexual offenders should be maintained and accessible to the Public.

The provisions of VAPP with regards to rape are quite wide as it did not like other laws restrict its definition of rape to protect only females in relation to vaginal penetration. VAPP doesn't restrict victims of rape to the female gender. The VAPP recognizes that sex goes beyond the use of the primary sexual organs and extends the scope to anus and mouth. It has been observed that before in Nigeria it was difficult to bring forceful anal or oral sex under the umbrella of rape as such was not part of our laws. The VAPP also indicates that penetration here need not only by the sex organ (penis) of the offender but by any part of his body or anything else. The Act, despite its laudable provisions has been criticized for not stipulating a minimum amount as compensation for rape so as well as the punishment prescribed for gang rape.

Overview of Rape in Nigeria

The issue of rape has physiological, psychological, moral and social consequences on the raped, whether man or woman. In the opinion of Obasi (2007)⁹, “Rape leaves painful memories and a lifelong consequence on the victim”. It inspires permanent damages on its victims. Rape equally degrades as well as violates a whole tribe or nation. Rape, it is noted terribly hurts women. It is, in the words of Olufemi Kayode “Like stabbing a heart and leaving the knife there” (Odeh, 2013)¹⁰. Alhassan (2013)¹¹ captures the consequences thus: In the months following a rape, victims often have symptoms of depression or traumatic stress.

They are more likely to abuse alcohol or drugs to control their symptoms. Nearly one-third have thoughts of suicide, and approximately 17 percent actually attempt suicide. Thirty percent of victims will go on to develop major depressive or post-traumatic stress disorders in their lifetime, long-time negative effects on sexuality and inability to form or maintain trusting relationships are common. Moreover, rape could have direct effect on the family in many ways. This happens if in the course of the act, the rapist or the raped contracts sexually transmitted diseases like HIV and AIDS, gonorrhea, and syphilis among others that may permanently damage their reproductive system, thus rendering them sterile or resulting to untimely death (Ferguson, 1998)¹². Added to this is the fact that rape may lead to unwanted pregnancy, abortion, abandonment of babies or other forms of child abuse and suicide (Nzeakor, 2002)¹³ (Wasike, 1999)¹⁴.



Methodology



Our methodology is summarized below:

1. **Data Collection:** Data with key words related to “Rape” were collected from openly available data sources in Nigeria (blogs, chat rooms) where conversations about Rape were being discussed. For this a total of 139,755 sentences were collected from different channels.
2. **Data Processing:** For data processing, Natural Language Processing techniques such as Word Frequency, Word Collocation, and Co-occurrence, Rapid Automatic Keyword Extraction (RAKE) were applied find relevant key words and phrases in the dataset.
3. **KeyWord Context Analysis:** Sentiment Analysis, topic modeling, and intent detection were to classify and understand the context of the use of the word RAPE in sentences.

Study area

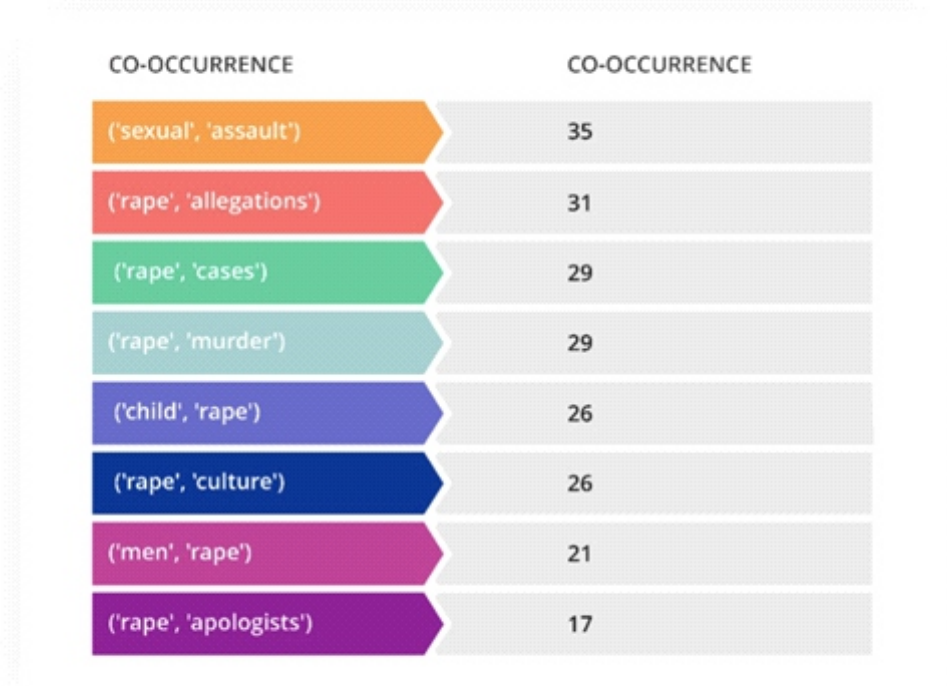
Nigeria. It is divided into five administrative divisions, and further divided into 774 local government areas. Lagos has the highest population density of Nigeria's states and the smallest area of Nigeria's 36 states. It is a major financial Centre and would be the fifth-largest economy in Africa if it were a country (Ekundayo,2013)¹⁵. The timeline for this study was between May-June 2020 when the pandemic had its early footprint in Nigeria and the lockdown protocol was initiated.

Datasets

Data was crawled from the internet using two python package-[Tweepy](#) and [BeautifulSoup](#). The source of data was [Twitter](#), [Nairaland](#) and [LindaIkeji](#) Blog. The data pre-processing operations were carried-out in python environment.



Tweets containing the word 'rape' and #WeAreTired were extracted from the internet. The total dataset contains about 2,000 tweets for the month of May and June 2020. We have 1,600 tweets containing the hashtag #WeAreTired. For the rape dataset, we extract the co-occurrence word with rape. Below are some of the co-occurrence word with rape.



Network Node of Tweets

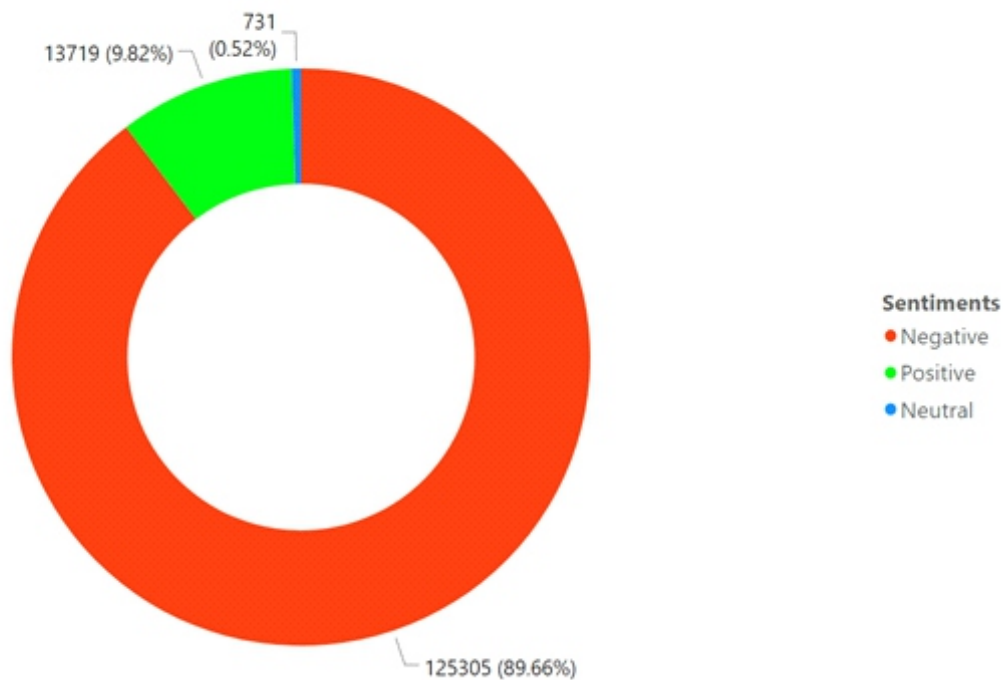
Social media enables connection via computation. As people share, like, follow, friend, reply, retweet, comment, tag, rate, review, edit, update, and text one another (among other channels) they form collections of connections. These collections contain network structures that can be extracted, analyzed and visualized. The result can be insights into the structure, size, and key positions in these networks. Python's library – [NetworkX](#) was utilized to make connection of words obtained from the twitter data to the endpoint of the word “Rape” is visualized below:



Sentiment Analysis Results

To understand the sentiments expressed, we performed sentiment analysis on each of the tweets which contain the co-occurrence word with rape. The table below shows a quick insight

keyword_wrt_rape	positive	negative	neutral	Total
culture	29	11	7	47
penalty	7	8	1	16
church	5	10	2	17
apologist	14	12	10	36
charges	9	5	7	21
cases	35	19	6	60
stop	29	26	12	67
men	193	145	60	398
murder	29	27	21	77
victims	32	25	21	78



The results from the sentiment analysis shows 125,305 negative values, 731 neutral values and 13,719 positive values.

The negative sentiment shows the writer's anger sometimes, but most especially it shows a decisive statement and not just an opinion, and sometimes contains some repulsive word. For example, let's explore some of the tweets that co-occur with the word 'Culture';

“Remember you did nothing to deserve -fuck rape culture.”

“Rape apologists are the worst kind! #EnoughIsEnough #endrapeculture #NoMeansNo,”

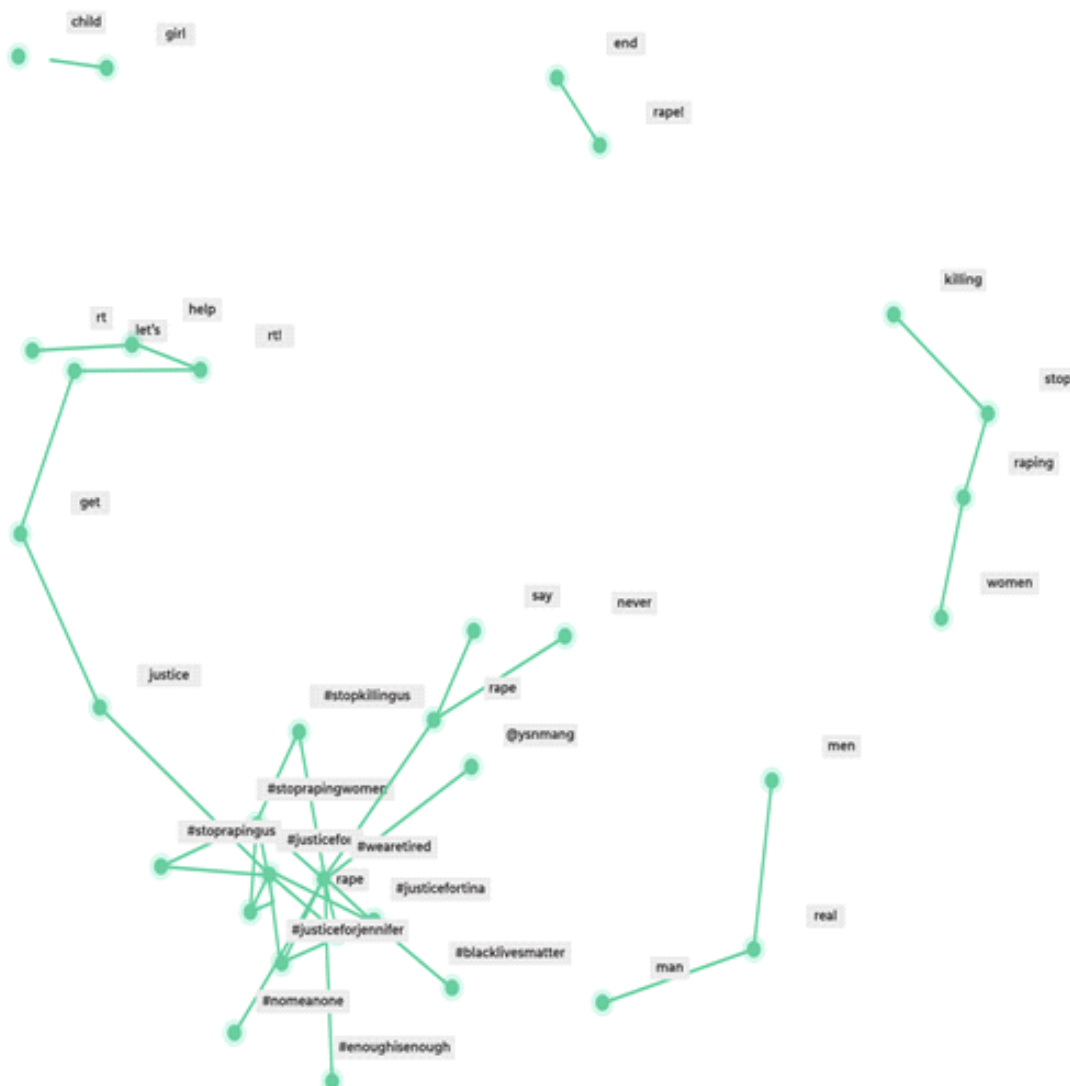
“How are you part of rape culture? Well, I hate to say it, but it's because you're a man.”,

The positive sentiment tells about those giving advice, suggestion, e.g:

“Wrong, you're the problem with society consistently victim blaming & downplaying the severity of rape culture, it has nothing to do with clothing. Have a good night”,

[Network Graph for #WeAreTired](#)

We explored the network graph for the #WeAreTired. This hashtag leads us to other hashtags relating to it. And from the hashtag, we can list most of the popular victims of rape. The image below shows the network.



News Blogs

The scrapped dataset from news blogs contains articles, paragraphs and sentences that have the word “Rape” in it and it was saved in CSV and txt format for analysis and modelling. Total scrapped articles, paragraphs and sentences is 1,228.

Sentiment Analysis

Each text is grouped based on the co-occurring word with rape and then we run them through the sentiment analysis model. The fact remains that the word **rape** is a negative word on its own. So, as discussed in the previous writeup, a text having negative sentiment means that;

The polarity negative shows the writer's anger sometimes, but most especially it shows a decisive statement and not just an opinion, and sometimes contains some repulsive word.

For the pulse dataset as being the dataset with the largest size; the word “her” and “men” co-occurring with “rape” have more text compared to other co-occurring word. “her” has 458 data size and “men” has 412.

“her” has 154 negative polarity and 303 positive polarity, and the word “man” has 138 negative polarity.

Culture seems to have less data size (23), and it has lower negative polarity. And the word case has 82 data size, and 21 negative polarity.

Lindalkeji Blog

We scraped comments from 106 blog post from www.Lindalkeji.com. From the dataset we obtained 3,758 data entry.

For each of the entry we perform sentiment analysis, from the sentiment analysis we obtain the following result. It is important to mention that comments from Lindalkeji are sometimes out of scope and topic.

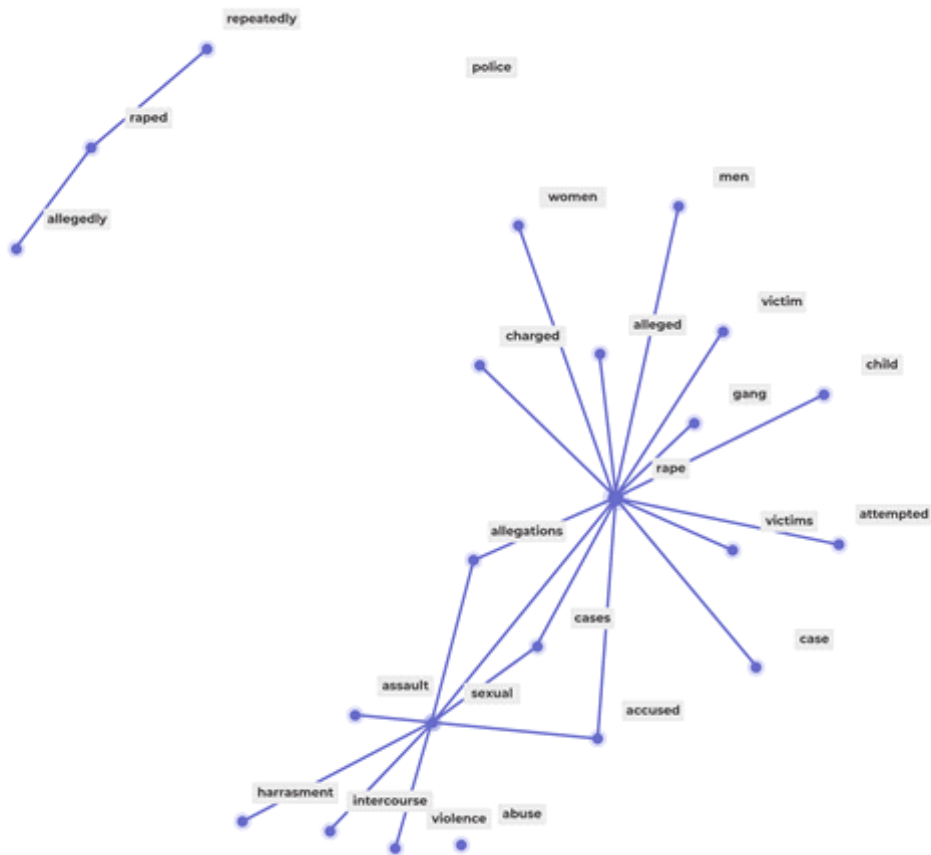
The results from the sentiment analysis shows 1,306 positive values, 1,179 neutral values and 1,273 negative values respectively.

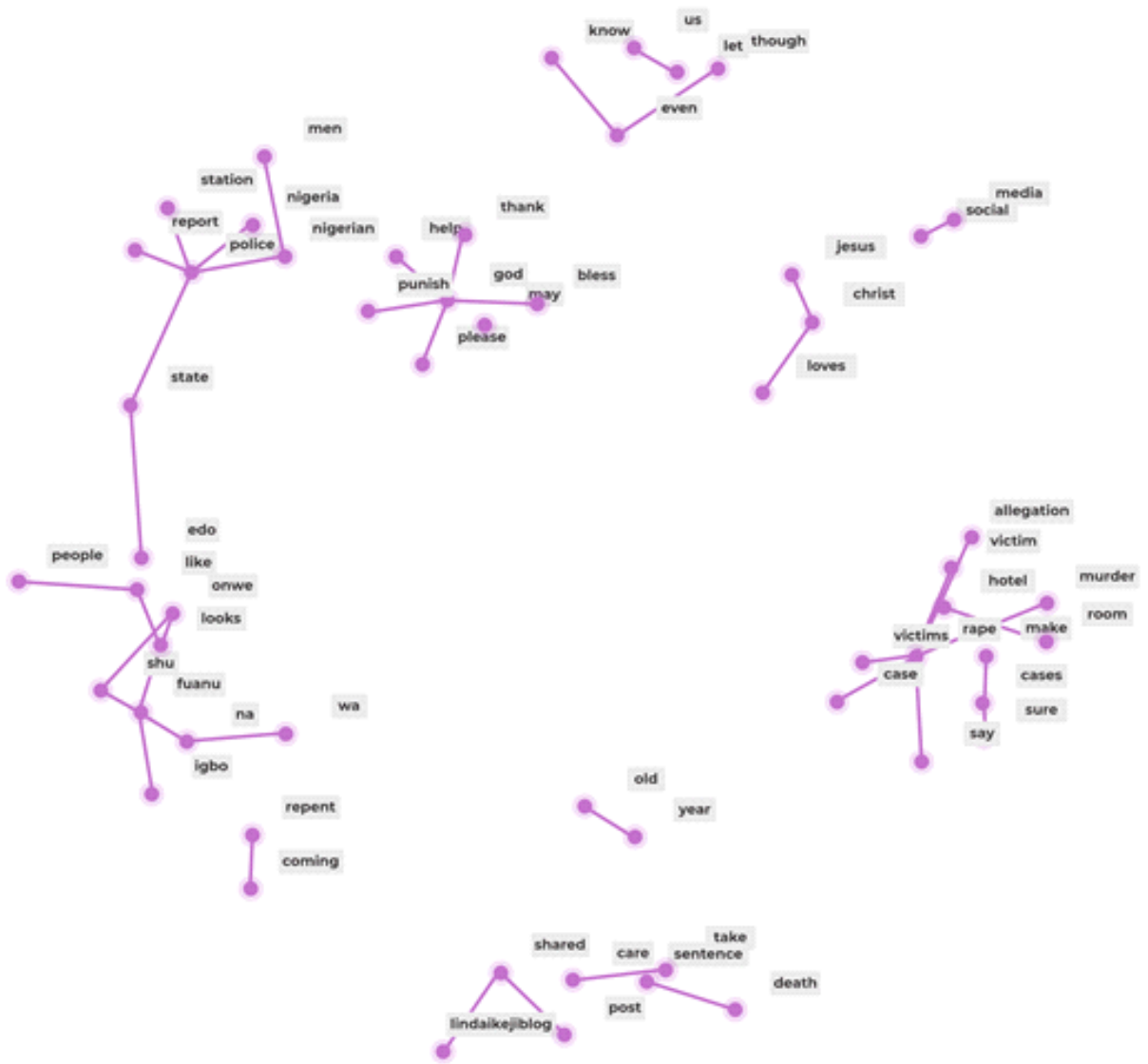
Co-occurrence Words

For each of the data scraped the co-occurring word with rape are extracted using bi-gram. The words across all the dataset are; her, case, gender-base, culture, murder, victim.

Network Graph

The network graph is generated from the bi-gram of co-occurring word with rape being the center node.





Topic Modelling

A 5-topic model was built on the dataset using the Latent Dirichlet Allocation algorithm. The algorithm was chosen based on its capabilities to perform well on the small amount of dataset which in the case is 1,228 records.

The top 10 words in each topic can be found in the table below

Topic class	Top 10 words	Insights
0	['women', 'old', 'told', 'year', 'police', 'raped', 'state', 'sexual', 'accuse', 'said']	<ul style="list-style-type: none"> - The police are aware of women rape cases in the state. - Sexual accusation is found in both the old and the young women
1	['gender', 'based', 'enforcement', 'ronaldo', 'violence', 'cases', 'government', 'police', 'said', 'rape']	<ul style="list-style-type: none"> - Government law enforcement on rape cases - Rape cases are leading to violence situations - Rape cases should not be gender based.
2	['social', 'european', 'old', 'year', 'rape', 'police', 'agree', 'policy', 'eyewitness', 'said']	<ul style="list-style-type: none"> - European police can enforce policy on rape - There are eyewitnesses to some rape cases - Rape are often common to social gather in the Europe
3	['cases', 'people', 'power', 'men', 'victims', 'violence', 'sexual', 'women', 'said', 'rape']	<ul style="list-style-type: none"> - Men are miss using the physical power on women - Most victims of rape are women - People should be kind to rape victims
4	['rape', 'year', 'old', 'police', 'said', 'accused', 'court', 'policy', 'eyewitness', 'agree']	<ul style="list-style-type: none"> - Government bodies such as court, police should strictly adhere to policies on rape issues.

Lindalkeji

Similarly, a 5-topic model was built on the dataset scrapped from www.lindaIkeji.com. This data contains lots of vital information and what people think of the word rape, the accused and the victims. Below is the outcome of this analysis

Topic class	Top 10 words	Insights
0	['rapist', 'come', 'old', 'davido', 'tweet', 'said', 'guy', 'need', 'friend', 'girl']	- People focus more on the rapist than the victim
1	['covering', 'know', 'doctor', 'taken', 'baby', 'need', 'man', 'woman', 'face', 'child']	- Covering up a rapist should be considered crime - Rape is not limited to men and women but also found occurring children
2	['make', 'lady', 'guy', 'come', 'man', 'say', 'men', 'girl', 'know', 'woman']	- Always make your sexual interest known to your partner
3	['medium', 'dbanj', 'ghana', 'say', 'come', 'woman', 'let', 'social', 'know', 'lady']	- That a man, woman says "let" does should be a medium for you to force it. - Celebrities are found of having rape issues
4	['need', 'girl', 'said', 'rapist', 'know', 'nigerian', 'child', 'men', 'woman', 'police']	- Police needs to start taking rape issues seriously - Nigerian men and women are find it difficult to quantify the gravity of rape

Conclusion



In this study, advanced data analytics methods such as social network analysis, topic modelling and sentimental analysis on social media data with the central topic on rape was performed. Twitter and popular Nigeria social blogs provided a rich data source to better understand the population tenets on the subject of rape. By using Social network analysis and visualization on the data, we identified central actors and better understood the formation of the key players in the rape network. Sentiment analysis was performed to computationally identifying and categorizing opinions expressed in the text data, in order to determine the population's attitude towards the subject of rape- positive, negative, or neutral. Topic modelling was performed on data to find group of words or recurring patterns (topic) in the data that best represents the concepts of rape/information in the data.



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About Data Science Nigeria.

Data Science Nigeria (Registered under the Corporate Affairs Commission of Nigeria as Data Scientists Network Foundation) is a registered non-profit organization with a vision to build a world-class Artificial Intelligence knowledge, research and innovation ecosystem that delivers high impact & transformational research, business use applications, AI-first start-ups, employability and social good use cases; such that in 10 years, Nigeria will become one of the top 10 AI talent/knowledge destinations with 20% GDP multiplier impact.

We are an award-winning community of world-class experts in Data Science, Software Engineering, Geospatial Analytics, Financial Inclusion Analytics and Artificial Intelligence with an inspiring in-house team and additional access to the largest cluster of Nigerian and International AI talents.

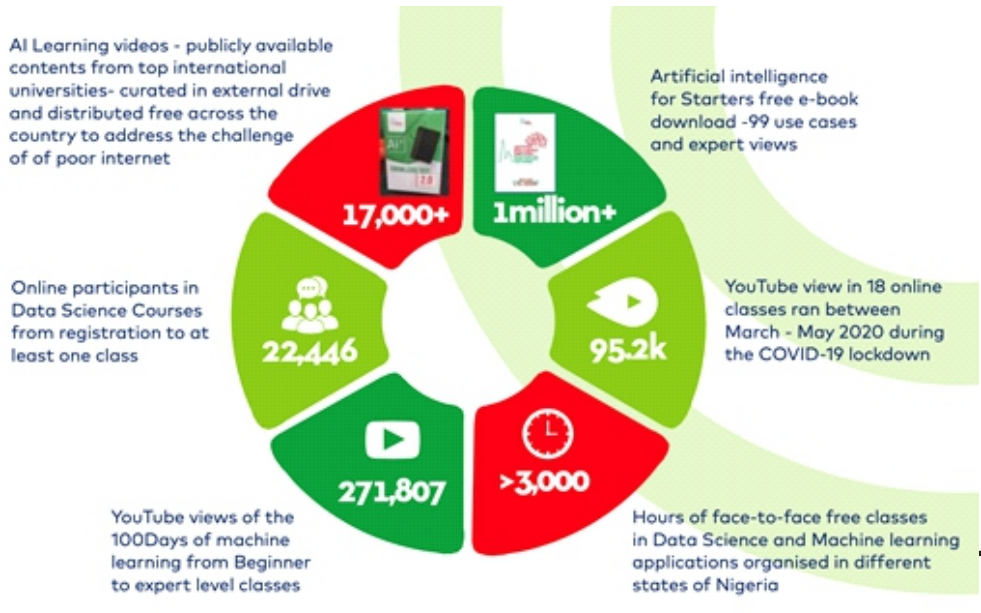
Data Science Nigeria's tried, and true system of training and AI community building has been validated by world class institutions. In July 2020, we won the Award of Best Academic Poster at the 21st ACM Conference on Economics & Computation (EC' 20)- the world's premier conference on the interface of economics and computer science. In 2019, we won 2 highest Artificial Intelligence awards on the continent space at the Deep Learning Indaba, Kenya: Maathai Impact Award and 2nd Best Research Poster. In addition, we were recognized at world's largest Artificial Intelligence Hackathon, Tunisia 2019.

Beyond the community and ground-breaking research activities, Data Science Nigeria is a consulting and solution development Organization at the cutting edge of using Artificial Intelligence and Data Science to solve pressing social and business problems. Data Science Nigeria provides solutions and capacity building for governments, multinationals, local and international humanitarian agencies and local businesses.

We deliver world-class solutions and every profit we make is invested into training more AI talents free of charge, advance research practices and expand innovation frontier for social good, as platform to achieve our vision to raise 1 million AI talents in 10 years.

About Data Science Nigeria.

Our Achievements



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 Official LinkedIn Page: <https://ng.linkedin.com/in/datasciencenigeria>
 Facebook: [facebook.com/datasciencenigeria](https://www.facebook.com/datasciencenigeria)
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