



## Women's Education in Afghanistan: Activists, the Taliban, and Public Views

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# Women's Education in Afghanistan: Activists, the Taliban, and Public Views

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## Abstract

This study examines women's education in Afghanistan from multiple views, including those of Activists, Taliban officials, and the Public. The study utilizes tweets' content analysis and sentiment analysis to investigate the levels and types of support for women's education. Twitter posts from Afghan activists, Taliban officials, and individuals were collected to gather the necessary data.

The study's findings reveal diverse views and sentiments among the different groups. Both male and female activists demonstrate strong support for women's education through active advocacy and promotion of equal access. The Public also provides substantial support, albeit to a slightly lesser extent. In contrast, the Taliban exhibits limited interest or concern for women's education.

To advance equality in education, the study underscores the importance of amplifying the voices of activists, addressing societal challenges, and advocating for legislative reforms. Policymakers, educators, and organizations in Afghanistan dedicated to improving women's education and empowering women can benefit from the valuable insights generated by this research.

**Keywords:** Women, Girl, Education, University, School, Twitter

## CHAPTER I: INTRODUCTION

Millions of women, especially without equal educational experiences, skills, or qualifications, women of specific classes and social groups have long been doomed to inferior lives in terms of their capacity to grow personally, their choice of employment, their standing as citizens, and their ability to influence leadership and decisions at the national level that have an impact on their local lives (Weiner, 1986).

Women practically prevent from receiving education around the globe, especially in countries with patriarchal and conservative government forms. Afghanistan is one of those countries where women suffered for decades. Today, women are prevented from educating themselves, or the government has imposed restrictions on their education system. This restriction has a substantial negative impact on women's daily activities. It limits their access to public gatherings, travel, study, and other activities.

According to the studies by Scott S. Smith (2020), the Taliban not only have issues with women's education but also does not allow people to use technologies, such as TV, Dishes, and advanced phones like iPhones or phones that record videos (Smith, 2020). Also, the Taliban tried to disconnect the internet in Afghanistan in recent years, and they succeeded in some areas under their control (Drissel, 2015).

Studies also show that educated women are more likely to have more opportunities, and “better-educated women that do work are more likely to work in non-farm activities (Anderson, Reynolds, Biscaye, Patwardhan, & Schmidt, 2021, p. 200).” Education for women has been cited as an essential factor in the development of feminism by several authors. Women’s higher education institutions sprung up simultaneously with the first waves of feminism in the United States, as noted (Plutzer, 1993, p. 149).

The denial of education for women can have severe consequences for society and individuals (Orfan, 2021). Taliban restrictions on women’s education in Afghanistan have led to high illiteracy rates among Afghan women, which has limited their participation in society (Mashwani, 2017). The Taliban’s return has raised fears that women’s rights, including access to education, will be further diminished (Women, 2022). Despite Taliban efforts to limit women’s education, evidence shows that there is opposition among Afghans to this action.

A survey in 2019, according to Tabasum Akseer and John Rieger, showed that 87% believed women should have equal access to education (Akseer & Rieger, 2019). Hodes’ 2019 study found that Afghan women who receive an education are more supportive of gender equality and human rights. This study is necessary because it sheds light on the different views of groups, such as Activists, the Taliban, and the Public. And it gives insight

into Afghan society's attitudes towards women's education. Further, the researcher examines the tones of the tweets posted by three different groups of people, both male and female Activists, the Taliban, and the Public. In the remaining chapters of this study, the researcher will address all three groups (Activists, Taliban, and the Public).

The goal is to analyze the tweets and gauge their level of support for women's education. The process is done through sentiment analysis. Sentiment analysis is determining whether a piece of text is positive, negative, or neutral based on the information contained within it using tools from Natural Language Processing and text analysis (Faizi, 2023). Descriptive data include a chi-square test of independence and a comparison of sentiment ratings across sexes and those between Activists, Taliban officials, and the Public. The study wraps up with a review of the tweets' most popular phrases and terms.

The study uses quantitative content analysis to analyze the tweets and test the hypothesis and sentiment analysis to assess the tone of each tweet related to women's education (Evans & Clark, 2015; Kitzie & Ghosh, 2016). Twitter operates as a network in which individuals rapidly disseminate and exchange thoughts; individuals can share their thoughts and feelings openly via the use of various forms of media, including text, photographs, videos, etc. (Karamouzas, Mademlis, & Pitas, 2022, p. 1).

Thus, these mediums can track public opinion on a selected topic. Public opinion “represents the views, desires, and wants of the majority of a population concerning a certain issue, whether political, commercial, social, or other (El Barachi, AlKhatib, Mathew, & Oroumchian, 2021, p. 1)” Further, the researcher uses the Python programming language to analyze the tweets. Python is quickly becoming one of the most widely used for computational science.

It is attractive for algorithm creation and exploratory data analysis because of its high-level interactive character and growing ecosystem of scientific libraries (Pedregosa, 2011, p. 2826). Also, Python is one of the most efficient and compatible programming languages for analyzing data and has thousands of libraries, also; the researcher uses several libraries, such as Pandas and NumPy, and scikit-learn. These libraries allow us to understand and analyze our data based on the study’s requirements.

A comprehensive literature analysis addresses the restriction on Afghan women regarding education, covers the historical and cultural backdrop, the conflict that impacts women’s lives, and the role that gender and ethnicity play in determining views regarding women’s educational opportunities. The following section of the study talks about the research problem, objective, and significance of the study. The researcher is committed to analyzing these results' ramifications and suggesting further

research and policy changes to advance gender equality and women's rights in Afghanistan.

## Research Problem

Despite some progress made in recent years, Afghan women remain significantly away from education, with barriers that hinder them from going to school and achieving education. Understanding and addressing these barriers is crucial for advancing women's education in Afghanistan. One aspect that deserves attention is the differing perspectives among Activists, the Taliban, and the Public regarding women's education.

Male and female activists play a pivotal role in advocating for equal educational opportunities for Afghan women. They recognize the transformative power of education in empowering women, improving their socio-economic prospects, and promoting gender equality. However, it is essential to acknowledge that male and female activists may experience and perceive these challenges differently due to societal expectations and gender roles. Exploring these nuances can provide valuable insights into the specific obstacles both male and female activists face and the strategies they employ to overcome them. To summarize the research problem, we compared Activists, the Taliban, and the public tweets related to women's education, and the aim is to find which group has higher support for women's education in Afghanistan. We seek to understand the difficulty of

social, cultural, poverty, conflict, and political factors that influence the public's views regarding women's access to education, focusing on the effect of gender norms.

## Research Question

The aim is to investigate the difference in views between activists, the Taliban, and the public and how gender affects male and female activists regarding women's education. The research question to be answered is: "What are the views of activists, the Taliban, and the public regarding women's education in Afghanistan, and how does gender influence activists' views on the topic?" We use Afghan people's tweets to answer this question, and the tweets come from Afghan activists, the Taliban, and the public. It's important to see women's education from different views; it gives us insight into women's education.

There are several reasons why we selected Twitter, according to R. Michael Alvarez (2018), firstly, the over 319 million monthly active users represent a diversity of people and organizations alike- providing scholars with an unusually representative sample population from which they can draw insights into different aspects of human behavior or responses accordingly. Secondly, its massive flow of daily messages reaching up to an astonishing 500 million allows researchers real-time tracking of trends and issues; these vast amounts of information retrieved subsequently enable



developments across multiple fields such as economics or public health (Alvarez, 2018). Also, the findings will help readers comprehensively understand women's access to education from three different groups in Afghanistan. According to a report in 2022, the Total number of Twitter users was 236.6 thousand (Kemp, 2022).

## Research Objective

Scholars have paid more attention in recent years to issues affecting women, such as education, equality, political participation, and other areas where women typically face challenges. Inequity in education can be traced back to several factors. Still, one of the most frequently cited is that "higher education research has traditionally been framed within a masculine paradigm, often with male participants" (Parson, 2020, p. 515)". Conflict harms women's access to education, particularly in countries like Afghanistan, where civil and international wars have plagued for decades.

Earlier, we stated that the study compared three different groups' tweets related to women's education, such as activists, the Taliban, and the public; apart from that, we investigated how gender influences the activists' views on women's education. In this study, "gender" is used as a cultural and social norm, not as "sex." The imposition of gender meanings on physically diverse bodies as passive recipients of cultural laws has been criticized by those who believe that the formation of gender involves

determinism. Instead of genetics determining one's fate, culture is viewed here (Butler & Judith, 2006). Since gender is apparent, we have examined how gender influences activists' views on women's access to education.

The study contributes to the factors that gender influences the views of either the Public or Activists toward women's education in Afghanistan, considering culture and conflict from social aspects. We believe that by examining these factors, readers can gain a deeper understanding of women's education and the reason that women are prevented from education. The study will help better understand Afghan women's difficulties accessing education. We support and promote gender equality, women's education, working, expressing their ideas in public, and any other rights given to human beings by nature in Afghanistan.

### Significant of study

The significance of this study lies in its focus on gender as a factor in how people see women's educational opportunities in Afghanistan. Understanding the cultural and societal elements that contribute to gender imbalance in schooling can be gained by analyzing tweets from Afghan people, and this study aims to do just that. As a result, the study will benefit the academic community by providing new insights into this pressing topic and demonstrating the value of social media as a resource for scholars in Afghanistan and beyond.

Furthermore, this study will be one of the first to extensively investigate the difference in perspectives of activists, Taliban, and Afghan people regarding women's access to education through social media. This study will help improve conditions for female students in Afghanistan by giving them a stronger voice through social media. In doing so, it will shed light on the achievements and challenges faced by Afghan women and inspire future generations of women to pursue education and careers.

The study seeks to shed light on the power of social media to advance gender equality and elevate underrepresented communities' voices. Afghan women's difficulties in gaining access to education can be better understood by studying tweets from Afghans both inside and outside of Afghanistan. These results will provide the foundation for future efforts to advance gender equality in the classroom and beyond. This study acknowledges Afghan women's challenges and aims to illuminate such obstacles to inspire change. By sharing our findings, we want to encourage further discussion about how social media may help advance gender and political equality.

This study holds significant importance as it brings attention to the critical issue of women's education in Afghanistan and the concerning public opinion that tends to hinder their access to education. By employing Twitter as a data collection tool, this research will contribute to the

expanding literature on the gender imbalance in education. The findings are expected to inspire further investigations into the intricate relationship between gender dynamics and social media in Afghanistan and other contexts worldwide. By deepening our understanding of these dynamics, we can effectively address women's challenges in pursuing education and work towards creating more inclusive educational environments.

## CHAPTER II: THEORETICAL FRAMEWORK

### Literature Review

This study investigates women's education in Afghanistan from the views of Activists, the Taliban, and the Public and how gender affects male and female activists' views on women's education. While there has been progress in this area, there are still challenges that women in Afghanistan confront when attempting to enhance their education. The lack of resources, including schools, contributes to these issues, as do issues like poverty and cultural norms, as well as war and violence. Studies reveal that educated women have more opportunities and contribute more to non-farming activities, highlighting the value of education in empowering women and fostering gender equality (Anderson, Reynolds, Biscaye, Patwardhan, & Schmidt, 2021).

In exploring activists' perspectives on women's education and their support for gender equality, it is essential to recognize that activism encompasses a range of activities driven by social, political, and personal beliefs. Consumer educators aiming to redefine consumer education approaches can be seen as consumer activists, advocating for the intricate connections between consumers and the marketplace, encompassing political, social, and economic dimensions (McGregor, 2015).

Lyytikäinen's (2013) study examines how gender, class, and the civic field influence the complex nature of activist identity. The author, founded by young Russians opposing Vladimir Putin's government, has undertaken various actions such as protests, demonstrations, and hunger strikes (Lyytikäinen, 2013). According to Lyytikäinen, most activists within this movement espouse democratic ideas, with well-educated parents who hold professions such as teachers, doctors, and scientists, indicating a solid educational background among the activists.

This action of activists shows that they not only stand for women's education but also stand against any inequality that causes harm to individuals. According to Carla Luguetti and Kimberly L. Oliver (2020), the activist approach can help educators, student teachers, and young people become conscious of societal power structures that lead to social inequities (Luguetti & Oliver, 2020).

Lauri Johnson (2004) sheds light on women's education from activists' views. The African American women teachers in Harlem during the 1930s - 1950s were dedicated to providing their students with a high-quality education and actively engaged in social reform movements, teacher union organizing, and civil rights activities. These activist educators leveraged their influence to drive broader societal change, improve working conditions for teachers, and expand access to higher education. Their efforts had a transformative impact on the lives of African Americans and paved the way for subsequent generations of activists and educators in Harlem (Johnson, 2004).

Rebecca M. (2010) describes how gender influences the activists' view regarding women's education. Activists at Lakshmi Ashram had different views on women's education, and their opinions varied. Male activists saw education as a means to advance women's economic standing, to create more and better employment options and greater financial autonomy. They expected women to become more self-reliant through education and contribute significantly to their families and communities. However, the women activists at Lakshmi Ashram regarded education as a means to combat gender inequity and boost women's agency.

Activists knew that education could empower women, allowing them to decide for their future life and be aware of their societies (Klenk,

2010). These views shaped male and female campaigners' tactics. Female activists concentrated on changing social norms around women's education to remove impediments to women's education. In contrast, male activists were more focused on the financial aspect of women at Lakshmi Ashram to make them stand on their feet. Female activists faced family and community opposition to women's education. Male activists, seen as better social change leaders, were more accepted by policymakers.

Lakshmi Ashram's male and female activists championed women's education despite obstacles. They thought it empowered women and developed communities. They persistently fought for decent education for women. Further, Barbara J. Bank (2007), "Activists seeking sex equity and participants in the emerging discipline of women's studies (Bank, 2007)".

To move our attention to women's education in Afghanistan, we see the difference that women are forbidden from school and education. We further see women's education from the Taliban's and the Public's view. To understand the views of the Taliban and the Public regarding women's education, one must recognize the influence of action resources like knowledge and skills, empowering individuals to shape their lives. Modernization is crucial in fostering political involvement through economic growth, education, and personal independence. Societal values reflect the impact of industrialization and the ongoing conflict between

survival-oriented and self-expression values. Self-expression societies prioritize personal fulfillment, active participation, gender equality, tolerance, trust, civil liberties, democracy, and responsive governance (Welzel & Inglehart, 2008).

The Taliban is utilizing various technologies, including mobile phones, social media platforms, satellite imagery, and encrypted communications, to deliver services in the areas under their control. They employ mobile phones for communication, tax collection, and law enforcement while utilizing social media to spread propaganda, recruit fighters, raise funds, and coordinate activities. Satellite imagery aids in mapping and target identification and monitoring the actions of the Afghan government and its allies. Encrypted communications help protect their messages and facilitate coordination. The Taliban's use of technology poses significant challenges for the Afghan government, its allies, and the international community, impacting territorial control, service provision, achieving lasting peace, and necessitating ongoing adaptation to tackle these challenges (Smith, 2020).

Afghanistan is where women's rights have been oppressed for decades (Fluri, 2009, p. 260); thus, one must analyze Afghanistan's women's situation within the larger historical context of Afghanistan, not through the ideologies "before and after" the Taliban. Only such a view can



ensure that women are seen as essential to rebuilding Afghanistan. Ruth Ren (2010) launched a public survey to measure people's opinion regarding women's education by asking, "Women should have equal opportunities like men in education" Over 87% responded agreed with women's education, and 50% "strongly agreed" (Rene, 2010) according to the report only around 11% disagree, report highlights, a higher proportion of women 93% than men 82% support for equal opportunities in education.

When looking at the views of the Taliban regarding women's education, from 1994, they have disagreed with women's education and work; as Pia Karlsson & Amir Mansory (2008) say, "When the Taliban (students of Islam) entered the arena and installed law and order - at the cost of human rights abuse. In particular, women in the cities were denied work and education opportunities" (Karlsson & Mansory, 2008, p. 3).

Likewise, Saira Inayatullah (2022) interviewed the public by asking questions related to women's education; Inayatullah found that people are concerned about women's education because of the Taliban rule in 1994. The public expressed their concern about women's education as Inayatullah asked participants. They said, "Now, after the Taliban, women's education has reached nearly zero, and it has turned into a dream we don't know if it's achievable or not" (Inayatullah, 2022, p. 28), while the second participant answered, "now the Taliban break every single foundation that was built for

women's education.” The third participant said, “A pre-Taliban Afghanistan was good. We had a comfortable life. Education service was accessible to everyone. Now, the Taliban don’t allow girls to go to school.”

We argue the Taliban restricts women’s education, insisting patriarchal structure. Also, we argue that today’s Taliban is strongly involved with technology and advanced mobile phones and use social media to expand their views and influence more people around the country. It could be regarding women’s education and political participation; today, the Taliban have no issue with the use of technology in the country. Activists champion empowerment and social change through education, but female activists are more robust in supporting women’s education than male activists. The public holds diverse views influenced by education, religion, and cultural background.

### Hypothesis

H1: The Taliban’s views regarding women’s education will be significantly more restrictive and opposed than those of activists and the public: This hypothesis can be explained theoretically by the Taliban’s prior behavior. The Taliban, an Islamic extremist party that ruled Afghanistan from 1996 - 2001, imposed severe Islamic legislation, including women’s education and work limitations. Women were punished for attending school or working outside the home. Fundamentalist Islam and gender roles

underpin the Taliban's attitude. Based on their philosophy and past actions, the Taliban's views on women's education are likely more restrictive and opposed than those of Activists and the Public. That violence against women during 1996 was a "daily reality throughout the world," and the Taliban "drastically" curtailed women's rights (Skaine, 2002).

H2: Activists are more likely to demonstrate higher support for women's education than the Taliban and the Public: Women's education holds enormous significance and is a matter of ongoing contention. It is a robust solution to address numerous issues affecting women's lives. Although steps have been made to promote its expansion, women's education continues to face obstacles stemming from societal customs, entrenched power dynamics, and the failure of governments and nations to take adequate measures (Nussbaum, 2004). To see women's education from the perspective of activists who campaign for women's rights and education will likely see education as a fundamental right for all individuals, regardless of gender. They support the empowerment of women through education and equality.

On the other hand, the Taliban has a history of opposing women's education and viewing it as a threat to traditional gender roles (Telesetskyt, 1998). The public may hold varying views towards women's education, depending on factors such as their level of education, religious beliefs, and

cultural background. Generally, those who prioritize gender equality and women's rights are more likely to support women's education than those who do not. Hence, it is expected that activists would support women's education more than the Taliban and the Public.

H3: Female Activists are more likely to hold higher sentiments for supporting women's education than Male Activists: Women's education is generally a top priority for female activists since they better understand the challenges women experience in gaining an education. On the other hand, male campaigners might not place the same value on women's education as their female counterparts. Society standards and gender roles may still influence men's and women's views on education and women's rights. Gender, according to feminism theory, is a social construction, and gender norms and expectations are internalized via upbringing in a patriarchal society (Lorber, 2001). Therefore, female activists are more inclined to advocate for women's educational opportunities due to their gendered attitudes and ideas.

#### Argument

The study revolves around the views of activists, the Taliban, and the public regarding women's education. Activists, driven by feminist theories and ideologies, advocate for women's education as a fundamental right and a pathway to empowerment. They believe education is pivotal in

challenging societal norms, breaking free from oppressive systems, and fostering social change. Activists view education as a means for women to shape their communities and contribute to gender equality actively.

On the other hand, the Taliban's theoretical stance on women's education starkly contrasts with that of activists. Rooted in religious fundamentalism and traditional gender roles, the Taliban perceives women's education as threatening their established order. They view education for women as challenging patriarchal structures and seek to maintain oppressive systems by imposing severe limitations on women's access to education. The Taliban reinforces traditional gender norms and restricts women's opportunities for empowerment through education.

Surprisingly we found that the Taliban has changed their technology views to use mobile phones, watch TV, and allow dishes in the country. At the same time, these were banned in 1994, as well in the last two decades, hardly tried not to allow people to watch TV, carry advanced phones, limiting internet. Today we have realized that the Taliban uses technology more than everyone else, as the study revealed that the Taliban are more likely to tweet than activists and the public frequently.

Public perspectives vary, influenced by their education, religious beliefs, and cultural backgrounds. Some individuals align with the ideals put forth by activists, recognizing the transformative power of education

and the importance of equal opportunities for women. They acknowledge that education is crucial in improving women's lives and advancing gender equality. Others, however, may hold reservations or even oppose women's education due to adherence to societal norms and traditional values. These individuals may subscribe to a theory that reinforces gender roles and inhibits progress in women's education.

The discussion highlights the contrasting views surrounding women's education in this theoretical landscape. Activists, driven by feminist theories, emphasize the importance of education as a tool for emancipation. At the same time, the Taliban's perspective is rooted in religious fundamentalism and the preservation of traditional gender roles. Public exhibit various theoretical perspectives shaped by various factors, contributing to the discourse's complexity.

It is essential to consider when examining the support for women's education among activists, the Taliban, and the public. The theoretical perspectives influence each group's actions, beliefs, and strategies. Activists strive to remove barriers and advocate for women's educational access, while the Taliban seeks to maintain their established order by suppressing women's education. The public's theoretical stances are shaped by their unique experiences, education levels, religious beliefs, and cultural

values, which further contribute to the diversity of opinions regarding women's education.

### CHAPTER III: RESEARCH METHODOLOGY

We test our hypothesis through content analysis (Evans & Clark, 2015). It is offered here and comprises a set of methods we created for conducting systematic analyses of texts. Twenty years ago, researchers examined unemployment's mental and emotional effects in a longitudinal study (Mayring, 2004). To check the tone of the tweets related to women's education, we use sentiment analysis, also known as opinion mining, which refers to the study of how individuals feel about certain things. The entities can be goods and services, businesses and people, places and things, and ideas and concepts. There is a lot of room for potential issues in this subject. Sentiment analysis encompasses various activities formerly performed under several titles, such as opinion mining, opinion analysis, opinion extraction, subjectivity analysis, affect analysis, emotion analysis, and review mining (Liu, 2015).

Also, the chi-square used, which evaluates the consistency between an observed percentage and theoretical predictions, tests for statistical significance between two variables often representing nominal or ordinal levels of measurement (Lewis & Burke, 1949); it is common practice to use cross tabulation (crosstab) as an analysis method to compare the outcomes of one or more variables with those of another.



## Data Collection

Data collection began between December 01, 2022, and March 30, 2023, through Application Programming Interface (API). This API allows individuals to retrieve up to 3200 maximum rows from a single account (Kitzie & Ghosh, 2016). The researcher in this study analyzes three different groups of tweets, namely: Activists, both male and female; Taliban officials, since there is no female on the Taliban's cabinet, thus the study only focuses on the male side; last but not least, public, male and female, not by gender but in general, even though there is an equal amount of sample for both.

We have individually collected the tweets, and there are three different approaches to recognizing the activists to fetch their tweets. First, we have joined the Afghan Twitter spaces to recognize activists from there. Second, Google allows us to find Afghan activists by typing "Afghan activists". Third, Afghanistan's TV channels have frequently invited activists; these channels have hundreds of followers and views and invite activists daily. E.g., [TOLONews](#), [ArianaNews](#).

For the Taliban officials, there is a single approach, which is [Zabehulah M33](#), and "Official Twitter Account of the Spokesman of Islamic Emirate of Afghanistan, Zabihullah Mujahid". It's the official account of the Taliban spokesman, and Zabihullah has followed other

officials; it provides an easy way to recognize the officials and fetch their tweets.

The same approach has been made with [mobeenkhan1231](#). Mobeen is a famous person on social media. He is an active member of the Taliban, and most of the Taliban have followed him on Twitter; this gives us more ability to access Taliban officials to access to their tweets. Related to the public, the researcher has implemented the same approach, but this time, on Tolo News and Ariana News “[TOLOnews](#), [ArianaNews](#)”. It allows us to recognize the public from their followers or in the comment section because most people use Pashtu or Persian (Dari) language to comment on a post. To analyze the data, we randomly took a sample of 54 accounts for each group, Activists and the Taliban, and the Public. Noteworthy, the total amount of tweets could be varied; it belongs to which groups are more active on Twitter and tweeting frequently.

#### Translation

Before we move to the data cleaning, it's essential to note that most of the tweets are in Persian (Dari), and we translate them through Google Translate using the machine; we translate the tweets to be more accurate during the analysis.

## Data Cleaning

It's the procedure of finding wrong information, fixing it by eliminating unnecessary bits, and re-entering the right ones. Data cleaning includes eliminating mistakes and verifying information. Cross-checking data is a viable option for fixing this problem. Problems usually disappear after data is checked for accuracy. The obtained dataset is cleaned up before analysis to reduce time and effort. All the information is changed to lowercase, and slang or unnecessary terms are eliminated. URLs and textual references are also omitted since they are unnecessary for analysis. Eliminating frequent, brief function words (such as pronouns, prepositions, conjunctions, abbreviations, interjections, etc.) still essential to language syntax is "Remove Stop-Words" from the dataset, the stop-words consists of "the, I am, they, you, were, was, etc." (Domagoj Margan, 2015).

## Labelling Data

Labelling the tweets gives us more access to those related to women's education. In other words, one can differentiate which tweets are related to education and which are not. We have labelled data using five different keywords. As our dependent variables are women and education, we have also selected "girls," referred to as "women," and the three other keywords frequently appear on our tweets. Most people use those keywords to talk about women's education on Twitter, especially in the case of our

study. The keywords are as follows: “Education,” “School,” “University,” “Women,” and “Girl”.

These keywords are labelled as one (1), which means the tweet is related to education, while zero (0) means the tweets are neutral or not talking about education. Also, tweets like “beautiful women” or “good school” has removed from the dataset unless tweets that talk about the current study, such as “women banned from education” or “girls cannot go to school”, and other tweets which talk related to education. Further, the dataset was labelled through machine learning using Python Programming Language. The keyword “Women Education” Is a single keyword that consists of two words which precisely focus on women’s education. It breaks down the data into small pieces and analyses only those tweets with the Keyword of “Women Education”. Overall, the data analysis method shed light on the three groups: activists, the Taliban and the Public in Afghanistan, and their behavior patterns throughout the study’s three-month duration. Interesting trends and patterns, as well as connections between the various groups, were uncovered by the investigation

Male		Female	
Unclean	Clean	Unclean	Clean
remember world let taliban get away completely banning women education five years one hundred ninety nine	remember world let taliban get away completely banning women education five years	Please support women education Afghanistan	please support women education afghanistan
Women in Afghanistan after the return of the Dark ages—Taliban rule.	women afghanistan return dark ages taliban rule	Almost one Month since surrender Kabul Taliban banned women girl, work, media, sports, and Music Public	almost one month since surrender kabul taliban banned women girl work media sports music public
"The Taliban banned women's education in Afghanistan on the order of Pakistan," claims Hamid Karzai.	Taliban banned women education afghanistan order pakistan claims hamid Karzai	Unfortunately current problem women education work country serious sad twenty first century	unfortunately current problem women education work country serious sad twenty first century
The Taliban are afraid of women's education because they don't want a bright future for Afghanistan	Taliban afraid women education want bright future afghanistan	Today, all universities reopened in Afghanistan after winter break, but ONLY for men. These brave young women are peacefully protesting outside Kabul University against Taliban BAN on women going to university. Let us amplify their voices!	today university reopened afghanistan winter break men brave young women peacefully protesting outside kabul university taliban ban women going university let us amplify voices
Taliban banned girls' education in Afghanistan while many Taliban leaders send their daughters to study abroad	taliban banned girl education afghanistan many taliban leaders send daughters study abroad	Taliban ban Afghan Women Education Basic Human Right Least World Could Ban Taliban	taliban ban afghan women education basic human rights least world could ban taliban

Table 1: Activists' Tweets

Tweets from both male and female activists have been collected in Table 1. The table differentiates between processed and unprocessed tweets and offers a qualitative description. Several methods, already detailed, were used to get the purified tweets. The table symbolizes the dedication displayed by these activists in their fight to advance women's education. It highlights their unique insights and contributions to the continuing debates on this topic.

Unclean	Clean
Respected Maulvi Abdul Kabir said: Now compared to the past, good conditions have been provided for the return of migrants and aid is provided to them in a transparent manner, and we assure that the rights of migrants and returnees and the human rights of all Afghan people are protected. <sup>3/4</sup>	respected maulvi abdul kabir also said islamic emirate want deprive women education allow go homes mentioned examples women girls actually engaged business education work offices hospitals
As the majority of the people of Afghanistan are Muslims, the Afghan government considers the observance of the Islamic hijab in accordance with the religious and cultural values of the Afghan society and in accordance with the ideals of the majority of Afghan women, and emphasizes that nothing against the religious and cultural belief of the Islamic society has been imposed on Afghans. . 4/6	majority people afghanistan muslims afghan government considers observance islamic hijab accordance religious cultural values afghan society accordance ideals majority afghan women emphasizes nothing religious cultural belief islamic society imposed afghans
If Europe is working for women's rights in Afghanistan, but it is a slave, then in a religious and conservative society like ours, who can claim destruction rather than work to secure women's rights? Europe should not look at the Afghan society/women from the perspective of its own values.	europe working womens rights afghanistan slave religious conservative society like claim destruction rather work secure womens rights europe look afghan society women perspective values
These are female protesters harassing security forces who are protecting them. This shows the tolerance good behavior of IEA soldiers but no one will show this picture,no western journalist will tweet this. IEA will always protect the women their rights in Afghanistan. #Peace <a href="https://t.co/UJ561d2SEQ">https://t.co/UJ561d2SEQ</a>	female protesters harassing security forces protecting shows tolerance good behavior iea soldiers one show pictureno western journalist tweet iea always protect women rights afghanistan peace
Head of the Ministry of Higher Education: University doors are closed to women for four reasons. 1_ The existence of women's dormitories 2_ They come from one province to another province without mahram 3_ Students do not observe hijab 4_ And male and female students continue to live together. <a href="https://t.co/C2Nub9QmHr">https://t.co/C2Nub9QmHr</a>	head ministry higher education university doors closed women four reasons existence womens dormitories come one province another province without mahram students observe hijab male female students continue live together
On the basis of the decree of His Highness Amirul Momineen Hufzaullah, former governor of Kabul Province, Sheikh Nada Mohammad Nadeem was appointed as the head of the Ministry of Higher Education. On the basis of the order of the Supreme Commander of the Faithful, the former governor of Kabul, Sheikh Nada Mohammad Nadeem, was appointed as the Acting Minister of Higher Education. <a href="https://t.co/BHBGAMOTHh">https://t.co/BHBGAMOTHh</a>	basis decree highness amirul momineen hufzaullah former governor kabul province sheikh nada mohammad nadeem appointed head ministry higher education basis order supreme commander faithful former governor kabul sheikh nada mohammad nadeem appointed acting minister higher education

Table 2: Taliban Tweets

Tweets from the Taliban can be seen in Table 2, whereas activist tweets can be seen in Table 1; it appears that the Taliban tweets do not promote women's education. Activists are tweeting more than ever before on women's empowerment and education. In Afghanistan, advocates of both sexes are asking the public to promote girls' education. A greater number of activist tweets focus on the importance of women continuing their education.

Unclean	Clean
RT @Malala: While banning girls from school, the Taliban are also arresting champions of education. @matiullahwesa founded @penpath1 to pro...	malala banning girl school taliban also arresting champions education matiullahwesa founded penpath pro
Since 555 days, #Afghan #girls #education centers closed in #Afghanistan. Quality Education has the power to transform societies in a single generation. Afghan girls & women need quality education. They need support & help For Formal education, #LetAfghanGirlsLearn <a href="https://t.co/2hdSbFAIaC">https://t.co/2hdSbFAIaC</a>	since days afghan girl education centers closed afghanistan quality education power transform societies single generation afghan girl women need quality education need support help formal education let afghan girl learn
@matiullahwesa is the voice of Afghan generation. He is peaceful education activist. He want to Education for all in Afghanistan. We are all also have obligation to rise voice for Afghan girls and women education in Afghanistan. #RelaeseMatiullahwesa #LetAfghanGirlsLearn <a href="https://t.co/Yv4BBSNrB4">https://t.co/Yv4BBSNrB4</a>	matiullahwesa voice afghan generation peaceful education activist want education afghanistan also obligation rise voice afghan girl women education afghanistan relaesematiullahwesa let afghan girl learn
Negotiating the ban on women education in Afghanistan is so silly. Explaining to anyone why Afghan women have the right to get an education is so silly. Explaining how and why Islam supports is so silly. It is all just waisting time. #Taliban wont allow so the wait is also silly. <a href="https://t.co/sk5VtLjAiD">https://t.co/sk5VtLjAiD</a>	negotiating ban women education afghanistan silly explaining anyone afghan women right get education silly explaining islam supports silly waisting time taliban wont allow wait also silly
The war in Afghanistan is to destroy the idea of education. This war started fifty years ago. The world cannot even imagine how many teachers, students and education workers have been killed and how many schools have been burned in Afghanistan. <a href="https://t.co/IkUwrNtI3Z">https://t.co/IkUwrNtI3Z</a>	war afghanistan destroy idea education war started fifty years ago world cannot even imagine many teachers students education workers killed many school burned afghanistan

Table 3: Female Tweets, Public

Table 3 contains tweets of Afghan female, their tweets addressing education and support for women. These tweets illustrate the solidarity displayed by Afghan women for their fellow women and their education. One such example is the story of "matiullahwesa," an activist who was recently jailed by the Taliban for his passion to women's education and his attempts to arrange private lessons for females. Unfortunately, his situation remains unknown following his arrest. The tweets illustrate that people are fully aware of the relevance of education and consequently speak up for it. Moreover, other tweets suggest that the impediments to education extend beyond the Taliban, pointing out that the continuing fighting in Afghanistan also restricts educational prospects.

Unclean	Clean
@tomas_niklasson @gmukhopadhaya Excellency! I really appreciate your efforts for Afghanistan and Afghans. Afghans love to see you and others like you working for peace, political stability and protection of human rights particularly women education and rights in Afghanistan.	tomas niklasson gmukhopadhaya excellency really appreciate efforts afghanistan afghans afghans love see others like working peace political stability protection human rights particularly women education rights afghanistan
Have men in Afghanistan also staged rallies in support of women education? Women have been banned by Taliban for last 2 years but men inside Afghanistan are as silent as they have been sniffed by snake. Unfortunately many Afghans/Pashtun have religion dearer than their country	men afghanistan also staged rallies support women education women banned taliban last years men inside afghanistan silent sniffed snake unfortunately many afghanspashtun religion dearer country
Taliban reclusive Ameer Haibatulla said that his Emirate will not surrender to int pressure over women education and rights. In 2001 also TBs had such stubborn stance over #Osamabinladen who latter on was killed by US in Pak. Is Pak Army eying for an other project over Afg?	taliban reclusive ameer haibatulla said emirate surrender int pressure women education rights also tbs stubborn stance osamabinladen latter killed us pak pak army eying project afg
Afghanistan needs women leadership and women need education. Taliban r afraid of educated women. We stand with Afghan women and demand to let them get educated. Without women education no nation can prosper. Afghanistan needs prosperity and prosperity needs educated girls.	afghanistan needs women leadership women need education taliban r afraid educated women stand afghan women demand let get educated without women education nation prosper afghanistan needs prosperity prosperity needs educated girl
Why Taliban in Afghanistan r so much against women education and empowerment? Who r Taliban to decide about dress and education of women? Let us stand against terrorist Taliban and their masters in Pakistan to emancipate women and Afghanistan from them.	taliban afghanistan much women education empowerment taliban decide dress education women let us stand terrorist taliban masters pakistan emancipate women afghanistan

Table 4: Male Tweets, Public

Tweets from Afghan males are explicitly blaming the Taliban for their bans on women's education. These tweets shows that Afghan male strongly support women's education. They frequently blamed the Taliban and called them to allow women educate. Apart from that its very interested to highlights, most of Afghan people blaming the Taliban that working for the Pakistan, and any order related to women's education comes from Pakistan. The tweets are strongly supportive of education, and standing with women's education.



## CHAPTER IV: ACTIVISTS', TALIBANS' AND AFGHANISTAN PEOPLE'S VIEWS ON WOMEN'S EDUCATION

In this section, our approach begins with comparing and contrasting the tweets from activists the Taliban and the public. We examine the content of their tweets specifically related to women's education. Next, we consolidate only activists and analyze their perspectives collectively. By doing so, we aim to identify similarities and differences in their tweet tones and the topics they discuss about education. We do not decide the tones of tweets; everything we do in this study is based on machine learning. As part of our data acquisition methodology, we procured tweets from a heterogeneous group of activists. Initially, we categorized these activists based on their sex, distinguishing between males and females. Continuing our analysis, we merged the tweets from all three groups and classified them into activists, the Taliban, and the people (public). This categorization approach was chosen to understand the collected tweets' different views. By examining the distinct viewpoints of activists, delving into the narratives surrounding the Taliban, and considering the thoughts and sentiments expressed by the public, we aimed to explore their views individually present within the data.

In recent years, sentiment analysis on Twitter has become a subject of increasing research interest. Twitter, a widely popular microblogging platform, allows users to share their thoughts and opinions freely. In this context, sentiment analysis's primary goal is to analyze tweets and discern the underlying sentiment they convey (Crestani, 2016).

Twitter possesses distinctive features that set it apart, including:

1. Concise Messages: Tweets are limited in length, encouraging brevity and conciseness.
2. Easy Access and Download: Twitter allows convenient access and downloading of posted content.
3. Large Dataset: Twitter's extensive user base and high posting frequency contribute to its reputation as one of the enormous datasets of user-generated content.

#### Activists, Taliban and Public Views

This section consists of activists, both male and female; Taliban officials are only male, and there is no female in the cabinet of the Taliban, and also, the Public, which is Afghan people, does not involve in politics. Except for the Taliban, the other two groups consist of males and females, but our focus is not on sex. Instead, we analyze them in a group, based on their background, like "Activist, the Taliban, and the Public." At first, we would have a look at their tweets in the group, then we move forward and

analyze them in dept, using the keywords “Education,” “School,” “University,” “Women,” “Girl,” and “Women Education.” These keywords narrow down the dataset and analyze only those tweets related to these particular topics.

The analysis focused on three groups: Activists, the Taliban, and the Public. The sentiments expressed in the dataset were categorized into negative, neutral, and positive. Looking at the sentiment distribution, it is evident that the majority sentiment in all three groups is neutral. Activists have the highest count of neutral sentiments with 21,713 occurrences, followed by the people with 43,428 occurrences. The Taliban group, however, has a relatively lower count of neutral sentiments, with the exact number not specified. Moving on to positive sentiments, activists show a significant proportion, with 18,635 occurrences. People also exhibit a considerable number of positive sentiments, with 39,255 occurrences. Taliban has 34,009. Regarding negative sentiments, activists have 11,568 occurrences, while people demonstrate 22,944 occurrences. Similarly, the percentage of negative sentiments for the Taliban group is 16,204.

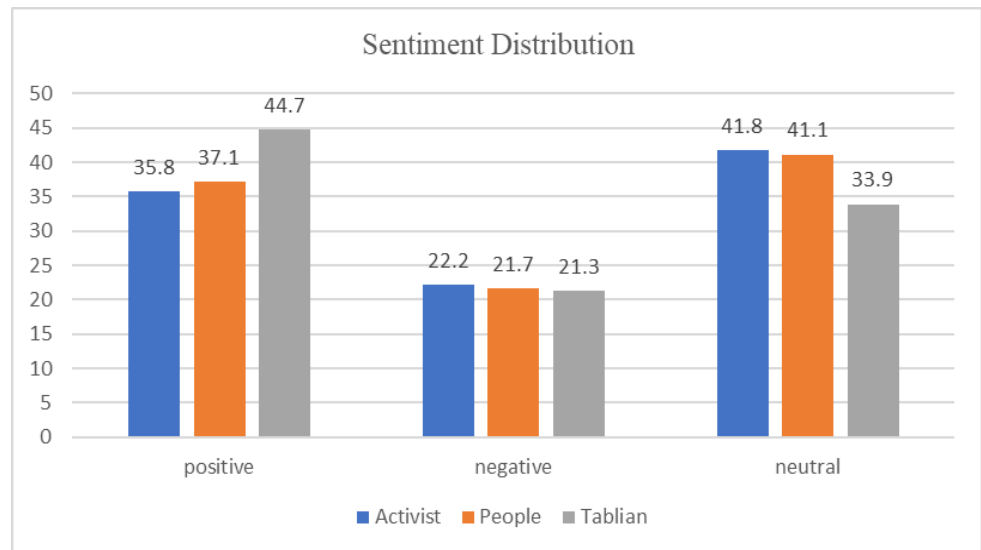


Figure 1: Sentiment Distribution

The percentages of each sentiment category for the different groups can be analyzed to gain further insights. For the activist group, negative sentiments represent approximately 22.28% of the total sentiments, while neutral sentiments comprise the most significant proportion at 41.82%. Positive sentiments also have a substantial presence, accounting for about 35.89% of the sentiment's activists express. For the Public, the distribution of sentiments is somewhat similar. Negative sentiments comprise around 21.72%, while neutral sentiments constitute the highest percentage at 41.11%.

Positive sentiments comprise approximately 37.16% of the sentiments expressed by the Public. In the case of the Taliban group, negative sentiments account for roughly 21.33% of the sentiments expressed, while neutral sentiments comprise approximately 33.90%.

Notably, the Taliban group shows a higher proportion of positive sentiments, with around 44.77%. Notably, the provided information covers a wide variety of topics outside only women's education, and this study looks at how sentiments are spread across the board. Negative, neutral, and positive sentiment categories capture the range of opinions and feelings expressed by participants in the dataset. In the next section, we break down our dataset related to women's education through five previously mentioned keywords.

In the sentiment distribution figure 1 provided, we can observe that the sentiment values for the Taliban group are represented as "NaN" (Not a Number). This occurrence raises questions and requires investigation to understand the underlying reasons. One potential explanation is the insufficient availability of relevant data, specifically about the Taliban group and the given keywords.

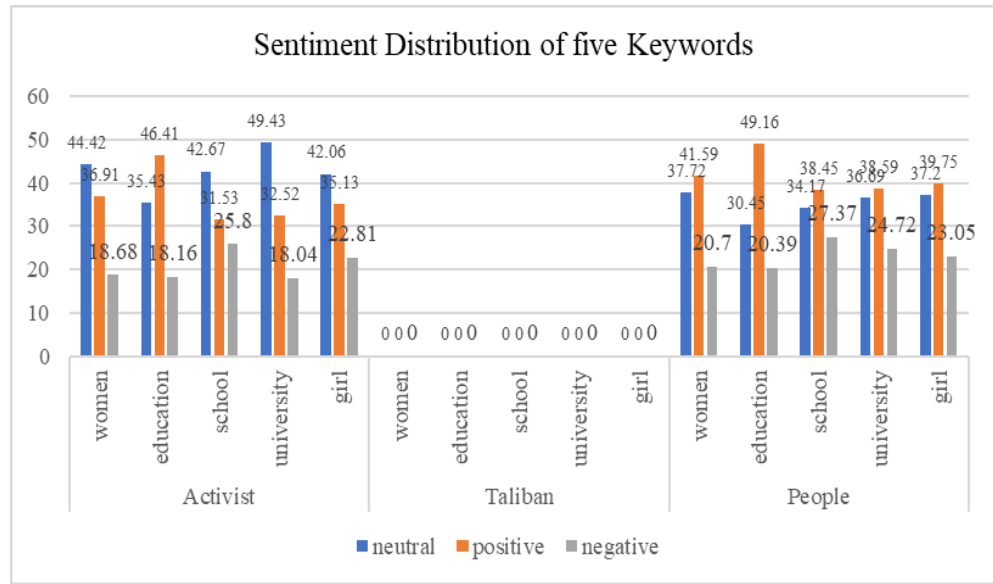


Figure 2: Sentiment Distribution of Five Keywords

Sentiment analysis algorithms rely on a substantial amount of data to accurately assess sentiment, and the absence of an adequate sample size for the Taliban group could lead to missing sentiment values. It is also possible that during the data filtering or preprocessing stages, the criteria applied to extract tweets related to the Taliban group inadvertently resulted in the exclusion of relevant tweets for those specific keywords. Furthermore, the sentiment expressed in tweets associated with the Taliban group might exhibit unique patterns or intricate nuances that challenge sentiment analysis algorithms to assign sentiment scores accurately.

When examining the sentiment distribution among activists, we observed varying opinions on the issue of women's education. For the keyword "Women," the sentiment distribution showed diverse views. Approximately 44.42% of the tweets expressed a neutral sentiment,

indicating a lack of clear stance or mixed opinions. On the positive side, 36.91% of the tweets supported women's issues, emphasizing the importance of education and empowerment. However, it is worth noting that around 18.68% of the tweets reflected a negative sentiment and expressed reservations or opposition toward women's education.

Moving on to the keyword "Education," we found that among activists, 35.43% of the tweets had a positive sentiment, highlighting the value and significance of education for women. Conversely, 18.16% of the tweets expressed a negative sentiment, suggesting concerns or objections regarding women's access to education. Notably, 46.41% of the tweets remained neutral, indicating a lack of solid sentiment or a balanced perspective among activists. Regarding the keyword "school," the sentiment distribution showed a similar pattern. Activists expressed a mix of sentiments, with 42.67% of the tweets being neutral, 31.53% positive, and 25.80% negative. It suggests that while a significant proportion of activists support the idea of women attending school, there are also concerns or criticisms expressed by a notable portion of the community.

For the keyword "University," the sentiment distribution among activists revealed that 49.43% of the tweets had a neutral sentiment, indicating a lack of a clear stance. However, 32.52% of the tweets were positive, demonstrating support for women pursuing education. Around

18.04% of the tweets displayed a negative sentiment, reflecting reservations or objections towards women's participation in university education. Lastly, focusing on the keyword "Girl," the sentiment distribution among activists showcased a similar trend to the previous keywords. Approximately 42.06% of the tweets had a neutral sentiment, while 35.13% expressed a positive sentiment, emphasizing the significance of supporting girls' education. Around 22.81% of the tweets displayed a negative sentiment, indicating concerns or criticisms about girls' education access.

We can observe notable differences when comparing the sentiment distribution between the people and activist groups. The Activist shows higher support for women's education, with higher percentages in the positive sentiment category than the people. The Activist also demonstrates a relatively lower portion in the negative sentiment category. Conversely, the people group has a higher percentage in the negative sentiment category, suggesting a comparatively lower level of support or more critical views regarding women's education. These differences highlight varying perspectives and levels of support within the two groups, emphasizing the distinct roles and attitudes of activists and the general population in advocating for women's education.



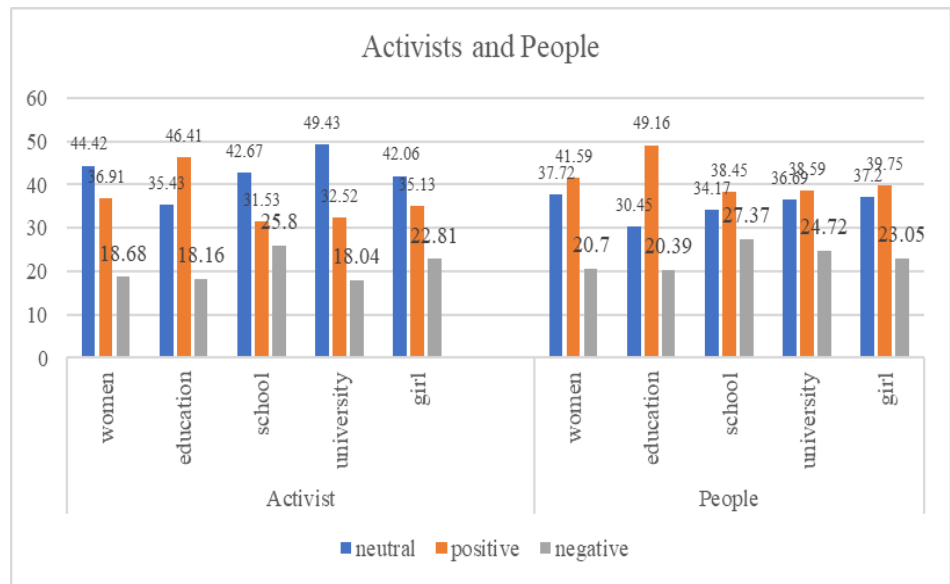


Figure 3: Activists and People

Figure 3 show, compares those keywords between activists and people. We can see that activists are more likely to be positive than the public.

Activist						Taliban					People				
Sentiment	Women	Education	School	University	Girl	Women	Education	School	University	Girl	Women	Education	School	University	Girl
Neutral	44.42	35.43	42.67	49.43	42.06	Nan	Nan	Nan	Nan	Nan	37.72	30.45	34.17	36.69	37.20
Positive	36.91	46.41	31.53	32.52	35.13	Nan	Nan	Nan	Nan	Nan	41.59	49.16	38.45	38.59	39.75
Negative	18.68	18.16	25.80	18.04	22.81	Nan	Nan	Nan	Nan	Nan	20.70	20.39	27.37	24.72	23.05

Table 5: Sentiment Analysis of Tweets Containing the Keyword

In Table 5, we can observe the percentage breakdown of each keyword, highlighting an unfortunate absence of data for the Taliban group. There are a couple of potential explanations for this absence. It could be that the Taliban either refrains from tweeting about these specific keywords or their involvement in discussions related to women, education, school, university, and girl is minimal, resulting in negligible representation in the collected data. It underscores the significance of the data obtained from the other two groups, providing valuable insights into their perspectives.

Tweets Related to Keywords
jobs allocated women educational sector today announced ministry education jobs teachers administrative staff male female states herat farah ghor badghis nangarhar laghman kunar nuristan
many years uzbekistan hijab allowed women educational institutions
public private universities throughout country open men women education process extended percent remaining parts country thousands women education higher education public health id passport offices airports police media

Table 6: Tweets Related to Five Keywords

To narrow down our data and focus on the keyword “Women Education” only, we found several unique patterns emerge. We first focused on the Taliban group. Unfortunately, the sentiment distribution data is unavailable for NaN (0). This lack of information hinders our understanding of the Taliban’s stance on women’s education specifically. It could imply that they do not engage in discussions or tweets about women’s education, or their stance is not reflected in the dataset. Again, you can take Table 5, the best tweet related to education, on their dataset.

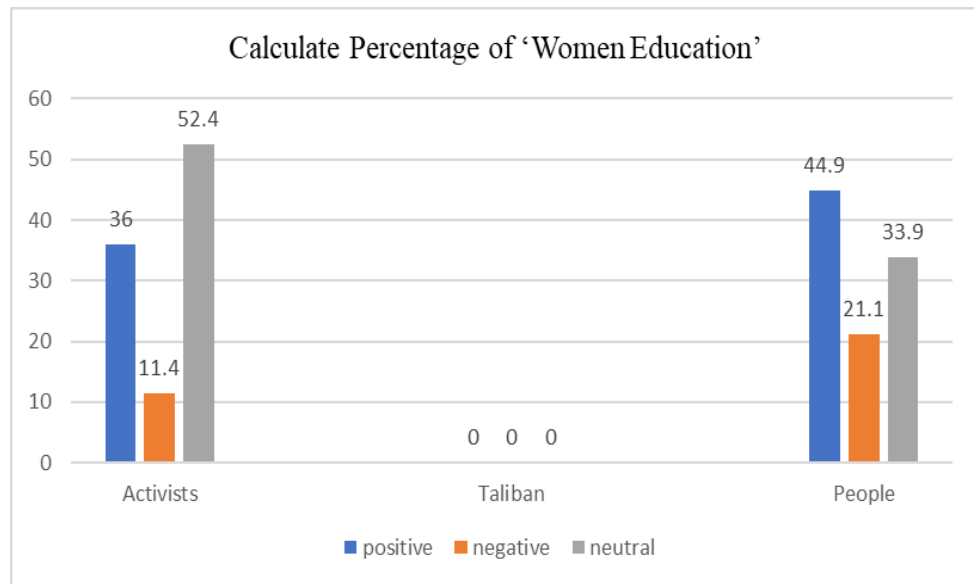


Figure 4: Calculate the Percentage of 'Women Education'

Considering the sentiment distribution among people, it is evident that a significant proportion of tweets, 33.94%, express a neutral sentiment. It suggests diverse opinions and perspectives among the general public regarding women's education. On the positive side, 44.95% support women's education, indicating a widespread belief in empowering women through educational opportunities. Conversely, 21.1% of the tweets are negative, highlighting concerns or reservations people may have regarding various aspects of women's education.

Based on the analysis of the sentiment distribution on the specific keyword "Women Education," activists show a mixed sentiment with a notable emphasis on support and advocacy. However, the lack of available data on the Taliban group limits our understanding of their stance. The Public's sentiment distribution reveals diverse opinions, with a significant

portion expressing support for women's education while acknowledging some negative sentiments. These findings shed light on the complexities and varying perspectives surrounding women's education within different groups, underscoring the need for further exploration and dialogue on this crucial topic.

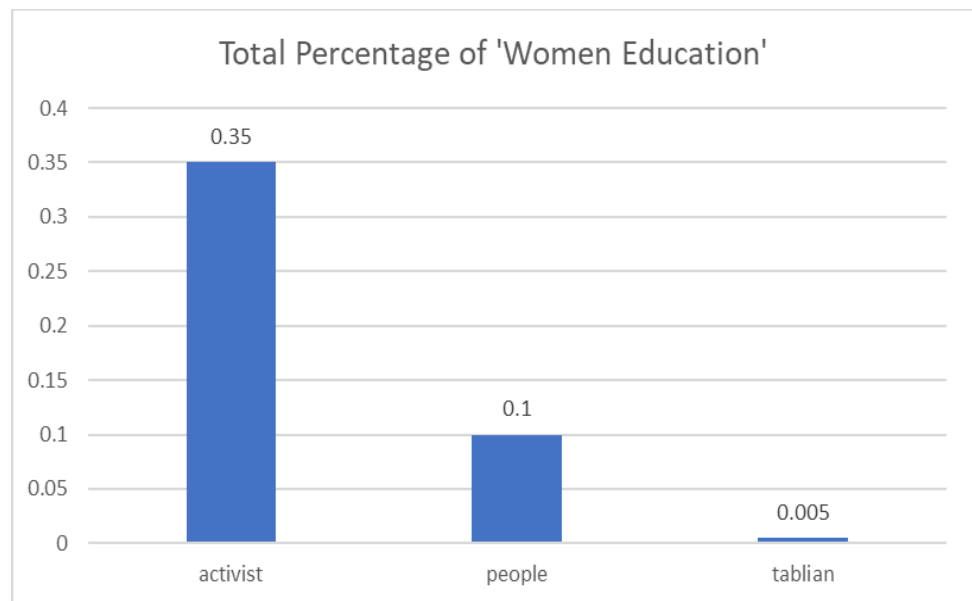


Figure 5: Total Percentage of 'Women Education'

The analysis reveals that the keyword "Women Education" has varying percentages among the different groups. Activists have the highest percentages, with 0.352492% of their tweets mentioning this keyword, followed by people with 0.103193%. On the other hand, the Taliban group has the smallest percentage of 0.005265%, which is why it does not appear in the calculations. Regarding the total number of tweets mentioning the keywords "Women Education," activists have 183 such tweets, while people have 109, and the Taliban only has 4. These findings indicate that

activists engage more frequently in discussions related to women's education, followed by people, while the Taliban group demonstrates the least involvement in conversations about this topic.

#### Analyzing the Frequency of Keywords Regarding Women's Education

Figure 6 below provides valuable insights regarding our keywords, namely "women," "education," "school," "university," and "girl." It illustrates the frequency of these keywords' usage by different groups each year. Based on the figure, we can observe that activists have consistently used these keywords more frequently in their tweets, particularly between October 2022 and January 2023. These findings suggest that the activist group has shown higher engagement and emphasis on these topics during those specific time frames.

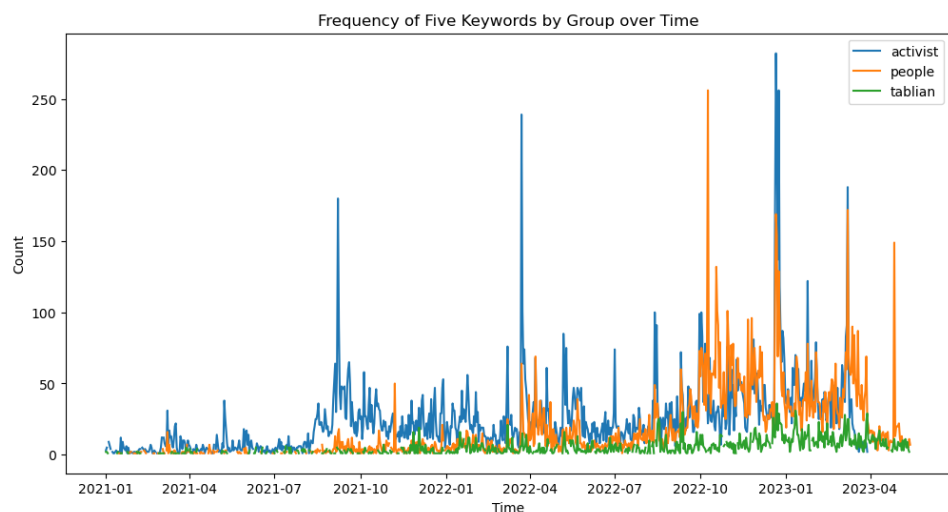


Figure 6: Frequency of Five Keywords by Group Over Time

Additionally, the analysis reveals that the Public has noticeably utilized the mentioned keywords. It indicates that people are actively engaged in discussions related to education and express support for women's rights and equality in education. On the other hand, the Taliban has exhibited a considerably lower frequency of tweets containing these keywords. It suggests that the Taliban group may not prioritize or demonstrate concern for women's education based on their limited usage of these keywords.

#### Taliban's Top Frequent Words

The Taliban's most frequently used terms reveal their point of view. Words like "Afghanistan," "People," and "Islamic" reveal their connection with the region, their religion, and their political leanings, respectively. They appear to be leading towards an Islamic state, as terms like "minister," "country," and "emirate" all point that way. The words "ministry," "god," "said," and "foreign" all allude to their diplomatic and theological concerns. These reoccurring expressions shed light on the Taliban's overarching goals and ideas.

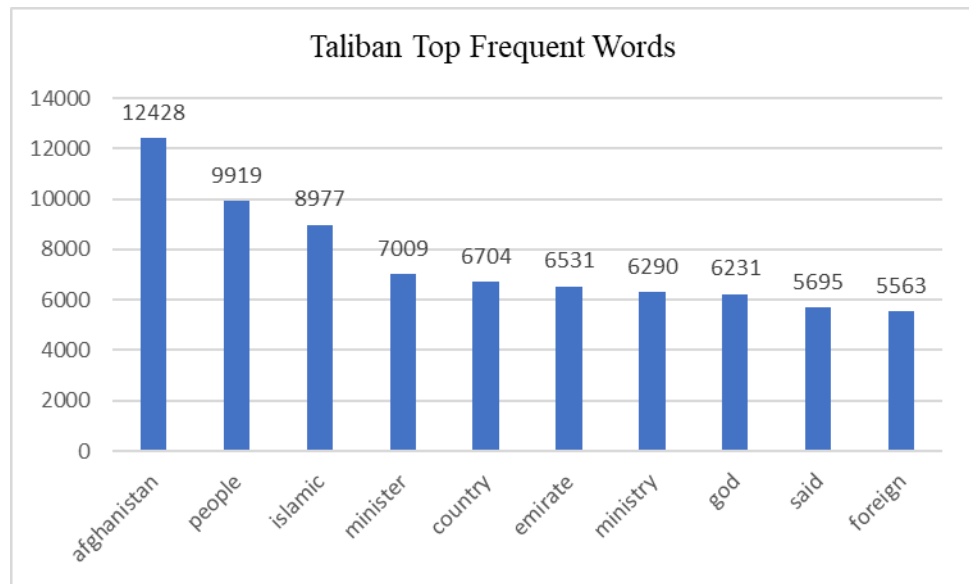


Figure 7: Taliban Top Frequent Words

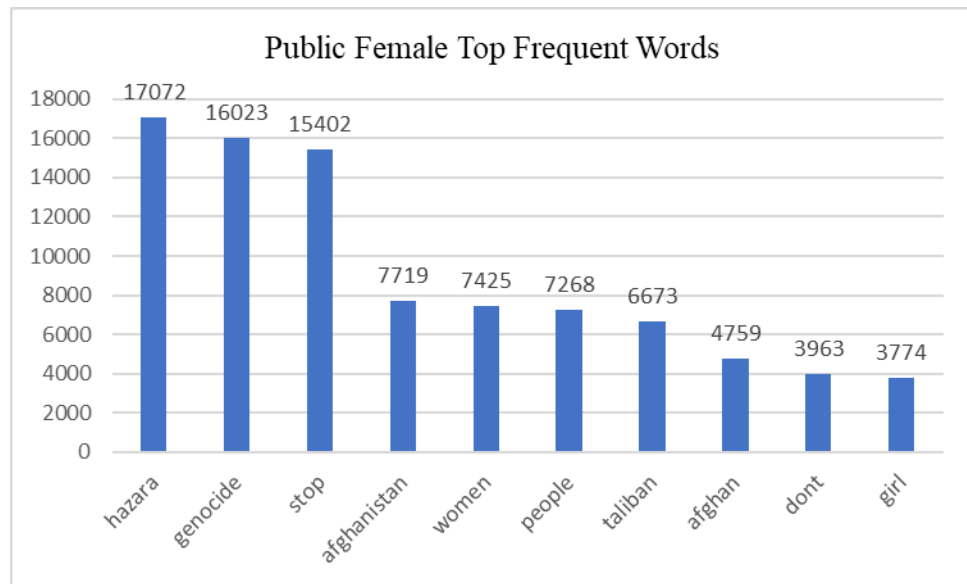
The word cloud for the Taliban reveals critical themes and priorities. It includes such as "Afghanistan," "people," and "Islamic," highlighting their close association with the country and their religious ideology. Terms like "minister," "country," and "emirate" suggest their involvement in governance and their pursuit of an Islamic state. This word cloud offers a glimpse of the Taliban's central focus and core values.





## Female Public Top Frequent Words

Ordinary women's top 10 words represent their worries and activism. "Hazara," "genocide," and "stop" show their awareness and activism. "Afghanistan," "women," and "people" demonstrate their national identity. "Taliban" offers their resistance to the gang, while "girl" underlines their empowerment of young women. These remarks reveal the social and political priorities of regular women.



Male Public, word cloud expresses their concerns about Afghanistan and the Taliban. "Afghanistan," "Taliban," and "people" show their focus on the country's predicament and its impact on Afghans. "Hazara," "genocide," and "Pakistan" indicate their grasp of regional affairs. "Stop," "country," and "one" emphasize their patriotism, action, and individuality.



## Male and Female Activists View

It's essential to have insight into both activists' tweets, and we differentiate them based on their sex, male and female. Since we collected every user individually, labeling them as male or female. Then we merged them through coding and compared them through coding, noteworthy. In this study, every single part of the data is analyzed, and human does not discuss the data through the machine. We start with male tweets, a total of 8,312 (47.75%) neutral, 5,182 (29.77%) positive, and 3,914 (22.48%) negative tweets achieved from the entire dataset, which belongs to the male activists. The result shows the number of tweets and the percentage of the tweets.

We have implemented the same method for the female activist'. The result shown here belongs to the females. A total of 13,583 (38.99%) were neutral, 13,531 (38.84%) positive, and negative 7,724 (22.17%), according to their tweets, female activists tended more toward positive and less neutral, while male activists were less favorable more neutral. It belongs to the entire dataset, which talks about different topics, and females are more positive in the number of tweets and their percentage.

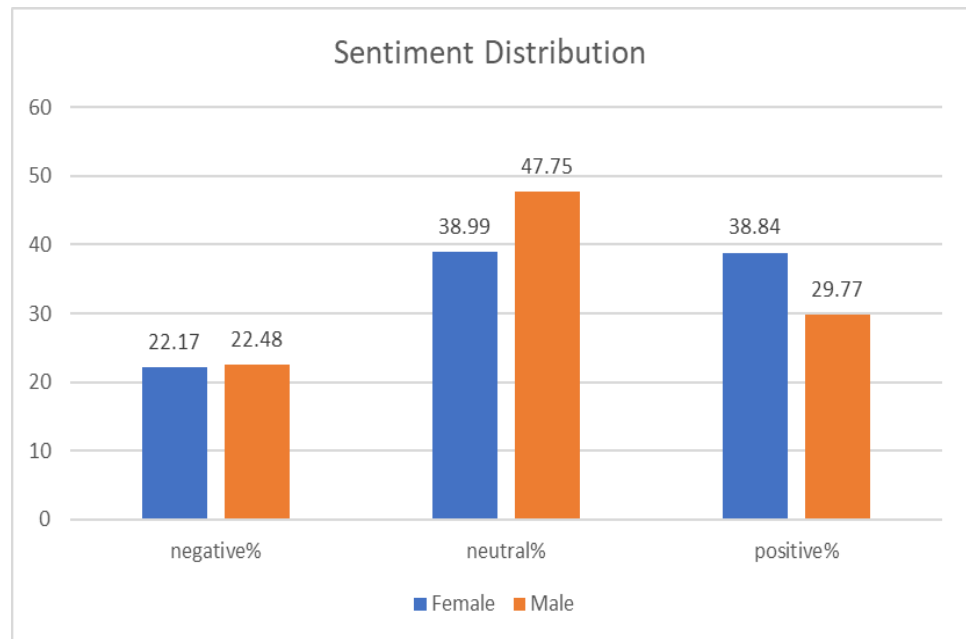


Figure 13: Sentiment Distribution (Activists)

In Figure 13, we compared and contrasted the tweets of male and female activists, taking their sex into account. According to the data, male activists' tweet at a rate of 47.75% neutral, 29.77% positive, and 22.48% negative. Female activists, in comparison, had a neutrality rate of 38.99%, a positivity rate of 38.84%, and a negativity rate of 22.17% in their tweets.

As earlier explained, we break down the tweets through five keywords which are "women," "girl," "school," "university," and "education." It allows us to analyze only those tweets related to women's education, and we remove any tweets with one of these keywords that are not related to women's education. The first result covers tweets related to male activists. We demonstrate each word individually, and for this section, the result is as follows:

Male Activists for each keyword: "Women" neutral, 1,674 (53.90%), positive, 902 (29.04%), and negative 530 (17.06%). "Education" neutral, 639 (41.71%) positive, 664 (43.34%), negatives, 229 (14.95%). "School" neutral, 656 (47.33%) positives, 375 (27.06%) negatives, 355 (25.61%). "University" neutral, 436 (56.70%) positive: 210(27.31%) negative: 123(15.99%). "Girl" neutral 1104 (46.96%) positive, 731 (31.09%) negative, 516 (21.95%).

Female Activists for each keyword: "Women" neutral 3594 (41.18%) positive, 3457 (39.61%) negative, 1677 (19.21%). "Education" neutral 690 (31.19%) positive, 1074 (48.55%) negative, 448 (20.25%). "School" neutral 976 (39.98%) positive, 829 (33.96%) negative, 636 (26.05%). "University" neutral 442 (43.85%) positive, 368 (36.51%) negative, 198 (19.64%). "Girl" neutral, 1953 (39.66%) positive, 1824 (37.04%) negative, 1147 (23.29%).

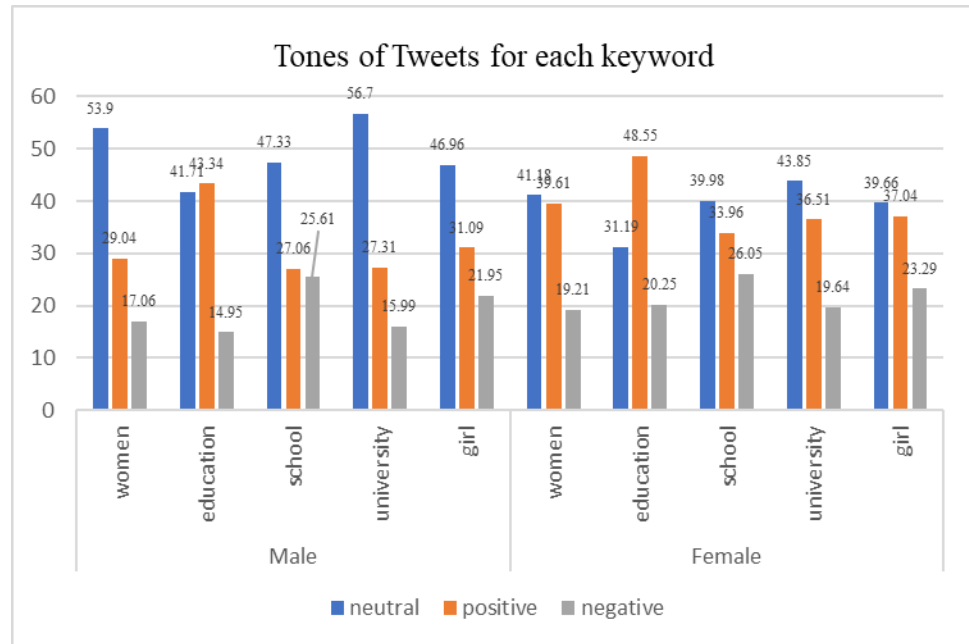


Figure 14: Tones of Tweets for each keyword (Activists)

In Figure 14, male activists expressed varying sentiments across different keywords. For instance, when discussing "Women," they had a higher proportion of neutral tweets (53.90%) compared to positive (29.04%) and negative (17.06%) tweets. Similarly, for keywords such as "Education," "School," "University," and "Girl," their sentiment distributions showed a combination of neutral, positive, and negative tweets with distinct percentages. On the other hand, female activists exhibited similar patterns of sentiment distribution for the exact keywords, albeit with slightly different proportions. The tone of tweets related to the keywords reveals insights about the average percentages among male and female activists. Among male activists, the average sentiment leans towards neutrality, with 49.04% of their tweets categorized as neutral. Positive

sentiments account for approximately 31.43% of their tweets, while negative sentiments make up 19.52% of their tweets.

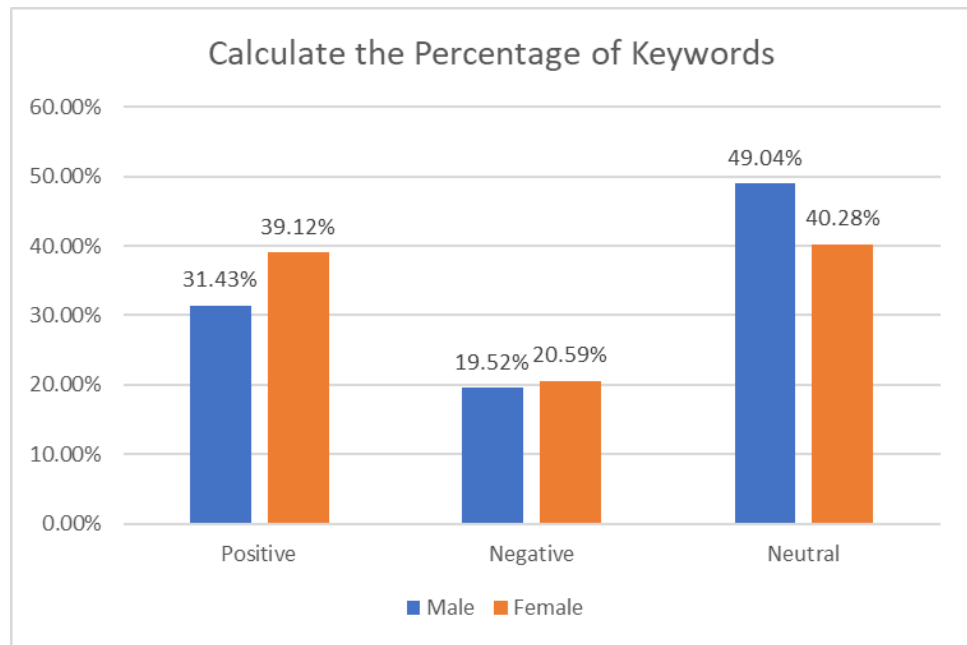


Figure 15: Calculate the Percentage of Keywords (Activists)

In Figure 15, female activists exhibit a slightly different sentiment distribution. The average percentages for females indicate a higher inclination towards positivity, with 39.12% of their tweets categorized as positive. A negative is 20.59% of their tweets, while 40.28% are neutral. These findings suggest that male and female activists express significant neutrality in their tweets. However, female activists tend to have a higher proportion of positive sentiments compared to their male counterparts. These distributions shed light on the overall sentiment tendencies of male and female activists when discussing topics related to education, school, university, women, and girls.



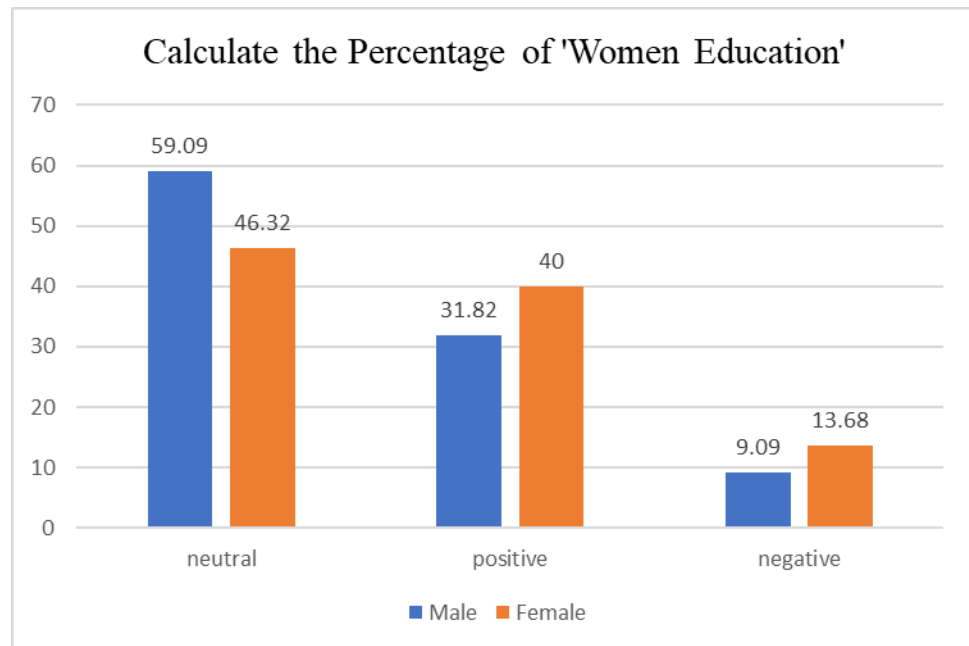


Figure 16: Calculate the Percentage of 'Women Education'

In Figure 16, the analysis focused on the sentiment distribution and the number of tweets related to the keyword 'women education' among male and female activists. For the male activists, the sentiment distribution for the 'women education' keywords was as follows: 59.09% of tweets were classified as neutral, indicating a balanced viewpoint. Positive sentiments accounted for 31.82% of the tweets, reflecting support and appreciation. On the other hand, 9.09% of the tweets had a negative sentiment, indicating criticism or concerns. The sentiment distribution for the same keywords showed a slightly different pattern among female activists. Most tweets, 46.32%, were classified as neutral, suggesting a cautious or unbiased stance. Positive sentiments accounted for 40.00% of the tweets, indicating higher support and enthusiasm.

There were negative sentiments in 13.68% of the tweets, indicating dissatisfaction or criticism. In terms of the number of tweets, among male activists, there were 52 neutral tweets (59.09%), 28 positive tweets (31.82%), and eight negative tweets (9.09%) related to “women education”. Among female activists, there were 44 neutral tweets (46.32%), 38 positive tweets (40.00%), and 13 negative tweets (13.68%). Overall, the analysis provides insights into the sentiment distribution and the number of tweets related to “women education” among male and female activists. While both genders expressed a range of sentiments, the specific distribution varied slightly, suggesting potential differences in perspectives and engagement on this topic

Text	Sentiment
unfortunately current problem women education work country serious sad twentyfirst century gender apartheid	Negative
afghanistan tragedy the taliban destructive group afghanistan banned women education colleges uni	Negative
unfair say entire pashtun population women education untrue urban pashtuns always support	Negative
protest talibans ban women education female employees kandahar healthcare centre	Negative
complete ban women education afghanistan blatant slap face ummah male female	Negative

Table 7: Tweets related to 'Women Education'

Figure 14 shows that female activists are likelier to have a negative attitude regarding the keyword “women education”. That's why checking out what they tweet about is so important. Tweets about women’s education

from female activists are compiled in Table 7. These tweets have been scrubbed, and their hostility has been assessed automatically.

After analyzing the tones of the activists' tweets, it's time to identify their different tweets. It helps us to understand which activists have a more positive, negative, and neutral tone.

Gender	T-Statistic	P-Value
Male	13.59%	6.61%
Female	42.01%	0.00%

Table 8: Calculate Sentiment Scores for Entire Dataset (Activists)

Table 8 shows the results of our study into the gender gap in tweet sentiment ratings throughout the entire dataset. Although we looked at the whole dataset, we zeroed in on the differences between male and female responses. The P-value reflects the statistical significance of the difference in mean attitudes between the two groups, while the T-statistic evaluates the magnitude of that difference. The T-statistic for detecting a difference in sentiment between positive and negative tweets about men was 13.59%. This divergence is improbable to arise by chance, as indicated by the incredibly small P-value of 6.61%.

We found an even starker contrast between male and female tweets. The T-statistic of 42.01% is significantly different from the 0, which would show no bias in any direction. This difference is highly noteworthy; the P-value of 0.00 supports this conclusion. In addition, we used our keywords

to analyze educational-themed tweets. We have used the same method for our five keywords, which are “Education,” “School,” “University,” “Women,” and “Girl” By doing this, we compare male and female tweets through coding, see [Appendix](#).

Table 7 revealed that the T-statistic of 12.23% indicates that the sentiment score significantly differs from the neutral value of 0. The P-value of 4.97% implies a highly significant difference. As seen above, men’s views on education, especially regarding women, clearly display a sentiment that markedly deviates from neutrality.

Gender	T-Statistic	P-Value
Male	12.23%	4.97%
Female	28.32%	1.69%

Table 9: Calculate Sentiment Scores for Five Keywords (Activists)

When we refer to women’s tweets, we get a significant departure from neutrality, with a t-statistic of 28.32% and an incredibly small p-value of 1.69%. It indicates that women’s sentiments about education differ significantly from neutrality, as expressed in their tweets. These findings highlight males' and females' distinct perspectives and attitudes when discussing education.

Understanding these divergent sentiments is crucial for addressing gender-specific challenges and promoting inclusivity in educational contexts. In short, the analysis provides strong evidence of gender-related

differences in sentiment expression and emphasizes the need for considering gender perspectives in education discourse. To get solid results regarding women’s education, it’s time to only test “Women Education” keyword, which counts as a single keyword.

Gender	T-Statistic	P-Value
Male	2.59%	0.01%
Female	3.43%	0.00%

Table 10: Calculate Sentiment Scores for Women Education (Activists)

Uncovering distinct sentiment patterns among males and females. Male tweets displayed a discernible shift from neutral sentiment, as evidenced by a t-statistic of 2.59% and a p-value of 0.01%. Meanwhile, female tweets exhibited an even more pronounced deviation, indicated by a higher t-statistic of 3.43% and a p-value of 0.00%.

These findings underscore the substantial differences in the sentiment expressed by males and females when discussing women’s education. Recognizing and addressing these divergences can guide targeted approaches and foster inclusivity within educational contexts. Gender is crucial in shaping perspectives and emotions surrounding this critical topic.

The chi-square test of independence was performed separately for the male and female genders. For the male gender, the test yielded a chi-square statistic of 53.38 and an extremely small p-value of 2.57e-12.

Similarly, for the female gender, the chi-square statistic was 35.16, with a highly significant p-value of  $2.31e-08$ . These results indicate a strong association between the gender of the users and the presence of tweets related to the five specified keywords. The cross-tabulation of gender and label shows that 21,222 tweets were not associated with the keywords among females, while 13,616 tweets were related. Among males, 10,934 tweets were unrelated to the keywords, and 6,474 were related.

The significant chi-square test results suggest that the occurrence of tweets related to the specified keywords differs significantly between genders. The findings imply notable differences in the engagement and discussion of the selected topics on social media platforms based on gender. Such insights can be valuable for understanding gender-specific perspectives and behaviours related to the given keywords. They can aid researchers, policymakers, and educational institutions tailor strategies and initiatives accordingly.

#### Female Activists' Top Frequent Words

Figure 17 shows activists' most frequent words frequently used in their tweets. Female activists tend to focus on gender issues and the situation in Afghanistan, as seen by the prevalence of the terms "Taliban," "Women," "Afghanistan," "Girl," and "Afghan." Moreover, the use of words like "People," "Rights," "School," "Kabul," and "Education" demonstrates their

interest in broader social and educational concerns. Similar patterns arise for male activists focusing on topics like the Taliban, Afghanistan, women, and girls. They also emphasize the words "Education," "School," "Kabul," "Talibans," and "People," suggesting that they are participating in conversations about schools, Kabul, and the Afghan people more generally.

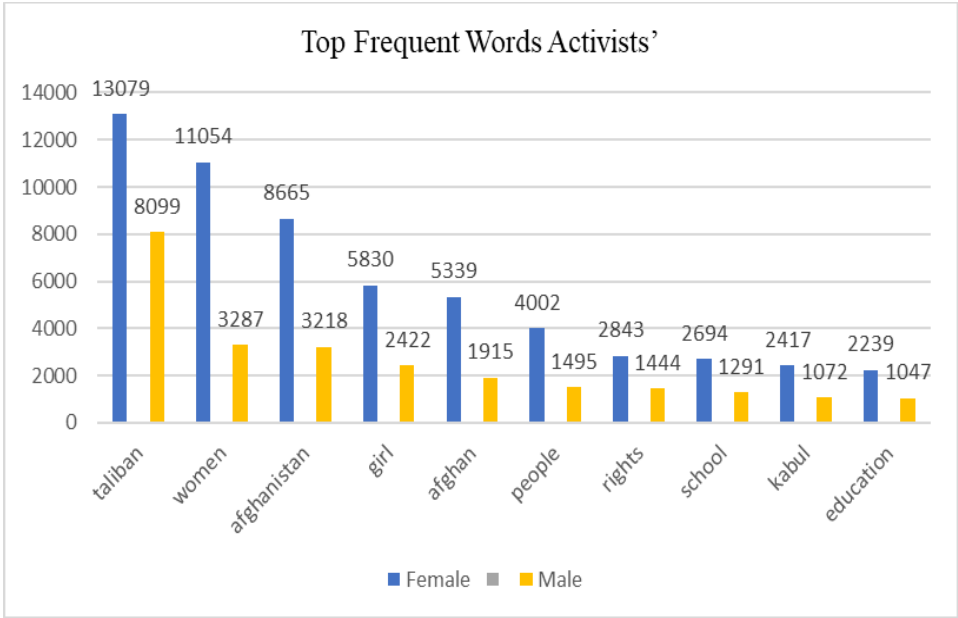


Figure 17: Top Frequent Words Activists'

Figure 18, the word cloud for female activists, reveals the main subjects they actively address. It visually represents their involvement in discussions about the Taliban, Women's rights, Afghanistan, Girls, and Education. These prominent terms capture the key themes and issues female activists passionately advocate for, emphasizing their commitment to promoting gender equality and driving positive social change.

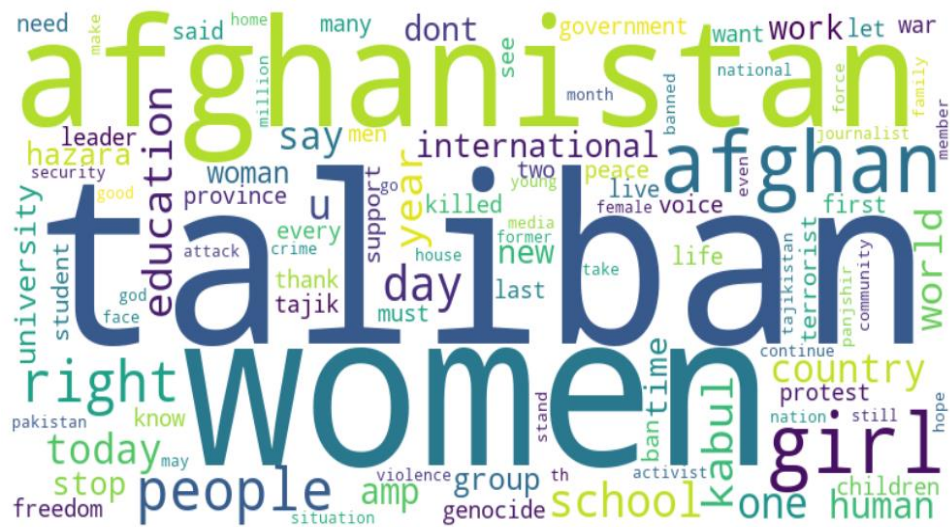
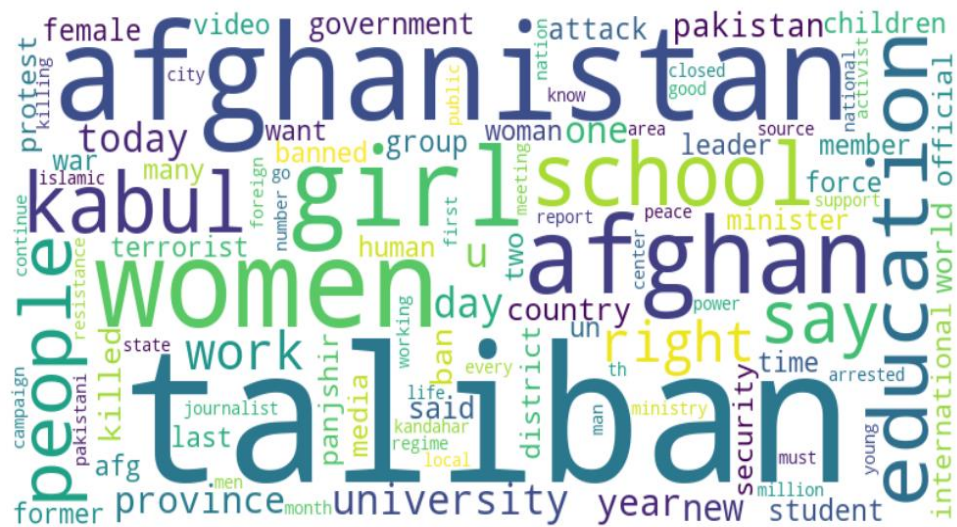


Figure 19, the word cloud for male activists, visually presents the key themes they are passionate about. It illustrates their active involvement in conversations related to the Taliban, Afghanistan, Women, Girls, and Education. These prominent terms reflect the specific areas that capture the attention and commitment of male activists, highlighting their significant contributions and dedication to discussing and addressing these crucial topics. The word cloud shows their engagement and dedication to social issues and advocacy.





## Logistic Regression Model

We used logistic regression to explore how different groups see the importance of women's education. We used gender as an IV, with females represented by a value of 1 and males by 0. Using algorithmic methods to combine activist data from men and women, we ensured a computational strategy throughout the investigation. The correlation between gender and women's education is explored in fascinating detail by the logistic regression results. Women (represented by a 1) are more likely than men (represented by a 0) to be in favor of investing in women's education, as indicated by the coefficient for the "Female" variable. This finding highlights the critical function of activists in promoting women's education. It underscores the significance of providing women with access to education as a means of achieving gender equality and empowering them. The results of this study shed light on the work of activists to advance women's

education and highlight the need for concerted efforts to promote educational equity for all people.

	Coef	Std err	Z	p> z	[0.025 0.975]
Const	-0.5241	0.016	-33.420	0.000	-0.555 -0.493
Female	0.0803	0.019	4.194	0.000	0.043 0.118

Table 11: Logistic Regression (Activists)

## CHAPTER V: DISCUSSION

The study discusses women's education from three different views, which are activists, the Taliban, and the Public, and how gender influences activists. The literature study emphasizes the difficulties women in Afghanistan encounter when trying to pursue an education. Women's access to education is severely hampered by a lack of resources, especially schools, and other issues like poverty, cultural standards, and the lasting effects of war and violence. These problems underline the need to remove the structural obstacles to women's educational prospects (Anderson, Reynolds, Biscaye, Patwardhan, & Schmidt, 2021).

In the fight for gender equality and promoting women's education, activists are crucial. They acknowledge how education can empower women, open economic opportunities, and promote financial independence. They engage in various initiatives to question social mores, knock down obstacles, and advance equal access to education (Klenk, 2010). Further, female activists are more supportive of women's education, pushing society toward equality and emphasizing male and female equality in education.

At the same time, male activists focus more on supporting women financially and making them self-sufficient, as this helps women stand on their feet and not rely on their fathers, brothers, and husband. Society sometimes welcomes these actions from female activists. And mostly, they

blamed their families, relatives, and the government. Meanwhile, male activists achieved more support from their families and the government because of being male.

Conversely, the public comprises individuals with unique theoretical views shaped by education, religious beliefs, and cultural backgrounds. Each person's worldview is influenced by their personal experiences and the knowledge they have acquired through education, their faith, and the traditions and customs of their culture. These views vary across the spectrum, reflecting the complex social fabric of Afghanistan. Some embrace the ideals put forth by activists, recognizing the transformative power of education and the imperative to ensure equal opportunities for women. Others, influenced by societal norms and traditional values, may hold reservations or oppose women's education, subscribing to a theoretical framework that reinforces traditional gender roles and norms (Rene, 2010).

While the Taliban's theoretical stance on women's education contrasts sharply. Rooted in religious fundamentalism and traditional gender roles, the Taliban perceives women's education as threatening their established order. In their worldview, education for women undermines the status quo and challenges the patriarchal structures they seek to uphold. Thus, the Taliban severely limits women's access to education, perpetuating

oppressive systems and hindering progress toward gender equality (Franks, 2003).

## CHAPTER VII: CONCLUSION

In conclusion, the discussion on women's education in Afghanistan reveals the contrasting viewpoints and motivations of activists, the Taliban, and the Public. Activists emphasize the importance of education as a fundamental right and a catalyst for empowerment, recognizing its ability to challenge societal norms, break oppressive systems, and contribute to communities. The Taliban, rooted in religious fundamentalism and traditional gender roles, perceives women's education as a threat to their established order, imposing severe limitations on access and hindering progress towards gender equality.

The perspectives of the Public vary, influenced by factors such as education, religious beliefs, and cultural backgrounds. While some individuals align with activist ideals, advocating for equal opportunities for women, others may disagree or oppose women's education due to adherence to societal norms and traditional values. This diversity of perspectives contributes to the complexity of the discourse surrounding women's education in Afghanistan.

The hypotheses proposed in this discussion provide expectations based on each group's ideologies and prior behaviour. Hypothesis 1

suggests that the Taliban's views on women's education will be significantly more restrictive and opposed than activists and the public. It aligns with the Taliban's history of imposing limitations on women's education and work during their rule in Afghanistan. Hypothesis 2 proposes that activists are more likely to demonstrate higher support for women's education than the Taliban and the public. Activists, driven by the belief in education as a tool for empowerment and social change, view it as vital for women's progress. Hypothesis 3 suggests that female activists are more likely to hold stronger sentiments in supporting women's education than male activists, reflecting a deeper understanding of women's challenges.

This discussion sheds light on the complex dynamics surrounding women's education in Afghanistan, highlighting its importance in challenging gender inequality, empowering women, and driving social progress. Activists play a vital role in advocating for women's access to education and breaking down barriers. They firmly believe that education is a fundamental right for everyone and a crucial tool for building a more equitable and fair society. However, the discussion also brings to the forefront the divergent position of the Taliban, which aims to uphold traditional gender roles and restrict women's education. The Taliban's viewpoint is based on a fundamentalist religious ideology. The clash of views between activists and the Taliban forms a significant part of Afghanistan's women's education struggle.

Moreover, the Public's diverse perspectives reflect Afghan society's intricacies. Factors like education, religious beliefs, and cultural values shape individuals' opinions on women's education. While some individuals support equal educational opportunities for women, others adhere to societal norms and traditional values that limit women's access. This diversity underscores the need for nuanced approaches to promote women's education and engage with various segments of Afghan society.

In conclusion, this discussion deepens our understanding of the motivations and views driving support for women's education in Afghanistan. Activists advocate for education as a fundamental right and a means of empowering women. Conversely, the Taliban adheres to an ideology restricting women's education and reinforcing traditional gender roles. Public exhibit various perspectives influenced by their education, religious beliefs, and cultural backgrounds. Recognizing and addressing these dynamics is essential in formulating strategies and policies that advance women's education and strive for gender equality in Afghanistan.

Recommendation: Exploring the efficacy of community-based education programs in increasing women's education in Afghanistan is one area that could be suited for future research. Women in rural and isolated places face additional obstacles while trying to further their education, and community-based programs may be the key to overcoming these obstacles.

Evaluating the effect of community-based initiatives on women's educational attainment may require performing case studies or launching experimental projects.

Women's education promotion strategies, such as program design, community engagement, curriculum creation, and the role of local stakeholders, might all be evaluated in this study. Cultural and social norms' impact on community-based initiatives may also be investigated. And the study might examine how these programs help women overcome obstacles, including early marriage, societal norms, and patriarchal structures, to further their education. The study can potentially inform the development of scalable and sustainable approaches to advancing women's education in Afghanistan and perhaps other contexts facing similar issues by analyzing the efficacy of community-based education initiatives. To further women's education and empowerment in the country, it could also inform policy suggestions and programmatic measures.

Weaknesses: One of the weaknesses in our study would be the geographic location; sure, we did focus on the user's location, except being an Afghan. We sincerely wanted to analyze every group by its location. Unfortunately, most users hide their location, making it hard for us to analyze their tweets based on their location.



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## Appendix

```
1. import tweepy
2. import pandas as pd
3. consumer_key = 'your_consumer_key'
4. consumer_secret = 'your_consumer_secret'
5. access_token = 'your_access_token'
6. access_token_secret = 'your_access_token_secret'
7. auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
8. auth.set_access_token(access_token, access_token_secret)
9. api = tweepy.API(auth)
10. username = 'twitter_username'
11. tweets = api.user_timeline(screen_name=username, count=100)
12. tweets_list = []
13. for tweet in tweets:
14.     tweets_list.append({
15.         'created_at': tweet.created_at,
16.         'text': tweet.text,
17.         'retweets': tweet.retweet_count,
18.         'favorites': tweet.favorite_count
19.     })
20. df = pd.DataFrame(tweets_list)
21. print(df.head())
```

Table 12: Fetch tweets by username

```
1. import pandas as pd
2. tweets_df = pd.read_excel('./data_processed/complete.xlsx')
3. tweets_df = tweets_df.dropna()
4. tweets_df['text'] = tweets_df['text'].str.lower()
5. keywords = ["women", "education", "schools", "study", "learn", "right", "ban", "people",
6.             "afghan", "educated", "girls", "female", "protest", "pashtun", "tajik", "uzbek", "hazara",
7.             "rights", "prohibit", "patriarch", "close schools", "close universities", "university", "man"]
8. matched_tweets = {}
9. for keyword in keywords:
10.     tweets_df['text'] = tweets_df['text'].fillna('')
11.     matched_tweets[keyword] = tweets_df[tweets_df['text'].str.contains(keyword, case=False)]
12.
13. for keyword, df in matched_tweets.items():
14.     print(f"{keyword}: {len(df)}")
15. for keyword, df in matched_tweets.items():
16.     df.to_excel(f'./data_processed/{keyword}_matched_tweets.xlsx', index=False)
```

Table 13: Find related data by keywords

```
1. def remove_usernames_links(tweet):
2.     tweet = re.sub("@[\^s]+", "", str(tweet))
3.     tweet = re.sub("http[\^s]+", "", str(tweet))
4.     return tweet
5. df = df.replace(r"\n", " ", regex=True)
```

```
6. df["text"] = df["text"].apply(remove_usernames_links)
```

Table 14: Remove URL, and mention

```
1. from collections import Counter
2. hashtags = []
3. for row in df['text']:
4.     hashtags.extend([tag.strip("#") for tag in row.split() if tag.startswith("#")])
5. counts = Counter(hashtags)
6. top_tags = counts.most_common(10) # modify topn parameter here
7. fig, ax = plt.subplots(figsize=(12, 8))
8. ax.bar([tag[0] for tag in top_tags], [len(tag[0]) for tag in top_tags])
9. ax.set_title("Top 50 Hashtags with Lengths")
10. ax.set_xlabel("Hashtag")
11. ax.set_ylabel("Length")
12. plt.xticks(rotation=90)
13. plt.show()
```

Table 15: Top 10 Trends

```
1. import pandas as pd
2. import re
3. pattern = r'#\w+'
4. df['hashtags'] = df['text'].str.extractall(pattern)[0].values
5. print(df)
```

Table 16: Remove Hashtags

```
1. import pandas as pd
2. contraction_map={
3.     "ain't": "is not",
4.     "aren't": "are not",
5.     "can't": "cannot",
6. }
7. def expand_contractions(text):
8.     pattern = re.compile('{{}}'.format('|'.join(contraction_map.keys()))),
9.     flags=re.IGNORECASE|re.DOTALL)
10.     def replace(match):
11.         return contraction_map[match.group(0).lower()]
12.     return pattern.sub(replace, text)
13. text_cols = data.select_dtypes(include=[object]).columns
14. data['text'] = data['text'].apply(lambda x: expand_contractions(str(x)))
15. data.head(5)
```

Table 17: Expand Contractions

```
1. import re
2. sample_string = 'This is a sample string with ASCII characters: !@#$%^&*()_+={}[]\|.;"<>,.?/~`'
3. clean_string = re.sub(r'^\x00-\x7F)+', '', sample_string)
```



```

4. print('Original string:', sample_string)
5. print('Cleaned string:', clean_string)

```

Table 18: Remove ASCII Characters

```

1. def whitespace(columns_name, text):
2.     data[columns_name] = data[columns_name].replace("", "", regex=True) #remove empty string
3.     data[columns_name] = data[columns_name].str.strip() #remove whitespace
4. whitespace('name', data)
5. whitespace('text', data)

```

Table 19: Remove Whitespace

```

1. df.dropna(subset=['text'], inplace=True)
2. df.dropna(inplace=True)
3. df.drop_duplicates(subset=['text'], inplace=True)
4. df[['text']].sample(5)

```

Table 20: Drop Null Values

```

1. import string
2. def remove_punctuations(text):
3.     for punctuation in string.punctuation:
4.         text = text.replace(punctuation, "")
5.     return text
6. df['text'] = df['text'].apply(remove_punctuations)

```

Table 21: Remove Punctuations

```

1. ct = pd.crosstab([df['ethnic'], df['gender']], df['label'], normalize='index')
2. print(ct)

```

Table 22: Contingency Code

```

1. from sklearn.feature_extraction.text import CountVectorizer
2. from sklearn.linear_model import LogisticRegression
3. import numpy as np
4. vectorizer = CountVectorizer(stop_words=stopwords.words('english'))
5. X_train_vectorized = vectorizer.fit_transform(X_train)
6. unwanted_words = ['afghanistan', 'taliban', 'afghan', 'kabul']
7. for word in unwanted_words:
8.     try:
9.         idx = vectorizer.vocabulary_[word]
10.        del vectorizer.vocabulary_[word]
11.        vectorizer._validate_vocabulary()
12.        X_train_vectorized = X_train_vectorized[:, np.arange(X_train_vectorized.shape[1]) != idx]
13.    except KeyError:
14.        pass
15. X_train_vectorized = vectorizer.fit_transform(X_train)
16. lr = LogisticRegression()
17. lr.fit(X_train_vectorized, y_train)

```

Table 23: Transforming Textual To Numeric

```

1. from sklearn.metrics import classification_report
2. y_pred = lr.predict(X_test_vectorized)
3. print(classification_report(y_test, y_pred))

```

Table 24: Evaluate Performance

```

1. def label_tweets(text):
2.     keywords = ['education', 'school', 'university', 'women', 'girl']
3.     for keyword in keywords:
4.         if keyword in text.lower():
5.             return 1
6.     return 0
7. df = df.copy()
8. df['label'] = df['text'].apply(label_tweets)

```

Table 25: Labeling Data

```

1. x = df['text']
2. sentiment_labels = []
3. sentiment_scores = []
4. for tweet in x:
5.     # Create a TextBlob object
6.     blob = TextBlob(tweet)
7.     # Get the sentiment polarity (-1 to 1)
8.     polarity = blob.sentiment.polarity
9.     if polarity > 0:
10.        sentiment = 'positive'
11.    elif polarity < 0:
12.        sentiment = 'negative'
13.    else:
14.        sentiment = 'neutral'
15.
16.    sentiment_labels.append(sentiment)
17.    sentiment_scores.append(polarity)
18. # Add the sentiment labels and scores as new columns in the DataFrame
19. df['sentiment'] = sentiment_labels
20. df['sentiment_score'] = sentiment_scores
21.

```

Table 26: Sentiment Analysis

```

1. # Define custom colors for sentiment categories
2. colors = {'negative': 'red', 'neutral': 'blue', 'positive': 'orange'}
3.
4. # Calculate sentiment counts
5. sentiment_counts = df['sentiment'].value_counts()
6.
7. # Plot the sentiment counts with custom colors
8. plt.figure(figsize=(8, 6))
9. sentiment_counts.plot(kind='bar', color=[colors.get(x, 'gray') for x in sentiment_counts.index])
10. plt.xlabel('Sentiment Category')
11. plt.ylabel('Count')
12. plt.xticks(rotation=0)

```

```

13. plt.title('Sentiment Distribution')
14. plt.show()
15.
16. # Calculate total counts
17. total_counts = sentiment_counts['positive'] + sentiment_counts['negative']
18. print("Sentiment Distribution:", total_counts)

```

Table 27: Sentiment Distribution

```

1. women_positive_count = df[(df['gender'] == 'male') & (df['sentiment'] == 'positive')].shape[0]
2. women_total_count = df[df['gender'] == 'male'].shape[0]
3. women_positive_percentage = (women_positive_count / women_total_count) * 100
4. # Print the results
5. print("Positive tweets from taliban:", women_positive_count, "(", women_positive_percentage, "%")

```

Table 28: Calculate Positive Tweets

```

1. coding_scheme = {
2. 'women': ['women', 'woman', 'female', 'feminine', 'girl', 'lady'],
3. 'education': ['education', 'educational', 'learning', 'academics', 'knowledge'],
4. 'school': ['school', 'classroom', 'teacher', 'students', 'curriculum'],
5. 'university': ['university', 'college', 'higher education', 'academia', 'campus'],
6. 'access': ['access', 'opportunity', 'enrollment', 'attendance', 'entry'],
7. 'quality': ['quality', 'standard', 'curriculum', 'teaching', 'learning'],
8. 'benefits': ['benefit', 'advantage', 'improvement', 'progress'],
9. 'barriers': ['barrier', 'restriction', 'obstacle', 'challenge', 'difficulty'],
10. 'empowerment': ['empower', 'empowering', 'confidence', 'self-esteem', 'agency'],
11. 'gender': ['gender', 'discrimination', 'inequality', 'feminism', 'patriarchy']
12. }
13.
14. # Define a function to apply the coding scheme to each tweet
15. def apply_coding_scheme(text):
16.     codes = []
17.     for code, keywords in coding_scheme.items():
18.         for keyword in keywords:
19.             if keyword in text.lower():
20.                 codes.append(code)
21.     return codes
22.
23. # Apply the coding scheme to the text column and create a new column for the codes
24. df_edu['codes'] = df_edu['text'].apply(apply_coding_scheme)
25.

```

Table 29: Code Scheme

```

1. from nltk.sentiment import SentimentIntensityAnalyzer
2. import nltk
3. # Initialize the sentiment analyzer
4. sid = SentimentIntensityAnalyzer()
5. # Loop through each keyword and calculate the sentiment of tweets containing that keyword
6. for keyword in ['women', 'education', 'school', 'university', 'girl']:
7.     keyword_tweets = df_edu[df_edu['text'].str.contains(keyword)].copy()
8.     keyword_tweets.loc[:, 'sentiment_score'] = keyword_tweets['text'].apply(lambda x:
sid.polarity_scores(x)['compound'])

```

```

9. print(f"Sentiment analysis of tweets containing the keyword '{keyword}':")
10. print(keyword_tweets.groupby('sentiment')['text'].count())

```

Table 30: Analyzing Five Keywords

```

1. from nltk.sentiment import SentimentIntensityAnalyzer
2. import nltk
3. import pandas as pd
4.
5. # Initialize the sentiment analyzer
6. sid = SentimentIntensityAnalyzer()
7.
8. # Create a DataFrame to store the sentiment percentages for each keyword
9. keyword_sentiments = pd.DataFrame(columns=['Positive', 'Negative', 'Neutral'])
10.
11. # Loop through each keyword and calculate the sentiment of tweets containing that keyword
12. for keyword in ['women', 'education', 'school', 'university', 'girl']:
13.     keyword_tweets = df_edu[df_edu['text'].str.contains(keyword)].copy()
14.     keyword_tweets['sentiment_score'] = keyword_tweets['text'].apply(lambda x:
sid.polarity_scores(x)['compound'])
15.
16.     # Calculate the sentiment distribution for the keyword
17.     sentiment_distribution = keyword_tweets.groupby('sentiment')['text'].count()
18.     total_tweets = sentiment_distribution.sum()
19.
20.     # Calculate the percentage of each sentiment category
21.     sentiment_percentage = sentiment_distribution / total_tweets * 100
22.
23.     # Add the sentiment percentages to the DataFrame
24.     keyword_sentiments.loc[keyword] = sentiment_percentage.values
25.
26. # Calculate the average sentiment percentages across all keywords
27. average_sentiments = keyword_sentiments.mean()
28.
29. # Print the average sentiment percentages
30. print("Average sentiment percentages:")
31. for sentiment, percentage in average_sentiments.items():
32.     print(f"{sentiment}: {percentage:.2f}%")

```

Table 31: Average Sentiment Percentages

```

1. sentiment_scores = [TextBlob(tweet).sentiment.polarity for tweet in df['text']]
2. # Compare the sentiment distributions using a t-test
3. t_stat, p_value = stats.ttest_1samp(sentiment_scores, 0)
4. print("Comparison of Sentiment whole tweets:")
5. print("T-statistic:", t_stat)
6. print("P-value:", p_value)

```

Table 32: Comparison of Sentiment Whole Tweets

```

1. import scipy.stats as stats
2. from textblob import TextBlob
3. keywords = ['women', 'education', 'school', 'university', 'girl']
4. # Filter tweets containing the keywords

```

```

5. men_education_tweets = df[df['text'].str.contains(''.join(keywords), case=False)]
6. # Calculate sentiment scores using TextBlob
7. sentiment_scores = [TextBlob(tweet).sentiment.polarity for tweet in men_education_tweets['text']]
8. # Perform one-sample t-test
9. t_stat, p_value = stats.ttest_1samp(sentiment_scores, 0)
10. # Print the comparison results
11. print("Comparison of Sentiment for five keywords:")
12. print("T-statistic:", t_stat)
13. print("P-value:", p_value)

```

Table 33: Comparison of Sentiment Five Keywords

```

1. taliban_education_tweet = df[df['text'].str.contains('women education', case=False)]
2. sentiment_scores = [TextBlob(tweet).sentiment.polarity for tweet in taliban_education_tweet['text']]
3. t_stat, p_value = stats.ttest_1samp(sentiment_scores, 0)
4. print("Comparison of Sentiment for Women Education Tweets:")
5. print("T-statistic:", t_stat)
6. print("P-value:", p_value)

```

Table 34: Comparison of Sentiment on Keyword Women Education

```

1. from scipy.stats import chi2_contingency
2. contingency_table = pd.crosstab(df['gender'], df['label'])
3. chi2, p_value, _, _ = chi2_contingency(contingency_table)
4. print("Chi-square Test of Independence:")
5. print("Chi-square:", chi2)
6. print("P-value:", p_value)

```

Table 35: Chi-square Test of Independence

```

1. cross_tab = pd.crosstab(df['sentiment'], df['gender'])
2. # Print the cross-tabulation
3. print("Cross-Tabulation of Sentiment and Gender:")
4. print(cross_tab)

```

Table 36: Cross-Tabulation of Sentiment and Gender

```

1. import matplotlib.pyplot as plt
2. from collections import Counter
3. # Combine all the text into a single string
4. all_text = ''.join(df['text'].tolist())
5. # Split the text into individual words
6. all_words = all_text.split()
7. # Count the occurrences of each word
8. word_counts = Counter(all_words)
9. # Retrieve the most common words
10. most_common_words = word_counts.most_common(10)
11. # Extract the words and their frequencies
12. words = [word for word, count in most_common_words]
13. frequencies = [count for word, count in most_common_words]
14. # Calculate the total frequency of all words
15. total_frequency = sum(frequencies)
16. # Calculate the percentages
17. percentages = [count / total_frequency * 100 for count in frequencies]
18. # Set up the figure and axes

```

```

19. fig, ax = plt.subplots(figsize=(10, 6))
20. # Create a bar chart for the most common words
21. bars = ax.bar(words, frequencies, color=['orange', 'darkblue', 'darkblue', 'darkblue', 'darkblue', 'darkblue',
'darkblue', 'darkblue', 'darkblue', 'darkblue'])
22. # Add labels and title
23. ax.set_xlabel('Words')
24. ax.set_ylabel('Frequency')
25. ax.set_title('Top 10 Most Common Words')
26. # Rotate x-axis labels for better readability
27. plt.xticks(rotation=45)
28. # Add percentage labels above each bar
29. for bar, percentage in zip(bars, percentages):
30.     height = bar.get_height()
31.     ax.text(bar.get_x() + bar.get_width() / 2, height, f'{percentage:.1f}%', ha='center', va='bottom')
32. # Show the chart
33. plt.show()

```

Table 37: Frequent Words

```

1. sentiment_counts = df.groupby(['created_at', 'label']).size().unstack()
2. # Extract the time periods and convert them to datetime objects
3. time_periods = pd.to_datetime(sentiment_counts.index)
4. # Set up the figure and axes
5. fig, ax = plt.subplots(figsize=(12, 6))
6. # Plot the stacked area plot for sentiment categories
7. ax.stackplot(time_periods, sentiment_counts.T, labels=sentiment_counts.columns)
8. # Add labels and title
9. ax.set_xlabel('Time')
10. ax.set_ylabel('Count')
11. ax.set_title('Tweet Frequency Time Series')
12. # Add legend
13. ax.legend()
14. # Show the chart
15. plt.show()
16.

```

Table 38: Time Series

```

1. from wordcloud import WordCloud
2. text = ''.join(df['text'])
3. # Create a WordCloud object with customized options
4. wordcloud = WordCloud(width=800, height=400, background_color='white', colormap='viridis',
5.                        max_words=100, contour_width=3, contour_color='steelblue',
6.                        prefer_horizontal=0.8, relative_scaling=0.5,
7.                        collocations=False).generate(text)
8. # Add a central word
9. wordcloud.generate_from_text("Afghanistan")
10. # Manipulate font sizes for the central word and other words
11. wordcloud = WordCloud(width=800, height=400, background_color='white', colormap='viridis',
12.                        max_words=100, contour_width=3, contour_color='steelblue',
13.                        prefer_horizontal=0.8, relative_scaling=0.5,
14.                        collocations=False).generate(text)
15. wordcloud.words_["Afghanistan"] = 80 # Set font size for the central word

```

```

16. # Display the word cloud using matplotlib
17. plt.figure(figsize=(10, 6))
18. plt.imshow(wordcloud, interpolation='bilinear')
19. plt.axis('off')
20. plt.tight_layout()
21. plt.show()

```

Table 39: Word-Cloud

```

1. import scipy.stats as stats
2. keyword = 'women education'
3. # Filter male tweets containing the keyword
4. male_education_tweets = df[(df['text'].str.contains(keyword, case=False)) & (df['gender'] == 'male')]
5. # Filter female tweets containing the keyword
6. female_education_tweets = df[(df['text'].str.contains(keyword, case=False)) & (df['gender'] == 'female')]
7. # Calculate sentiment scores for male tweets using TextBlob
8. male_sentiment_scores = [TextBlob(tweet).sentiment.polarity for tweet in
male_education_tweets['text']]
9. # Calculate sentiment scores for female tweets using TextBlob
10. female_sentiment_scores = [TextBlob(tweet).sentiment.polarity for tweet in
female_education_tweets['text']]
11. # Perform one-sample t-test for male tweets
12. male_t_stat, male_p_value = stats.ttest_1samp(male_sentiment_scores, 0)
13. # Perform one-sample t-test for female tweets
14. female_t_stat, female_p_value = stats.ttest_1samp(female_sentiment_scores, 0)
15. # Print the comparison results for male tweets
16. print("Comparison of Sentiment for Men Education Tweets:")
17. print("T-statistic:", male_t_stat)
18. print("P-value:", male_p_value)
19. # Print the comparison results for female tweets
20. print("Comparison of Sentiment for Women Education Tweets:")
21. print("T-statistic:", female_t_stat)
22. print("P-value:", female_p_value)
23. comparison_df = pd.DataFrame({
24.     'Gender': ['Male', 'Female'],
25.     'T-Statistic': [male_t_stat, female_t_stat],
26.     'P-Value': [male_p_value, female_p_value]
27. })
28. comparison_df.head()

```

Table 40: Comparison of Sentiment for Men Education Tweets