Abstract

Social media platforms, especially Twitter/X have been deemed as a polarized political space. Previous research has shown that populist rhetoric on social media elicits more engagement with users. But, are populist presidents generating more divisive and plebiscitary interactions with users than their non-populist counterparts? If so, are supporters or opponents engaging in more of these interactions with populist presidents? Are supporters of populist presidents showing more support for their leader than supporters of non-populist presidents? To answer these questions, this paper relies on a content analysis of millions of tweets replying to Latin American presidents. It uses a combination of Artificial Intelligence approaches, including Generative Pre-Trained Transformers (GPT) for data augmentation and text classification with Bidirectional Encoder Representations from Transformers (BERT). I analyze these data using a combination of annotated time series and multilevel negative binomial regression models. The results suggest that populist presidents generate more divisive and plebiscitary interactions in general. However, such kind of interactions are also achieved by non-populist presidents under certain circumstances, for instance, elections, pandemics, and social outbursts.

Key Words

Populism, rhetoric, social media, polarization, Latin America

Populist Rhetoric from the Bottom-Up: Divisive and Plebiscitary Interactions on Twitter with Latin American Presidents.

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Introduction

A brief examination of tweets on political subjects swiftly reveals the extensive division that characterizes interactions on social media platforms. The scholarly literature on this topic provides some empirical support for this observation (e.g. Yarchi, Baden, and Kligler-Vilenchik 2020; Bakshy, Messing, and Adamic 2015; Conover et al. 2011). Additionally, various studies indicate that populist leaders contribute to creating a polarized digital environment by emphasizing divisions between the elite and the people (Boucher and Thies 2019; Hameleers 2020). While these studies offer valuable insights into the role of populists in digital polarization, we know less about how social media users interact with populist leaders, especially those in power, and how these interactions further exacerbate divisions.

Given the growing influence that social media have on the political environment, knowing how users interact with leaders on these platforms is relevant to understanding the polarizing potential of those interactions. Furthermore, deliberation is crucial for a

healthy democracy. Deliberation holds potential to shape beliefs and opinions toward consensus and to constrain political authority by requiring justifications that are acceptable in terms of public reasoning (King 2003, p. 24). When online deliberation leads to division rather than consensus, it not only makes agreement impossible but also paves the way for the adoption of policies that lack appropriate justification. In essence, high-quality deliberation on public affairs increases the political costs of implementing policies that contradict the public's reasoned arguments. Thus, understanding the dynamics of interactions between users and leaders on social media may help us to assess the risks of democratic erosion posed by these platforms.

To gain a deeper understanding of the interactions between social media users and populist presidents, this paper aims to explore several key questions. Firstly, are populist presidents generating more polarizing responses with users than their non-populist counterparts? Are supporters or opponents engaging in more divisive interactions with populist presidents? Do supporters (opponents) of populist presidents show more support (opposition) for their leader compared to supporters of non-populist presidents? Are these trends consistent, or do they vary over time? Answering these questions will allow us to distinguish between the polarizing effects of populist communication from the top down and those from below. This analysis will also shed light on the dynamics of engagement with populist leaders in power, examining the extent and nature of such interactions and whether they are influenced by specific political contexts or remain constant.

I propose that social media users in countries led by a populist executive (in contrast to those led by non-populist leaders) will display a permanent level of divisive responses. However, that kind of rhetoric will be more prevalent among opponents than supporters. On the other hand, since populists in power use social media to promote themselves (Waisbord and Amado 2017) and their movements in an attempt to consolidate a majority (Urbinati 2017), supporters will be more outspoken in showing their support.

To answer the research questions presented in this paper, I have collected an original dataset, comprising nearly 2 million tweets replying to five Latin American presidents from 2019 to 2021. This dataset was analyzed using advanced Artificial Intelligence

techniques. This included employing Generative Pre-Trained Transformers (GPT) for enhancing the dataset through data augmentation. along with a Bidirectional Encoder Representations from Transformers (BERT) model for sentiment and content analysis of the tweets. The results indicate that populist presidents tend to incite more divisive and plebiscitary interactions on social media. Interestingly, a similar levels of divisive and plebiscitary discourse are present in responses to non-populist presidents. However, these interactions seem to be driven by specific events, such as protests, social outbursts, and health crises. The subsequent sections will detail the theory underpinning this study, outline the data collection process and analysis methods, present the results, and discuss the findings and their implications.

Populism and Polarization on Social Media: Top-Down Perspective

Given that a fundamental element of populism, as a thin-centered ideology, posits that "society [is] ultimately separated into two homogeneous and antagonistic groups, the pure people versus the corrupt elite" (Mudde 2004:23), a natural connection with polarization seems almost inherent. From this perspective, the essence of populism lies in exacerbating social and political divisions between these two poles (McCoy, Rahman, and Somer 2018). Consequently, it is reasonable to anticipate that populists would utilize social media as an additional, or sometimes preferred, tool to exploit these divisions. In an analysis of tweets from Latin American presidents, Waisbord and Amado (2017) finds that populist presidents rely on an antagonistic and confrontational discourse. Accordingly, these populist leaders use Twitter to launch attacks against their opponents. Others like Kreis (2017) have identified in Donald Trump's tweets the representation of the homogeneous people and the corrupt elite.

Populist use of social media has been characterized by two practices: unmediated communication (Boucher and Thies 2019; Hameleers 2020; P. Maurer and Diehl 2020; Jost, M. Maurer, and Hassler 2020) and a top-down style (Kreis 2017; Waisbord and Amado

2017). Unmediated communication allows populists to address followers or attack opponents directly, articulate discursive pieces, and bypass traditional media channels. This approach enables populists, especially those in power, to rely on strategic polarization to advance their agendas (Ortega et al. 2022). The second practice, a top-down style, is a vertical mode of communication that evades any form of deliberation. As Waisbord and Amado (2017) highlights, this style of communication rejects the notion of a communicative commons, which values reasoned deliberation and allows for democratic pluralism. Instead, populist leaders use social media to broadcast their messages, normalize their rhetoric (Kreis 2017), and reinforce a news-making position and visibility (Waisbord 2018). In sum, these two practices mutually reinforce each other, heightening a more polarized digital environment surrounding populists.

On top of populist communication strategies and styles, we must consider the polarizing nature of social media platforms. Scholars have warned about these platforms' propensity to create ideological echo chambers (Hendrix 2019; Barberá 2015). While echo chambers created by algorithmic ranking seem to exist and affect exposure to some content, others have challenged their effects. Bakshy, Messing, and Adamic (2015) suggest that individual choices, more than echo chambers, define exposure to diverse perspectives. Similar conclusions were reached by Eady et al. (2019) when analyzing approximately 1.2 billion tweets posted by U.S. users. They found that, although online echo chambers exist, there is significant cross-ideological exposure among Twitter users. Yet others, like Yarchi, Baden, and Kligler-Vilenchik (2020), have identified three different aspects of polarization on social media: interactional, positional, and affective. Interactional polarization involves how users interact with like-minded individuals compared to those with opposing views. Positional polarization occurs when social media platforms predominantly expose users to confirmatory viewpoints, reducing tolerance for opposing positions. Affective polarization refers to emotional responses towards opposing political groups, often manifesting as hostility. Yarchi, Baden, and Kligler-Vilenchik (2020) find that different platforms exhibit varying forms of polarization, with Twitter displaying all three types. Conversely, Facebook shows more heterophily, suggesting fewer echo

chamber effects.

Division and Support from the Bottom

Most studies analyzing social media users' reactions to populist rhetoric focus on two aspects: populist attitudes among users and their engagement with this type of rhetoric. Survey experiments conducted in Austria and the Netherlands by Hameleers and Schmuck (2017) reveal that social media messages blaming elites or immigrants tend to strengthen populist attitudes, particularly when the source is a favored politician. Thiele and Turnšek (2022) use a series of content analyses of Facebook comments regarding the 2015-2016 refugee crisis in Austria and Slovenia. Their results show that right-wing populist comments increased the number of replies but reduced deliberative quality, whereas people-centric comments reduced argumentation in replies, and anti-immigrant comments led to increased incivility. Others have found a positive correlation between the number of tweets from populist parties and user engagement, indicating a 'more is more' effect (Alonso-Muñoz 2020). Studying Facebook posts from the Italian populist party, *Lega Nord* and its leader, Matteo Salvini, Bobba (2019) finds that populist communication is positively correlated with more 'likeability' of a message. Also analyzing Facebook posts, Jost, M. Maurer, and Hassler (2020) find that anger is likely to be elicited by populist communication that blames elites or out-groups for societal problems. The study also shows that inclusive populism increases 'Love' Reactions. In a similar vein, Cassell (2021) finds that Latin American candidates using populist rhetoric on Twitter drive higher levels of engagement measured in likes and retweets, than those using other discursive forms. Finally, Hameleers (2020) studies how populist communication in the Netherlands and the U.S. resonates with citizens. The findings of the study suggest that in the U.S., citizens' rhetoric is marked by affective polarization along partisan lines, while in the Netherlands, citizens target the cleavages between native and hard-working ordinary people versus the elite.

These studies provide a good picture of how citizens receive populist rhetoric from

the top. However, none of the studies systematically analyze the prevalence of polarizing rhetoric from the bottom on social media, nor do they explore the dynamics of interactions between leaders and users. As such, several questions remained unanswered. Are there differences in the responses that populist and non-populist leaders receive from the public? What forms do these responses take? How do these interactions evolve? Additionally, what is the impact of crises on these dynamics? Answering these questions is important to understand the polarizing potential of these interactions. Furthermore, it is helpful to assess the quality of political deliberation on these platforms derived from populist communication. Deliberation is essential for democracy (e.g. Habermas 2015) as it provides an opportunity to exchange different points of view about public issues. Thus, prevalent polarization in online deliberation might pose risks to democratic stability.

Polarizing Reactions from the Bottom-Up

I theorize that polarization on social media from the bottom is indeed a reaction to populist communication, especially to populists in power. this form of polarization is characterized by two distinct dynamics: divisive rhetoric and plebiscitary rhetoric. These elements interact and reinforce each other, resulting in a bottom-up polarization among the public.

Divisive rhetoric is characterized as communication that underscores division, discord, or conflict between different societal groups, fostering an 'us vs. them.' Populist leaders often facilitate responses with this form of rhetoric by explicitly delineating societal divisions–identifying who belongs to the in-group and who is relegated to the out-group. As previously discussed, these leaders strategically exploit societal cleavages to further their agendas (Ortega et al. 2022), using divisive rhetoric as a key tool in this strategy.

On the other hand, plebiscitary rhetoric refers to responses that call for unity either in support of or opposition to a political leader or movement. This approach resembles a direct, public expression of opinion. It suggests a kind of informal, public referendum conducted via social media. As previously discussed, populists leverage social media to

Table 1: Examples of Responses with Divisive Rhetoric

Replying to	**Original**	**English**
@alferdez	*Alberto no sigas mintiendo se acabaron los ignorantes en maza en este pais siguen los ignorantes que piensan con la pansa y que son manada ya no mientas mas.*	*Alberto, stop lying, the days of widespread ignorance in this country are over. Only the ignorant who think with their stomachs and who act like a herd remain. Stop lying anymore.*
@lopezobrador_	*Que te los compren tus babeantes seguidores.*	Let your drooling followers buy them for you.
@ivanduque	*Amarrecese los pantalones y no ceda a la IZQUIERDA y al COMUNISMO, que ellos al final solo quieren tumbarlo de la Prsidencia e imponer el SOCIALISMO del Siglo XXI.*	*Tighten your pants and do not give in to the LEFT and COMMUNISM, because in the end they only want to overthrow you from the Presidency and impose 21st-century SOCIALISM.*
@jairbolsonaro	*O povo Brasileiro tem que ter memoria e fazer seu voto novamente para o Bolsonaro no 2022. Nos, os latinoamericanos, temos que acabar com a doenca do socialismo genocida.*	*The Brazilian people must remember and cast their vote again for Bolsonaro in 2022. We, the Latin Americans, must put an end to the disease of genocidal socialism.*
@sebastianpinera	*A este hombre le faltan cojones, para acabar con eso terroristas, como hace falta el General Pinochet.*	*This man lacks the guts to finish off those terrorists, how greatly General Pinochet is missed.*

enhance their visibility and promote their movements, aiming to consolidate a majority. Consequently, responses to populist leaders frequently exhibit plebiscitary rhetoric characteristics. However, this phenomenon is not limited to supporters of populism. Opponents too often rely on similar strategies on social media, mobilizing their followers in a call for unity against populist agendas. Table 2 exhibits examples of tweets that exemplify this kind of plebiscitary rhetoric in response to various presidents.

The objectives of the study are twofold. First, it aims to assess the extent of divisive and plebiscitary responses generated by populist presidents compared to non-populist counterparts on social media platforms. This objective is translated in the following hypotheses:

H1. Populist presidents will generate more divisive reactions from social media users than their non-populist counterparts.

H2. Populist presidents will generate more plebiscitary reactions from social media users than their non-populist counterparts.

Table 2: Examples of Responses with Plebiscitary Rhetoric

Replying to	**Original**	**English**
@alferdez	*El pueblo soberano acompana de pie Presidente!*	*The sovereign people stand by you, President!*
@lopezobrador_	*Y seremos los ciudadanos los que democraticamente mandaremos a morena al carajo. De una vez y para siempre.*	*And it will be us, the citizens, who will democratically send Morena to hell. Once and for all.*
@ivanduque	*Bravo president Duque! Felicitaciones! Ud nos esta representando muy bien*	*Bravo President Duque! Congratulations! You are representing us very well.*
@jairbolsonaro	*E da-lhe Bolsonaro! Brasil rumo ao progress! Temos o melhor Presidente de todos os tempos*	*Go Bolsonaro! Brazil is on the way to progress! We have the best President of all time*
@sebastianpinera	*Ud es un grande! Dios quiso que estuviera al mando el 2010 y ahora. Por si o no la gente va a criticar. Confiamos en Usted!*	*You are great! God wanted you to be in charge in 2010 and now. Whether yes or no, people are going to criticize. We trust in You!*

The second objective is to examine the interaction dynamics between populist presidents and their supporters versus opponents on social media. This involves comparing the level of divisive and plebiscitary interactions initiated by supporters and opponents when engaging with populist presidents. This is established by these hypotheses:

H3. Populist presidents will generate more divisive reactions from supporters than their non-populist counterparts.

H4. Populist presidents will generate more divisive reactions from opponents than their non-populist counterparts.

H5. Populist presidents will generate more plebiscitary reactions from supporters than their non-populist counterparts.

H6. Populist presidents will generate more plebiscitary reactions from opponents than their non-populist counterparts.

Data

To test the determinants of divisive and plebiscitary rhetoric emerging from the bottom on social media, I analyze Twitter data consisting of users' original replies to five Latin

American presidents: Alberto Fernández (Argentina), Jair Bolsonaro (Brazil), Sebastián Piñera (Chile), Iván Duque (Colombia), and Andrés Manuel López Obrador (Mexico). The dataset encompasses tweets published between October 2019 and December 2021, capturing a range of political circumstances, including social outbursts and the emergence of Covid-19. Additionally, these cases provide a diverse representation of the political spectrum, including a left-wing populist president (López Obrador), a right-wing populist president (Bolsonaro), two right-wing non-populist presidents (Duque and Piñera), and one left-wing non-populist president (Fernández). The classification of the presidents as populists or non-populist and as left-wing or right-wing is based on the analysis made by the 'Global Populism Database (GPD): Populism Dataset for Leaders 1.0' by Team Populism Hawkins, Aguilar, et al. 2019. The GPD evaluates the degree to which chief executives adopt discursive elements of the ideational approach to populism, as described by Hawkins and Rovira Kaltwasser Hawkins and Rovira Kaltwasser 2018. Furthermore, the cases selected represent the five larger Latin American economies in the region. The data collection of the responses to these leaders was conducted using the 'AcademicTwitteR' package in R, which in the past facilitated access to the Twitter API. The total dataset comprises over 9 million tweets replying to these five presidents.

The analysis of these data followed three stages. The first stage involved assigning a sample to five pairs of local research assistants in five countries. Each pair was assigned a sample of the dataset[1] to code the responses to Latin American presidents as either having divisive or plebiscitary rhetoric, or other, and to determine their sentiment as negative, positive, or neutral[2]. For this task, the coders had access to an interactive web application[3], specifically designed for the project, enabling them to work efficiently on personal computers or mobile phones without the need for spreadsheets or direct database access. After an initial training round and a subsequent review of the first 100 coded tweets to align criteria, all pairs of coders achieved enough levels of agreement, indicating high reliability in their coding consistency.

For the second stage, I used the manually coded tweets with consensus to train and test two classifier models: one for rhetoric type and another for sentiment. Given an

	Sentiment			Rhetoric Type		
Type of Model	Original	Synthetic Balanced	Final	Original	Synthetic Balanced	Final
Precision	0.8	0.87	0.88	0.78	0.8	0.86
Recall	0.78	0.78	0.82	0.75	0.79	0.82
F1 Score	0.78	0.82	0.84	0.76	0.81	0.84

Table 3: Performance Metrics for Classification Models of Tweets in Spanish

	Sentiment			Rhetoric Type		
Type of Model	Original	Synthetic Balanced	Final	Original	Synthetic Balance	Final
Precision	0.79	0.9	0.91	0.01	0.72	0.91
Recall	0.74	0.91	0.92	0.33	0.7	0.8
F1 Score	0.75	0.9	0.92	0.021	0.71	0.84

Table 4: Performance Metrics for Classification Models of Tweets in Portuguese

imbalanced sample, where 'other' for rhetoric type and 'negative' for sentiment were significantly more common, I employed *gpt-3.5-turbo-instruct*, a Generative Pre-training Transformer (GPT) model by OpenAI, to create synthetic tweets. Specifically, for the Spanish cases, 400 synthetic tweets each for divisive and plebiscitary rhetoric were generated (100 per president). The GPT model was prompted with a synthesis of the theory, examples from manually classified tweets, and a request for synthetic tweets. This approach, previously employed in Whitfield 2021 with even less accurate models like GPT-2, aids in balancing the dataset by augmenting observations for minority classes. This process was repeated for the Portuguese language in the Brazilian case and the sentiment model in both languages.

The subsequent step involved fine-tuning the classifier by incorporating these syn-

thetic tweets alongside the manually coded ones. I use a BERT pre-trained model, *BERTuit* (Huertas-Tato, Martin, and Camacho 2022) for the tweets in Spanish, *BERTimbau* (Souza, Nogueira, and Lotufo 2020) for tweets in Portuguese and the Python package 'transformers' by Hugging Face for this purpose. Pre-trained models have demonstrated superior performance in text classification tasks, as indicated by Malla and Alphonse 2021, compared to other machine learning methods like SVM or random forests. This preliminary model was then used to classify tweets with coder disagreements, serving as a 'third coder' to resolve conflicts in the manual classification and improve the balance of the data. Tables 3 and 4 show the performance metrics for each of these steps. I use three metrics to analyze performance: Precision, Recall, and F1 Score. High precision indicates the likelihood of a positive prediction being correct. Recall, on the other hand, measures the number of positive predictions made by the model. The F1 Score is a metric that combines both precision and recall to provide a balanced measure between the two. As shown in Tables 3 and 4, adding synthetic tweets and then retraining the model with those tweets improved the model's performance. Using the synthetically balanced model to classify tweets with disagreement among coders also led to an improvement in the model.

The final models were used to classify the remainder of the sample (N = 9,568,296). Tables 5 and 6 illustrate the distribution of tweets across the categories of interest: divisive and plebiscitary rhetoric, along with positive and negative sentiment. Divisive responses were notably prevalent in the case of former Chilean President Sebastián Piñera, whereas plebiscitary responses were more common in the two populist cases. Positive responses accounted for almost 20% of the total in the case of Jair Bolsonaro, while negative responses were particularly high for Iván Duque, exceeding 80%.

Table 5: Divisive and Plebiscitary Responses to Presidents

President	**Country**	**Total Responses**	**Divisive Responses**	**% Divisive Responses**	**Plebiscitary Responses**	**% Plebiscitary Responses**
Alberto Fernández	Argentina	1,398,839	159,363	11.39	30,0047	2.14
Andrés M. López O	Mexico	1,708,535	308,831	18.07	100,060	5.85
Iván Duque	Colombia	1,247,527	213,745	17.13	8,315	0.66
Jair Bolsonaro	Brazil	4,773,483	229,809	4.81	224,371	4.7
Sebastián Piñera	Chile	439,912	119,172	27.08	5,220	1.18

Note: Bold font denotes a populist president.

Table 6: Positive and Negative Responses to Presidents

President	**Country**	**Total**	**Positive Responses**	**% Positive Responses**	**Negative Responses**	**% Negative Responses**
Alberto Fernández	Argentina	213,502	213,502	15.26	1,020,274	72.93
Andrés M. López O	Mexico	1,708,535	220,520	12.90	1,257,880	73.62
Iván Duque	Colombia	1,247,527	78,902	6.32	1,016,388	81.47
Jair Bolsonaro	Brazil	4,773,483	915,255	19.17	1,900,445	39.81
Sebastián Piñera	Chile	439,912	16,589	3.77	320,344	72.82

Note: Bold font denotes a populist president.

To visually and statistically analyze the data derived from the tweet classifications, I collected additional variables. The primary independent variable is a dichotomous indicator of whether a president is classified as populist or non-populist. To address specific contextual factors, I included a dummy variable for the electoral period, defined as a tweet posted within two months before a major electoral event. The presence of protests is another dummy variable, indicating whether there was a significant mobilization, based on data from the Global Protest Tracker (International Peace 2024) on the day the tweet was posted. 'Social outburst' is a dummy variable denoting whether the country was experiencing a social crisis, according to data from the Crisis Watch of the International Crisis Group (Group 2024). Lastly, 'COVID-19' is a binary variable designed to capture the impact of the pandemic, assigned a value of 1 or 0 depending on whether the tweet was posted within the two months following March 11, 2020, when the World Health Organization declared the pandemic.

Methods

To analyze the previously described data, I employ a two-fold strategy. First, I present annotated time series plots that depict the counts of daily aggregated divisive and plebiscitary responses in conjunction with significant events such as electoral periods, major protests, social outbursts, and the onset of the COVID-19 pandemic. These annotated time series plots provide not only a visual representation of the data over time but also an intuitive illustration of how specific events might influence users' rhetoric in response to the leaders.

For the statistical analysis, I use multilevel negative binomial regression (NBR) models. NBR can be characterized as part of the generalized linear models (Hilbe 2007). Using an NBR is advised when modeling count response data that is overdispersed, as is the case of the responses to presidents on social media. To capture the differences among presidents, I introduce random effects for the 'president' variable. Consequently, these models are structured hierarchically, with observations nested within the 'president'

category. At the same time, other independent variables such as populist/non-populist, protests, social outbursts, and the COVID-19 pandemic are analyzed at the individual response level. Previous studies have suggested that the half-life of tweets from politicians is about 24 hours (Goel et al. 2023) and the dependent variable here is a daily aggregate of tweets, I incorporate a lagged version of the counts of the type of rhetoric. This also helps to account for the serial correlation observed in the dependent variable in the pre-analysis.

NBR uses a logarithmic link function, thus the coefficients represent the change in the log of the expected count of the dependent variable. As such, their interpretation is not intuitive. Consequently, I have transformed these coefficients into Incidence Rate Ratios (IRRs) to enable a more intuitive understanding of how the independent variables influence the frequency of the type of rhetoric. IRR are the exponentiated representation of the coefficient from NBR. As a result, they provide the expected factor change in the dependent variable for a one-unit increase in the independent variable.

Results

This section presents annotated time series analyses for the five Latin American presidents included in the analysis and four multilevel models using negative binomial regression. For this part of the analysis, the sample was reduced to 1,194,174 as the observations with 'neutral' sentiment and 'other' types of rhetoric were dropped. Figure 1 displays time-series data showing the weekly prevalence of divisive and plebiscitary rhetoric by sentiment along with relevant events surrounding the observations. For comparison purposes, the data is normalized.

Although in most cases divisive rhetoric is present, in non-populist cases, most fluctuations are connected with specific circumstances. For instance, the major peaks in divisive responses for Alberto Fernández occurred close to massive protests, a vaccination scandal and during an electoral period. Similarly, Duque and Piñera elicited divisive responses that coincided with periods of major social outbursts in their countries. There

are peaks also present in the populist cases of Bolsonaro and López Obrador, however, the presence of this type of rhetoric seems more consistent over time. Plebiscitary rhetoric shows a more dramatic picture. While very rare in non-populist cases, it seems to be associated with specific events. For instance, Fernández received this kind of response after his inauguration and in the weeks following the declaration of COVID-19 pandemic. Similar effects are seen in all other four presidents. Other than that, only Duque elicited a high number of plebiscitary responses, but in this case a negative one as a result of a national strike. Plebiscitary responses in populist cases seem more consistent too, with peaks in specific moments such as López Obrador's COVID-19 infection and Bolsonaro's hospitalization for chronic hiccups. Interestingly, López Obrador witnessed a negative plebiscitary peak around the mid-term election.

While annotated time series provide insights into how responses with various types of rhetoric behave over time and provide information about events that might trigger these responses, deriving generalizable evidence from them is challenging. Therefore, Table 7 presents the results from four multilevel negative binomial regression (NBR) models, each corresponding to a different type of rhetoric. The unit of analysis in each model is the grouped number of responses–divisive or plebiscitary, positive or negative–for a single day. The fixed-effects part of the table displays coefficients indicating the impact of independent variables on the daily count level. The random effects section reveals the variance and standard deviation of the random intercepts for each president.

The coefficients in Table 7 suggest that being a populist has a positive and statistically significant effect on the generation of divisive and positive rhetoric, as well as on both positive and negative plebiscitary rhetoric. However, there is no significant effect on divisive negative rhetoric. Divisive positive rhetoric appears to be influenced by social outbursts and the emergence of COVID-19. Similarly, divisive negative rhetoric is positively associated with protests, social outbursts, and the onset of COVID-19. Plebiscitary negative rhetoric is also generated by protests, social outbursts, and the COVID-19 crisis.

Figure 1.1 - Weekly Divisive and Plebiscitary Responses for Alberto Fernández

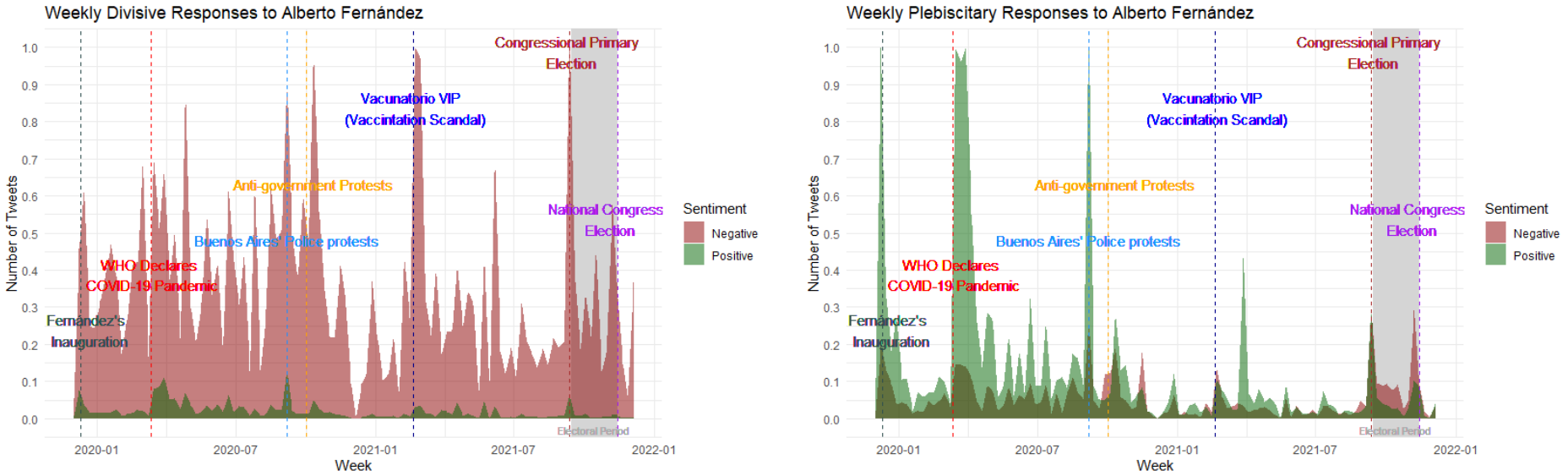


Figure 1.2 - Weekly Divisive and Plebiscitary Responses for Andrés Manuel López Obrador

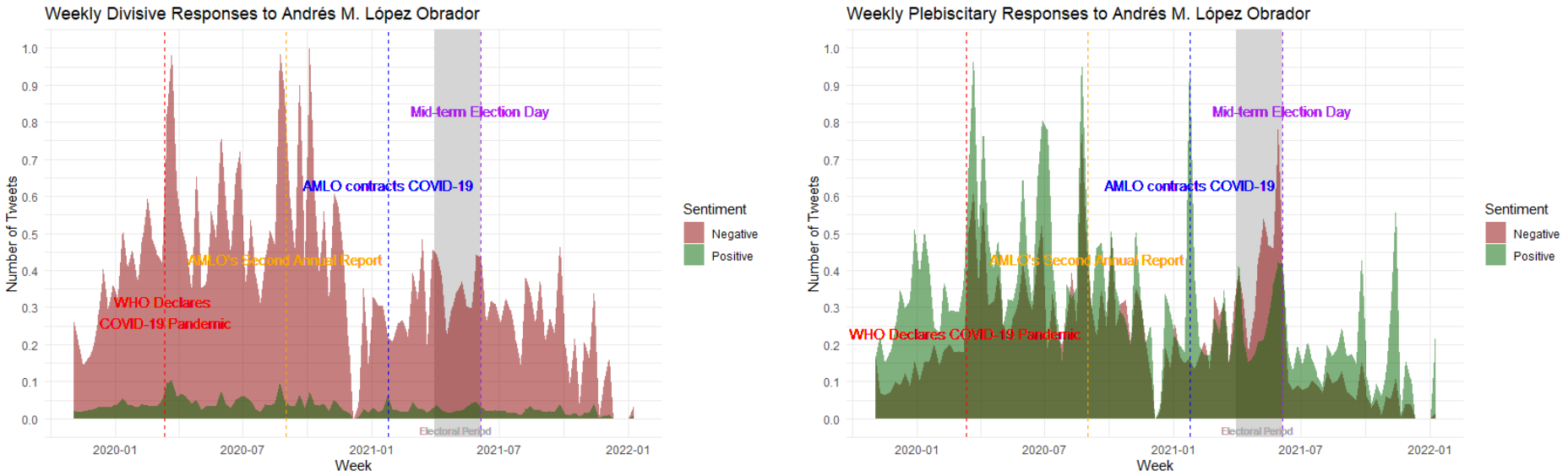
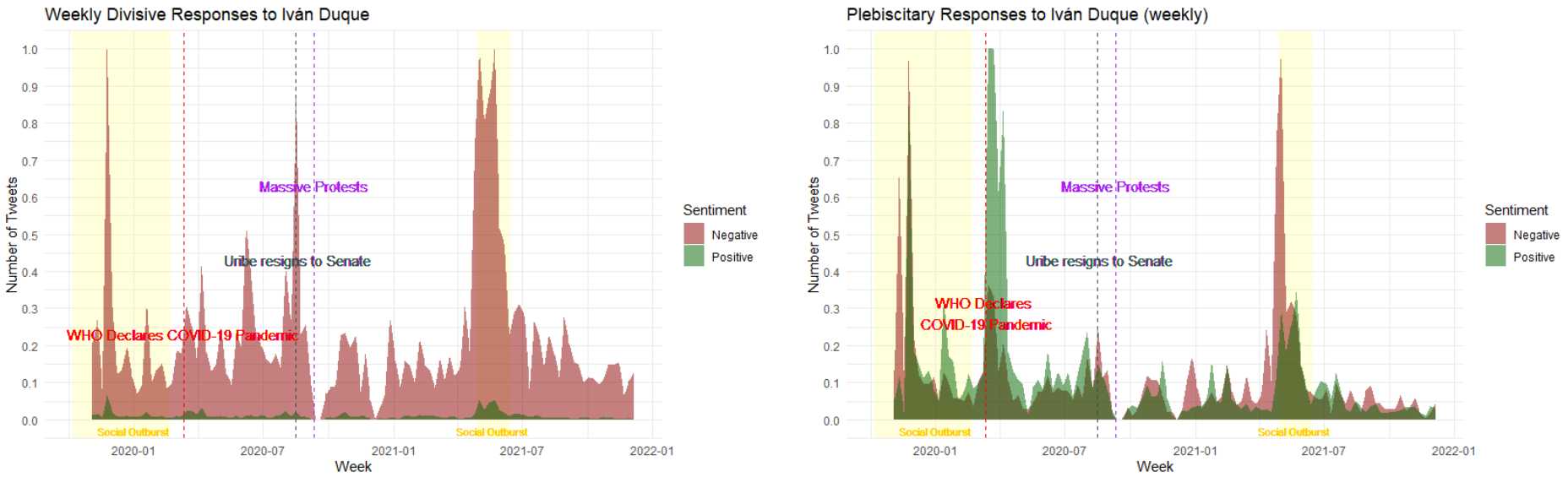
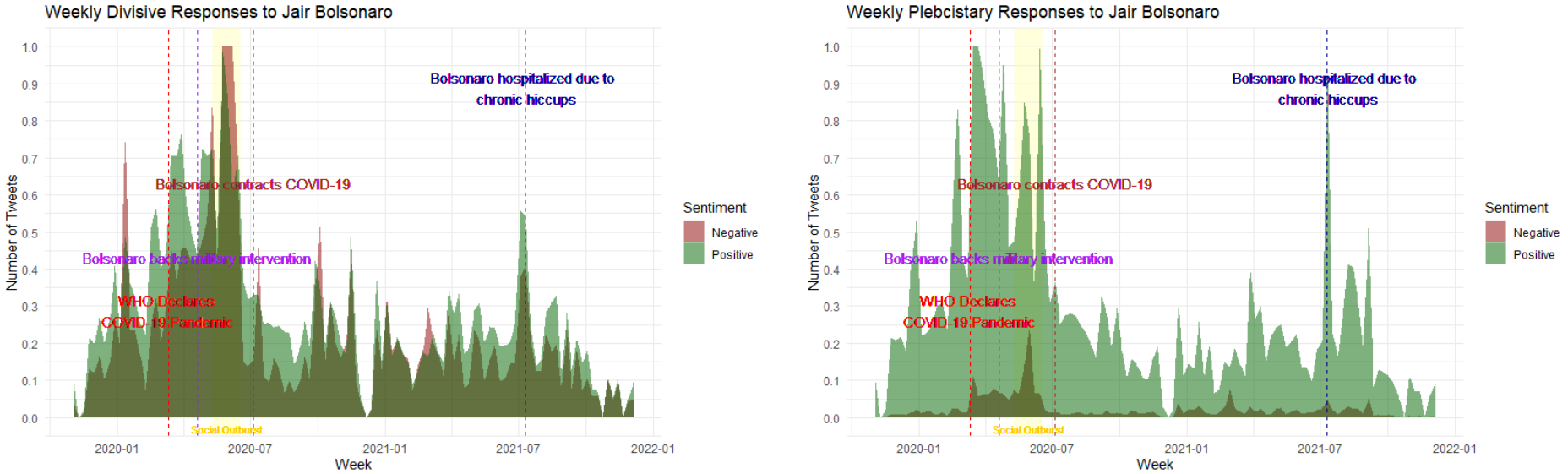


Figure 1.3 - Weekly Divisive and Plebiscitary Responses for Iván Duque



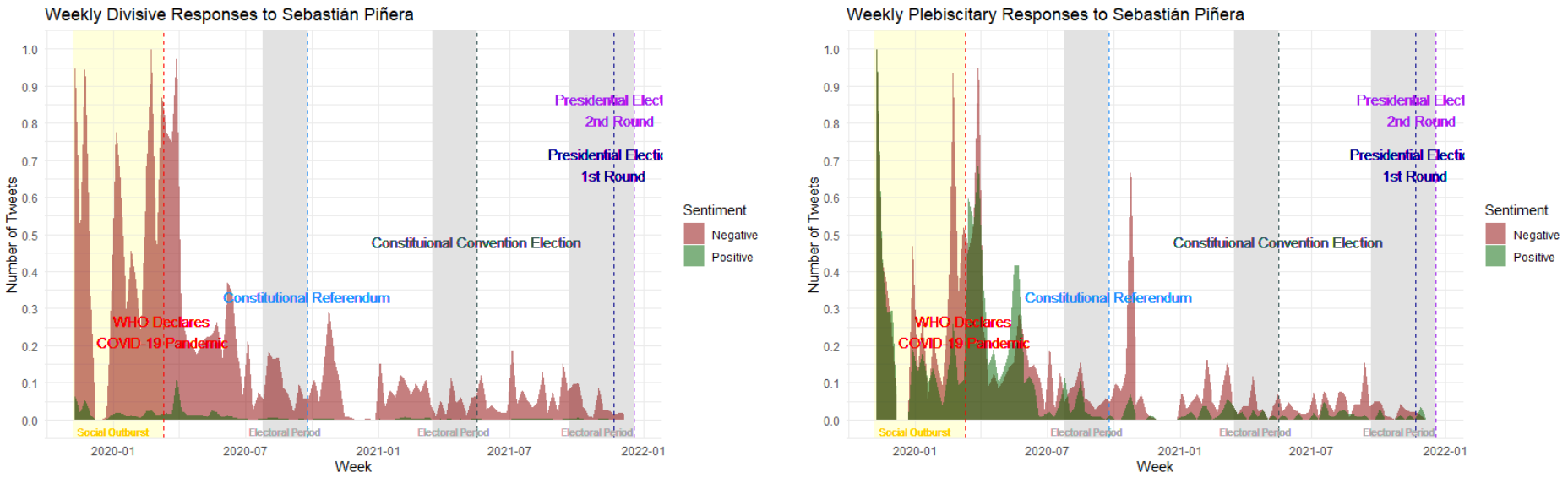
Note: The scale has been transformed using min-max normalization to make figures comparable.

Figure 1.4 - Weekly Divisive and Plebiscitary Responses for Jair Bolsonaro



Note: The scale has been transformed using min-max normalization to make figures comparable.

Figure 1.5 - Weekly Divisive and Plebiscitary Responses for Sebastián Piñera



Note: The scale has been transformed using min-max normalization to make figures comparable.

Table 7: Multilevel Negative Binomial Regression Models of Generation of Four Types of Rhetoric

	Divisive		**Plebiscitary**	
	Positive	**Negative**	**Positive**	**Negative**
Fixed Effects:				
Populist	**2.2332**	0.1722	**3.4649**	**1.9810**
	(0.5326)	(0.5318)	(0.9652)	(0.6565)
Electoral Period	**-0.5325**	**-0.0988**	**-0.1355**	**0.2835**
	(0.0683)	(0.0171)	(0.0226)	(0.0699)
Protests	0.4479	**0.0319**	**0.0374**	**1.1648**
	(0.2520)	(0.0161)	(0.0180)	(0.2834)
Social Outburst	**1.3940**	**0.3378**	**0.3344**	**1.4401**
	(0.0726)	(0.0173)	(0.0215)	(0.0814)
COVID-19	**1.1524**	**0.1945**	**0.4048**	**0.9382**
	(0.0624)	(0.0165)	(0.0201)	(0.0694)
Rhetoric Lag	0.0002	**0.0535**	**0.0839**	**0.0026**
	(0.0003)	(0.0202)	(0.0261)	(0.0007)
Intercept	**1.7405**	**5.0801**	**1.5362**	**1.2669**
	(0.3374)	(0.3361)	(0.6091)	(0.4153)
Random Effects:				
President (Variance)	0.339	0.338	1.118	0.515
President (SD)	0.582	0.581	1.057	0.717

Note: Coefficients in bold are statistically significant at the 0.05 level.

Interestingly, electoral periods have a negative impact on positive and negative di-

visive rhetoric, as well as positive plebiscitary rhetoric. Previous observations of the dependent variable show a statistically significant temporal correlation in the cases of negative divisive rhetoric and the two forms of plebiscitary rhetoric.

The Random Effects section of the results indicates the variance and standard deviation among the five presidents analyzed in each model. The variance and standard deviation are moderate for the divisive models, suggesting this kind of response is likely to be similar across all five presidents. However, the variance and standard deviation are high in the positive plebiscitary rhetoric model, likely reflecting differences between populist and non-populist presidents. While less extreme, the model for negative plebiscitary rhetoric also exhibits high levels of variance and standard deviation.

To interpret the impact of populism and the additional independent variables on augmenting the frequency of responses with specific rhetoric, Figures 2 and 3 show Incidence Rate Ratios for each of the four types of rhetoric. Figure 2.a shows the substantial impact of being populist on generating positive divisive rhetoric. For populists, positive divisive rhetoric is expected to be 9.32 times higher than for non-populists. Responses are 1.56 times more likely to be positively divisive during protests, although this relationship is not statistically significant. Social outbursts, on the other hand, are 4 times more likely to generate positive divisive responses. Responses during the first two months after the COVID-19 pandemic was declared by WHO are 3.16 times more likely to be positive and divisive. Figure 2.b shows that only social outburst has a relatively substantial effect on negative divisive rhetoric. Under social outburst conditions, this type of rhetoric is likely to increase 1.4 times.

Figure 3.a shows the highest impact of being a populist in power. Ceteris paribus, being a populist is likely to generate 31.97 times more positive plebiscitary rhetoric than non-populists. Here, COVID-19 also shows a statistically significant and somewhat substantial relationship as a response during the first two months of the pandemic is likely to be 1.49 times more likely to be positive and plebiscitary. Figure 3.b shows that being a populist is 7.24 times as likely to elicit a negative and plebiscitary response. This kind of response is also 4.2 and 3.2 times more likely under social outburst and protest

conditions, respectively. COVID-19 also elicits 2.5 times more negative and plebiscitary responses.

Discussion

The analysis presented here suggests that divisive rhetoric appears to be a chronic feature in the case of populists, likely due to a combination of populist communication styles and social media platform dynamics. This finding provides support to H1, as populist presidents generated more divisive reactions than their non-populist counterparts. However, in cases with constant mobilizations or social outbursts, divisive rhetoric can also be acute in non-populist contexts. Acute periods of divisive rhetoric were present during Sebastián Piñera and Iván Duque presidencies when facing social unrest in their countries. In Argentina, a series of protests and scandals have driven the divisive responses against Alberto Fernández.

Plebiscitary rhetoric seems more complex than divisive rhetoric, although evidence suggests that populist leaders are more consistently associated with responses of this kind. Supporting H2, both populist presidents—AMLO and Bolsonaro—generated a significantly higher number of plebiscitary responses compared to their non-populist counterparts. While some of these responses were positive, and thus likely expressions of unity and support, there were specific moments when these expressions were negative. Plebiscitary responses to Alberto Fernández are likely explained by a honeymoon effect. Fernández's term began on December 10, 2019, thus, he likely enjoyed exceptional support during those first months in office. Fernández, López Obrador, Duque and to some extent, Sebastián Piñera seem to have experienced a brief rally-round-the-flag effect after the COVID-19 pandemic was declared. Duque experienced a negative plebiscitary response after the national strike, which might be indicative of a response of users against the government policies in the form of a call for unity for rejection. Another phenomenon unveiled by the data in the study is the positive plebiscitary response to sickness. This was observed during López Obrador's first COVID-19 infection and Bolsonaro's hospi-

Figure 2a - Impact on the Frequency of Positive Divisive Rhetoric

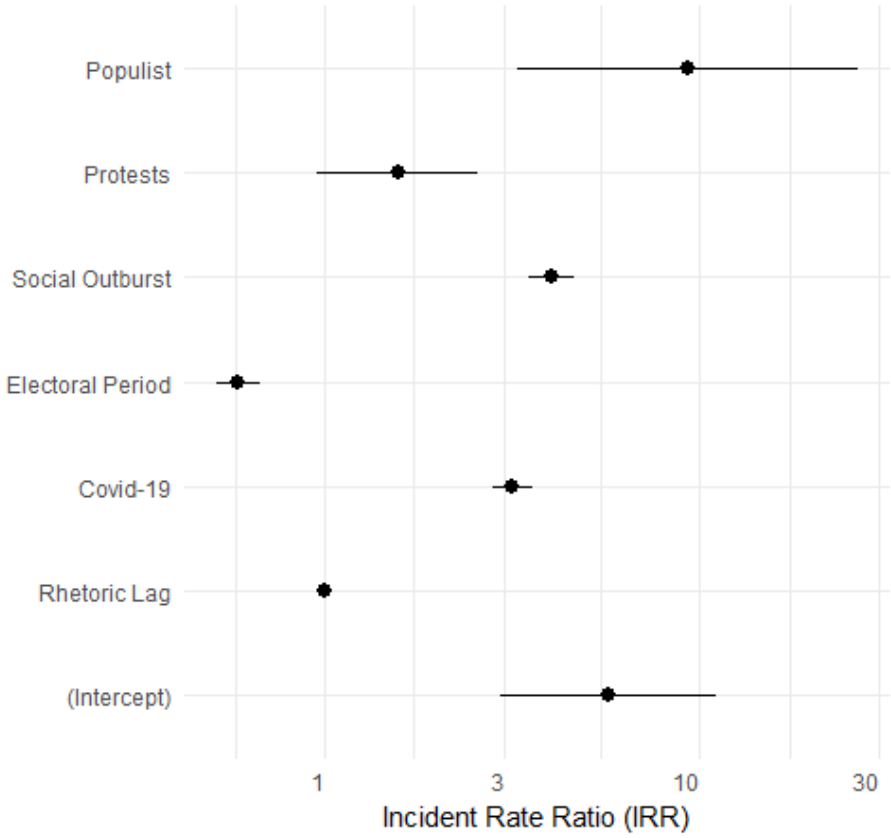


Figure 2b - Impact on the Frequency of Negative Divisive Rhetoric

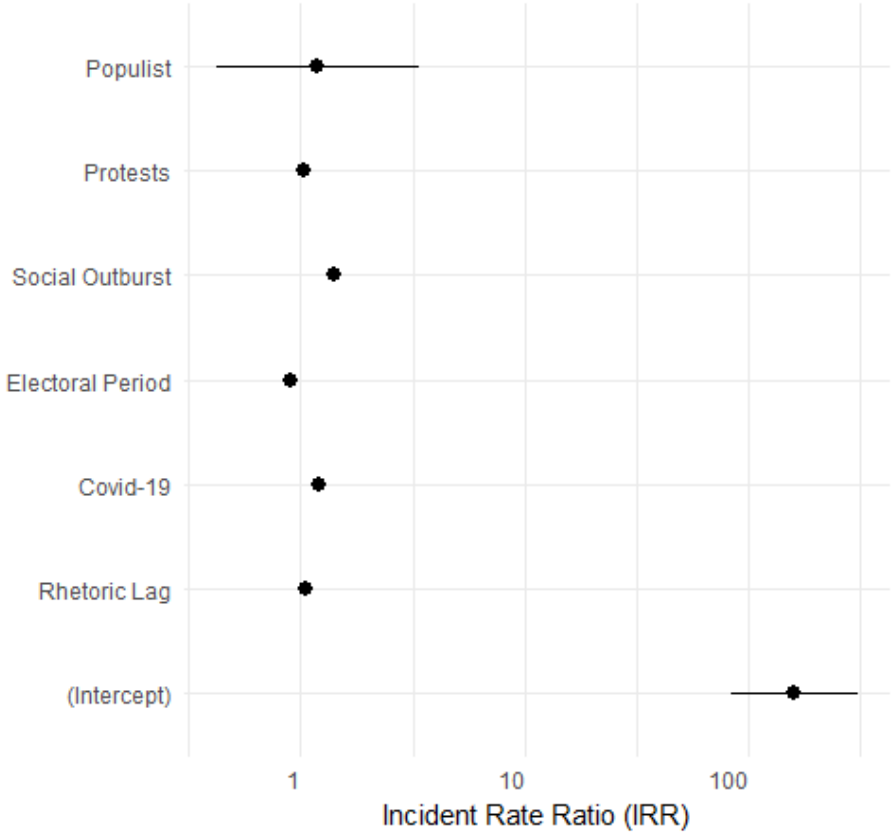


Figure 3a - Impact on the Frequency of Positive Plebiscitary Rhetoric

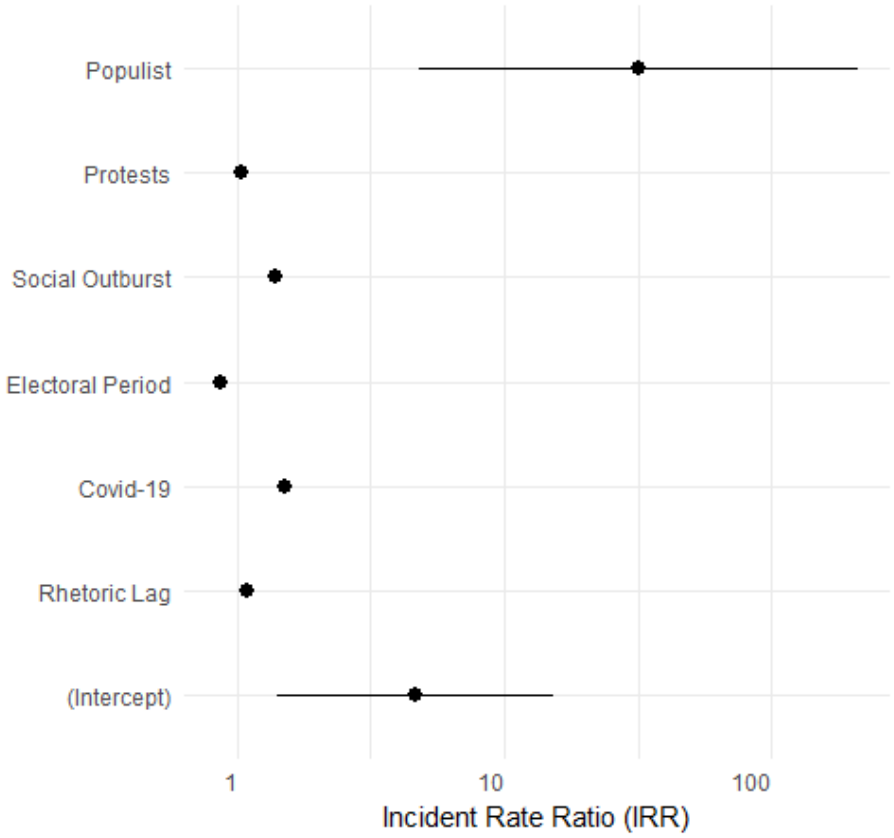
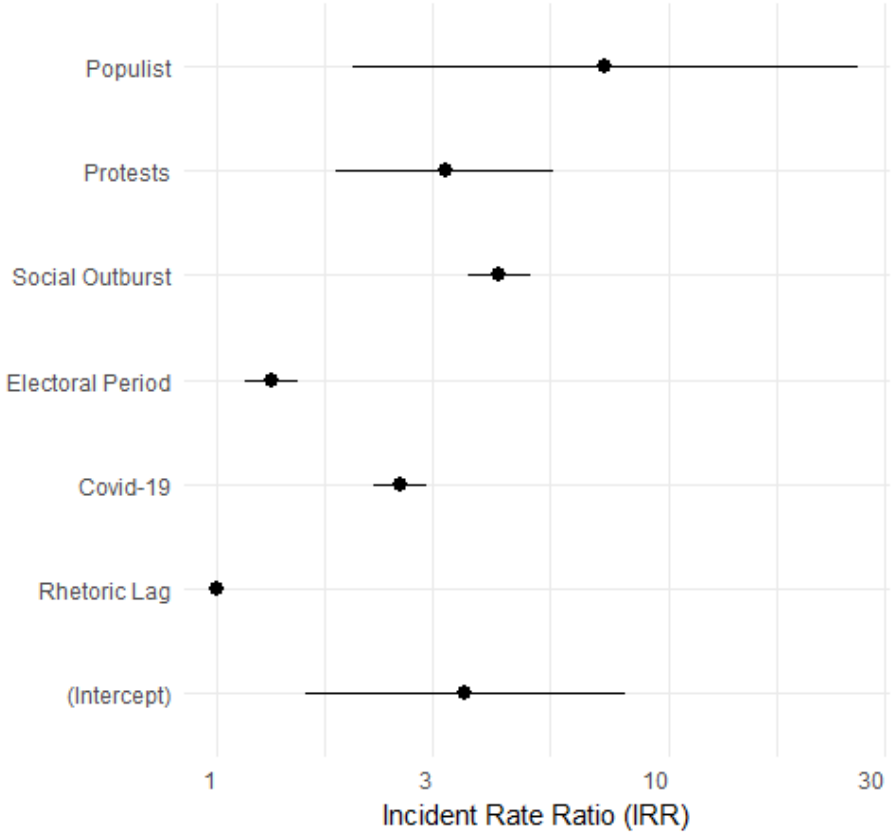


Figure 3b - Impact on the Frequency of Negative Plebiscitary Rhetoric



talization.

Supporting the hypotheses on generating reactions from supporters (H3 and H5), the findings of the statistical analysis suggest that populists in power are more likely to use positive divisive and plebiscitary rhetoric. Regarding opponents, the analysis supports H6, as populists are more likely to elicit negative plebiscitary reactions. The analysis did not reveal a statistical relationship between being a populist and generating negative divisive responses, thus failing to support H4. Other variables also showed the potential to generate the kind of responses studied. Social outbursts and protests are likely to increase the levels of the four types of rhetoric analyzed. It is particularly relevant that social outbursts generate high levels of positive divisive rhetoric and negative plebiscitary rhetoric. This likely indicates that supporters of the president are emphasizing societal divisions while opponents are calling for the rejection of the president. The emergence of COVID-19 has been shown to generate divisive rhetoric predominantly from supporters. Additionally, COVID-19 shows a positive relationship with plebiscitary responses.

The implications of these findings are significant. On the one hand, they indicate that populist leaders possess a distinctive ability to influence public opinion, whether positively or negatively. Additionally, these findings highlight the potential for such leaders to foster divisiveness and plebiscitarian attitudes among social media users. Despite the inherently limited representation of social media demographics, previous research has raised concerns about the offline political effects of social media activities (e.g., Gil de Zúñiga, Molyneux, and Zheng 2014; Connelly, Mery, and Strasbaugh 2021). Furthermore, considering that populist presidents like AMLO and Bolsonaro have 10.3 and 11.8 million followers, respectively, the potential for their polarizing impact cannot be underestimated.

The results presented here provide a nuanced understanding of how users engage with populist and non-populist leaders in Latin America on social media, specifically Twitter. The substantial volume of both divisive and plebiscitary responses observed to populist leaders aligns with prior research on the polarizing nature of populist rhetoric on social media. The unique ability of populist rhetoric to elicit strong, both supportive and

antagonistic, reactions corroborates the theoretical perspectives put forth by scholars such as Waisbord and Amado (2017) and Kreis (2017). These authors emphasize the use of social media by populists to distinctly demarcate 'the people' from 'the elite.' Additionally, the findings of this study echo the concept of strategic polarization on social media (Ortega et al. 2022), suggesting that populists are effectively taking advantage of these platforms for this purpose.

These findings enhance our understanding of how citizens interact with populist leaders on social media. Previous research has indicated that populist rhetoric is highly appealing to social media users, as evidenced by increased likes, retweets, and comments within specific communities (e.g., Alonso-Muñoz 2020; Bobba 2019; Jost, M. Maurer, and Hassler 2020; Cassell 2021; Hameleers 2020). Although primarily descriptive, this study goes beyond these observations by offering a more comprehensive analysis of the engagement elicited by these leaders. It identifies two distinct forms of responses—divisive and plebiscitary—and examines their prevalence. This analysis sheds light on the potential for online and offline polarization driven by these interactions, thereby opening the theoretical debate on the responses to populists from the bottom up. From a methodological standpoint, the study contributes to the growing field of computational social science and specifically to the use of Artificial Intelligence tools to enhance research on political issues. As a result of this paper, a large dataset of tweets will be made available for addressing other inquiries. Furthermore, four models, two in Spanish and two in Portuguese are already available for analyzing questions similar to those in this study or for being retrained to answer others.

Notes

[1]Sample sizes varied among cases. For Argentina, Chile, and Colombia, the sample size was 10,000, as fewer cases of divisive and plebiscitary rhetoric were expected. For the populist cases, the sample size was 5,000 cases.

[2]A more extensive explanation of the coding rules can be found in Annex 1 - Codebook.

[3]This interactive web application was designed using the R Package Shiny.

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