

TWITTER AND INDIA'S 2019 LOK SABHA ELECTION: COMPARING INDIAN NATIONAL PARTIES' CAMPAIGN STRATEGIES ON TWITTER¹

JIN, XIAOLI²

ABSTRACT

India's 2019 Lok Sabha Election was one of the largest democratic elections in the world. During this election, candidates used social media to reach out to voters and advertise their policy initiatives. In this paper, I examine how India's major parties differ in their campaign strategies on Twitter with respect to their general tweeting patterns, policy prioritizations, and messages to underrepresented voters. To conduct this research, I adopt three methods—LASSO Logistic, Mutual Information, and Keywords Subsetting—to uncover policy initiatives in tweets. My findings suggest that India's major parties and their leaders differ in their tweeting frequency, choice of language, and the number of times they mention one another. They not only prioritize different sets of policies in their tweets, but also shift their priorities over time in response to major political events. Finally, parties and politicians also differ in the messages they deliver to underrepresented voters. The data collected from candidate and party tweets highlights a clear set of policy initiatives addressing traditionally marginalized voters.

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² Xiaoli Jin is an associate at Keystone Strategy, a consulting firm that serves clients in the crossroads of technology, law, and economics. She graduated from Middlebury College in 2019 with a dual degree in Political Science and Computer Science. She was also pre-admitted to Harvard Law School. Her articles have appeared on YaleGlobal, Columbia Journal of International Affairs, Columbia Public Policy Review, JURIST Legal News and Commentary, among other news channels.

INTRODUCTION

As smartphone penetration rate and mobile data consumption increase steadily in India, social media has allowed India's political campaigns to infiltrate digital spaces. Many voters now receive their news from social media platforms like Twitter, and politicians rely on these platforms to amplify their campaign messages.³ From April to May 2019, India held its 17th Lok Sabha National Election to elect members to the lower house of India's Parliament. It was one of the world's largest democratic exercises, with over 900 million eligible participants.⁴ In the build-up to this election, India's political parties constantly vied for advantages on social media. From March to April 2019, 45.6 million tweets were posted about this election.⁵ Accordingly, understanding campaign messages on social media is crucial to interpreting major parties' election strategies.

There is a wealth of research on the use of social media in American elections. Peterson, for instance, analyzes why U.S. politicians like to use Twitter for their campaigns.⁶ Similarly, LaMarre and Suzuki-Lambrecht demonstrate that Twitter is an effective tool for candidates to inform and engage voters, as increases in candidates' Twitter usage significantly increased their odds of winning.⁷ Most of the research focusing on the U.S. share the same conclusion: political parties display many distinct differences in their social media strategies, based on differing policies, supporters and governing statuses. For example, Lassen and Brown show that members of the minority party use Twitter more

³ "Twitter Provides a Front Row to the World's Largest Democratic Election," *Twitter*, May 27, 2019, https://blog.twitter.com/en_in/topics/events/2019/lok-sabha-2019-wrap-up.html

⁴ David Schultz and Manisha Madhava, "How India Holds an Election With 900 Million Voters and 8000 Candidates," *The Washington Post*, May 8, 2019, https://www.washingtonpost.com/politics/2019/05/08/india-more-than-candidates-states-are-campaigning-parliament-seats/?noredirect=on&utm_term=.9c5e1ede6807

⁵ "India Election Sees 45.6 Million Tweets; PM Modi Most Mentioned Figure: Twitter," *Business Today*, April 11, 2019, <http://www.businesstoday.in/top-story/india-election-sees-456-million-tweets-pm-modi-most-mentioned-figure-twitter/story/336443.html>

⁶ Rolfe D. Peterson, "To Tweet or Not to Tweet: Exploring the Determinants of Early Adoption of Twitter by House Members in the 111th Congress," *The Social Science Journal* 49.4 (2012): 430–31, <https://doi.org/10.1016/j.soscij.2012.07.002>

⁷ Heather L. Lamarre and Yoshikazu Suzuki-Lambrecht, "Tweeting Democracy? Examining Twitter as an Online Public Relations Strategy for Congressional Campaigns," *Public Relations Review* 39.4 (2013): 360–61, <https://doi.org/10.1016/j.pubrev.2013.07.009>

frequently than members of the majority party.⁸ Evans, Cordova and Sipole find that challengers are more likely than incumbents to mention their opponents' names and attack them on Twitter.⁹ Alashri et al. reveal that candidates focus on different areas of policies on social media, ranging from healthcare to immigration to the economy,¹⁰ while Barbera demonstrates that political parties are more responsive to their supporters than to the general public on social media.¹¹

While plenty of research has been done on social media in the U.S., fewer papers explore the same topic in India. As of 2018, only 24 percent of India's population had access to social networks.¹² Campaigning on social media is also a more recent trend for Indian politicians than for their U.S. counterparts. However, India's internet usage has been steadily increasing in the past 10 years.¹³ There are reasons to believe that the differences in campaign strategies which U.S. political parties display on social media may also exist in India's elections.

Therefore, this paper will test whether and how India's political parties use different social media strategies in the 2019 Lok Sabha Election. I examine the Twitter accounts and tweets of India's two major parties—the Bharatiya Janata Party (the incumbent, hereafter referred to as BJP) and the Indian National Congress (the challenger, hereafter referred to as the Congress) — and their respective leaders, Narendra Modi and Rahul Gandhi. To formulate my hypothesis in depth, I posit these five research questions:

Q1. How often did each party and politician tweet?

Q2. How often did each party and politician mention or attack one another?

⁸ David S. Lassen and Adam R. Brown, "Twitter: The Electoral Connection?" *Social Science Computer Review* 29.4 (2010): 419–20, <https://doi.org/10.1177/0894439310382749>

⁹ Heather K. Evans, Victoria Cordova, and Savannah Sipole, "Twitter Style: An Analysis of How House Candidates Used Twitter in Their 2012 Campaigns," *PS: Political Science & Politics* 47.2 (2014): 459, <https://doi.org/10.1017/s1049096514000389>

¹⁰ Saud Alashri et al., "The 2016 US Presidential Election on Facebook: An Exploratory Analysis of Sentiments," *Proceedings of the 51st Hawaii International Conference on System Sciences* (2018): 1775-76, <https://doi.org/10.24251/hicss.2018.223>

¹¹ Pablo Barberá et al., "Who Leads? Who Follows? Measuring Issue Attention and Agenda Setting by Legislators and the Mass Public Using Social Media Data," *American Political Science Review* 113.4 (2019): 883, <https://doi.org/10.1017/s0003055419000352>

¹² Sanika Diwanji, "India - Social Network Penetration 2017-2023," *Statista*, March 31, 2020, <https://www.statista.com/statistics/240960/share-of-indian-population-using-social-networks/>

¹³ Sanika Diwanji, "India - Internet Penetration 2017," *Statista*, March 30, 2020, www.statista.com/statistics/255135/internet-penetration-in-india/

Q3. Which languages did each party and politician tweet in?

Q4. Which key areas of policy did each party and politician pay attention to, and how did their attention shift over time?

Q5. Did the two parties and politicians differ in the policy messages they conveyed to underrepresented voters? If so, which policy messages did each of them emphasize?

Based on research on American elections discussed above, I expect the Congress and Gandhi to tweet more often than the BJP and Modi (Q1). I also expect the Congress and Gandhi to mention the BJP and Modi in their tweets more often than the BJP and Modi mention them (Q2). Since the BJP-led government made the use of Hindi mandatory on government social media accounts in 2013, I expect the BJP and Modi to tweet in English less often than the Congress and Gandhi (Q3).¹⁴ To test the fourth research question, I review popular tweets about India's 2019 election and sort them into three policy areas that are most frequently discussed: *Economy and Jobs*, *Security and Defense*, and *Corruption*. Since research shows that incumbents in developing countries face significant disadvantages such as corruption charges, I expect the Congress and Gandhi to discuss *Corruption* more than the BJP and Modi.¹⁵ I also expect Gandhi and the Congress to talk more about *Security and Defense* in February 2019, as a deadly bombing attack in Pulwama, Kashmir had occurred in February under the incumbent's watch.¹⁶ Since a report from India's National Sample Survey Office was leaked in January 2019, showing that India's unemployment rate had reached a four-decade high, I expect Gandhi and the Congress to have increased their attacks on Modi's performance on *Economy and Jobs* following this announcement (Q4).¹⁷

¹⁴ See "India PM Modi Demands Hindi, Not English For Social Media," *NBC News*, August 11, 2014, <http://www.nbcnews.com/news/asian-america/india-pm-modi-demands-hindi-not-english-social-media-n172421>

¹⁵ Marko Klačnja, "Corruption and the Incumbency Disadvantage: Theory and Evidence," *The Journal of Politics* 77.4 (2015): 928–929, <https://doi.org/10.1086/682913>

¹⁶ Shaurya K. Gurung, "What Happened at Pulwama and History of Terror Attacks on Convoys," *Economic Times*, February 20, 2019, <https://economictimes.indiatimes.com/news/defence/what-happened-at-pulwama-and-history-of-terror-attacks-on-convoys/articleshow/68019194.cms>

¹⁷ Somesh Jha, "Unemployment Rate at Four-Decade High of 6.1% in 2017-18: NSSO Survey," *Business Standard*, January 30, 2019, www.business-standard.com/article/economy-policy/unemployment-rate-at-five-decade-high-of-6-1-in-2017-18-nssso-survey-119013100053_1.html; "Troubling Unemployment Data, Leaked in January, Now Released Post-Elections," *The Wire*, <https://thewire.in/economy/official-data-unemployment-2017-2018>; "Is the Job Scene in India Bad? Depends on How You See It, Says Govt," *Economic Times*, June 1, 2019, <https://economictimes.indiatimes.com/jobs/indias-unemployment-rate-hit-6-1-in-2017-18/articleshow/69598640.cms>

Among the research questions, the fifth question is potentially the most unique and interesting to answer. Since the 2019 Lok Sabha election was highly competitive, winning voters from traditionally underrepresented groups was especially important. Studying how parties and politicians reach out to underrepresented voters is also critical to reveal how they use social media to get their messages across. To answer the fifth question, I identify four groups of underrepresented voters: women, Muslims, farmers, and young voters, which cover minorities in terms of gender, religion, economic status, and age. I expect to see each party and politician talk about their distinctive policy initiatives relevant to each underrepresented group when reaching out to those specific voters (Q5). By answering the aforementioned five research questions, I seek to reveal whether and how India's major parties differed in their social media strategies through a policy-oriented perspective.

DATA AND METHODOLOGY

The data in this study comes from the official Twitter pages of Modi, Gandhi, the BJP, and the Congress. I collected all the tweets from their respective Twitter timelines from November 1, 2018 to April 30, 2019, using this to compile a dataset of 9295 tweet objects from the BJP, 3972 tweet objects from the Congress, 2034 tweet objects from Modi and 287 tweet objects from Gandhi.¹⁸ Each tweet object contains a series of attributes pertaining to the tweet, including but not limited to date, text, hashtag, URL, number of re-tweets, and number of likes.

To clean up the tweets for subsequent analyses, I tokenize and lemmatize the contents of the tweets. Tokenization means breaking a sentence into words. For instance, "I love my supporters" will be broken into four words: "I", "love", "my" and "supporters." Lemmatization is the process of reducing inflectional or derivationally related forms of a word to a common base form. For instance, "am," "are," and "is" will all be reduced to "be" and "cars" and "car's" will both be reduced to "car." I also remove stop-words, pictures, and hyperlinks from the tweets. I mark the tweets that contain videos, pictures, hyperlinks, or tags to another tweet as "multimedia" content. I use the Google Translate API to label the language of tweets and translate non-English tweets to English. For tweets

¹⁸ The time frame is set from November 2018 to April 2019 since this paper was originally written for a class that ended in May 2019. As the Lok Sabha election started in April 2019, this time frame covers the period when the most intense social media campaigns took place.

that contain both English and local languages, Google may label them as English or as non-English. Concededly, the usage of the Google API can incur translation errors. I assume such translation errors are equally spread across the two parties' and politicians' tweets, and that the usage of the Google API does not give one party advantage over the other.

To identify tweets about each key policy category and group of underrepresented voters, I first tried unsupervised machine-learning techniques like Latent Dirichlet Allocation,¹⁹ and K-means clustering.²⁰ However, since tweets are short and usually contain mixed topics, these unsupervised methods produce unconstructive results. Therefore, I compile a list of search-words for each policy category introduced before: *Economy and Jobs, Security and Defense, and Corruption*. Tweets that contain these search-words were tagged with the corresponding policy category. A tweet can have more than one tag if it contains search-words from multiple categories. Similarly, to identify tweets that target underrepresented voters, I compile a list of search-words for each of the four groups of underrepresented voters: farmers, women, Muslims and youths. I tag tweets that contain these search-words as related to the corresponding group; a single tweet could be tagged with multiple groups.

The most challenging part of this study was identifying keywords in tweets that can shed a light on each party's policies towards underrepresented voters. Given the large volume of tweets, it is almost impossible to manually review all the tweets, extract policy terms, and rank the terms by frequency. Therefore, I adopt a keyword-extraction method that maximizes the chance of uncovering insightful terms in a large number of tweets.

To start, I tally the one hundred most frequent words in tweets related to each group of underrepresented voters. For each party or politician, let vector

¹⁹ Latent Dirichlet Allocation (LDA) is a statistical model best known for topic modelling. In this study, LDA clusters tweets into topics based on text similarity, so that the texts in each tweet are best represented by the topic the tweet belongs to. See Thushan Ganegedara, "Intuitive Guide to Latent Dirichlet Allocation," *Towards Data Science* (blog), *Medium*, March 27, 2019, <https://towardsdatascience.com/light-on-math-machine-learning-intuitive-guide-to-latent-dirichlet-allocation-437c81220158>.

²⁰ K-means clustering is a basic machine learning algorithm best known for data partitioning. In this study, K-means classifies tweets into k clusters, where each tweet belongs to the cluster with the nearest mean (the averaging of the data). See Michael J. Garbade, "Understanding K-Means Clustering in Machine Learning," *Towards Data Science* (blog), *Medium*, September 12, 2018, <https://towardsdatascience.com/understanding-k-means-clustering-in-machine-learning-6a6e67336aa1>

F_i denote the one hundred most frequent words in tweets related to group i ($i \in \{1, 2, 3, 4\}$.) Let F_{ij} denote the j^{th} word in F_i , where $1 < j < 100$. $F_{i,1}$ is the most frequent word while $F_{i,100}$ is the one hundredth most frequent word. While some of these words are specific to the group of underrepresented voters, others are generic words like “India” that appear frequently in all tweets. To filter out the latter, I use three methods to further select keywords out of F_i that are distinctly relevant to group i . The three methods are the Lasso Logistic, Mutual Information and Keywords Subsetting methods. The main reason to use three methods concurrently is to ensure the output is accurate. A keyword is included into the final result only if it is selected by at least two of the three methods. As the three methods are built upon different mathematical principles, using them together ensures that the keywords they produce are accurate and high-quality. Below are the mathematical details behind each method.

Method 1: Lasso Logistics

The LASSO logistic method aims to identify words that contribute the most to determining if a tweet would be related to a group. For a random tweet k from the given party/politician, let $X_{i,k}$ denote the word-count vector of k , which records the number of occurrences of words in F_i that appear in k . In other words, the j^{th} element of $X_{i,k}$ would be the frequency of the word F_{ij} in tweet k . Let $y_{i,k}$ indicate whether tweet k is related to group i . The probability of $y_{i,k}=0$ and $y_{i,k}=1$ can be expressed respectively as:

$$P(y_{i,k} = 1 | X_{i,k}) = \frac{e^{\beta_i^0 + \beta_i^T X_{i,k}}}{1 + e^{\beta_i^0 + \beta_i^T X_{i,k}}}$$

$$P(y_{i,k} = 0 | X_{i,k}) = \frac{1}{1 + e^{\beta_i^0 + \beta_i^T X_{i,k}}}$$

Combining the two equations above gets the following:

$$P(y_{i,k} | X_{i,k}) = P(y_{i,k} = 1 | X_{i,k})^{y_{i,k}} * P(y_{i,k} = 0 | X_{i,k})^{1-y_{i,k}}$$

Let $L_{\beta,N,i}$ denote the log likelihood of N independent observations, given parameters β and group i . Then $L_{\beta,N,i}$ can be written as:

$$\begin{aligned}
 L_{\beta,N,i} &= \log\left(\prod_{k=1}^N P(y_{i,k}|X_{i,k})\right) = \sum_{k=1}^N \log(P(y_{i,k} = 1|X_{i,k})^{y_{i,k}}) + \log(P(y_{i,k} = 0|X_{i,k})^{1-y_{i,k}}) \\
 &= \sum_{k=1}^N y_{i,k} * (\beta_i^0 + \beta_i^T X_{i,k}) - \log(1 + e^{\beta_i^0 + \beta_i^T X_{i,k}})
 \end{aligned}$$

Accordingly, the objective function for group i with l_1 penalization can be written as:

$$\min(-L_{\beta,N,i} + \lambda \sum_{n \geq 1} |\beta_i^n|),$$

where λ is the regularization parameter. I then used 10-fold cross validation to find the optimal values for each pair of group and party/politician.²¹ After regularization, the number of keywords returned by these optimal values usually ranges from less than fifteen up to fifty, which suggests that further ranking among returned keywords is needed.²²

To rank keywords further, let $X_{i,k}^r$ be the frequency of word r in tweet k associated with group i , in which r is one of the keywords returned by the LASSO logistic regression. Let $\beta_{i,k}^r$ be the regression coefficient of r . Here $\beta_{i,k}^r$ represents the change in the log-odd ratio $\frac{P(y_{i,k}=1|X_{i,k})}{P(y_{i,k}=0|X_{i,k})}$ by unit change of $X_{i,k}^r$. Since the change of log-odd ratio is positively correlated with the change of probability $P(y_{i,k} = 1|X_{i,k})$ and the measurement of keywords' exact interpretative power is beyond the scope of this study, I used β_i^r directly as a proxy to rank keywords returned by LASSO regression. If further studies want to be more precise in gauging each keyword's impact to the change of probability $P(y_{i,k} = 1|X_{i,k})$ by unit change of $X_{i,k}^r$, they would need to further transform β_i^r into a coefficient of marginal effect. To do so, they can take the derivative of $P(y_{i,k} = 1|X_{i,k})$ with respect to $X_{i,k}^r$, i.e.,

marginal effect of word r

$$= \frac{1}{N} \sum_{k=1}^N \frac{d}{dX_{i,k}^r} P(y_{i,k} = 1|X_{i,k}) = \frac{1}{N} \sum_{k=1}^N P(y_{i,k} = 1|X_{i,k}) * P(y_{i,k} = 0|X_{i,k}) * \beta_i^r$$

²¹ Cross validation is a statistical technique that helps to discover and reduce the error of a model over a test set. Scholars use it to select the parameters that fit their models the best and to avoid overfitting.

²² Regularization is a form of regression that shrinks the coefficient estimates to avoid overfitting. Scholars use it to reduce the interference of noise (data points that are not generalizable) in their training data. See Prashant Gupta, "Regularization in Machine Learning," *Towards Data Science* (blog), *Medium*, November 16, 2017, <https://towardsdatascience.com/regularization-in-machine-learning-76441ddcf99a>

Method 2: Mutual Information

Mutual information measures the amount of information about variable A obtained by observing variable B . In this paper, variable A refers to whether tweet k belongs to group i and variable B refers to whether word $w \in F_i$ exists in k .

Let T denote all tweets from a given party/politician; let t be the number of elements in T . Let W_i denote all tweets in T that are related to group i ; let w_i be the number of elements in W_i . Let W_k denote all tweets in T that contain word k ; let w_k be the number of elements in W_k . Let P_i denote the probability of occurrence of group i ; let P_k denote the probability of occurrence of word k . Accordingly, P_i and P_k can be expressed as:

$$P_i = \frac{w_i}{t}, \text{ in which } i \in 1, 2, 3, 4$$

$$P_k = \frac{w_k}{t}, \text{ in which } k \in F_i$$

Next, let $w(i, k)$ denote the number of tweets in W_i that contains word k ; let $P(i, k)$ denote the probability of co-occurrence between group i and word k . Accordingly:

$$P(i, k) = \frac{w(i, k)}{t}$$

The formula of mutual information between i and k is given as the following:

$$I(i, k) = P(i, k) * \log\left(\frac{P(i, k)}{P(i) * P(k)}\right)$$

Based on the formula above, I select the words in F_i with high mutual information I as the top keywords of group i for the given party/politician.

Method 3: Keywords Subsetting

The Keywords Subsetting method is the most straightforward among the three. It selects the most frequent words among tweets related to an underrepresented group and filters out those that are also the most frequent

words among all tweets. By filtering out common words like “India” that appear in all tweets, this method helps identify keywords that are unique to the voters of interest. Specifically, let A denote the 200 most frequent words among all tweets of a given party/candidate.²³ As defined before, F_i denotes the one hundred most frequent words related to group i and from the same party/politician. Now consider:

$$B_i = F_i \cap \{x | x \in F_i, x \in A\}$$

The words in B_i would be the keywords of group i for the given party/politician. When there are too many words in B_i , I select the ones that appear first in B_i , since B_i preserves the order of F_i .

RESULTS AND INTERPRETATIONS

General Tweeting Styles and Patterns

This section presents testing results for my expectations outlined for Q1, Q2, and Q3. In general, findings of this section indicate that the two parties and politicians did exhibit different strategies on Twitter. However, these findings also contradict my hypotheses for Q1 and Q3.

First, contrary to the expectation that challengers tweet more often than incumbents, on average, the BJP tweeted twice as frequently as the Congress, and Modi tweeted seven times more frequently than Gandhi (Table 1). One explanation goes to Modi's large social media following. Since Modi is the world's third most followed politician, just after Barack Obama and Donald Trump, he is more likely to use his popularity to his advantage by sending out more tweets.²⁴ A closer look at Modi's Twitter account provides another potential explanation: Modi is likely not the only person writing his tweets, as many of his tweets come up within extremely short intervals. It is not uncommon to see five tweets from Modi's account in three minutes. Furthermore, compared to Gandhi, Modi seems to be less selective about what he tweets. Rather, his main strategy was to always keep his audience engaged. On the contrary, Gandhi's tweets usually received more

²³ Having tried setting the count parameter to 100, 200, 300, 400 and 500, I found 200 returned the most interpretable results.

²⁴ Matthias Lüfkens, “Twiplomacy Study 2018: Executive Summary,” *Twiplomacy*, July 10, 2018, <https://twiplomacy.com/blog/twiplomacy-study-2018/>

likes and re-tweets that Modi's tweets, indicating that Gandhi's priority might be to receive the most responses from voters to each of his tweets.

Table 1: A Comparison of Volume and Likability

	Modi	Gandhi	BJP	Congress
Average Number of Tweets Per Day	16	2	76	32
Average Number of Re-Tweets Per Tweet	4,413	8,207	618	636
Average Number of Likes Per Tweet	18,604	30,315	1,815	1,827

In line with my expectation for Q2, that challengers tend to mention incumbents more often than incumbents mention challengers in their tweets. The percentage of Gandhi's tweets that mentioned Modi or the BJP is almost three times as high as the percentage of Modi's tweets that named Gandhi or the Congress. However, this is not conclusive evidence to show that Modi and the BJP refrained from calling out their opponents. As the governing party, Modi and the BJP had to respond to many opposing parties, not just Gandhi and the Congress. For instance, as the heat of the campaign moved to West Bengal, Modi and the BJP temporarily put aside their "tug of war" with Gandhi and focused on Mamata Banerjee, the Chief Minister of Bengal and the Chairperson of the All India Trinamool Congress.²⁵ Nevertheless, the findings for Q2 are still able to show that criticizing the BJP was a larger component in the Congress' social media strategy than criticizing the Congress was in the BJP's strategy.

Findings for Q3 both support and defy my expectation that the BJP and Modi would tweet in English less often than the Congress and Gandhi. In line with my expectations, the Congress tweeted mainly in English and the BJP predominantly tweeted in languages other than English (mostly Hindi with some other local dialects). This is not surprising, as the core support for the BJP often

²⁵ "PM Modi, Mamata To Launch Poll Campaign In West Bengal Today," *Outlook*, April 2, 2019, www.outlookindia.com/website/story/india-news-pm-modi-mamata-to-launch-poll-campaign-in-west-bengal-today/328011

comes from the Hindi belt of the country, especially in the 2014 general election.²⁶ Yet contrary to my expectation, Modi—a well-known promoter of Hindi—had the highest percentage of English tweets: 20 percent more than that of Gandhi. NBC News once reported that under Modi's watch, government officials in India could use English only as a secondary language to Hindi.²⁷ Given this information, Modi's pivot to English on Twitter is even more interesting. This particular finding reveals that a political party and its party leader may exhibit different tweeting patterns, underscoring the multifaceted nature of political parties' social media strategies.

Overall, observations in this section provide convincing evidence that the BJP and the Congress exhibited different tweeting styles. However, some findings, like Modi predominantly tweeting in English, also remind readers of the complexity of political parties' social media tactics.

Table 2: A Comparison of Content Attributes

	Modi	Gandhi	BJP	Congress
Percentage of tweets written in English	84.27%	63.76%	31.65%	61.63%
Percentage of tweets with multi-media content	69.03%	62.02%	72.56%	82.48%
Percentage of tweets that mentions the other party	11.50%	31.71%	17.51%	38.82%

Responses to Key Policies and Events

This section presents testing results for the expectations I put forth for Q4: how much attention each party and politician paid to the key areas of policies,

²⁶ Gilles Verniers, "Lok Sabha Elections 2019: Can BJP Retain Dominance in Hindi Heartland?" *Hindustan Times*, April 29, 2019, <https://www.hindustantimes.com/lok-sabha-elections/lok-sabha-elections-2019-can-bjp-retain-dominance-in-hindi-heartland/story-6LPGqs3mjr2PexB7Muc1TI.html>

²⁷ "India PM Modi Demands Hindi, Not English For Social Media," NBCNews, NBCUniversal News Group, accessed April 2019, <http://www.nbcnews.com/news/asian-america/india-pm-modi-demands-hindi-not-english-social-media-n172421>.

and how their attention shifted over time. In general, the findings indicate that the two parties and politicians did differ in the level of attention they devoted to various policy topics. However, their attention to each area of policy did not always change as expected.

First, as anticipated, Gandhi and the Congress showed more interest in *Corruption* than Modi and the BJP: Gandhi was almost four times more likely to bring up corruption in his tweets than Modi. Gandhi's interest manifested itself most intensely in January 2019, right after India's Supreme Court announced that it found nothing wrong with a deal brokered by Modi to purchase 36 Rafale fighter jets from France. Gandhi and the Congress then started to mobilize supporters on social media to protest the Supreme Court's decision. In February 2019, India's Supreme Court announced that it would revisit the case and hear the review pleas in detail.²⁸ Although it is unclear whether the Supreme Court's compromise was prompted by Gandhi and the Congress' social media campaigns, this incident demonstrates the potential of party activity on social media to influence national politics and to convey party messages across to the electorate.

Also in line with my expectation, Gandhi had focused on *Security and Defense* in February, primarily because of the tragic suicide bombing attack in Pulwama, Kashmir. Since Gandhi was not the incumbent and could not directly address the nation's anger through policy as much as Modi could, social media became the channel for him to show the nation how much he cared about this attack. On the contrary, Modi, as the Prime Minister, could directly show his stance through military action against Pakistan. Thus it might be less necessary for Modi to repeatedly highlight his position on social media than it was for Gandhi.

Gandhi and the Congress paid more attention to *Economy and Jobs* than Modi and the BJP did on average. Yet contrary to my expectations, Gandhi and the Congress did not increase their attention on this policy topic following the release of the news that India's unemployment rate reached a forty-year high in late January 2019. Instead, Gandhi and the Congress doubled down on *Economy and Jobs* in March 2019. A closer investigation into Gandhi and the Congress' tweets reveals Modi's Goods and Service Tax (GST) as one of the main reasons

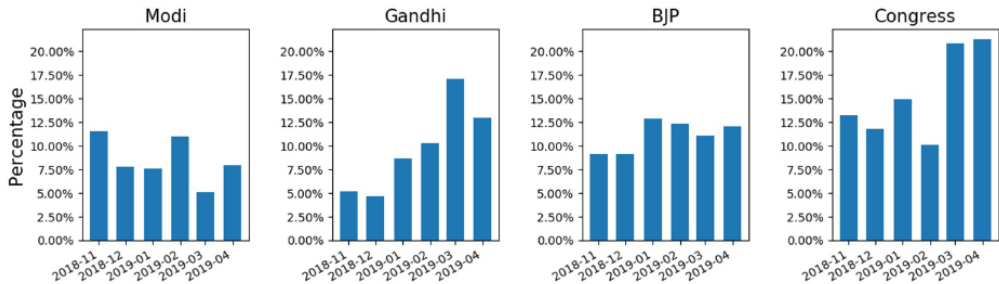
²⁸ "Supreme Court to Hear Plea Seeking Review of Rafale Deal Judgment on Feb 26," *India Today*, February 22, 2019, <https://www.indiatoday.in/india/story/supreme-court-plea-rafale-deal-judgment-review-feb-26-1462841-2019-02-22>

for their surge of interest. In March 2019, the World Bank released its India Development Update Report and placed GST as one of the world's most complex tax systems.²⁹ Gandhi and the Congress might have seized this opportunity and increased their criticism of Modi's economic performance.³⁰

Table 3: Percentage of Tweets Relevant to Policy Fields

	Modi	Gandhi	BJP	Congress
Economy and Jobs	8.41%	9.76%	11.46%	15.66%
Security and Defense	5.21%	9.01%	12.88%	5.21%
Corruption	3.15%	14.29%	5.56%	10.47%

Figure 1: Percentage of Tweets Relevant to Economy and Jobs by Monthly Average



²⁹ Poonam Gupta et al., "India Development Update: India's Growth Story" (report, World Bank, New Delhi, India, March 7, 2018), <http://documents.worldbank.org/curated/en/814101517840592525/pdf/India-development-update-Indias-growth-story.pdf>; "GST: Indian System among the Most Complex Globally, Says World Bank Report," *Business Standard*, March 16, 2018, https://www.business-standard.com/article/economy-policy/gst-indian-system-among-the-most-complex-globally-says-world-bank-report-118031600472_1.html

³⁰ "Gabbbar Singh Tax Now Globally Acclaimed: Rahul Gandhi Mocks PM Modi," *Times of India*, March 18, 2018, <https://timesofindia.indiatimes.com/india/gabbar-singh-tax-now-globally-acclaimed-rahul-gandhi-mocks-pm-modi/articleshow/63354146.cms>

Figure 2: Percentage of Tweets Relevant to Security and Defense by Monthly Average

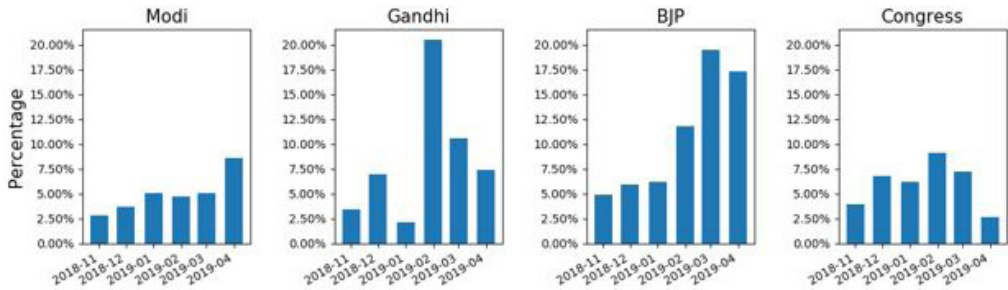
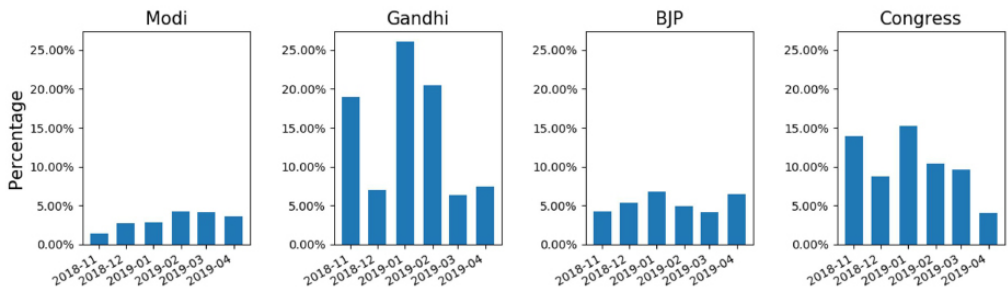


Figure 3: Percentage of Tweets Relevant to Corruption by Monthly Average



Messages to Underrepresented Voters

This section presents testing results for my expectations outlined for Q5: Did the two parties and politicians differ in the policy messages they conveyed to traditionally underrepresented voters? In line with my expectations, both parties and politicians sought to promote their own policy initiatives in their tweets to underrepresented voters. The following subsections explain their differences in detail.

Farmers

On the side of Modi and the BJP, keywords like “pmkisan” and “nidhi” were associated with the Prime Minister Modi’s *Kisan Samman Nidhi* scheme. Launched in February 2019, Modi’s Kisan plan included a 6000-rupee annual

income support program to marginalized farmers.³¹ The keywords “water,” “middlemen,” and “irrigation” highlighted Modi’s policies to provide farmers with better irrigation sources, and eliminate the multi-layer middleman system required for farmers to distribute their produce.³² The keywords “debt” and “income” echoed the BJP’s slogan to increase farmers’ income and alleviate their debt.

On the other side, Gandhi and the Congress denounced the exorbitant insurance prices farmers had to pay for their crops under the BJP’s watch, which is reflected in the keyword “insurance.” They also criticized the inadequacy of the Minimum Support Price (MSP) Modi’s government granted to farmers, which is reflected in the keywords “msp” and “distress.” On the offensive front, the Congress proposed a series of loan waivers to alleviate farmers’ debts, which was reflected in the keywords “loan,” “debt,” “bank,” “assistance,” and “forgive.” The keywords “small” and “unemployment” implied that Gandhi and the Congress often addressed farmers together with small-business owners and the unemployed population in order to build a coalition of those who might have suffered economic hardship under the incumbent’s governance.

Table 4: Top Keywords Related to Farmers

	Top Keywords Related to Farmers
Modi	income, pmkisan, nidhi, loan, suffer, welfare, irrigation, water, middle/middlemen, hardwork, waiver, debt, promise, step, class
Gandhi	intention, distress, forgive, bank, get, insult, hard, lakh, boot, debt, small, suit
BJP	kisan, assistance, crop, irrigation, debt, nidhi, waive/waiver, double, income, pension
Congress	msp, forgive, insurance, debt, suicide, crop, acquisition, food, waive/waiver, loan, budget, unemployed

³¹ “PM Rolls out ₹75,000-Cr Income Support Scheme for Farmers,” *Hindu BusinessLine*, February 24, 2019, <https://www.thehindubusinessline.com/news/pm-launches-kisan-scheme-over-1-crore-farmers-get-1st-instalment/article26356409.ece>; “Narendra Modi Launches PM-Kisan Scheme, 12 Crore Farmers Will Be Benefited,” *Livemint*, February 24, 2019, <https://www.livemint.com/politics/policy/narendra-modi-launches-pm-kisan-scheme-12-crore-farmers-will-be-benefited-1550995773911.html>

³² Kamakshi Ayyar, “The Global Water Crisis: Why Are India’s Taps Running Dry?” *Time*, June 6, 2018, <https://time.com/5302661/water-crisis-drinking-india-drought-dry/>

Women

The two parties and politicians also conveyed different sets of policy initiatives in their tweets to female voters. The keyword “empowerment” occurred frequently in Modi’s and the BJP’s tweets, as Modi wanted to remind female voters of how women’s lives had improved during his term. Specifically, the keywords “gas,” “smoke,” “ujjwala,” and “ojana” all refer to Modi’s *Ujjwala* initiative that introduced Liquefied Petroleum Gas (LPG) connections to ordinary Indian families, which helped women by eliminating the smoke created through cooking.³³ Building lavatories in villages was another policy Modi liked to use to attract female voters (reflected in the keyword “toilet”).³⁴ The *Swachh Bharat Mission* Modi’s government launched in 2014 has increased rural women’s access to lavatories and reduced the rate of open defecation. Accordingly, Modi and the BJP framed their promotion of lavatories as a symbol of respect for the nation’s mothers and daughters. Interestingly, Muslim women were another focus in Modi’s and the BJP’s tweets, the specifics of which will be unpacked in the section about Muslims.

Gandhi and the Congress campaigned on bringing more women into politics. In April 2019, the Congress had passed the election manifesto *Hum Nibhayenge*, which promised to reserve 33 percent of all jobs in Lok Sabha and State Legislative Assemblies for women if the Congress won the election (reflected in the keyword “reservation”).³⁵ The Congress also campaigned to promote women’s participation in businesses, especially through Self-Help Groups (SHG) that have taken off in India in recent years (reflected in the keywords “group” and “self”). SHGs have played an important role in including rural women into India’s financial networks.³⁶ In November 2018, the Congress tweeted that it would allocate a grant of 500 crores to female entrepreneurs and a grant of

³³ Utpal Bhaskar, “PM Highlights Ujjwala Success; Reaches out to Women, Poor, Muslims,” *Livemint*, May 28, 2018, www.livemint.com/Politics/OVJ1CPuxjSCNtdggALEm6N/PM-Modi-says-10-crore-LPG-connections-given-in-4-years-again.html

³⁴ Narendra Modi, “Swachh Bharat Mission Has Benefited the Poor and the Women Most: PM Modi” (speech, Goalkeepers Global Goals Awards 2019, New York City, NY, September 25, 2019), <https://www.narendramodi.in/text-of-pm-modi-s-speech-at-goalkeepers-global-goal-award-2019-546603>

³⁵ “In Its Manifesto, Congress Proposes NYAY Scheme, ‘Kisan Budget,’ Review Of AFSPA,” *Outlook*, April 1, 2019, <https://www.outlookindia.com/website/story/india-news-congress-releases-manifesto-for-lok-sabha-elections-2019/327983>

³⁶ “Self-Help Groups: Congress President Rahul Gandhi,” Rahul Gandhi (website), <https://rahulgandhi.in/en/amethi/shgss.php>

100,000 rupees to each SHG.³⁷

Overall, both parties promoted distinct policies in their tweets to appeal to female voters, and economic, political, and social empowerment set the tone for most women-related tweets.

Table 5: Top Keywords Related to Women

	Top Keywords Related to Women
Modi	brother, man, empowerment, nari, yojana, million, role, focus, movement, youngsters, focus, house, enthusiasm, hospital, large, caste, tribal
Gandhi	bright, acknowledge, hunger, choksi, declaration, kashmiri, refalescam, brother, build, trader
BJP	bharti, narishakti, empowerment, ujjwala, muslim, brother, divorce, son, ganga, smoke, yojana, gas, connection, toilet
Congress	incforwoman, reservation, brother, reserve, entrepreneur, child, group, account, respect, fighter, dream, self

Youth

Similar to their messages to farmers and women, the two parties and politicians promoted different policy initiatives in their tweets to young voters. As unemployment was the one of the most pressing problems plaguing India's young voters, both parties set out different policy priorities to save young people from the quagmire of unemployment.³⁸

The BJP focused on education (reflected in the keyword "education"). For instance, in January 2019, the BJP announced on Twitter that it would reserve 10 percent of the seats in government-run educational institutions to students from underprivileged backgrounds.³⁹ Innovation was another focus of the BJP

³⁷ Congress (@INCIndia), "Without women Telangana cannot progress. Congress and TDP both believe in SHGs. Every group will be given ₹1,00,000 grant. ₹500cr will be allocated for women entrepreneurs: Congress President @RahulGandhi #TelanganaWithRahulGhandi," Twitter, November 28, 2018, 4:31 a.m., <https://twitter.com/INCIndia/status/1067757801282318339>

³⁸ "Youth Unemployment Rate for India," *Economic Research: Federal Reserve Bank of St. Louis*, <https://fred.stlouisfed.org/series/SLUEM1524ZSIND>; "33% Of India's Skilled Youth Jobless: Official Survey," *Livemint*, August 7, 2019, <https://www.livemint.com/politics/policy/a-third-of-skilled-youth-in-india-jobless-official-survey-1565161972818.html>

³⁹ BJP (@BJP4India), "केंद्र सरकार युवाओं को समान अवसर देने के लिए समर्पित है। हाल में ही सरकारी सेवाओं और

and Modi's campaign. The keyword "hackathon" refers to a kind of technology competition that aims to promote talent in the sciences. In multiple tweets, Modi expressed his pride that young people in India have participated in hackathons. Furthermore, the recurring keywords "especially," "particularly," and "remarkably" echoed Modi's special shoutout to young voters in his tweets. On his Twitter Timeline, Modi consistently thanked young people for coming to his rallies and supporting him. He also stressed that he would treat the demands of the youth as a policy priority.

On the other hand, the Congress accused Modi's government of not investing enough in the future, especially with regards to supporting young entrepreneurs. Gandhi and the Congress vowed to make it easier for India's young people to start businesses (reflected in keywords "business," "entrepreneur," and "permissions"). Under their plan, young entrepreneurs would not need to apply for government permissions to start their new businesses for up to three years.

Table 6: Top Keywords Related to Youths

	Top Keywords Related to Youths
Modi	bal, hackathon, especially, friend, tell, remarkably, particularly, motivate, voter, hope, dream, large, puraskar, awareness, request
Gandhi	persecute, future, small, new, declaration, get, trader, unemployed, business, bring, reduce
BJP	youthwithmodi, pregnant, skill, employment, man, elderly, education, future, opportunity, earn, medicine, irrigation
Congress	unemployed, permission, house, opportunity, student, entrepreneur, suicide, employ, job, provide, business

Muslims

Neither the parties nor their leaders frequently mentioned "Muslim" in their tweets.⁴⁰ Even with only a few keywords, however, there is still evidence to show that the BJP differed from the Congress in its outreach to the Muslim

शिक्षण संस्थानों में गरीब सामान्य वर्ग के युवाओं को 10 प्रतिशत आरक्षण देने का फैसला लिया गया है : पीएम श्री नरेन्द्र मोदी #NaMoInJK," Twitter, February 2, 2019, 11:59 p.m., <https://twitter.com/BJP4India/status/1091969357008105473>

⁴⁰ I also look at tweets that mentioned "Islam." The results have no substantial difference.

community.

The BJP often appealed to Muslim women by mentioning its abolition of the triple divorce practice on Twitter (reflected in keywords “triple,” “divorce,” and “talaq”). Triple divorce (also known as triple talaq) was a controversial practice in India that allowed a Muslim man to legally divorce his wife by stating the word “divorce” three times. Since Modi’s government abolished this practice in 2017, the BJP consistently featured triple divorce in its tweets, portraying the party as the champion of Muslim women’s rights.⁴¹ On the contrary, Congress did not often mention this policy in their tweets about Muslims. Findings in the “Women” section echoed this observation.

Table 7: Top Keywords Related to Muslims

	Top Keywords Related to Youths
Modi	none
Gandhi	none
BJP	divorce, triple, islamic, daughter, talaq, pass
Congress	grow, zay, ia, islamia

CONCLUSION

As smartphones and Internet access become more prevalent around the world, social media has increasingly played a role in elections in developing countries. Although research suggests that political parties in the U.S. often employ different campaign strategies on social media, similar research on developing countries’ elections is lacking. In this paper, I examined whether India’s two major parties, the BJP and the Congress, displayed distinctly different campaign strategies on Twitter. In general, results produce clear evidence that the two parties differed in their Twitter strategies during the 2019 Lok Sabha Election. However, in a few cases, the exact way they differed was not as expected.

First, testing results reveal that Modi and the BJP tweeted more often than Gandhi and the Congress. This observation is contrary with previous findings in U.S. research that the challenging party uses social media more often than the

⁴¹ Casey Quackenbush, “India Outlaws Islamic Practice of ‘Instant Divorce,’” *Time*, September 20, 2018, <https://time.com/5401422/india-instant-divorce-outlaw/>; “Congress Backs Triple Talaq Bill, Khurshid Strikes Discordant Note,” *Economic Times*, December 28, 2017, <https://economictimes.indiatimes.com/news/politics-and-nation/congress-backs-triple-talaq-bill-khurshid-strikes-discordant-note/articleshow/62283011.cms>

incumbent. Second, results reveal that Gandhi and the Congress mentioned Modi and the BJP in their tweets more often than Modi and the BJP mentioned them. This observation is consistent with findings in U.S. research that the challenging party tends to mention/attack the incumbent more often. However, contrary to expectations, Modi tweeted in English more often than Gandhi, despite being a well-known promoter of the Hindi language. The rationale behind this discovery needs to be explored by future research.

Next, testing results indicate that the two parties and politicians displayed different levels of attention to different policy areas and that their attention shifted over time. In line with my expectations, Gandhi and the Congress paid more attention to *Corruption*. They also indicated increasing interest in security-related issues after the terrorist attack in Kashmir in February 2019. Yet contrary to my expectations, the news that India's unemployment rate had reached a forty-year high did not make Gandhi and the Congress more likely to write about *Economy and Jobs* in their tweets. This observation shows that the challenging party does not necessarily respond to every piece of negative news about the incumbent, as it needs to prioritize which topics to address. Last but not least, testing results indicate that the two parties and politicians emphasized different sets of policy messages to underrepresented voters. Through keyword analysis, I identified a series of policies each party and politician featured in their tweets to attract these voters.

This paper contributes to the study of political elections by integrating natural language processing and statistical methodologies with policy analyses. Specifically, this paper introduces three methods to extract interpretable keywords from tweets. These three methods often returned similar but slightly different keywords, which indicates that they can be used together to achieve more precise results. The methods also prove to be an effective way to identify policies from a large number of tweets (15,000 tweets in this study). Future research in other fields of social science can also apply these methods to assist their own study.

Finally, this paper raises some interesting questions for further exploration in the future. For one, the dearth of tweets about Muslim males deserves more investigation. Furthermore, future research can apply similar analyses to other popular social media sites in India, like Facebook and WhatsApp, to test if the findings in this paper still hold. Last but not least, this paper hopes to inspire more scholarly work on the use of social media to promote public policies,

especially with regards to underrepresented voters in developing countries.

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