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Digital Echoes of a Movement: Analyzing the Evolution of the WomanLifeFreedom Movement through Hashtag Analysis

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by

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ABSTRACT

This research investigates the digital activism surrounding the WomanLifeFreedom (WLF) movement on X (formerly Twitter)[1], a significant socio-political uprising in Iran following the death of Mahsa Amini in September 2022. The study analyzes the use of the hashtag #MahsaAmini and co-occurrence hashtags along with it to understand the movement's dynamics, geographical spread, and evolving discourse. Observing in nine months of the movement, I tracked 270,000 tweets, to map engagement and identify key co-occurring hashtags.

Findings reveal five primary frames within the movement: Tactics and Mobilization, Regime Change, Global Solidarity & Support, Activism, and Women's Rights. The analysis underscores the pivotal role of hashtags in Iranian protests, demonstrating how protesters strategically organized collective actions before the regime's repressive actions. Despite the central slogan 'WomanLifeFreedom' and the movement's origins in the death of a 22-year-old girl, my findings show that the movement not only focused on women's rights but mainly advocated for broader political transformation.

This study highlights how social media has unified and mobilized diverse groups against systemic oppression in Iran. It illustrates the Iranian populace's strong desire for change and emphasizes the critical role of digital platforms in contemporary movements for democracy and human rights, particularly in authoritarian contexts.

[1] I will use 'Twitter' throughout this thesis, although the platform was rebranded as 'X' in 2023.

To two amazing women in my life: my mother and my sister, who have always been there for me throughout my life to teach me to be strong and independent, but most importantly, to be kind.

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Introduction

After the 1979 revolution that established the Islamic Republic in Iran, the country has experienced several significant uprisings against its authoritarian regime. Notable examples include the 2009 Green Movement, which protested against alleged electoral fraud in the presidential elections, and the 2019 protests over rising gasoline prices. (Syed, 2022) The most widespread movement, however, has been the recent "Woman, Life, Freedom" (WLF) movement.

This was ignited by the death of 22-year-old Mahsa Amini on September 16, 2022, who died in a Tehran hospital after being detained by the Islamic Republic of Iran's morality police for allegedly violating the Islamic Republic's strict dress code for women. Amini's death has been attributed to alleged physical abuse by the authorities, highlighting concerns about the treatment of women under Iran's theocratic regime. Her case became a catalyst for widespread protests across Iran. These protests were notably supported by extensive use of social media, which played a crucial role in disseminating information and mobilizing international support. Her death highlighted concerns about the treatment of women under Iran's theocratic regime and drawing attention to broader issues of state violence, including the reported killing of peaceful protestors and minors (DeLong-Bas, 2024).

One notable aspect that distinguished the recent "Woman, Life, Freedom" movement from previous uprisings was the pivotal role of social media. (Lamensch, 2022) With the widespread adoption of social media platforms in

Iran, particularly among Generation Z, this movement catalyzed a global discourse on the transformative power of social media in amplifying marginalized voices, especially within authoritarian regimes (Ghobadi, 2022) (FP, 2022) Social media was instrumental in disseminating information, organizing protests, and garnering international support. (Siedow, 2024) This movement underscores its potential to challenge oppressive systems and attract global attention to local struggles, thereby reshaping the dynamics of political activism in contemporary society.

The WLF movement transcended national borders, resonating with individuals and communities worldwide committed to human rights and gender equality. This movement's growth was significantly propelled by hashtag activism, which served as a tool for organizing collective action and drawing international attention to the protesters' cause. This study delves into the intricate relationship between the WLF movement and the evolving public sphere, highlighting the critical role of social media in contemporary activism. It focuses on the strategic use of hashtags as a proven powerful mechanism for activism, allowing for the mobilization of global support and the amplification of voices that challenge authoritarian rule. In a censored society like Iran, Iranian people leveraged social media to amplify their objective of regime change. Framing analysis was employed to uncover this underlying motivation.

Background and History

The historical and political context of Iran, marked by a transition from a Constitutional Monarchy to an Islamic Republic regime, and the persistent struggle for human rights since then, sets the stage for understanding the significance of the WLF movement.

Iran is a republic governed by a theocratic constitution that imposes stringent regulations on citizens' social and private lives. Despite having one of the highest rates of internet adoption and social media usage in the Middle East and North Africa (MENA) region, the state's significant interventions mediate this usage, such as filtering access to sites like Facebook and Twitter (Wulf, 2022). Iran holds significant influence in the MENA region, distinguished by its unique historical, political, and cultural trajectory.

In the 20th century, from 1941 to 1979, during the reign of the last king of Iran, Mohammad Reza Shah Pahlavi, his vision for Iran centered on progress and modernization. The Shah aimed to demonstrate that Iran could compete with Western nations and achieve similar levels of modernity. To advance this agenda, he targeted specific societal aspects. Under his rule, traditional dress styles were discouraged, and the Shah believed that visible changes in dress would catalyze a deeper, internal shift towards a more modern and advanced society. During his leadership, women gained the right to vote, and several laws, such as the Family Protection Laws, were enacted to safeguard women's rights and grant them access to legal courts (Camara, 2012).

This era saw the rise of various political parties, a thriving free press, and active labor unions. However, Iran's Shi'i religious figures criticized the Shah for marginalizing religious learning and authority. Ayatollah Khomeini (1902-1989), a prominent religious leader and outspoken critic of the Shah, gained influence after being exiled to France following a religio-political rally in 1963 against the Shah's "White Revolution." The white revolution was an attempt by the Shah aimed to introduce reforms such as women's suffrage, land reform, and literacy enhancement (Bill, 1970; Sreberny-Mohammadi, n.d.).

By the 1970s, a new form of religious politics, sometimes referred to as Islamism, began to take shape. In 1978, a coalition of religious figures, traditional trade and manufacturing groups (Bazaar), and Marxists (People's Mojahedin Organization of Iran or Mojahedin E Khalgh (MEK)) united to overthrow the Shah. "An unholy alliance between two extremist wings, black reactionaries (radical Muslims) and unpatriotic, destructive Reds (communists)" as Shah described it (Times, 1965). On January 17, 1979, the Shah left Iran, and The Islamic Revolution of 1979 subsequently brought Ayatollah Khomeini to power, establishing the Islamic Republic (Keddie, 2007).

The 1979 Islamic Revolution marked a pivotal moment in Iranian history, generating profound political and ideological repercussions throughout the region. Since then, Iranian society has experienced substantial transformations across social, economic, and cultural domains, frequently shaped by the pressures of Western-imposed sanctions. The codification of Islamic principles into law has

profoundly affected life in Iran, resulting in a level of regulation not found in liberal democracies (Wulf, 2022). As stated in Khomeini's will and testament in 1983, Islam and the Islamic government are sacred entities that ensure worldly prosperity and ultimate salvation in the Hereafter. Unlike secular ideologies, Islam provides comprehensive guidelines for every facet of individual and societal life, including social, material, spiritual, cultural, political, military, and economic systems. It meticulously addresses all aspects, no matter how minor, related to the education and overall progress of both individuals and society in both material and spiritual realms (Imam Khomeini's Last Testament, 1983).

To further consolidate control and disseminate the regime's values and ideology, the Iranian new government established strict regulations over the media. Article 175 of Islamic Republic's constitution outlines the framework for the Islamic Republic of Iran Broadcasting (IRIB), prohibiting private broadcasting networks and ensuring adherence to Islamic laws under the Supreme Leader's direct oversight (Pierre Pahlavi, 2012). The Press Law enacted in Iran in 1986 presents a complex legal framework concerning media censorship and freedom of expression. While it ostensibly prohibits governmental interference with the press, the law also contains provisions that allow for the punishment of content perceived as detrimental to the foundational principles of the Islamic Republic (Iran Data Portal, n.d.).

Certain press regulations impose significant restrictions on content and outline severe consequences for violations. While the regulations protect press freedom by prohibiting coercive measures against media entities, they also

specify prohibitions against promoting content that threatens state security or insults religious authorities. These prohibitions can result in severe penalties. Writers and journalists are particularly affected, as they can be held accountable for content that encourages actions against state security or foreign policies, despite the vague definition of what constitutes a security threat, which allows for potential arbitrary enforcement. Additionally, harsh penalties, including charges of apostasy, can be imposed for insulting Islam and religious leaders through writings. Publications that denigrate state leadership or religious authorities face repercussions such as revocation of publishing licenses and legal actions against responsible individuals as serious as death penalties (Iran Data Portal; Pahlavi, 2012).

The emergence of the internet and social media platforms, however, has disrupted this control, empowering Iranian citizens with a novel avenue for self-expression and circumventing state censorship. Examining the complex interplay between the WLF movement and the dynamic evolution of the public sphere underscores the indispensable significance of social media in modern activism.

Literature Review

It has been more than four decades since Jürgen Habermas first discussed the rise and fall of the bourgeois public sphere, defined as an area of social life where public opinion is shaped (Habermas, 1992). His theory of the public sphere revolves around the notion of public reason free from external influence and hierarchical governance. Within this sphere, either physical or virtual (McKee, 2005), social engagement flourishes, and the seeds of political change take root. As highlighted by Bozeman & Johnson (2015), safeguarding such an environment is a public value for the community as it promotes inclusiveness, citizen involvement, and dialogues on responsibilities and freedoms. In any society, public values embody our convictions regarding the entitlements, advantages, and obligations we ought to possess as members. These beliefs also mirror the responsibilities we hold towards our society, authorities, and fellow individuals. Furthermore, they assist us in defining the ideals that should influence our governance and regulations (Bozeman 2007).

Since the mid-1990s, Habermas's idea has regained significance, particularly in understanding the impact of information and communication technologies, notably the internet, on political landscapes. In his 1989 publication, he envisioned the capabilities of emerging communication technologies to connect individuals and foster inclusivity and democratic participation.

Social Media and the Public Sphere

Through communication, participation, and information dissemination, online platforms can play a crucial role in influencing and reflecting the public's values and issues (Criado et al., 2013; Mergel, 2013a, 2013b; Mergel & Bretschneider, 2013; Monshipouri, 2017).

Moreover, the role of social media platforms extends beyond mere communication. They have become a place for shaping and safeguarding public values in different societies associated with concepts such as equity, social justice, civil liberties, transparency, and political participation, depending on the societal issues (Gerbaudo, 2012; Gustafsson, 2012; Linders, 2012; Loader et al., 2014).

Social media allows individuals to share their thoughts and opinions on current political events using various formats, such as videos, pictures, and text (Kushin & Kitchener, 2009). It also enables people to respond quickly to the posted content and connect with each other (Bakshy, Messing, & Adamic, 2015; Semaan, Robertson, Douglas, & Maruyama, 2014).

Marla Parker's framework offers a fascinating lens through which to view the complex relationship between social media and political action, which leads to the evolution of public values (Parker & Bozeman, 2018). It presents a dynamic process where social media serves as a platform for disseminating factual information about real-time events by posting. The ensuing communication features on social media, including reposting, reacting, indexing, and generating trends, actively contribute to shaping shared values. Social Media also allows exposure to widespread audiences, which also facilitates the amount and depth of

conversations related to public values (Hanna, Rohm, & Crittenden, 2011; Kietzmann et al., 2011).

Twitter and Hashtags

Twitter initially operated as an SMS text-based platform, which imposed a constraint on the length of tweets to 140 characters. This was influenced by the 160-character limit of SMS, with 20 characters allocated for commands and usernames. The limitation of 140 characters enabled Twitter to be used on millions of "feature phones" and smartphones—regardless of operating system or manufacturer—as well as Instant Messaging (IM) protocols. As Twitter evolved, the maximum tweet length expanded to 280 characters, allowing for more expression while still maintaining brevity, and tweets could include photos and short videos. In July 2023, the name of the platform changed from "Twitter" to "X", and subscribed users were given the ability to post longer texts without character limitations. On Twitter, individuals can rise to prominence through the engagement of a specific Twitter community, utilizing features like retweets, favorites, and endorsements.

Moreover, retweeting fosters interconnection between different publics, enabling discourse to transcend localities and amplify certain messages. Therefore, while traditional media power remains formidable, social media users still have the potential to capture the interest of mainstream journalists and engage in self-representation that is both independent and community-specific (Poell, 2014).

Upon the interconnectedness of the platform, Twitter enables information to go viral, garnering attention from both elite and mainstream users. The introduction of hashtags in 2007 by technologist Chris Messina marked a pivotal moment in online discourse, fundamentally reshaping how conversations are organized and understood (Bruns & Burgess, 2011). The hashtag (#) symbol is used to index, order, and accumulate public dialog into coherent topical threads on social media, most notably on Twitter. Hashtags function as an indexing system, grouping ideas and messages together in a way that is similar to a book's index, making it easy to store, search for, and collect information for users (Bonilla, n.d.; Portwood-Stacer & Berridge, 2014). Tweets that do not include a hashtag are mainly seen only by the people who 'follow' the account holder, and only if the follower happens to be attentive at that particular moment that the tweet has been posted (Marwick & Boyd, 2011). Therefore, a user's conversational reach is limited by the size of their social network. By including hashtags, however, users can mark their tweets as relating to a certain topic and address the entire community of users who are tracking the hashtagged discussion. Tweets marked with a specific hashtag will be shown both to the user's established followers and to anyone else following the hashtag conversation, allowing the formation of communities around issues or causes (Bruns & Burgess, 2011). Semiotically, hashtags mark the intended meaning of a post adding more clarification to what a statement is really about (Bonilla & Rosa, 2015).

Activism on Social Media

Smith (2005) defines activism as collaborative efforts by groups of individuals to influence organizations or institutions, urging them to change their policies, practices, or conditions deemed problematic by the activists. Moreover, digital activism involves participating in political movements utilizing various online platforms (McCaughey & Ayers, 2003). Hashtags, with their versatility—whether used to denote specific content, causes, locations, dates, or nurture community connections— have become indispensable tools in social media activism, commonly known as hashtag activism (Deller, 2011; Jackson et al., 2020).

Jackson et al., 2020 illustrate the significant impact of hashtag activism, notably exemplified in 2011 when Iranians utilized the hashtag #IranElection to organize offline protests against a disputed election, granting a global audience direct insight into the unfolding events of a burgeoning uprising. Since then, activists have used various hashtags, including #JusticeForTrayvon, #BlackLivesMatter, #YesAllWomen, and #MeToo, to advocate, mobilize, and communicate. The #MeToo movement began in 2006 with social activist Tarana Burke aiming to support victims of violence (Shugerman, 2017). However, it gained the world's attention in 2017 when many prominent figures highlighted the issues of assault and violence in society using #metoo on their social media accounts. Studies have also shown that marginalized communities and the ones that are often misrepresented in the news media turn to digital activism to find and build a community and amplify their voices (Bonilla & Rosa, 2015; Vie, 2014;

Williams, 2015). According to Asen and Brouwer (2001), many historically oppressed and marginalized groups create publics to advocate for their rights and responsibilities related to participation, shared authority, or both. These publics play a role in hashtag activism by challenging prevailing knowledge structures and amplifying the voices of marginalized communities often excluded in mainstream discourse (Jackson & Foucault Welles, 2015). Social networking platforms typically act as the main arenas where marginalized voices can collectively express their perspectives to a broader audience (Leung & Lee, 2014).

In examining the literature on social and political movements, Haunss (2015) explores a range of perspectives, from cyber optimism to cyber pessimism, regarding the impact of technology on these movements. Cyber optimists like Jenkins (2006) initially suggested that the advent of technology fosters a culture of participation, enabling individuals to join conversations. Building on this view, other researchers have highlighted how technology can draw widespread attention to social and political issues and unite diverse groups toward a common goal or value at minimal cost (Byrd et al., 2017; Freelon, McIlwain, & Clark, 2016; Myles, 2019).

Some scholars, such as Herman (2014), argue that digital activism can lead to "slacktivism," where individuals feel content merely sharing posts from their homes without further engagement (Herman, 2014; Loken, 2014; Wasik, 2009; Williams, 2015). However, in authoritarian societies, digital activism goes beyond slacktivism; these regimes, such as Iran, have developed and shared

advanced technical capabilities to monitor and control internet activity, enabling them to identify and punish those who dissent.

Poell (2014) found that members of underrepresented groups in authoritarian societies, like Iran, can potentially have a greater influence in reshaping dominant narratives. To truly bring about social change, it is crucial for social movements to bridge the gap between online and offline realms (Valenzuela, 2013). Critics who label hashtag activism as slacktivism overlook the transformative power of discourse and the hashtag's potential for driving meaningful discussions (Fairclough, 1992). Moreover, the aggregating nature of hashtag activism highlights its role in movements where people not only highlight issues but also form cohesive communities of engagement (Bonilla & Rosa, 2015).

Given the widespread utilization of hashtags across various movements, numerous prior investigations have explored hashtag activism through a range of methodologies. Some research has employed "hashtag ethnography," which involves ethnographically describing how hashtags are utilized in social movements. These studies have delved into movements primarily centered around issues of race and gender, as well as movements initiated by students and educators Needs more reference (Bonilla & Rosa, 2015).

Further extending this discourse, Bonilla, 2015 evaluates the potential of hashtags as tools for mobilization, activism, and the construction of digital identities. For instance, in the realm of women's lives, hashtags serve as catalysts for dialogue on myriad issues, ranging from gender equality and reproductive

rights to challenges women face in various facets of life. For example, movements such as #MeToo and #TimesUp have utilized hashtags to amplify voices, raise awareness, and foster national and international solidarity in the face of gender-based violence and workplace harassment. These hashtags, as part of the larger public values sphere on social media, contribute to reshaping societal attitudes and advocating for transformative changes in policies (UN-Women, 2019).

Hashtags and Movement Framing

At the core of social movements lies a crucial observation: they actively shape and interpret social issues through a process known as framing (Miller, 2000; Ferree et al., 2002). This entails constructing meaning in a manner that guides members of the movement in comprehending a given social context. The notion of "frame" (and framework) originated from Goffman (1974:21) to describe "schemata of interpretation" that empower individuals to "locate, perceive, identify, and label" events within their personal experiences and the broader world.

Hashtags not only foster communities but also help to convey their messages more precisely and effectively. (Jelani Ince, 2017) indicate that the utilization of different indexing behaviors, primarily hashtags, in the same post embodies a type of distributed framing for movements on digital platforms. This implies that framing through hashtags provides a means for movements to develop perspectives on issues and solutions that extend beyond the influence of leaders or highly visible figures within the movement, allowing a broader

audience to contribute their interpretations and fostering communities centered around specific concerns.

The concept of a "movement frame" was first introduced by Snow et al. (1986) to facilitate discussions on how activists perceive issues and derive motivation for action. Through framing, activists have the capacity to portray specific policies or situations referred to as the "diagnostic" characteristic of framing by scholars (Snow & Benford, 2000; Benford, 1993).

To explore the distributed framing process in the case of #BlackLivesMatter, Ince conducted a hashtag analysis evaluating the trend of the co-occurrence hashtags during two pivotal moments within the movement: the shooting of Michael Brown and the non-indictment of Darren Wilson. In addition to monitoring hashtag trends, Ince categorized all associated hashtags into five distinct frames: police violence, Ferguson unrest, tactics, counter-protest, and solidarity. Furthermore, they developed a connection between these hashtags to evaluate the collective memory of a group in a social movement, concluding that the evolution of the mentioned distributed framings of a movement follows a natural progression, starting with specific grievances and advancing to a more mature phase where the emphasis shifts from grievances to considerations of tactics and policy change. Analyses of #BlackLivesMatter tweets brought attention to the emergence of movement frames on Twitter that were both critical and supportive of the police (Ince J. et al., 2017).

Studying the role of social media in political movements is integral to recognizing the messages of movement and potential challenges and opportunities

in advancing human rights, especially for a censored community like the Iranian people, who have been excluded from mainstream media and coverage of events for the last four decades. By synthesizing the communicative functions of hashtags, exemplified in this study, this research aims to discern patterns in movement framing extending beyond individual perspectives, pursuing a holistic understanding of online discourse and its implications for broader societal conversations over different timeframes of the movement. In essence, this literature review establishes a sturdy foundation for the research method, guiding my exploration of the multifaceted dynamics of social media (specifically Twitter) within the context of the WLF movement.

Studying The Frames of WLF

This study aims to understand how individuals in the movements employ hashtags, allowing a nuanced examination of how digital communication channels empower suppressed voices and advocate for common values—particularly in the case of the WLF movement. As a recent movement, there is a lack of investigation into the role of social media and monitoring the public engagement within different frames of the movement over time. Social media emerged as a powerful tool for people, especially the younger generation, to express themselves online. Individuals who were marginalized from media coverage within the country have become influencers and catalysts for the WLF movement, challenging conservative theocratic and patriarchal values enforced on them through education, media, and policing. The communicative power of hashtags as

a dynamic indexing tool for discourse and human rights advocacy allowed for the amplification of suppressed voices during this recent movement.

The following research questions were analyzed by the hashtag analysis method:

RQ1: To what extent did the WLF movement garner support and engagement across various cities in Iran on Twitter?

RQ2: Do the co-occurrence patterns of different hashtags reflect the changing discourse and priorities within the movement over time in accordance with the events that occurred during the movement?

RQ3: What were the core messages and demands of the movement according to the identified frames?

Method

The 77.6 million posts of the #MahsaAmini hashtag indicates widespread discussions surrounding the WLF movement during the nine-month search period. Indexing is the way that "the crowd" on social media sorts through content and labels it to create a semantic network. Similar to how a book's index clusters ideas with tags, social media hashtags group messages and ideas together and distribute them, a process referred to as "distributed framing" by Ince.

To explore the distributed framing process in the case of the WLF movement, I conducted a hashtag analysis evaluating the trend of the target hashtag (#MahsaAmini) and the co-occurrence of other hashtags with it. The sampling period ranged from September 14, 2022, when the first #MahsaAmini post was made, to May 31, 2023. This period covers the time from Mahsa Amini's death on September 16, 2022, until May 31, 2023, when the target hashtag subsided below the sampling threshold of 1,000 tweets per day.

Sprout Social, a tool with API functionality, enables tracking the number and frequency of hashtag mentions by public accounts on Twitter within specific timeframes. Using this tool, I obtained a comprehensive daily and monthly count of tweets referencing #MahsaAmini and analyzed co-occurring hashtags.

Additionally, a representative random sample of 1,000 tweets per day over the nine-month duration of the study was collected using the TwiBot tool. This

random sampling technique ensures the inclusion of diverse discourse within the dataset.

The following paragraphs delineate the processes of collecting, cleaning, and analyzing Twitter data related to #MahsaAmini and its co-occurring hashtags.

Data preprocessing began by importing the collected data, stored in Comma-Separated Values (CSV) files, into a Pandas DataFrame. Pandas is a powerful Python library designed to streamline the manipulation and analysis of longitudinally structured data. During this initial phase, I identified specific rows lacking hashtags, which were inadvertently collected by the data retrieval tool. To rectify this anomaly, rows characterized by missing values (NaN) within the 'hashtags' column were eliminated using the dropna() function. This step ensured that only tweets containing hashtags were included for subsequent analysis.

Given that hashtags were stored as a string separated by commas, I utilized Python's ‘str. split ()’ function to parse these strings into lists of individual hashtags. Considering Twitter's non-case-sensitive hashtag system and Python's case-sensitive nature, I ensured comprehensive inclusion by converting all hashtag strings to lowercase. To quantify the frequency of each unique hashtag, I employed Python's ‘Counter’ class from the ‘collections’ module. This facilitated streamlined counting of hashable objects, enabling efficient tallying of hashtag occurrences. After parsing hashtags into lists and utilizing ‘Counter’ function, I tallied the occurrence of each hashtag within each day. These daily counts were

then aggregated to derive monthly counts, providing a holistic perspective on hashtag usage trends across four significant periods.

After observing all the collected hashtags, I categorized those that were posted in the same content next to the target hashtag into five frame categories, described below.

Main Hashtag: #MahsaAmini

To identify the frames within the movement, I collected hashtags that appeared more than 1000 times within my designated timeframe alongside #MahsaAmini in my sample. These hashtags were categorized into five groups based on their relevance to specific individuals, locations, concepts, or events associated with the movement.

These five categories served to delineate keyframes: Women's Rights, Tactics & Mobilization, Regime Change, Activists, and Global Solidarity & Support. Each frame reflects a distinct aspect of the movement, from advocating for specific rights to mobilizing for systemic change and seeking global solidarity.

Hashtag Coding

1. Women's Rights: Hashtags advocating for women's freedom, rights, and gender equality in Iran addressing gender apartheid and discrimination. Examples include: #Women's_Rights, #SaveIranianSchoolGirls, #IranChemicalAttacks, #IranianWomen, #No_To_Compulsory_Hijab, #WomanLifeFreedom, #FemmeVieLiberté.

2. Regime Change: Hashtags incorporating messages about a full systemic change within Iran and the change of the Islamic Republic with a democratic government. Examples include: #IranRevolution2022, #MullahsGetOut, #DownWithIslamicRepublic, #EndIranRegime, #IranRegimeChange and #FreeIran.

3. Activist: Hashtags highlighting activists such as political prisoners, activists, protestors, journalists, and artists who advocate for change within Iran. Examples include #NikaShakarami, #ToomajSalehi, #MajidRezaRahnavard, #MohammadMehdiKarami, #FatemeSepehri, #MohsenShekari.

4. Tactics and Mobilization: Hashtags referring to the methods, ideologies, and tactics employed in protesting within Iran and concepts used for mobilization. Examples include: #nationwide_strike, #iran_united, #irannationwidestrikes, #wedont_and forget, #iranprotest2022.

5. Global Solidarity & Support: Hashtags that repeat or affirm the movement's message of seeking help from the global community. Examples include: #MahsaAct, #IRGCTerrorists, #FactFinding, #StopKillingChildrenInIran, #JCPOA, #StopExecutionInIran, #MEKTerrorists, #IranianLivesMatter, and #NIAC_Is_Not_Our_Voice.

Specific hashtags, such as #iran and #iranian were excluded as they lacked specific meaning linked to the analysis. The number of posts falling into each

category across different timeframes was calculated. This calculation involves summing the product of the number of posts associated with a specific hashtag.

Four significant periods have emerged within the movement, delineated by pivotal events unfolding:

1. Sep 16, 2022 - Dec 8, 2022: This period is characterized by the aftermath of Mahsa Amini's tragic death, serving as a catalyst for widespread protests and activism within Iran. The emergence of the #IranProtest and #IranRevolution hashtags reflect the mobilization of Iranian civilians against systemic injustices, with over 1,600 protests reported during this period (AJC, 2023). High arrest rates (reportedly exceeding 20,000 individuals), protester fatalities (with more than 500 killed), and instances of state violence were significant elements of this timeframe, including killing of more than 68 young protestors who were under the age of 18, such as #Nika_Shakarami, #KianPirFalak, #SarinaEsmailzadeh, #HadisNajafi and others (OHCHR, 2024; United Nations, 2024). The onset of #SchoolChemicalAttacks targeting girls' schools in Iran further galvanized public outrage and solidarity, leading to the creation of hashtags like #iranchemicalattacks and #iranianschoolholocaust.

2. Dec 8, 2022 - Feb 10, 2023: This period witnessed heightened repression by the regime, including the execution of protestors to quell dissent and instill fear among Iranian people (Reuters, 2022). The execution of seven protestors, accompanied by state media broadcasts of coerced "confessions,"

underscores the regime's disregard for human rights and due process. Hashtags like #MohsenShekari, #MajidrezaRahnavard, and others memorialize the victims of state violence and highlight the regime's systematic abuse of power. Despite intensified repression, hashtag activism within the movement intensified, marked by a significant emphasis on garnering global support and solidarity against the regime's atrocities.

3. Feb 10, 2023 - April 22, 2023: This interval witnesses the emergence of a coalition among opposition groups outside of Iran, signaling a strategic shift towards people’s attention on international collaboration and advocacy. The formation of alliances and coordination among opposition groups reflects a concerted effort to amplify the movement's message and leverage external pressure on the Iranian regime.

4. April 22, 2023 - May 31, 2023: This period marks the disintegration of the coalition and a shift in people’s understanding of the opposition groups claiming to be their voices.

The independent variables in this study consist of the four timeframes identified as significant events during the observed start and end times. The dependent variables are the number of the public's engagement through posting within each frame of the Woman Life Freedom categories for each timeframe.

Results and Discussion

The hashtag #mahsaamini was initially posted on Twitter on September 14th one day after her arrest by the morality police. After her death on September 16th, the demonstration began in Tehran outside the Kasra hospital where she was taken, then moved to her hometown of Saqqez, and subsequently spread to various cities and towns across the country (Motamedi, 2023). Throughout the study period, the hashtag was posted 77.6 million times, marking its significant usage. Notably, it was most frequently used on September 23, 2022, with a total of 6,919,717 posts (Figure 1).

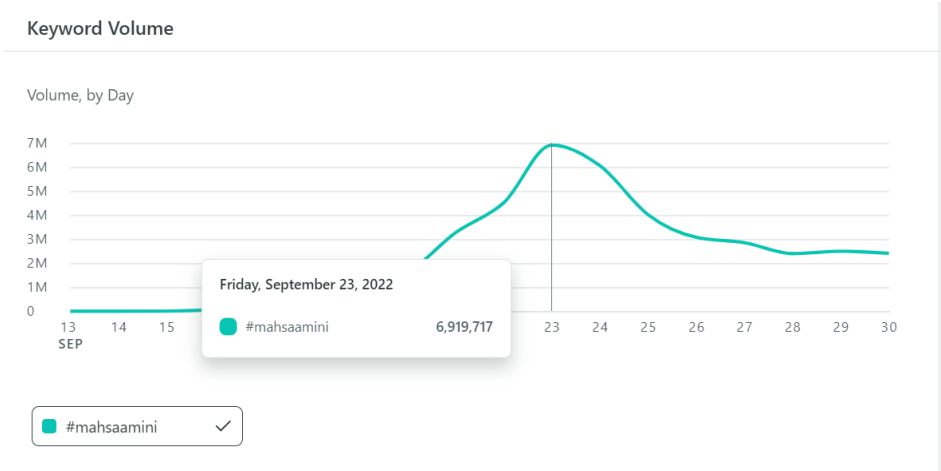
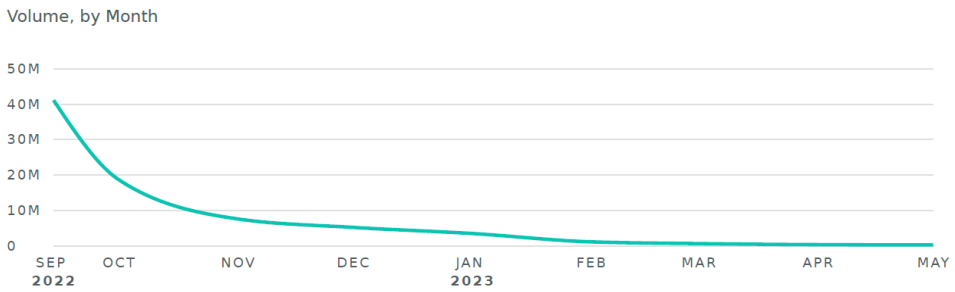


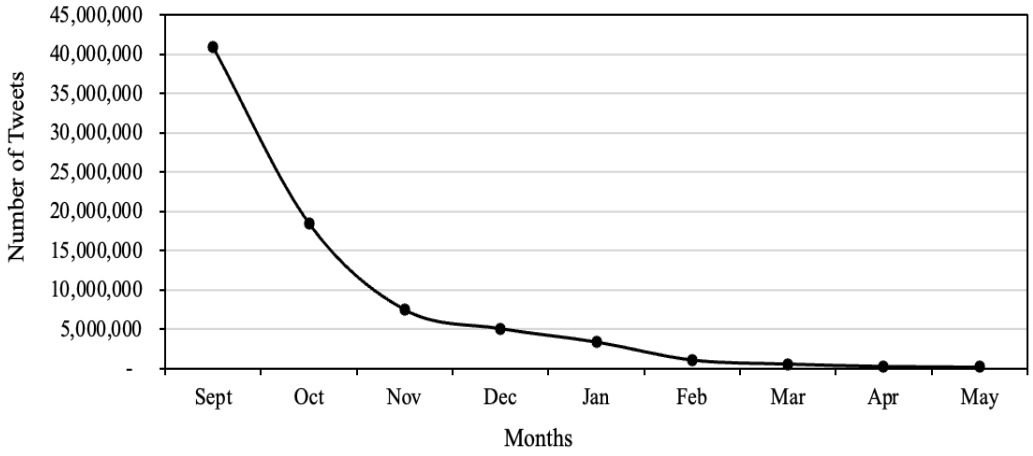
Figure 1. The number of #MahsaAmini hashtag posted during its peak day on September 23, 2022.

Figure 2 illustrates the trend of the hashtags posted during the study timeframe from two different tools utilized in this research, Sprout Social and TwiBot. The precise correspondence between the number of posted hashtags and

their trending patterns across both data-gathering tools validates the accuracy of the data collection method and the monthly tabulation of hashtags.



a)



b)

Figure 2. The number of #MahsaAmini hashtags posted over the study period obtained from a) Sprout Social and b) TwiBot data-gathering tools.

The five most occurring hashtags alongside #mahsaamini are #Nationwide_Strike, #IranRevolution, #IRGCTerrorists, #WomanLifeFreedom, and #Nika_Shakarami, as shown in Figure 3.

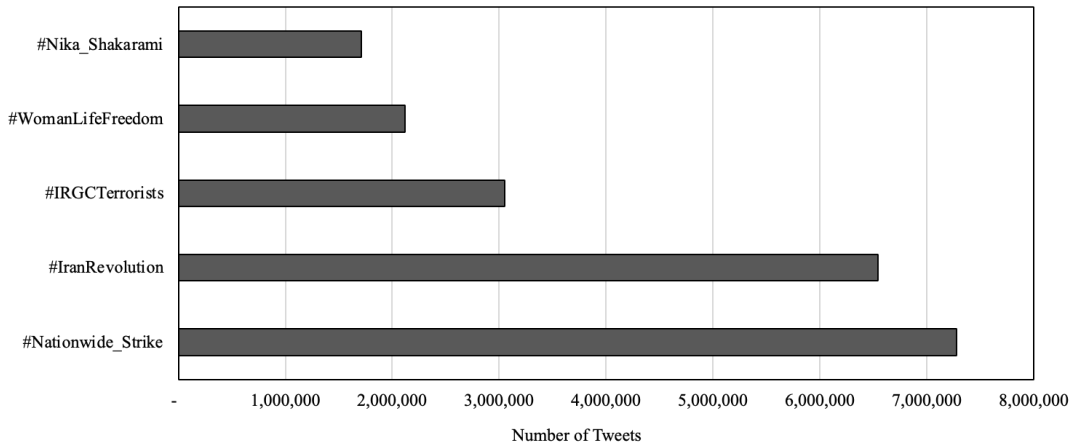


Figure 3. The five hashtags most frequently co-occurring with #MahsaAmin over the study period.

Analyzing the graph depicting the top five most frequently co-occurring hashtags alongside #MahsaAmini is essential for understanding the significance of their usage and the events prompting their emergence.

According to the collected data, #Nationwide_Strike leads with 7,275,641 posts, highlighting the involvement of traditional trade people in different cities and university student strikes, prohibiting attendance at classes (Guardian, 2022). It is followed by #IranRevolution with 6,543,684 posts, signifying the main emphasis of the people on a revolution. The next hashtag is #IRGC_Terrorists, with 3,049,972 posts. The Iranian Revolutionary Guard Corps (IRGC)**,** also known as Sepah or Pasdaran, was established by Khomeini in May 1979 after the Iranian revolution to safeguard the Islamic revolution from counter-revolutionary forces (Abedin, 2001). In April 2019, President Trump described the IRGC as the Iranian government’s primary means of directing and implementing its global

terrorism campaign, leading the US to designate the IRGC as a Foreign terrorist organization (Gauette, 2019). During the WLF movement, Iranians were actively urging democratic countries to designate the IRGC as a terrorist organization and to impose sanctions on them due to the IRGC's key role and involvement in suppressing protestors (Ebadi, 2023). Next is #WomanLifeFreedom with 2,119,404 posts, as the movement’s slogan stating that women’s rights are at the heart of life and liberty, amplifying the injustice towards women by the Islamic republic regime. The fifth most prevalent hashtag, #Nika_Shakarami, appears in 1,710,564 posts. Nika Shakarami, a 16-year-old girl, vanished on September 20th, 2022, from an anti-regime protest in Tehran. Her body was found after 9 days. Iranian mainstream media reported that she committed suicide by falling off a roof (Polglase & Mezzofiore, 2022; Reuters, 2022). Her family laid her to rest in Khorramabad, their ancestral city. However, Iranian authorities intervened, relocating her remains to a small village, Hayat ol Gheyb. Officially, her death was attributed to blunt force trauma. Following a rigorous investigation spanning months and consulting multiple sources, the BBC definitively concluded that Iran's security forces not only molested but also fatally assaulted the young protester (Bertram Hill, Aida Miller & Michael Simkin, 2024).

RQ1: Geographical Focus of Twitter Engagement Throughout the Movement

As of 2023, Iran's population stood at 88.55 million people, with 69 million individuals utilizing the Internet, ranking it fifteenth among countries with a large Internet user base (Data Portal Website).

To address the first question of this research, I examined the geographical focus of Twitter engagement among individuals residing in Iran. Given the use of cybersecurity tools like virtual private networks (VPN) by social media users in Iran to bypass filtering and conceal their location from the watchful eyes of repressive security forces within the country, pinpointing users' precise locations in the collected data posed a challenge. However, hashtags serve as invaluable indexing tools, signaling the content's association with a particular area []. Therefore, to analyze the geographical distribution of Twitter engagement, hashtags representing various cities in Iran were collected that co-occurred with the primary target hashtag, #mahsaamini, over the specified timeline of the study. The frequency of these city-related hashtags was monitored to gauge online activism related to provincial capitals and smaller cities in Iran.

The resulting geographical map graph displays twenty-seven selected cities, with the size of the circles corresponding to the volume of posts associated with each location (Figure 4).

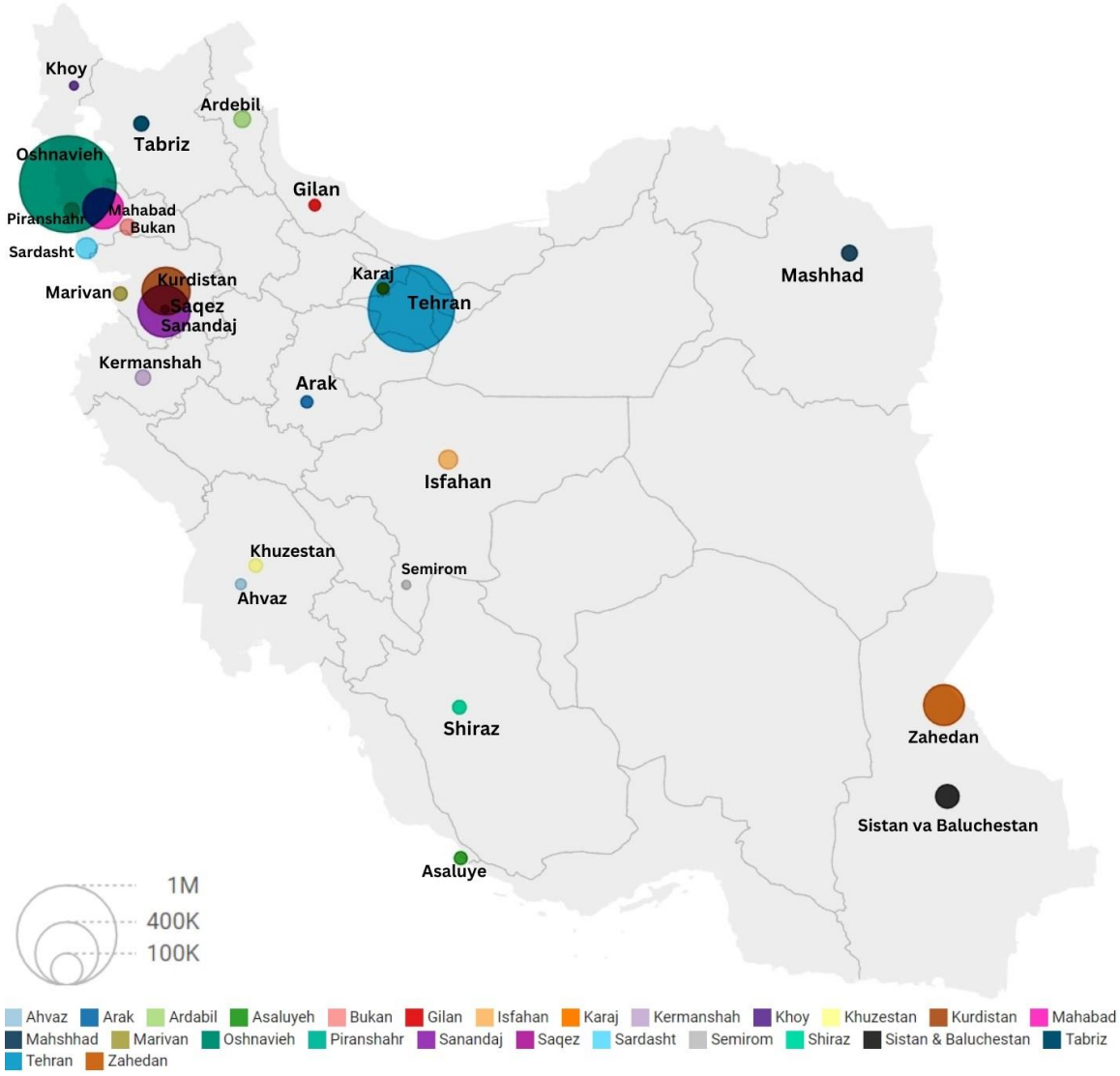


Figure 4. The geographical dispersion of the content of posted hashtags along with #MahsaAmini throughout the country

This visualization highlights nationwide concerns expressed through digital advocacy within the WLF movement, demonstrating active engagement from major urban centers to smaller towns throughout Iran during the designated time frame.

Tehran emerged as a focal point for the movement, with protests starting on the day of Mahsa Amini's death on September 16, 2022. The capital witnessed continuous and escalating demonstrations, including significant student participation from universities like the Tehran University and Sharif University of Technology. Events in Tehran ranged from peaceful student marches to violent confrontations with security forces, particularly notable during the Sharif University crackdown on October 2nd and the fire at Evin prison on October 15th (NYTimes, 2022; Niels de Hoog and Elena Morresi,2022).

The Kurdish regions, particularly Saqqez and Sanandaj, were also crucial to the movement. Amini’s hometown, Saqqez, saw immediate defiance, with women removing their headscarves and chanting against the regime during her funeral on September 17th (AlJazeera, 2022; David Gritten, 2022). Protests quickly spread across Kurdistan, leading to widespread unrest and severe crackdowns, especially noted on October 10th in Sanandaj (ISW,2022).

Other cities also played significant roles. Mashhad and Rasht joined the protests on September 19th, and Isfahan experienced heavy clashes on September 23rd (Reuters, 2022). Oshnavieh briefly drove security forces out on September 24th, illustrating a rare moment of regime loss of control. Zahedan witnessed a tragic event known as "bloody Friday" on September 30th, where security forces killed dozens, leading to further protests on October 14th (Human Rights Watch, 2022)

Ahvaz, Karaj, and Tabriz saw substantial engagement as well. Ahvaz joined on September 30th, with young people taking to the streets. Karaj's high school students joined the movement on October 3rd, and Tabriz experienced violent clashes on October 20th (Guardian,2022).

RQ2: The Evolution of the Movement

To address the second research question, the five defined frames of the movement were analyzed over the timeframe of the study.

Tactics and Mobilization Frame

The first evaluated frame, which garnered the highest attention, is the Tactics and Mobilization frame, with more than 10,800,000 posts over the study period (Figure 5). The frame includes hashtags such as #IranNationWideStrike, #IranProtests, #IranUnited, #HungerStrike, which denote the strategies and messages utilized by the people and the concepts they deployed for increasing unity and mobilization despite the strong censorship of news in the country. The frame had its highest participation at the beginning of the movement, coinciding with nationwide strikes and protests and declines following the arrests and crackdowns by regime forces completely subsiding after January 2023, as the protests inside the country were shut down by the security forces.

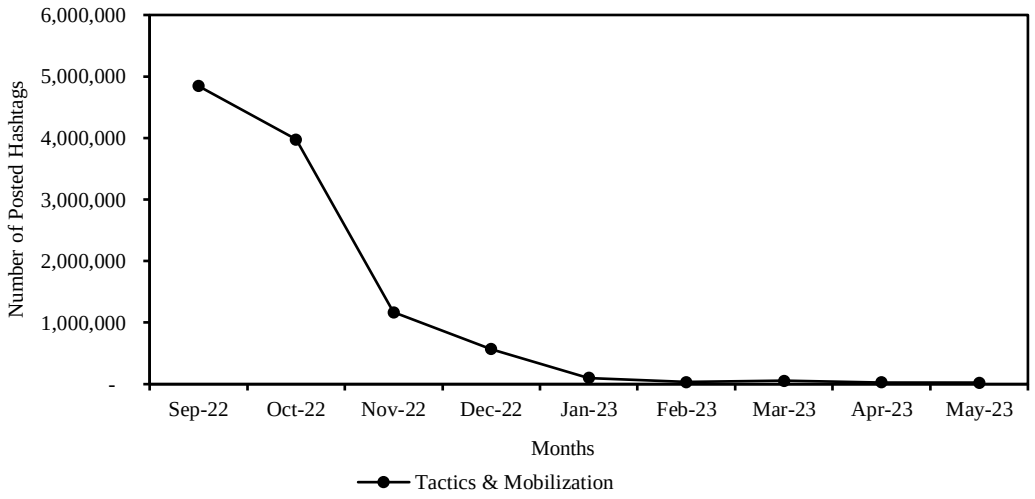


Figure 5. Trends of The Posted Hashtags in The Tactics and Mobilization Frame Over Time

Regime Change Frame

The frame with the second highest engagement and shared posts is the Regime Change frame, accumulating more than 7,800,000 posts. The substantial participation in sharing hashtags within this frame underscores the public's strong emphasis on revolution, aiming for the complete replacement of the Islamic Republic with a democratic government in Iran. The most occurred hashtags posted in this frame include #IranRevolution, #NoToIslamicRepublic, #IranRegimeChange, and #FreeIran. The peak of the graph occurs in October 2022 following the nationwide protests and detention of the protestors and activists.

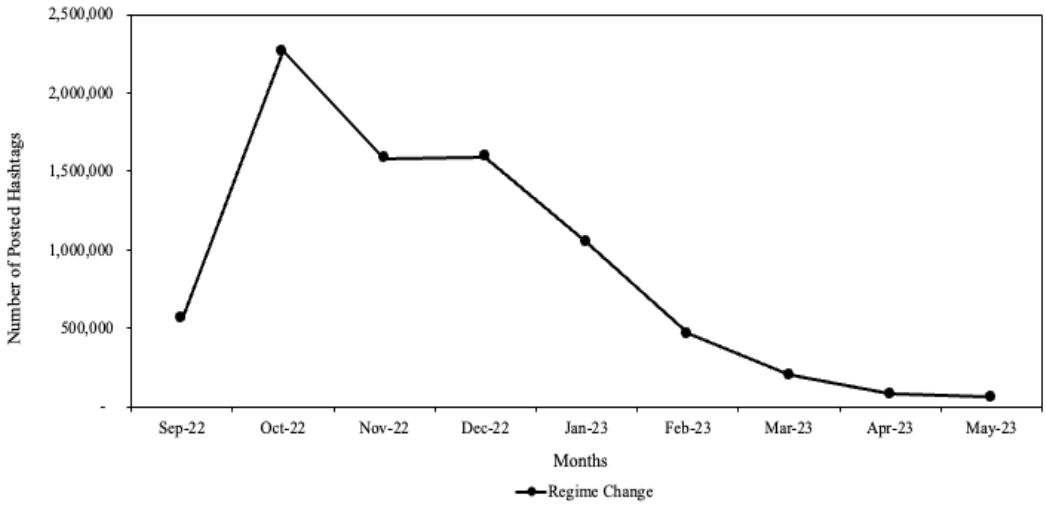


Figure 6. Trends of The Posted Hashtags in The Regime Change Frame Over Time

The Activist Frame

The next evaluated frame, which involved more than 7,000,000 posts, is the Activist frame (Figure 7). This frame primarily aimed to raise awareness of the lives of the political prisoners and executed protestors or mourn the loss of the protestors by the regime and those who had been executed by the regime. Among the arrested protestors (more than 20,000 individuals), according to announcements from the Ministry of Justice, seventy were sentenced to death, including one arrested for singing rap songs (Ebadi, 2023).

People's engagement in this frame underscores the multifaceted nature of the movement, encompassing a spectrum of concerns and demands as the regime started cracking down on the movement and murdering people on the street for protesting and demanding freedom.

Based on the collected data, among the gathered hashtags, there are 10 names of women and 26 men. The peak observed in October 2022 corresponds mainly to the #NikaShakarami hashtag following the confirmation of her death in October after being missing for several days. The second peak occurred in December 2022 when the regime issued execution sentences for imprisoned protesters. The primary hashtags include the names of #MajidRezaRahnavard, #MohsenShekari, #MohammadMehdiKarami, #SeyedMohammadHosseini, #MajidKazemi, #MohammadGhobadlou, and #SalehMirHashemi. Despite efforts to garner international attention, these individuals were executed following the state media's broadcasting of their coerced "confessions" and the Supreme Court's affirmation of their convictions and death sentences amidst allegations of torture and lack of fair trial, charged with "enmity against God" (moharebeh) and "Corruption on Earth" (mofsed-fel-arz) (Mehrnami, 2022).

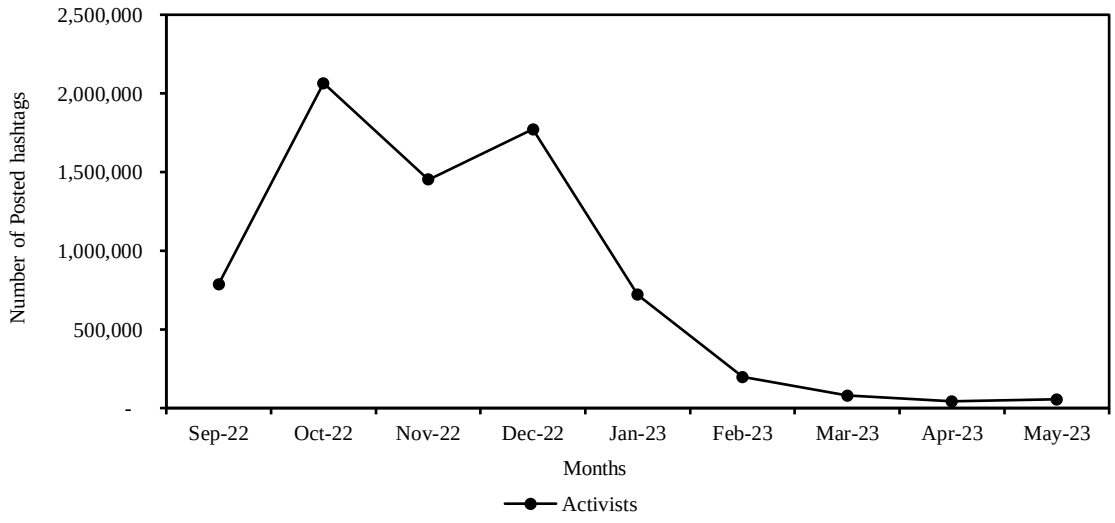


Figure 7. Trends of The Posted Hashtags in The Activist Frame Over Time

Global Solidarity & Support Frame

The fourth movement frame evaluated in this study is the Global Solidarity & Support frame, with over 5,800,000 posts over the studied timeframe. The frame contains people's messages and demands from the international community using social media as the only tool they have found to make their voices heard without the censorship or manipulation of the message that the regime has been strongly utilizing over the years. As shown in Figure 8, the first peak of the graph is seen at the onset of the movement when people sought to attract international attention. The second peak, representing the highest number of posts in this frame, occurred during the formation of the opposition groups' coalition in the United States in January 2023. This event heightened the importance of international support, prompting people to use hashtags to voice their global demands. The shared posts in this frame include hashtags such as #IRGCTerrorists, #MahsaAct, #MEKTerrorists, #MaximumSupport, #NIAC_Is_Not_Our_Voice, #NoToNIAC, and #StopJCPOA.

Recognizing the activities of political groups outside Iran that purported to represent Iranian voices, people actively utilized hashtags and social media platforms to inform the global community about those falsely claiming to be their representatives, such as the National Iranian American Council (NIAC) and the People's Mojahedin Organization of Iran or Mojahedin E Khalgh (MEK).

For example, NIAC identifies itself as a "non-partisan, non-profit organization founded in 2002 to give voice to the Iranian American community."

However, the group has faced longstanding accusations from Iranians, both within the country and abroad, of advocating and lobbying on behalf of the Islamic Republic and promoting policies that benefit the regime (Fazeli, 2022). Several hashtags in this frame related to NIAC activities demonstrate this disapproval of Iranians of the group.

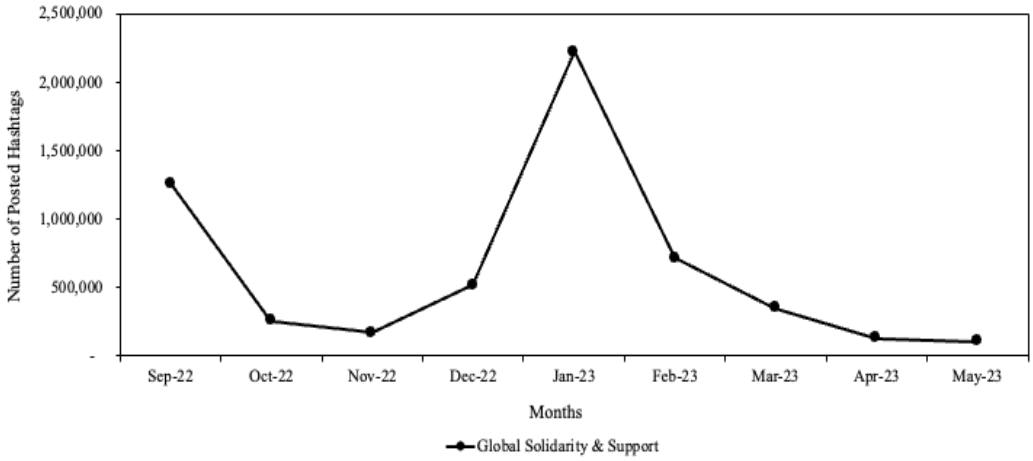


Figure 8. Trends of The Posted Hashtags in The Global Solidarity & Support Frame Over Time

To analyze the number of hashtags posted in support of opposition figures recognized as representatives by the people during the movement, the number of tweets containing their names alongside the #MahsaAmini hashtag was counted. The collected data of hashtags that co-occurred with #MahsaAmini more than 1,000 times over the nine-month study period include the names of four opposition figures that were part of the formed coalition in January 2023.

1. Reza Pahlavi: The exiled Crown Prince of Iran and son of Mohammad Reza Shah Pahlavi, the last monarch before the 1979 Islamic Revolution. Having resided in the United States since the revolution, Pahlavi has

continuously opposed the regime in Iran, dedicating his efforts to amplifying the voices of Iranians and raising global awareness of their ongoing struggles (Harounoff, 2024).

2. Hamed Esmaeilion: An Iranian Canadian author and dentist who turned into a social activist after losing his wife and daughter in the downing of flight PS752 by the Islamic Revolutionary Guard Corps in 2020, which resulted in 176 fatalities. As a spokesperson for the families of the victims, he has used his platform to amplify human rights abuses in Iran, including suppression of dissent and freedom of speech (Burke, 2023).

3. Ali Karimi: A renowned Iranian soccer player, nicknamed the "Asian Maradona," who has been openly supporting demonstrators against the regime. He left Iran in the fall of 2022 following threats from the regime and continues his advocacy from the United States (Ghobadi, 2023).

4. Masih Alinejad: An Iranian American journalist and women's rights activist encouraging protests against the mandatory hijab in Iran. She initiated the "My Stealthy Freedom" campaign, which showcases Iranian women defying the hijab mandate by sharing their photos without it (Stahl et. al, 2023).

According to the analysis of co-occurred hashtags with #MahsaAmini, Reza Pahlavi commands a significant presence, with 81% of tweets concerning opposition figures mentioning him (Table 1).

Table 1. Number of Hashtags in Support of Opposition Figures and Percentage

Names	**Number of posts co-occurred with the main hashtag**	**Percentage**
Reza Pahlavi	312,944	81%
Ali Karimi	29,183	8%
Masih Alinejad	5,237	1%
Hamed Esmaeilion	41,301	11%
Total	**388,666**	-

This substantial online presence strongly correlates with findings from a recent survey conducted by the Empirical Research and Forecasting Institute (ERF.I), a U.S.-based think tank. In February 2023, the survey queried 9,000 Iranians regarding their choice of political representation. The data reveal that a significant majority, 79.7% of respondents, identify Reza Pahlavi as their preferred political leader (ERF.I, 2023). These results underscore the alignment between social media trends, specifically Twitter posts, and public opinion among Iranians.

Women's Right Frame

The last frame that included more than 2,400,000 posts is the Women's Rights frame. The main hashtags in this frame include #WomanLifeFreedom in different languages, #No_To_Compulsory_Hijab, #IranianWomen, #Women's_Rights, #SaveIranianSchoolGirls, and #IranChemicalAttacks.

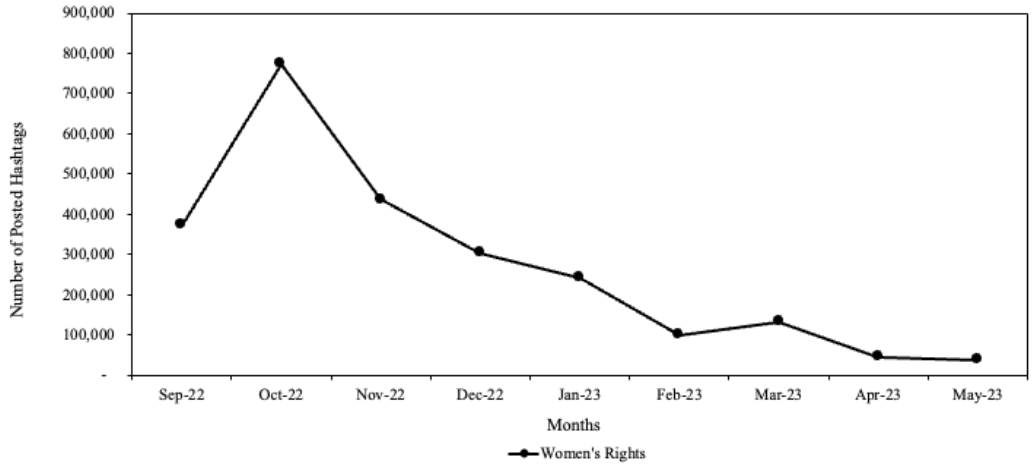


Figure 9. Trends of The Posted Hashtags in The Women's Rights Frame Over Time

RQ3: Was the WLF Movement Primarily Advocating for Women's Rights?

Twitter users harnessed hashtags to amplify diverse voices, reflecting a wide array of concerns and aspirations. Considering the movement's name and its origins following the tragic passing of Mahsa Amini, women's rights issues were expected to hold a central position. However, my investigation expanded to elucidate the objectives and demands of this movement.

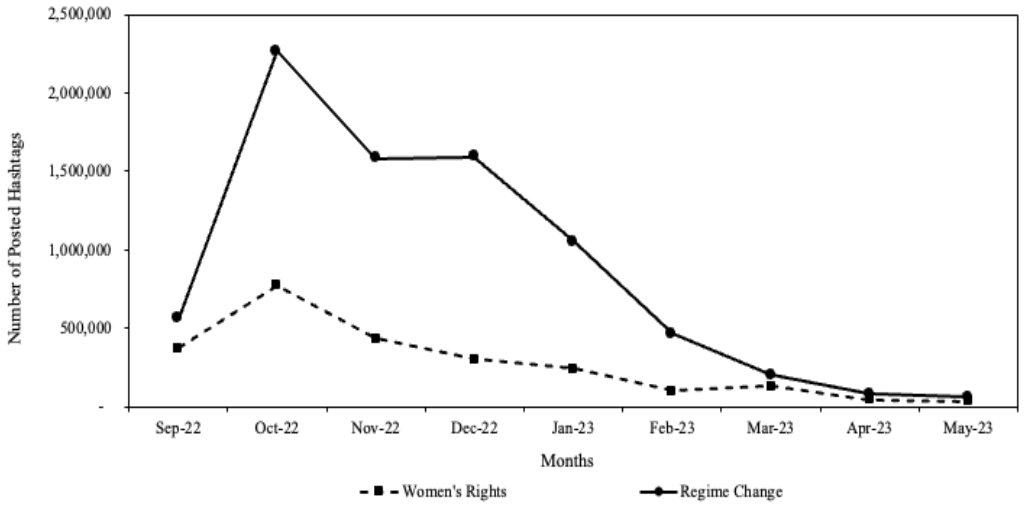


Figure 10. Comparison of Two Frames of women's Rights and Regime Change as The Main Purpose of The Movement

Upon examination of the data on shared hashtags in different frames, a notable disparity emerged between the Women's Rights and Regime Change frames in Iran. This demonstrates that the online discourse was heavily oriented towards a broader political transformation rather than solely addressing gender-specific issues within the existing regime.

This observation aligns with previous scholarship about protests. The WLF movement encompassed a wide range of concerns beyond women's rights, including authoritarian rule, economic stagnation, rampant unemployment, environmental crises, and the imposition of religious fundamentalism. Additionally, the movement served as a public outcry against the regime's widespread cronyism and corruption, as well as its aggressive foreign policy and ambitions for regional dominance, which have isolated Iran and fueled severe

inflation over the last 45 years (Ref, 2023, Gamaan, 2023). Therefore, as shown by the posted hashtags in Figure 10, and stated in several articles, the movement clearly aimed not only at recognizing women's rights but at the overthrow of the regime as a whole.

Conclusion

The #MahsaAmini hashtag and its associated digital activism on Twitter represent a profound and widespread movement within Iran, reflecting deep-seated societal and political discontent. Initially posted on September 14th, the first protest occurred on September 16th. By September 23, 2022, the #MahsaAmini hashtag had reached its peak usage, demonstrating how online mobilization translated into widespread offline protest, becoming a powerful tool for mobilizing millions across the nation and attracting global community attention. The protests, initially concentrated in Tehran, quickly spread to other major cities and smaller towns, demonstrating nationwide solidarity and shared grievances against the regime.

Iranian people used hashtags to broaden their freedom of expression in a censored society. They employed them to mobilize protests, report news, expose wrongdoing, seek international support, and voice opinions on various aspects of the movement. This digital activism acted as a powerful resistance against systemic oppression and aimed to attract global attention. Importantly, it entailed significant risks, including the potential for government arrest, underscoring the bravery and impactful nature of these digital actions. This is far from slacktivism; it represents a genuine form of protest. The movement can be understood in detail through five observed frames using hashtags.

Tactics and Mobilization: This frame, with over 10 million posts, showcased the strategies and collective actions taken by the protesters before the repressive actions by the regime, emphasizing unity and widespread participation.

Regime Change: Garnering substantial attention with 7.8 million posts, this frame underscored the movement's ultimate goal of overthrowing the Islamic Republic and establishing a democratic government.

Activist Frame: This frame focused on the plight of political prisoners and executed protesters, shedding light on the human cost of the regime's crackdown.

Global Solidarity & Support: This frame reflected the protesters' appeal for international backing with significant peaks during pivotal moments.

Women’s Rights: While central to the movement, the women's rights frame was part of a broader discourse on systemic change, with over 2.4 million posts addressing gender-specific issues.

While women's rights were a crucial aspect of the movement, the analysis indicates a broader objective aimed at systemic political transformation. This aligns with the multifaceted grievances of the Iranian populace, encompassing not only gender-based oppression but also authoritarianism and social injustices.

In conclusion, the WLF movement, amplified through digital advocacy, marks a pivotal chapter in Iran's socio-political landscape. The extensive and persistent engagement on social media platforms to broaden the scope of freedom

underscores the population's yearning for fundamental change. This movement not only showcases the potency of social media in mobilizing and uniting diverse groups but also stands as a testament to the resilience and resolve of the Iranian people in their pursuit of justice and freedom. As the movement evolves, continued analysis of digital activism will be crucial in understanding its impact and guiding international support for the Iranian struggle for democracy and human rights.

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Appendix

Tables of Aggregated Hashtags Across Five Analytical Frames

Table A. 1.The Posted Hashtags in The Women's Rights Frame Over Time

Hashtags	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Total
#زن_زندگی_آزادی	147,240	345,950	135,250	54,230	40,573	20,093	16,811	9,839	10,641	780,628
#womanlifefreedom	2,727	147,383	162,250	134,130	127,273	45,943	35,915	14,107	13,890	683,618
#womenlifefreedom	13,633	75,233	41,000	46,750	32,300	11,440	9,209	3,615	3,196	236,377
#hijab	100,887	9,250	2,250	2,550	227	733	666	662	303	117,527
#woman_life_freedom	13,633	32,683	16,000	21,250	10,993	6,013	4,898	1,074	1,013	107,559
#iranianwomen	57,260	25,900	6,750	6,290	1,813	623	1,117	537	316	100,606
#women_life_freedom	2,727	40,083	16,750	7,650	8,500	1,943	1,058	854	526	80,091
#zanzendegiazadi	-	27,750	10,250	12,920	4,760	3,153	3,546	1,064	973	64,418
#ژن_ژیان_ئازادی	8,180	17,267	11,750	3,740	4,307	2,420	1,528	1,669	1,894	52,754
#jinjiyanazadi	2,727	12,950	12,000	5,780	3,853	1,320	1,391	633	987	41,641
#زن_زندگی_آزادی	2,727	20,350	12,250	1,360	567	403	627	182	118	38,584
#saveiranianschoolgirls	-	-	-	-	-	807	28,802	1,333	342	31,284
#women	5,453	11,100	5,250	2,380	567	550	411	278	145	26,134
#نه_به_حجاب_اجباری	13,633	3,700	250	510	-	73	176	1,132	368	19,843
#femmevieliberte	2,727	1,850	2,000	2,890	2,267	1,210	1,136	393	303	14,775
#femmevieliberté	-	2,467	1,000	850	2,380	1,430	1,411	412	184	10,134
#iranianschoolholocaust	-	-	-	-	-	-	9,052	173	-	9,225
#iranchemicalattacks	-	-	-	-	-	-	2,723	4,316	816	7,854
#زن زندگی آزادگی	-	-	1,000	1,020	2,153	587	1,176	230	355	6,521
#chemicalattackonschools	-	-	-	-	-	-	3,233	240	13	3,486
#chemicalattack	-	-	-	-	-	-	3,057	134	53	3,243
#biologicalterror	-	-	-	-	-	37	2,782	48	39	2,906
#chemicalattacksonschools	-	-	-	-	-	-	705	1,486	566	2,757
#زن_زندکی_آزادی	-	-	-	-	-	697	1,038	345	224	2,304
										2,444,270

Table A. 2. The Posted Hashtags in The Regime Change Frame Over Time

Hashtags	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Total
#iranrevolution	329,927	794,267	554,250	723,690	606,560	156,860	98,711	29,911	31,923	3,326,099
#iranrevoiution	-	294,767	203,750	335,580	294,780	84,590	51,883	19,736	14,534	1,299,620
#iranrevolution2022	51,807	530,950	371,000	247,180	20,400	807	705	221	263	1,223,332
#iranrevoiution2022	-	191,167	238,750	139,060	10,200	660	451	134	26	580,448
#freeiran	46,353	125,800	38,500	37,910	15,867	7,920	4,193	1,160	1,565	279,269
#walkoutiri	-	-	-	-	-	172,810	2,626	105	53	175,594
#نه_به_جمهوري_اسلامي	46,353	43,167	16,250	8,670	2,153	623	1,058	2,618	566	121,458
#انقلاب۱۴۰۱	2,727	17,267	47,250	32,980	6,573	2,383	529	105	66	109,880
#freeiran2022	8,180	51,800	12,000	5,440	453	-	39	29	13	77,954
#iranrevolution2023	-	-	1,000	-	41,593	11,330	6,544	1,467	1,605	63,539
#endiranregime	32,720	19,733	8,750	850	567	367	39	19	53	63,098
#iranreveloution	-	8,017	27,500	16,660	4,647	403	78	10	13	57,328
#iranregimechange	5,453	22,200	9,000	3,740	3,400	1,027	1,136	1,295	1,526	48,777
#islamicregimemustgo	2,727	40,700	750	170	1,700	1,357	118	10	39	47,570
#انقلاب_۱۴۰۱	-	20,350	15,750	3,570	3,627	367	157	10	-	43,830
#نه_به_جمهوری_اسلامی	8,180	19,117	2,000	3,910	2,493	587	2,410	1,669	526	40,891
#iranianrevolution	2,727	4,317	2,250	2,550	907	10,083	9,914	3,270	487	36,504
#نه_به_جمهوري_اسلامي	2,727	21,583	2,250	170	227	147	3,194	3,309	658	34,263
#iranrevulotion	8,209	12,562	6,460	182	124	86	60	-	-	27,683
#revolution	2,727	11,717	5,000	4,590	1,247	477	431	144	66	26,397
#no_to_islamic_republic	-	2,467	-	-	1,247	403	4,036	12,218	3,078	23,448
#ایران_را_پس_میگیریم	2,727	2,467	6,250	7,820	567	330	411	38	26	20,636
#مرگ_بر_جمهوری_اسلامی	2,727	8,017	2,500	2,890	907	660	372	192	39	18,304
#مرگ_بر_خامنه_ای	-	7,400	2,750	3,060	3,740	550	372	86	13	17,972
#notoislamicrepublic	2,727	3,083	1,750	3,570	1,360	367	490	556	408	14,310
#انقلاب	-	2,467	4,500	3,400	907	1,137	1,274	221	329	14,233
#mullahsgetout	-	-	-	1,360	10,540	587	176	67	53	12,783
#iranrevoiution2023	-	-	-	-	7,140	1,577	2,684	192	263	11,856
#انقلاب_ایران_۱۴۰۱	-	6,909	-	182	-	-	40	-	13	7,145
#مرگ_بر_خامنه‌ای_جنایتکار	-	617	-	-	-	2,053	1,999	1,208	26	5,903
#rev4iran	-	-	-	-	-	770	4,291	105	39	5,206
#نه_به_جمهوری_اسلامی	2,736	1,256	294	365	-	-	-	384	40	5,075
#downwithislamicrepublic	-	-	1,250	850	1,020	367	509	614	421	5,031
#walkoutlrl	-	-	-	-	-	4,547	39	-	-	4,586
										7,850,023

Table A. 3. The Posted Hashtags in The Tactics & Mobilization Frame Over Time

Hashtags	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Total
#اعتصابات_سراسری	3,116,580	2,363,683	645,500	331,840	41,027	10,487	8,915	4,373	3,065	6,525,469
#iranprotests	449,900	325,600	108,250	60,350	17,907	8,543	5,251	4,095	4,906	984,802
#iranprotests2022	425,360	272,567	84,500	28,390	4,647	770	353	192	79	816,857
#اعتراضات_سراسری	133,607	236,800	82,750	34,850	5,553	1,907	1,058	1,707	1,973	500,205
#اعتصاب_سراسری	193,593	110,383	29,500	20,570	567	147	1,019	3,318	1,289	360,386
#کیرم_تو_بیت_رهبری	-	153,550	21,500	6,120	2,267	1,063	725	134	132	185,491
#اعتصابات_سراسری	84,527	54,883	1,500	850	1,247	587	4,996	1,640	500	150,729
#اعتصابات_سراسری	46,353	55,500	6,250	2,210	113	110	39	134	53	110,763
#anonymous	70,893	30,833	7,000	680	227	330	157	29	26	110,175
#freedom	21,813	35,767	11,250	5,270	2,493	770	1,332	249	250	79,195
#اعتصابات_پتروشیمی	-	28,983	30,750	8,500	-	-	-	-	-	68,233
#iranprotest	24,540	34,533	4,750	1,700	567	257	137	48	118	66,650
#مرد_میهن_آبادی	8,180	26,517	16,250	3,910	907	110	255	115	158	56,401
#victoryisnear	2,736	40,198	4,405	-	-	-	-	-	13	47,353
#دادخواهی	5,453	28,983	5,250	850	2,720	367	157	134	118	44,033
#آزادی	21,813	11,100	2,250	850	1,020	440	764	221	355	38,813
#مرگ_بر_دیکتاتور	5,473	11,934	5,873	2,190	1,489	171	119	128	40	27,417
#یرم_تو_بیت_رهبری*	-	20,967	4,250	1,190	113	37	98	432	171	27,257
#اعتراضات_سراسری	2,736	12,562	5,579	1,460	1,489	600	60	90	27	24,602
#اعتراضات_و_اعتصابات_سراسری	-	6,167	7,250	5,270	3,967	183	118	29	132	23,115
#نه_به_اعدام	-	-	3,250	12,750	1,587	147	235	96	1,039	19,103
#اعتصابات	2,736	13,818	1,175	365	-	-	-	13	40	18,147
#اتحاد_سفید	-	-	-	-	-	-	8,876	2,944	13	11,833
#iranprotests2023	-	-	-	-	4,193	843	333	1,208	1,723	8,301
#protest	-	-	1,500	1,020	1,700	843	1,881	585	579	8,108
#هر_درخت_یک_آخوند	-	-	-	-	-	2,273	2,371	2,263	487	7,394
#علیه_فراموشی	-	-	-	680	-	3,483	1,332	844	723	7,063
#فراخوان_۲۲_۲۳_۲۴_اسفند	-	-	-	-	-	110	5,917	-	-	6,027
#همه_باهم_هستیم	-	-	-	170	-	-	20	-	5,735	5,924
#عمامه_پرانی	-	1,884	2,936	365	-	-	40	-	-	5,226
#ایران_متحد	-	1,233	-	510	227	660	1,391	105	-	4,127
#hungerstrike	-	-	-	-	-	73	1,587	1,247	250	3,157
#زمین_گرده	-	-	-	-	-	-	-	-	2,815	2,815
#سه_شب_آتش	-	-	-	-	-	-	2,684	-	-	2,684
#persianarmy	-	-	-	-	340	-	20	-	1,907	2,267
#irannationwidestrikes	-	-	-	-	-	-	-	1,151	618	1,769
#هدف_کل_سپاهه	-	-	-	-	-	428	458	551	13	1,450
#خیابان_رمز_پیروزی	-	-	-	182	124	343	458	218	107	1,432
#اتحاد_مبارزه_پیروزی	-	-	-	182	124	343	458	218	107	1,432
										10,366,205

Table A. 4. The Posted Hashtags in The Activists Frame Over ‘Time

Hashtags	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Total
#نیکا_شاکرمی	8,180	801,667	125,000	30,090	4,873	3,373	2,508	585	329	976,605
#toomajsalehi	-	67,217	164,000	110,330	62,673	34,210	15,988	5,744	4,196	464,358
#nikashakarami	2,727	383,567	36,750	18,700	9,293	5,317	3,331	2,043	1,394	463,121
#کیان_درخشان	389,913	617	-	-	113	-	-	-	-	390,643
#حسین_رونقی	10,907	138,750	203,500	3,740	453	73	20	29	13	357,485
#توماج_صالحی	-	75,850	169,500	61,370	24,480	10,927	7,054	2,110	1,513	352,803
#حدیث_نجفی	253,580	54,267	15,500	3,060	1,247	807	1,019	1,199	39	330,717
#mohsenshekari	-	-	-	224,060	9,180	2,090	980	182	158	236,650
#mohammadmehdikarami	-	-	250	169,150	42,387	1,357	294	345	118	213,901
#majidrezarahnavard	-	-	23,500	113,730	11,333	1,283	1,372	153	184	151,556
#mohammadghobadlou	-	-	750	51,000	72,760	623	137	19	2,289	127,578
#armitaabbasi	-	9,867	10,500	40,290	60,633	3,447	137	38	53	124,965
#hadisnajafi	57,260	38,850	9,250	3,910	1,700	513	549	192	171	112,395
#nikashakrami	-	104,217	5,750	-	1,247	37	39	10	13	111,312
#humanrights	32,720	36,383	21,000	9,520	4,193	1,797	1,195	681	1,131	108,621
#hosseinronaghi	-	49,950	55,250	1,190	340	183	-	29	-	106,942
#kianpirfalak	-	-	57,250	27,880	3,853	807	960	825	316	91,890
#freetoomaj	-	4,317	11,000	9,350	26,407	16,720	13,500	5,169	2,789	89,251
#nika_shakarami	-	64,133	15,750	6,460	1,133	110	176	115	118	87,996
#سامان_یاسین	-	-	56,750	25,330	567	1,467	921	393	513	85,940
#سارینا_اسماعیل_زاده	-	66,600	8,000	4,930	907	147	78	77	105	80,844
#محسن_شکاری	-	-	-	68,000	4,647	2,310	725	249	171	76,102
#mohammadghobadloo	-	3,083	3,000	19,890	48,167	183	137	38	539	75,038
#howhealthyistoomajreally	-	-	-	54,400	14,733	1,063	294	105	26	70,622
#آرمیتا_عباسی	-	12,950	9,500	26,010	18,700	807	-	-	13	67,980
#sarinaesmailzadeh	-	50,567	4,750	6,970	1,473	953	901	489	474	66,577
#مجیدرضا_رهنورد	-	-	37,000	21,080	2,833	587	568	144	145	62,357
#alimoazzami	-	-	-	58,140	227	-	-	-	-	58,367
#arashsadeghi	-	-	40,000	13,600	4,307	220	20	29	92	58,267
#hossein_ronaghi	2,727	9,250	45,000	-	-	-	-	-	-	56,977
#محمد_قبادلو	-	3,700	18,750	10,540	22,327	37	39	19	1,289	56,701

#ps752	8,180	18,500	7,250	6,290	13,940	1,613	568	134	79	56,555
#نه به کشتن بلوچها	-	-	25,500	28,900	1,020	220	78	-	13	55,732
#mohammadbroghani	-	-	750	24,140	28,107	220	78	29	66	53,390
#mohammadmoradi	-	-	-	45,900	4,760	403	803	134	79	52,080
#samanyasin	-	-	25,500	20,230	2,153	880	568	738	1,342	51,412
#کیان_پیرفلک	-	-	35,000	9,860	1,587	477	549	201	158	47,831
#محمد مرادی	-	-	-	45,560	1,020	293	20	19	39	46,952
#tomajsalehi	-	9,867	18,750	6,800	6,347	1,907	1,646	710	303	46,328
#محمد بروغنی	-	617	-	37,740	7,593	183	39	38	-	46,211
#toomaj_salehi	-	6,783	28,750	6,630	1,587	1,027	216	163	-	45,155
#mahansadrat	-	-	-	43,690	340	257	-	-	13	44,300
#irgcterrorists	-	-	-	-	12,013	13,163	8,993	5,965	4,130	44,265
#mohammadhosseini	-	-	-	12,410	27,880	2,017	549	710	92	43,657
#mohsen_shekari	-	-	-	35,530	3,060	110	-	-	-	38,700
#ps752justice	2,727	12,950	8,750	3,910	9,067	623	255	67	132	38,480
#آرش_صادقی	-	617	21,250	12,410	2,040	73	-	10	39	36,439
#فاطمه_سپهری	10,907	12,333	5,500	1,870	2,267	587	627	374	237	34,701
#voriaghafouri	-	-	32,750	340	-	37	-	-	-	33,127
#وریا غفوری	2,727	-	28,250	170	227	73	-	-	-	31,447
#armita_abbasi	-	7,400	4,500	11,900	4,193	330	20	-	13	28,356
#محمدمهدی کرمی	-	-	-	20,740	4,760	843	274	134	39	26,791
#miladarmoun	-	-	1,500	4,590	5,327	12,173	1,822	288	237	25,937
#tumaj_salehi	-	-	18,750	-	3,627	1,980	999	173	-	25,529
#alimoazami	-	-	-	24,990	-	-	-	-	-	24,990
#sarashirazi	-	-	-	-	-	23,833	294	10	-	24,137
#ماهان_صدرات	-	-	-	22,950	113	37	-	-	-	23,100
#seyedmohammadhosseini	-	-	-	12,580	9,407	293	78	-	39	22,398
#mohammadghobadlu	-	-	-	8,840	12,013	-	118	48	158	21,177
#majidkazemi	-	-	-	340	16,433	37	39	29	3,643	20,521
#mohamadbroghani	-	-	-	9,520	9,633	-	-	-	-	19,153
#navidafkari	2,727	3,700	5,000	4,080	1,587	660	216	48	342	18,359
#mehdikarami	-	-	-	14,960	2,493	-	-	19	13	17,486
#hassanfirouzi	-	-	-	6,290	10,087	587	78	10	-	17,051

#freetoomajsalehi	-	1,233	6,250	3,230	3,627	1,173	313	240	118	16,185
#سیدمحمد_حسینی	-	-	-	13,600	1,587	697	59	77	53	16,071
#محمد_مهدی_کرمی	-	-	-	11,390	3,853	477	235	48	-	16,003
#donyafarhadi	-	-	-	13,940	1,927	-	39	10	-	15,915
#irgcterroists	-	-	-	-	5,780	8,617	901	489	-	15,787
#yaldaaghafazli	-	-	5,000	7,310	680	183	196	384	184	13,937
#fatemehsepehri	-	6,167	2,000	1,870	2,380	477	294	105	303	13,595
#یلدا_آقافضلی	-	-	7,635	4,197	372	171	20	38	-	12,434
#حمیدرضا_روحی	-	-	3,000	2,890	5,213	367	274	374	105	12,224
#توماج_صالحی	-	1,850	3,250	1,870	2,267	1,247	607	384	316	11,790
#میلاد_آرمون	-	-	750	3,230	1,133	5,903	372	67	66	11,522
#mohammadboroughani	-	-	-	2,210	8,727	330	59	-	-	11,325
#niloofarhamedi	-	3,083	3,750	2,040	793	330	255	173	526	10,950
#taranehalidoosti	-	-	1,175	6,935	1,985	86	-	13	13	10,206
#amirnasrazadani	-	-	-	7,140	1,133	1,210	118	125	132	9,857
#محمد_حسینی	-	-	-	1,700	5,780	953	411	144	26	9,015
#سارا_شیرازی	-	-	-	-	-	8,727	39	10	-	8,775
#salehmirhashemi	-	-	-	1,360	3,627	660	59	29	2,920	8,654
#hamidrezarouhi	-	-	2,750	3,740	340	-	196	1,352	26	8,404
#niloufarhamedi	2,727	617	500	1,020	793	293	411	412	921	7,695
#elahehmohammadi	-	1,850	1,250	850	567	183	137	316	1,000	6,153
#saeedyaghoubi	-	-	-	680	2,153	37	39	19	2,157	5,086
#seyyedsadrullahfazleizare	-	-	-	-	-	-	-	-	4,814	4,814
#yusufmehrdad	-	-	-	-	-	-	-	-	4,735	4,735
#savesharmahd	-	1,233	-	-	113	1,137	588	652	750	4,473
#farhadmeysami	-	-	-	-	-	4,437	-	-	-	4,437
#freesaman	-	-	-	170	-	-	372	1,966	1,223	3,731
#sara_shirazi	-	-	-	-	-	2,530	940	-	-	3,470
#مجاهد_کورکور	-	-	-	1,190	113	37	118	432	1,407	3,297
#jamshidsharmahd	-	-	-	-	680	1,283	411	518	368	3,261
#سعید_یعقوبی	-	-	-	340	793	37	-	10	1,763	2,942
#mojahedkourkour	-	-	-	1,020	113	-	39	1,247	276	2,695
#صالح_میرهاشمی	-	-	-	340	1,020	37	-	-	1,263	2,659

#zanyartondro	-	-	-	-	-	-	627	1,275	13	1,916
#kolsumoftadehpour	-	-	-	-	-	-	-	940	171	1,111
										7,003,669

Table A. 5 . The Posted Hashtags in The Global Solidarity Frame Over Time

Hashtags	Sep-22	Oct-22	Nov-22	Dec-22	Jan-23	Feb-23	Mar-23	Apr-23	May-23	Total
#irgcterrorists	2,727	24,050	11,500	18,360	1,826,707	502,223	243,604	85,706	73,790	2,788,667
#iranianlivesmatter	1,131,567	14,800	14,000	3,570	1,020	147	157	134	197	1,165,592
#irgcterorrists	-	-	-	-	127,727	50,637	9,385	5,102	3,038	195,889
#irgcterroists	-	-	-	-	5,780	8,617	901	489	-	15,787
#irgcterrorists	-	-	-	-	12,013	13,163	8,993	5,965	4,130	44,265
#stopexecutionsiniran	-	617	8,500	89,760	57,573	7,920	4,428	1,832	7,682	178,311
#saytheirnames	-	617	25,750	108,970	23,913	550	607	326	447	161,181
#stopexecutioniniran	-	-	500	114,920	34,907	1,283	1,665	230	1,841	155,347
#factfinding	-	-	3,250	61,710	22,893	14,410	11,482	2,206	132	116,082
#irgc	5,453	18,500	15,250	15,300	16,887	2,127	1,803	1,304	579	77,202
#internetshutdown	73,881	2,512	294	182	124	-	-	13	-	77,006
#stophazaragenocide	-	55,500	5,250	5,270	1,587	843	255	58	26	68,789
#mahsaact	-	-	-	-	3,740	6,160	33,367	16,121	6,432	65,820
#boycottiriday	-	-	-	-	-	56,210	1,842	959	1,710	60,721
#mekterrorists	-	-	-	-	-	28,307	17,105	4,546	1,815	51,772
#unfactfinder	-	-	17,250	24,650	340	-	-	-	-	42,240
#stopjcpoa	10,945	29,521	-	182	124	-	-	-	-	40,773
#iranlobby	2,727	24,667	5,000	7,140	567	367	137	38	26	40,668
#stopbalochgenocide	-	-	5,250	26,520	3,287	1,173	470	29	132	36,861
#borrellsupportsterrorists	-	-	-	-	27,313	6,490	1,215	230	13	35,261
#un	2,727	9,867	10,000	5,780	1,020	367	431	19	289	30,500
#irgcterrorist	-	3,083	2,000	510	14,507	4,693	1,234	786	552	27,367
#helpiran	13,682	8,165	3,524	547	744	86	-	-	13	26,762
#beourvoice	10,945	8,793	2,056	3,832	496	171	-	13	120	26,427
#niac	-	16,650	3,000	3,570	1,133	293	294	77	26	25,044
#niac_is_not_our_voice	-	13,818	3,817	3,832	496	86	40	-	-	22,090
#humanrightsviolations	-	3,700	10,750	4,760	567	183	333	86	145	20,524
#humanrights	32,720	36,383	21,000	9,520	4,193	1,797	1,195	681	1,131	108,621
#ircgterrorists	-	-	-	-	15,753	2,310	176	38	53	18,331
#jcpoa	-	6,167	1,500	4,930	1,813	587	255	38	355	15,645
#stopkillingchildreniniran	-	-	9,750	2,550	1,247	293	509	595	39	14,983

#irgcterroirsts	-	-	-	-	-	4,033	5,741	3,366	1,592	14,732
#niaclobbies4mullahs	-	9,421	1,175	3,102	496	343	80	-	13	14,630
#irgcterroristss	-	-	-	-	3,740	7,773	1,763	-	-	13,277
#josepborrell_is_a_terrorist	-	-	-	-	12,013	-	-	-	-	12,013
#noniac	-	-	7,047	1,460	248	257	358	51	40	9,462
#internet	5,453	1,233	500	170	-	37	-	-	1,723	9,116
#betheirvoice	-	617	2,250	3,060	1,473	293	451	182	395	8,721
#un_hrc	-	617	250	850	2,947	2,017	999	10	13	7,702
#usenvoyiran	-	617	-	-	2,380	1,980	999	173	-	6,149
#سپاه تروریستی پاسداران	-	1,233	750	-	2,607	440	274	269	276	5,849
#ircouncilterrorists	-	-	-	-	2,493	1,980	999	173	-	5,645
#israel	-	1,233	750	850	1,133	513	294	518	92	5,384
#irgctrrorists	-	-	-	-	2,153	1,430	999	316	434	5,333
#irgccotrrorists	-	-	-	-	-	2,970	1,803	221	79	5,072
#repmccaul	-	-	-	-	-	-	4,800	-	-	4,800
#notoexecutionsiniran	-	-	-	2,737	620	-	-	13	27	3,397
#no_to_niac	-	1,884	-	182	-	-	119	832	187	3,205
#maximumsupport	-	-	-	-	-	-	255	740	2,015	3,010
#salamiterrorist	-	-	-	-	-	-	-	1,055	105	1,160
										5,892,024