

# Setting an example: Political leaders' cues and compliance with health policies in the early stages of the Covid-19 pandemic in Mexico

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## Abstract

How do political leaders' cues affect citizen behavior regarding a new and complex issue? We address this question in the context of the early stages of the Covid-19 pandemic in Mexico, using electoral outcomes and municipal-level mobility data from Facebook's Movement Range Maps. In March 2020, Mexico's president downplayed constantly the severity of the coming health crisis by continuing his political rallies throughout the country and encouraging people to leave their homes. Using an event-study analysis, we find that, after the first press conference where his government declared mobility restrictions were not yet necessary, on March 13, citizens' geographic mobility in pro-government municipalities was higher than in cities where support for the president was less strong. Our results are robust to several specifications and definitions of political support. Moreover, we find evidence that our results are driven by cities with higher media penetration, which implies that they can be attributed to people's reactions to the president's cues rather than to systematic differences in the preferences of his supporters.

## KEYWORDS

Covid-19, health behavior, leadership, social distancing

## INTRODUCTION

Since the beginning of the pandemic, governments around the globe have implemented numerous non-pharmaceutical interventions (NPI) to contain the spread of the novel coronavirus SARS-CoV-2, the virus responsible for the Covid-19 disease. These mitigation strategies include school closures, cancellations of mass-gathering events, closures of “non-essential” businesses, and information campaigns about preventative measures (e.g., handwashing). These measures are meant to “flatten the curve,” a process by which the disease is allowed to spread more gradually to avoid the saturation of the health care system.<sup>1</sup> The success of these

measures depends crucially on clear communication and trust in institutions (Blendon et al., 2008; Fineberg, 2014; Holmes, 2008; Vaughan & Tinker, 2009).

The role of leaders in this context becomes critical to influence human behavior, deliver the necessary information to people, and minimize the risk of infection. The literature shows that leaders affect agents' beliefs and behavior by reducing information asymmetries (Dewan & Myatt, 2008; Hermalin, 1998), shaping social norms (Acemoglu & Jackson, 2015), or conveying a message charismatically (Antonakis et al., 2019). Through words and behavior, a leader can affect people's ethical conduct (Ajzenman, 2021; d'Adda et al. 2017), their contributions to a public good (Gächter & Renner, 2018; Güth et al., 2007), or even their perceptions and decisions on intrinsically personal matters, such as contraception and fertility (Bassi & Rasul, 2017). An important aspect of leadership in the context of this analysis is the effect it has on health-related risky behavior.

In this article, we explore the effects of a high-profile political leader's cues on citizens' preventive health behavior—reducing mobility to prevent the spread of SARS-Cov-2. A political cue is a signal about the value represented by a particular issue and its likely consequences (Gilens & Murakawa, 2002). Anthony Downs (1957, p. 233) notes that the average citizen “cannot be expert in all the fields of policy that are relevant to his decision. Therefore, he will seek assistance from men who are experts in those fields, have the same political goals he does, and have good judgment.” Yet, the influence of these information “shortcuts” depends heavily on the type of issue in question. Carmines and Stimson (1980) distinguish between two kinds of issues in terms of the decision-making effort—easy issues, which are ends-oriented, emotional, and relatively familiar (such as abortion or same-sex marriage); and hard issues, which are means-oriented, technical, and unfamiliar (such as economic policy or foreign affairs). The literature shows that, in general, when a topic is new and cognitively demanding, like the effectiveness of NPI in minimizing health hazards, citizens rely on heuristics and leader cues to form opinions (Druckman, 2001; Kam, 2005; Mondak, 1993; Tversky & Kahneman, 1974).

We focus on the early outbreak of Covid-19 in Mexico, a setting that is suitable to address our research question. In March 2020, health officials were preparing the national strategy to be implemented amid the rising number of Covid-19 cases in the country and abroad. At the same time, Mexico's president Andres Manuel Lopez Obrador (AMLO) constantly undermined the severity of the pandemic, disregarded social distancing, and urged people to go out, “...live life as usual... if you're able, and have the means to do so, continue taking your family out to eat ... because that strengthens the economy” (Ward, 2020). His attitude toward the health crisis sparked severe criticism in the political opposition and national and international media (Grillo, 2020; Linthicum, 2020). Many subnational governments even enacted their own mitigation policies ahead of the federal government (Guasco, 2020).

We hypothesize that AMLO's cues are important in the formation of early risk expectations about the virus. Arguably, his supporters would have viewed his statements and lack of caution about the disease (cues) as a signal that the new virus was not a cause of great concern. On the other hand, this situation likely had the opposite effect on the perception of risk among his critics. For example, Nicholson (2012) shows that U.S. President Bush's endorsement of a policy did not persuade Republicans, but it made Democrats more polarized on the issue. This parallel may suggest that, in our context, individuals who oppose the president politically would have taken his cues as a suggestion that the pandemic was a very serious threat and that they should act accordingly.

To address our research question, we conduct an event-study analysis at the day-municipality level. Specifically, we analyze the effect of AMLO's March 13 press conference.<sup>2</sup> The conference was the first time that the main topic in the agenda was the strategy to take for the coming pandemic. That day, the vice-secretary of Health, Hugo López-Gatell—who would later become the “czar” of the Mexican Covid-19 health policy—, said that mobility-reduction policies, such as cancellation of mass-gathering events (e.g., concerts, movies, or sporting

events) were not necessary at that point. In addition, the Mexican president finished that conference announcing that the following day he would be starting his tour in the state of Guerrero (AMLO, 2020a).<sup>3</sup>

In practice, our empirical strategy defines the “treatment” as the interaction between pro-AMLO (a dummy variable that takes value 1 if the municipality had a higher-than-median vote share for AMLO in the 2018 election) and March 13. We use mobility data from Facebook’s Movement Range Maps (Facebook, 2021) and municipal-level electoral data from the 2018 presidential election to assess whether AMLO’s supporters reduced their mobility less than AMLO’s non-supporters did.<sup>4</sup> Our results show that, following the conference on March 13, citizen mobility was statistically higher in those cities where the president received higher support. This effect persisted for at least 10 days and is robust to several specifications and definitions of political support.

Besides reducing citizen mobility, there are several possible strategies to mitigate the spread of the virus. For example, wearing facemasks is also an important measure to contain the spread of Covid-19, and one that, at least in the United States, has been polarized along partisanship and ideological lines (Utych, 2021). Yet, we prefer to focus on citizen mobility for two reasons. First, in the period we analyze (March 2020), Mexican health authorities did not recommend the use of facemasks.<sup>5</sup> Second, measuring this kind of preventive health behavior relies on self-reported data, which we do not have. Moreover, self-reported information can be problematic because people may not accurately report their own behavior. For example, people may be inclined to over-report the frequency of handwashing if they are afraid of being thought of as irresponsible. On the other hand, our measure of mobility does not suffer from these issues. It is an objective index capturing the extent to which people move around different locations.<sup>6</sup>

This article contributes to the literature in two ways. First, it adds to the extended literature that examines the role of leaders’ cues on agents’ beliefs and behavior. Economics has traditionally focused on the role of incentives as the main channel through which a principal actor affects the behavior of agents (Grossman & Hart, 1983; Hart, 1995; Holmstrom & Milgrom, 1994; Jensen & Meckling, 1976). Meanwhile, an emerging theoretical (Acemoglu & Jackson, 2015; Hermalin, 1998) and empirical literature explores the way in which leaders, through their words and exemplary behavior, encourage followers to behave in certain ways. Antonakis et al. (2019) conduct a series of lab and field experiments to show that charismatic elements in a leader’s speech raise productivity and encourage pro-social behavior. In 1991, Pope John Paul II’s visit to Brazil affected behavior and perceptions significantly regarding contraception and fertility (Bassi & Rasul, 2017). Ajzenman (2021) finds that, after disclosure of corruption by local politicians, secondary students’ cheating on cognitive tests increased significantly in Mexico. His findings are important for our article because they suggest that actions taken by leaders affect people’s—or at least young adults’—behavior in Mexico.

Second, we contribute to the new and growing literature examining the relationship between politics and compliance with NPI during the Covid-19 pandemic. In the United States, many studies have found that partisanship plays an important role in compliance with stay-at-home mandates, risk expectations regarding health and job hazards, and other preventative health activities, such as handwashing (Allcott et al., 2020; Barrios & Hochberg, 2020; Gadarian et al. 2021; Lipsitz & Pop-Eleches, 2020; van Holm et al., 2020). Particularly related to this article, Painter and Qiu (2020) find that when a Republican governor in the United States issues a stay-at-home order, Democratic counties are less likely to comply. Grossman et al. (2020) show that, while governors’ recommendations to stay at home, which preceded actual mandates to do so, led to a large and significant reduction in mobility, the effect was more pronounced in Democratic than Republican counties, and stronger under Republican governors.

In addition to the vast literature on politics and Covid-19 in the United States, Mariani et al. (2020) and Ajzenman et al. (2020) find that Brazilian president Jair Bolsonaro’s dismissive

rhetoric of the pandemic led his supporters to comply less with social distancing recommendations, which increased the rate of contagion in their communities. In the case of Mexico, Daverio-Occhini et al. (2020) show that public events held by AMLO led to higher mobility levels in municipalities with higher political support for him. In this article, rather than focusing on public appearances and events held during the pandemic crisis, we analyze the effects of AMLO's initial statement on social distancing. We argue that this leader's behavior and nudges are more likely to influence people's decisions when the issue at hand is relatively unknown, and individuals lack clear information on the existing trade-offs. Additionally, we use different sources to compute our main dependent variable (mobility data).

The structure of the article is as follows. The second section describes the background. The third section describes the data and descriptive statistics. The fourth section explains the empirical framework we use to test our hypothesis. In fifth section, we present and discuss our main results, and sixth section offers conclusions.

## BACKGROUND

In the early stages of the pandemic, the Mexican Government seemed to lack a clear course of action to deal with the new disease. On March 11, when the World Health Organization (WHO) declared Covid-19 a pandemic, the federal health authorities had not yet presented a plan to mitigate the spread of the virus.<sup>7</sup> This hesitant and relaxed position against the disease mirrored AMLO's behavior and statements. The president caught the attention of national and international media (see O'Grady, 2020) by continuing his political rallies and tours around the country throughout the month of March, and until April 15 (15 days after his government declared a national lockdown that restricted all “non-essential”<sup>8</sup> activities). During these events, he never wore a facemask,<sup>9</sup> and he insisted on greeting and kissing his supporters. One of the people he visited was the mother of the infamous drug trafficker Joaquin “El Chapo” Guzman—currently serving a life sentence in the United States—when visiting the drug lord's hometown in the state of Sinaloa on March 29 (Phillips, 2020).

Many opposition governors criticized the president for his reckless behavior and implemented their own social distancing policies before the federal government enacted the closure of all non-essential businesses on March 31 (Guasco, 2020).<sup>10</sup> The state of Jalisco announced the cancellation of mass-gathering events and the start of online courses for universities on March 13, just moments after the President held his conference where it was announced that these measures were not yet necessary. Enrique Alfaro, a member of the opposition party *Movimiento Ciudadano*, said, “The scientific evidence shows that the difference between those cities or countries that had more serious issues, and those that were able to contain the virus was taking measures on time...the health of Jalisco citizens is above any agenda...I do not share the tone set forth by the Federal Government...” (Gobierno del Estado de Jalisco, 2020). Almost half of the state governments implemented either one or both of these social distancing policies before the federal government indicated it. With the exception of Baja California and Tabasco, governors of the states implementing early social distancing policies belonged to opposition parties different from the federal government.<sup>11</sup>

Throughout March 2020, AMLO continued his political rallies in several Mexican cities and constantly gave statements (in his daily press conferences, or other media outlets) that minimized the gravity of the situation and questioned the effectiveness of social distancing and mobility-reduction measures in tackling the pandemic.<sup>12</sup> Our empirical strategy will be based on one crucial event—the president's press conference on March 13. We believe it was the most influential event for several reasons.

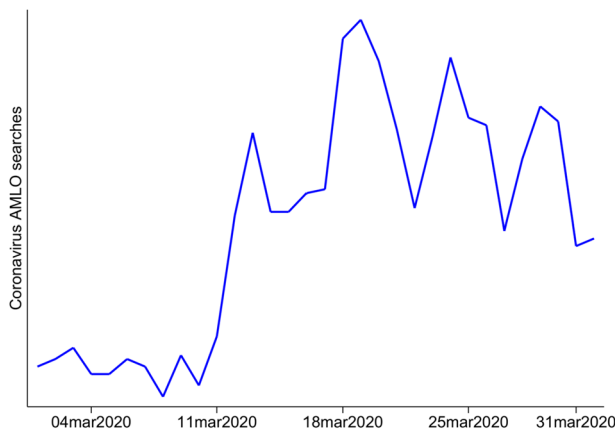
First, it was the first time that the main topic of the daily press conference was the strategy to be taken to face the impending health crisis. In this session, the vice-secretary Hugo

López-Gatell, who later became the face of health policy regarding Covid-19 in Mexico said, “if these measures are done too prematurely [mobility restrictions] they wear out...we cannot keep schools closed for too long; we cannot restrict commercial activities for too long because they start having negative consequences” (AMLO, 2020a). Moreover, the president finished this conference by saying that the next day he would continue his tour in the state of Oaxaca (AMLO, 2020a). As discussed above, a leader's cue is a signal about the value or importance of a given issue. Therefore, we believe the statements from his government officials, and the behavior exhibited in this press conference can be interpreted as a signal from the president that the coming health crisis was not as severe as some suggested. Second, this date coincides with a clear surge in interest in Covid-19 and preventative measures in the Mexican public, as our analysis of Google trends (2021) data shows (see Figure 1). Third, it happened at a moment when the population had virtually no direct experience with or knowledge of the virus and thus was more likely to be affected by the cues of charismatic leaders.

Plausibly, the effects of subsequent statements would be more difficult to disentangle from his initial stance and from other concurring factors, such as more direct experience with the virus, differences in the area-specific incidence of the disease, socioeconomic factors, and heterogeneity in risk preferences. Therefore, we believe that the March 13 press conference was crucial in the formation of risk expectations throughout the initial stages of the pandemic, particularly for AMLO's political supporters. We believe that the words of Mexico's political leader were of paramount importance for compliance with NPI and health-related risk expectations.

Although AMLO's party has a congressional majority and won many local elections in 2018, we argue that his personal attitude, and not a partisan divide among voters, drives the effects we observe.<sup>13</sup> Partisanship is more prevalent and has a greater influence on political behavior in older democracies, where parties are better established, than in newer, less stable party systems (Converse, 1969). Indeed, studies on partisanship in multiparty systems or new democracies with less established party systems are recent (Brader & Tucker, 2012; Samuels & Zucco 2014).

Many authors (Beltrán, 2009; Bolívar Meza, 2019; Sánchez y Sánchez, 2019a, 2019b; Vidal et al., 2010) have found that, at least for AMLO's National Regeneration Movement party (Morena) and its coalition in the 2018 elections, there was no clear ideological voter identity



**FIGURE 1** Google trends for the searches of words “AMLO” and “Coronavirus”. The searches are normalized in the period (March 2020) and the region specified (Mexico). The first peak in searches happened the same date AMLO released a statement saying mass isolation was not necessary (March 13). *Source:* Authors' elaboration, based Google Trends (2021)

(the Social Encounter Party [PES] is actually a pro-life, right-wing party, while Morena and the Labor Party [PT] are more left-leaning). Bolívar Meza (2019, p. 62) notes that, “with the purpose of accumulating more votes and win elections, this coalition did not present a political project based on a specific ideology but instead immediate objectives...this time as a candidate for the coalition [Obrador] kept a moderate posture, placing the fight on corruption as the main aspect of his project.” Likewise, Sánchez y Sánchez (2019a) find that, in Mexico City, those who voted for Morena in 2018, followed a “rational partisanship,” motivated more by the poor performance of the previous mayor (Miguel Angel Mancera, of the Party of the Democratic Revolution [PRD]) and the repercussions of social programs than their views on topics, such as abortion or same-sex marriage (considered as left-wing ideology). Vidal et al. (2010) find that clientelist attachments influence some aspects of party identification in Mexico, while Beltrán (2009) and Sánchez y Sánchez (2019b) show that there are very few ideological voters in Mexico when it comes to their ideas or opinions on specific policies. Moreover, Morena is a party founded by AMLO in 2015.<sup>14</sup> In such a short period, we believe, it is unlikely for AMLO's voters to have developed an ideological identity that may have led them to behave differently in the context we study (e.g., being less risk-averse).<sup>15</sup>

Recent literature has used Internet searches to assess the formation of expectations about consumption, market volatility, and unemployment (Choi, 2009; Dimpfl & Jank, 2016; Vosen & Schmidt, 2011). Moreover, trends in Google searches predict disease outbreaks, such as influenza and Covid-19 (Ayyoubzadeh et al., 2020; Nuti et al., 2014). Closely related to our topic, Barrios & Hochberg, (2020) find that, in the United States, Republican counties had lower volumes of Google searches about the health and economic risks of Covid-19. Interestingly, the authors find that this trend reverses after March 9, when it was announced that high-profile Republican figures had contracted the virus. This data supports the claim that, at least in part, the formation of risk expectations does not depend solely on facts but also on politics.

In a context similar to ours, Calvo and Ventura (2020) show that pro-government and opposition partisans report very different expectations of health and job risk in Brazil. Their results highlight the importance of how political leaders deliver their messages to the public. Respondents in their experiments were sensitive to negative (blame avoidance) and positive frames (cross-the-aisle), with negative social media messages from a pro-Bolsonaro politician reducing overall support for the government and increasing perceptions of health and job risks of government non-supporters. This data seems important in our setting because AMLO, like many other populist leaders, relies on blame avoidance and anti-elite rhetoric to support his policies and defend himself against criticism from media and opposition.

To test our main hypothesis—whether AMLO's March 13 press conference led his constituents to reduce their mobility less than non-supporters—we look at the changes in behavior that occurred in pro-AMLO municipalities, where he obtained a higher-than-national-median share of the vote, in the aftermath of his press March 13 conference. As Figure 1 shows, this date coincides with an increasing interest in the topics of coronavirus and the president. Therefore, this setting allows us to analyze the influence of a prominent leader's cues on people's actions, in this case, whether they reduce their mobility.

## DATA AND DESCRIPTIVE STATISTICS

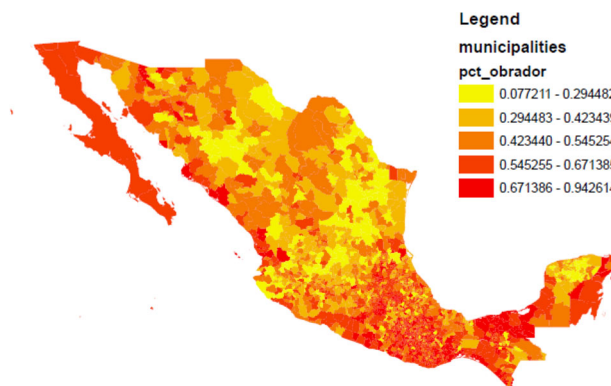
To measure compliance with social-distancing policies, we use the Movement Range Maps developed by Facebook (2021).<sup>16</sup> This information is derived from people who use Facebook on a mobile device and have opted to share their exact location.<sup>17</sup> The Movement Range Maps (Facebook, 2021) provide this information for each day at a level 2 division from the Database of Global Administrative Area (GADM, 2018). The data set contains two different

metrics—“Change in Movement,” and “Stay Put.” The first index captures mobility by counting the number of level-16 Bing tiles (which are approximately 600 m by 600 m in area) in which an eligible user is seen in the space of a day. It indicates the average percentage change in cells visited by users in a municipality with respect to the pre-Covid-19 period (February). The second index shows the percentage of people who are only observed in a single level-16 Bing tile during the day.<sup>18</sup> In the empirical analysis, we use the “Change in Movement” index for our baseline specification since it is better suited to capture more nuanced changes in mobility patterns. The results also hold when using the “Stay Put” index.

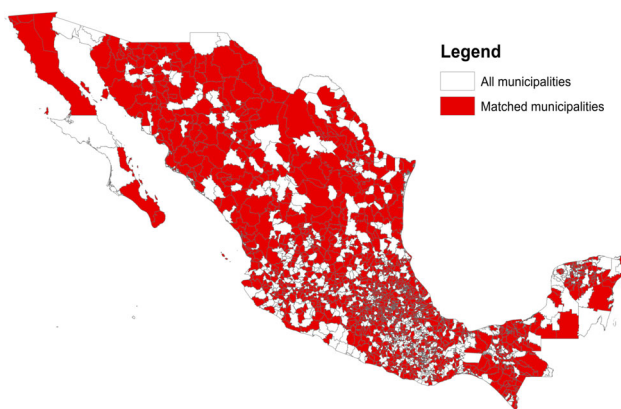
To measure political support for AMLO, we use electoral data from the *Instituto Nacional Electoral* (INE, 2018) on the presidential elections of 2018, which are available at the municipality level. Overall, the president won more than 50% of the votes (a high level of support, given that Mexico has a one-round multiparty system).<sup>19</sup> He obtained the highest share of votes in more than 85% of the municipalities, and in almost half of the municipalities, he obtained more than 50% of the votes. Figure 2 shows AMLO's vote-share distribution across municipalities in the 2018 presidential election.

To control for potential confounding factors that affect jointly political support for AMLO and mobility in the surge of the pandemic, we include a series of sociodemographic and economic controls from the 2010 population census (INEGI, 2010) and the 2019 economic census (INEGI, 2019) from the *Instituto Nacional de Geografía y Estadística*. We control for the “early” implementation of NPI by state governors; this data set was manually coded using official state-level government websites. We use the number of Covid-19 confirmed cases and deaths as reported by the Mexican Health Secretariat (Secretaria de Salud, 2020) to control for regional differences in the spread of the contagion, which might have had a significant effect on mobility patterns. Finally, we use municipal-level data on access to cable television and home Internet from the *Instituto Federal de Telecomunicaciones* (IFETEL, 2020).

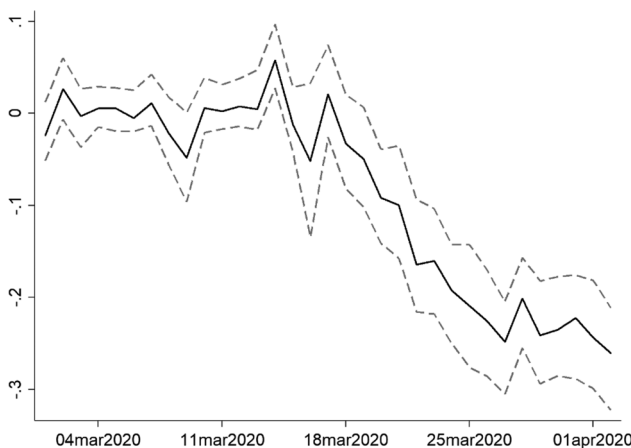
As mentioned above, the datasets we use for the empirical analysis are defined at different administrative levels. Specifically, the controls and the electoral support variables are defined at the municipality level (2457 observations), while the mobility indexes are available at the GADM level, which is slightly coarser (1854 observations in total). We proceed with the spatial merging by assigning the GADM-level mobility indexes to the municipalities where the largest share of the corresponding GADM territory is located. After dropping the observations with missing values, we obtain a sample of 1785 municipalities spread across 997 GADM, which represents 94% of the total population.<sup>20</sup> Figure 3 depicts the map of the matched municipalities.



**FIGURE 2** Political support for AMLO in the 2018 presidential election. *Source:* Authors' elaboration, based on INE (2018)



**FIGURE 3** Matched municipalities. *Source:* Authors' elaboration, based on Facebook (2021)

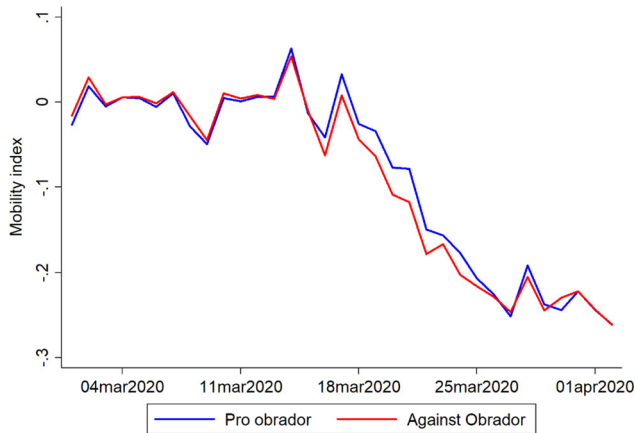


**FIGURE 4** Changes in mobility (municipal level). This index shows the percentage change in the average number of cells visited by individuals at the municipality level with respect to their baseline in February. The solid line indicates the average, while the dotted lines show the 25th and 75th percentiles. *Source:* Authors' elaboration, based on Facebook (2021)

The spread of the virus and the alarming news from European countries had a substantial influence on mobility patterns in Mexico. Figure 4 shows the daily median, 25th, and 75th percentiles of Facebook's “Change in Movement” index (Facebook, 2021). The figure suggests that, on average, people did not change their behavior until mid-March, when the mobility index drops significantly in all municipalities. By the end of the month—when the national lockdown started—the mobility index was 30% lower in the median municipality. Although the pattern seems to be consistent across municipalities, the 25–75 percentile groups indicate that there were some differences in the timing and the magnitude of the reduction of mobility across municipalities.

The main objective of this article is to assess whether, and to what extent, the initially dismissive approach by the Mexican president affected people's behavior. Specifically, we expect AMLO's supporters to be more sensitive to the president's nudges, and therefore to be less likely to reduce their mobility following AMLO's press conference on March 13 (Bakker et al., 2020; Lipsitz & Pop-Eleches, 2020). We use municipal-level electoral data from the 2018 presidential elections (INE, 2018) to infer location-specific political preferences. Figure 5 shows the





**FIGURE 5** Changes in mobility level by political support. Mobility changes by political support for AMLO. A municipality is defined as pro-AMLO if it obtained a higher share of the national median vote (55%). We can see that pro- and anti-AMLO cities behave very similarly before March 13. After that, although both cities reduced their mobility, those in favor of the president did so less markedly. *Source:* Authors' elaboration, based on Facebook (2021); INE (2018)

trends of mobility depending on support for AMLO (we define a municipality to be “pro-AMLO” if the president received a vote share higher than the national median of 55% in that municipality). We can see that pro-AMLO municipalities experienced a less marked reduction in mobility levels in the aftermath of the first diagnosed cases and deaths in the country.

We expect citizen mobility to be affected by several different socioeconomic factors, which, in turn, are likely to shape electoral outcomes and political preferences in general. Therefore, it is important to include these controls in the analysis, to address concerns related to omitted variable bias. We derive a number of socioeconomic controls from the 2010 population census and the 2019 economic census (INEGI, 2010, 2019). Additionally, we control for population density and for the number of cumulative cases and Covid-19-related deaths in the municipalities. The empirical analysis is carried out at the municipality level. Since mobility data is only available at the GADM level, municipalities within GADM boundaries (an average of 1.8 municipalities per district) are assumed to have the same mobility level.<sup>21</sup>

The descriptive statistics for the variables employed in the empirical section are displayed in Table 1, for the whole sample as well as separately for municipalities with a higher- and lower-than-median level of support for the current president. Municipalities where AMLO obtained more support in the 2018 presidential elections differ significantly from the others along a number of dimensions, including lower average levels of education and higher population densities. While in March the two groups seemed to be on a similar trajectory regarding the spread of the virus, the paths started to deviate in early April, as indicated by the number of cumulative cases per capita, which increased faster in AMLO-supporting municipalities, and whose mean difference becomes statistically significant by the end of April.

## ESTIMATING EQUATION

As explained above, March 13 represents a key date in our setting because it was the first day on which the main topic at the daily presidential press conference was Covid-19—where it was stated that mobility restriction and social distancing policies were not yet appropriate—and it coincides with a peak in the number of related Google searches. We exploit this event to

**TABLE 1** Descriptive statistics for selected variables

	Mean	SD	Mean <i>T</i> = 1	Mean <i>T</i> = 0	<i>p</i> value
<i>Socio Economic Variables</i>					
Share of older than 64	8.42	4.09	8.55	8.15	0.06
GDP per capita	0.12	0.41	0.10	0.12	0.51
Unemployment rate	4.03	2.89	3.85	4.43	0.00
Average education	6.89	1.58	6.84	6.99	0.05
Population density	5.41	6.23	5.64	4.93	0.02
TV access	49.53	24.85	47.72	50.74	0.03
Internet access	27.68	25.76	27.55	26.71	0.56
<i>Cumulative cases per 100,000</i>					
March 15th	0.07	1.01	0.07	0.06	0.85
March 31st	0.73	3.26	0.79	0.68	0.51
April 15th	2.65	7.02	2.91	2.41	0.15
April 30th	8.89	18.66	9.85	7.92	0.04

*Note:* Cumulative cases per 100,000 are computed as the total number of cases diagnosed in a municipality up to a certain date and are normalized by the municipality's population. *T* = 1 refers to the municipalities with higher support for López Obrador (higher than the median municipality).

*Source:* Authors' elaboration, based on Secretaria de Salud (2020); IFETEL (2020); INEGI (2010, 2019).

estimate the effects of AMLO's cues on citizen behavior in terms of mobility reduction. Formally, we estimate the following equation.

$$Y_{i,t} = \sum_{\lambda=0}^{10} \beta_{t-\lambda} \text{Treatment}_{i,t-\lambda} + \sum_{\lambda=1}^{20} \beta_{t+\lambda} \text{Treatment}_{i,t+\lambda} + \gamma Z'_{s,t} + \theta X'_{i,t} + \alpha_i + \phi_t + \epsilon_{i,s,t}, \tag{1}$$

where  $Y_{i,t}$  is the mobility index “Change in Movement” for municipality  $i$  on day  $t$ .  $\text{Treatment}_{i,t}$  is a dummy variable that takes a value equal to 1 if municipality  $i$  is favorable to AMLO,<sup>22</sup> and day  $t$  corresponds to March 13. We then include 10 leads and 20 lags to inspect pretreatment and posttreatment effects. The key assumption is that municipalities favorable to AMLO behaved the same as those not favorable to him, in the absence of the president's message and behavior, which can be verified through the inspection of the pretreatment trends in mobility in the control and treatment municipalities.

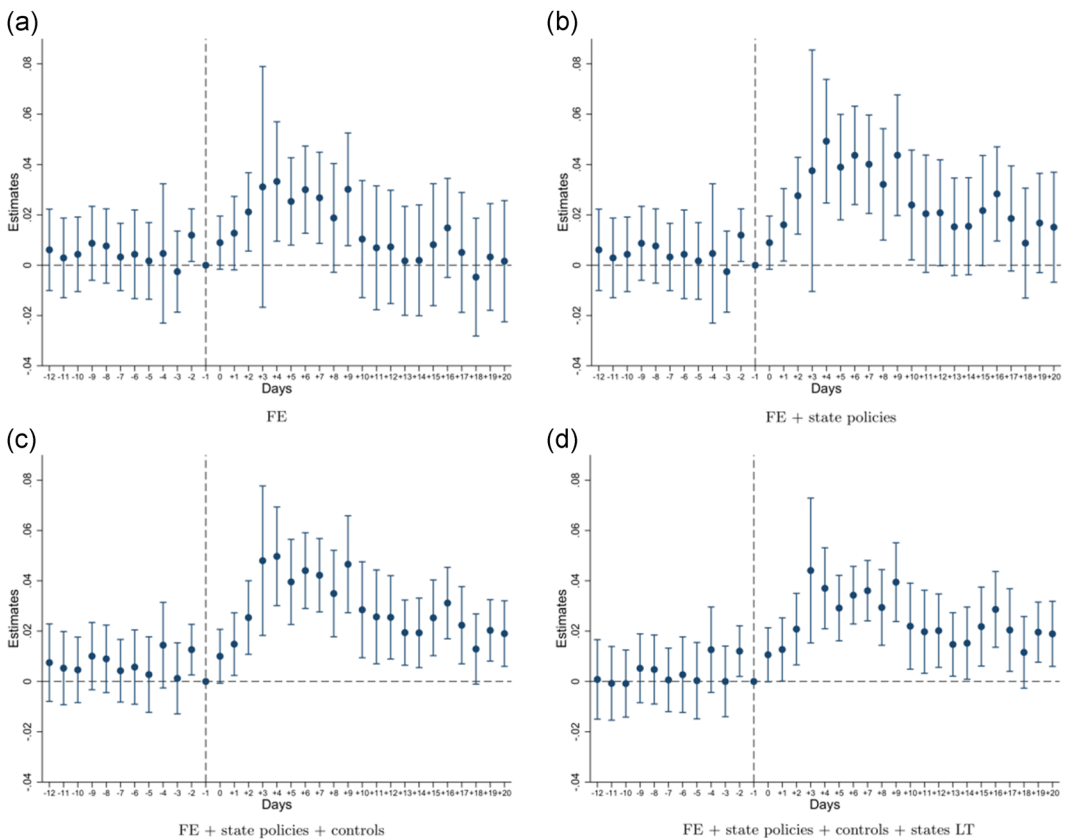
We add several controls to this basic specification. We include municipality and day-fixed effects that are represented by  $\alpha_i$  and  $\phi_t$  in the equation.  $Z'_{s,t}$  is a vector of variables that controls state-level policies (closure of schools and recreation centers) and reports state cases and deaths.  $X'_{i,t}$  is a vector of variables that includes the interaction between day fixed effects, and respectively, the share of unemployed citizens, population density, gross domestic product (GDP) per capita, the share of citizens older than 65, and the average years of education in municipality  $i$ . We include these interactions due to their correlation with political support for the president, which, if unaccounted for, could bias our estimates. In one of the specifications estimating Equation I, we also include state-specific linear trends. The error term is  $\epsilon_{i,s,t}$ , and we cluster the standard errors at the municipality level and weigh the previous equation by the population at the municipality level registered in 2010.

## RESULTS

## Baseline

Figure 6 plots the coefficients resulting from estimating Equation I, using the “Change in Movement” index. In graph (a) we include only the treatment variable and the municipality and day fixed effects; graph (b) adds state-level social-distancing policy variables as controls; graph (c) adds the municipality level variables interacted with day fixed effects as controls, plus cases and deaths at the state level; graph (d) adds state-specific linear trends.

Adding policies implemented at the state level in (b) allows us to isolate the effect of state-level measures to curb the virus. Since such policies are likely to be related to the political preferences and leadership at the local level, they could potentially be driving our results. Still, the results in Figure 6b indicate that controlling for such factors does not change our main findings and, if anything, it makes them even more pronounced. Adding linear trends in (d) allows us to control for other state-specific time trends capturing the evolution in the local public and their political attitude toward the virus. Once again, our main results are left virtually untouched by such adjustment.

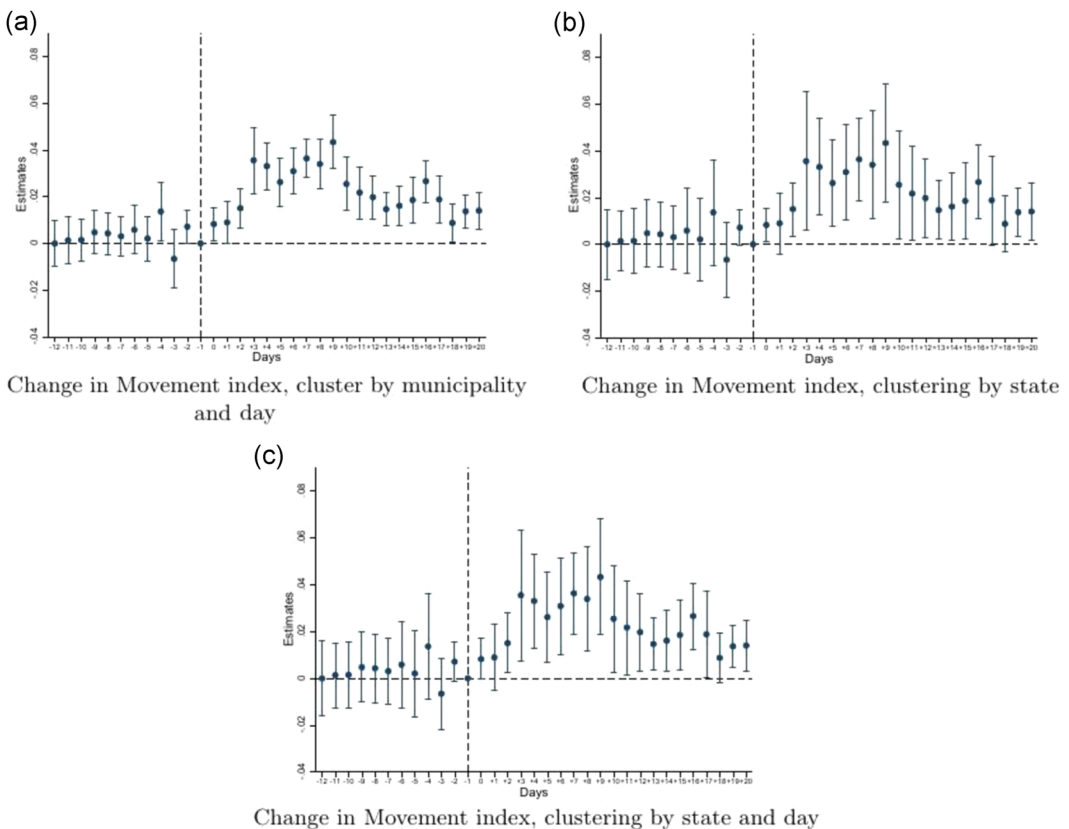


**FIGURE 6** Event study analysis, main specification. The dependent variable is the “Change in Movement index.” In graph (a) we include only time and municipality fixed effects, in (b) we also include state-level social distancing policies as controls, in (c) we additionally control for municipal-level features, and finally in (d), we add state-time trends. *Source:* Authors' elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); INEGI (2010, 2019)

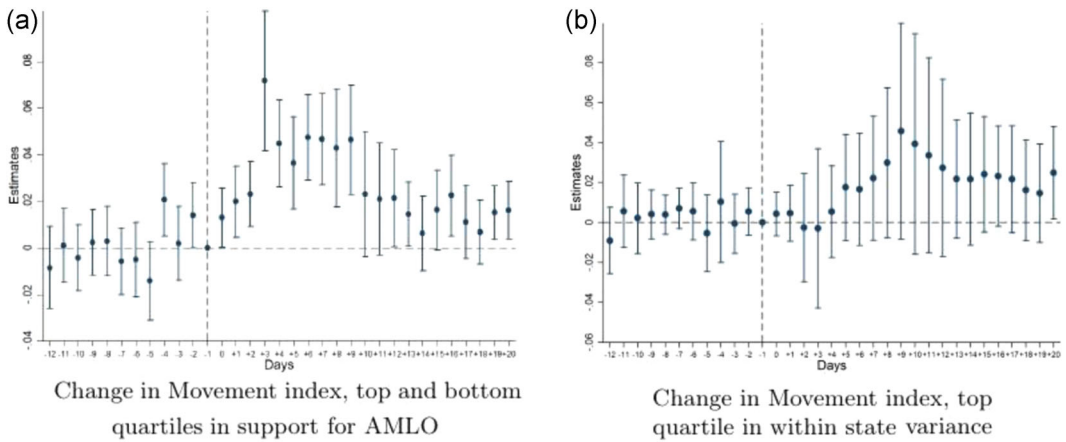
In all the graphs we observe that all but one lead ( $t = -2$ ) are not statistically different from zero, supporting the validity of the parallel trends assumption we had outlined. On the other hand, we see that there is a substantial, positive, and statistically significant difference between treated and control groups virtually every day after the treatment. Moreover, as mentioned above, the difference becomes larger and more robust as we add controls for confounding factors. Taking as a reference Figure 6d, the average coefficient estimate for the first 20 days after the statement is 0.025. Considering that the average municipality drop in mobility in anti-AMLO municipalities in the period from March 13 to April 2—with respect to the baseline period of February—is  $-0.14$ , it translates into an average higher mobility of approximately 17.8%.<sup>23</sup> The magnitude of the effect is sizeable and nontrivial. Hence, after AMLO's press conference where the importance of mass isolation (social distancing) was disregarded, treated municipalities exhibit higher mobility than control ones.

**Robustness checks**

We conduct several robustness checks to support the validity of our results. Figure 7 reports the estimates of our most complete specification—Figure 6d—with the difference that we are



**FIGURE 7** Event study analysis, different clusters. The dependent variable is the “Change in Movement index,” and all graphs use the same controls as that of Figure 6 graph (d). In graph (a) we cluster standard errors at the municipality-day level, in (b) we cluster standard errors by state, and in (c) we cluster standard errors by state-day level. *Source:* Authors' elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); INEGI (2010, 2019)



**FIGURE 8** Event study analysis, alternative definitions of political support. The dependent variable is the “Change in Movement index,” and all graphs use the same controls as that of Figure 6 graph (d). In graph (a) we compare municipalities in the top and bottom quartile of AMLO's vote share, in (b) we compare municipalities with above and below median vote share for AMLO within their specific state. *Source:* Authors' elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); INEGI (2010, 2019)

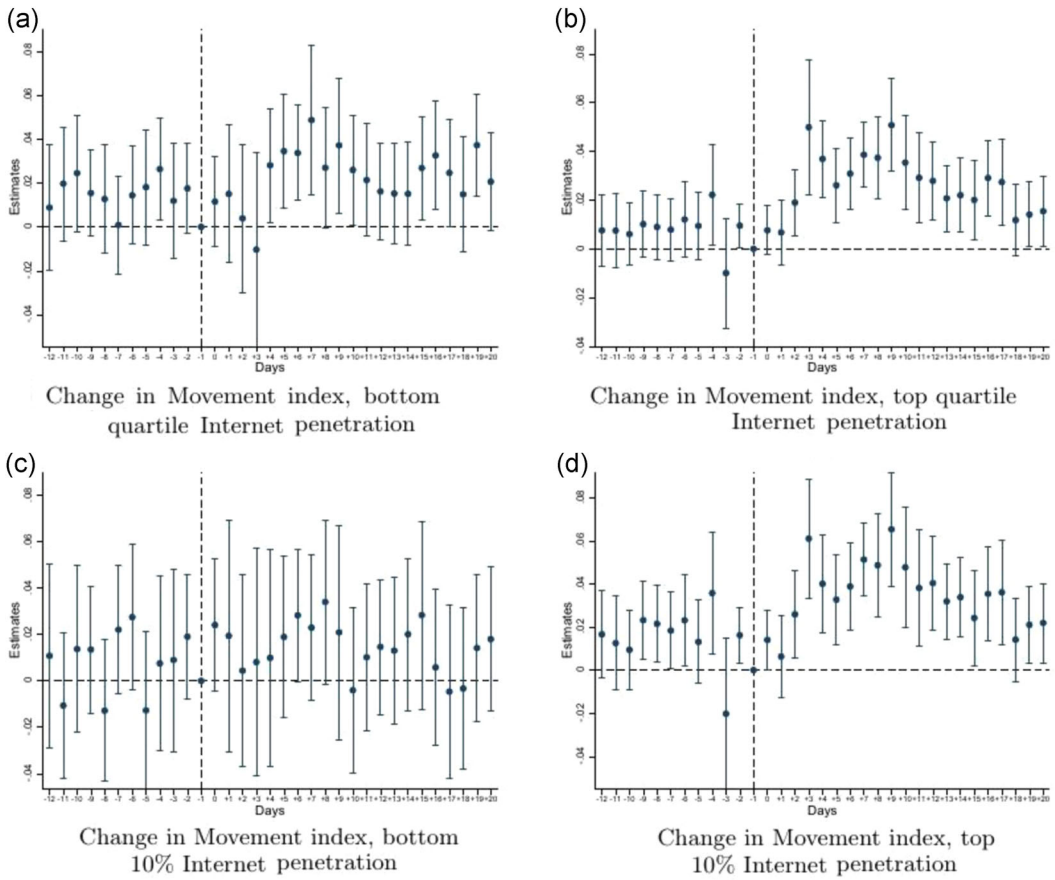
varying the way in which we cluster standard errors. Namely, we cluster at the state level, at the municipality-day level, and at the state-day level. The pattern of the results remains mostly unchanged.

We corroborate our results under different definitions of political support for AMLO. First, we compare the top and bottom quartiles in AMLO's vote share. Figure 8a shows the results for this specification, and it corroborates our results. Second, as we can see in Figure 2, there is a strong regional component in the support for the Mexican president, which implies that in some instances we may have states with almost all municipalities being pro-AMLO, or all anti-AMLO. This situation raises concerns for our empirical results because we lose some within-state variation. To address this concern, we define our binary variable of support for AMLO in a municipality based on the state-level votes obtained by the president in the 2018 election. Specifically, we estimate Equation 1 by defining a municipality to be pro-AMLO if it obtained more votes than the state-level median. Figure 8b shows the results of applying this change. Even though the coefficient estimates are noisier, the economic significance pattern survives this test.

Finally, we replicate our baseline results with the second measure of mobility at our disposal, the “Stay Put” index, to check if our results are dependent on the way mobility is measured. Appendix Figure A1 provides evidence that the results also hold if we use this second measure of mobility.

## Possible mechanisms

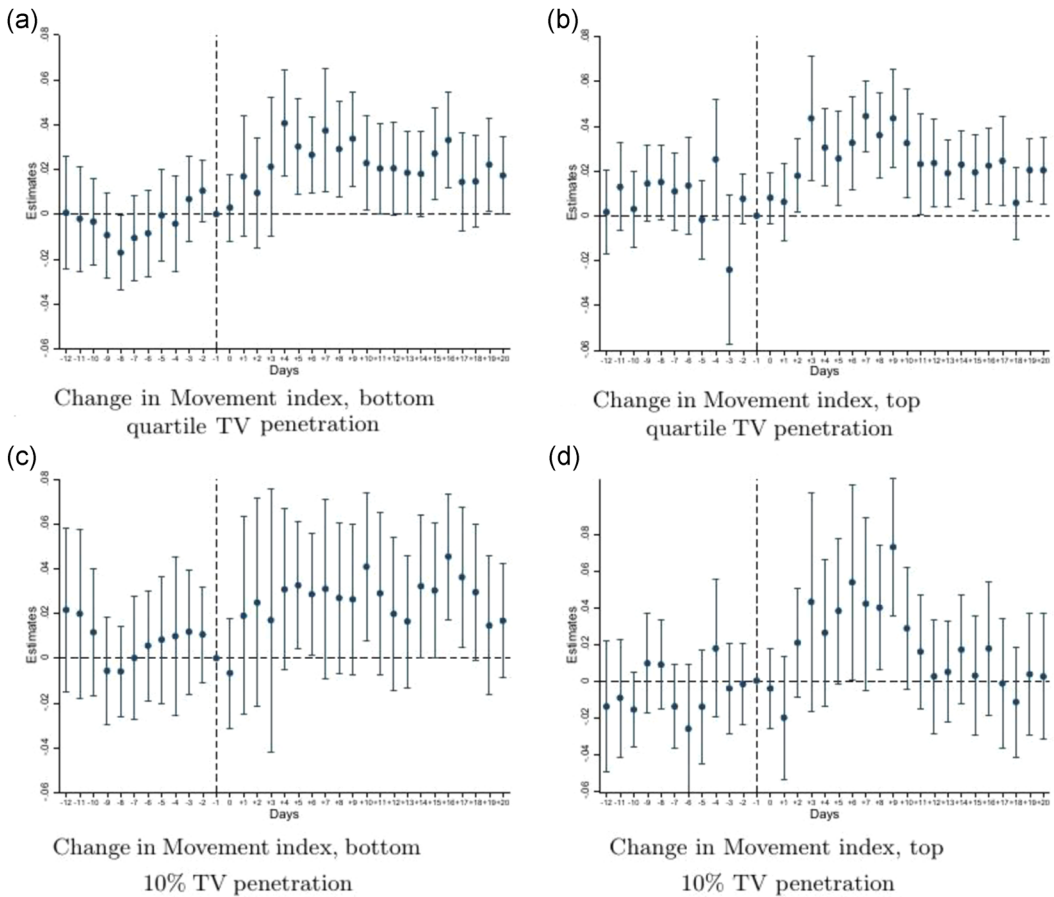
We argue that AMLO's personal attitude toward the pandemic, particularly his press conference on March 13, drives the effects we observe. For that matter, we expect citizens that are more exposed to AMLO's messages (and support him) are more likely to disregard social distancing measures. To shed light on this possible connection, we explore the role of access to media at the municipal level. Specifically, we estimate Equation 1 for several sub-samples according to the share of households with Internet access or cable television. Figure 9 shows the results for access to the Internet. Figure 9a runs the analysis on the bottom quartile with respect



**FIGURE 9** Event study analysis, top and bottom quartile and decile of internet penetration. The dependent variable is the “Change in Movement index,” and all graphs use the same controls as that of Figure 6 graph (d). *Source:* Authors’ elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); IFETEL (2020); INEGI (2010, 2019)

to Internet access; Figure 9b, on the top quartile; Figure 9c, on the bottom decile; and Figure 9d, on the top decile. In areas with low Internet penetration, we do not find a strong statistical difference, if any, between treated and control municipalities in terms of mobility. The opposite holds true in areas with high Internet penetration. Figure 10 performs a similar analysis, focusing on paid cable television. Although the pattern is similar to that of Internet access, our results seem less clear.

The fact that the effects of the statement are more pronounced where information is more accessible indicates that AMLO’s cues, rather than some underlying difference in preferences (potentially also correlating with political ideology and support) are causing the observed difference in mobility. Indeed, if the differences in mobility patterns were merely a reflection of systematic differences in preferences between AMLO supporters and non-supporters, we would expect them to be equally significant and large regardless of access to Internet and television since they would be independent of the coverage and resonance of the leader’s message. The fact that the divergence in mobility patterns coincides with the March 13 press conference and is only observed clearly in connected areas suggests instead a direct effect of the leader’s cues, which found fertile ground in a context where the population had very little reliable information on the virus and its ability to spread.



**FIGURE 10** Event study analysis top and bottom quartile and decile of TV penetration. The dependent variable is the “Change in Movement index,” and all graphs use the same controls as that of Figure 6 graph (d). *Source:* Authors’ elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); IFETEL (2020); INEGI (2010, 2019)

## CONCLUSION

Governments play a key role in the fight against pandemics; they finance the development of vaccines and their distribution, they coordinate the efforts of diverse agencies, and they communicate to the public the best actions to take to mitigate the risks presented by the new disease. They also implement strategies to slow down the spread of the virus and thus avoid saturation of the health care system. Moreover, the success of these NPIs depends largely on how much individuals decide to comply with these preventive measures. Hence, it is important in this context—a new and complex problem—for people to receive the necessary information to assess accurately the costs and benefits of compliance with these NPI.<sup>24</sup> Regular citizens may find it hard to understand, or be completely unaware of, the best practices to avoid contagion, the geographical spread of the disease, or the negative externalities. In this context, clear and coherent communication from leaders can be of paramount importance to convince the public to adopt best practices to avoid the spread of a new and contagious disease.

In this article, we analyze the cues from a high-profile political leader in Mexico—a country with increasing levels of political polarization—in citizens’ health-prevention measures (social

distancing) in the early stages of the Covid-19 pandemic. In March 2020, AMLO constantly undermined the severity of the pandemic, continued greeting and kissing his constituents at political rallies, and urged people to go out to restaurants because that “strengthens the economy” (Ward, 2020). He is not the only leader to portray this behavior regarding the pandemic. Former US president Donald Trump and Brazil's president Jair Bolsonaro have also publicly and outrightly confronted national health authorities, encouraged people to go out, and downplayed the risk and negative externalities of the pandemic. These two countries have, at the time of writing this paper, the two highest rates of per capita contagion in the Americas.

Using two different measures of social distancing at the municipality level, several empirical specifications, and definitions of political support, we find that AMLO's cues played a significant role in citizen compliance with social distancing measures. Following the press conference where his government stated directly that it was not yet necessary to cancel mass-gathering events or impose restrictions on people's mobility, we observe a robust and higher level of mobility among his supporters. This effect is statistically significant and persists for at least 10 days after the press conference. Our findings emphasize the role of political leaders' actions and statements (cues) as an example to influence citizens' behavior.

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## ENDNOTES

<sup>1</sup>Medical evidence shows the effectiveness of these interventions. Chinazzi et al. (2020) and Kraemer et al. (2020) find that restrictions on mobility imposed early in China mitigated substantially the spread of the virus. For the United Kingdom, Davies et al. (2020) model the effect of four base interventions (school closures, physical distancing, shielding of people aged 70 or older, and self-isolation of symptomatic cases) and their interactions. For each scenario, they projected estimated new cases over time, admission to intensive care units (ICU), and deaths, and compared the effect of each intervention on the basic reproduction number, R0. Their findings suggest that intensive interventions with extensive lockdown periods were necessary to prevent health-care demand from exceeding its capability.

<sup>2</sup>Since he became president, AMLO has held a press conference every day. In these sessions, he (and members of his government) discuss the implementation of social programs, the status of infrastructure projects, or replies to criticism from the media and political opposition. Since the beginning of the pandemic, an additional press conference headed by López-Gatell began, where he would report health-policy decisions to the media.

<sup>3</sup>Although this was not the only occasion in which he undermined the severity of the crisis, we argue that this event had a critical effect on the risk expectations of citizens.

<sup>4</sup>The share of votes for AMLO at the municipality level is approximately 55%, a very high share, considering Mexico has one-round multi-party elections.

<sup>5</sup>Instead, the *Jornada de Sana Distancia* (Healthy Distance Program), which officially started on March 23, focuses on some basic preventive measures (keeping a distance of six feet between people, washing hands constantly, and others), reprogramming of events that could hold more than 5000 people at once (sporting events and concerts), and sheltering the elderly.

<sup>6</sup>Although it is possible that people may be moving across cells (as reported by our Facebook index) and still complying with some of the basic preventive measures (keeping a six-foot distance, washing hands, and others), the indication from health authorities is also to suspend non-essential activities and stay at home, if possible. Hence, we believe mobility is a good proxy for compliance with social distancing because people who continue moving geographically are clearly not following at least some of the indications made by experts.

<sup>7</sup>On May 24, the federal government issued the first official guidelines to deal with the pandemic. They include cancellation of events with more than 50 people, school closures, closure of non-essential businesses, and more (Diario Oficial de la Federación, 2020a).



- <sup>8</sup>Only activities related to the essential function of the economy were allowed to function (agriculture, food retail, transportation, energy). For more information, see *Diario Oficial de la Federación* (2020b).
- <sup>9</sup>The first time he wore a facemask in front of the media was for his visit to the United States, in early July 2020 (Agren, 2020).
- <sup>10</sup>By opposition we mean those not belonging to the party coalition with which AMLO won the presidency in 2018 (“Together We Will Make History”: Morena [*Movimiento Regeneración Nacional*], PT [*Partido del Trabajo*] and PES [*Partido Encuentro Social*]).
- <sup>11</sup>Baja California and Tabasco, with governors aligned with the president, were two of the states the pandemic affected the earliest and the most.
- <sup>12</sup>For instance, on March 4 he said, “...we have to hug each other, it is fine...” in response to the recommendations of health experts regarding social distancing (Grillo, 2020). On March 12, he said, “Keep calm. Our economy is strong; we have healthy public finances and enough reserves to deal with any kind of crisis” (AMLO, 2020b). Other examples are on March 18, AMLO shows a religious amulet that “protects him” from the virus at one of his daily press conferences (Linthicum, 2020); March 22, AMLO uploads a video on his Facebook page urging people to go out and eat at a local restaurant, “live life as usual... if you're able and have the means to do so, continue taking your family out to eat ... because that strengthens the economy” (Ward, 2020); March 29, a video shows the president greeting Joaquín Guzmán's mother in the drug lord's hometown, Badiraguato Sinaloa (Phillips, 2020).
- <sup>13</sup>Moreover, Mexican voters seem increasingly polarized after AMLO won the presidency. According to the National Electoral Survey (Aparicio & Cornejo, 2020) between 2000 and 2018, voters had consistently rated their own party in a favorable way (on a scale of 0 to 10, at about 8). Meanwhile, during the same period, the opinion voters held of opposing parties decreased from 4.1 to 2.4. The negative evaluation drops considerably, from 3.9 to 2.4, between 2015 and 2018 (after AMLO founded his party in 2014).
- <sup>14</sup>He spent most of his career in the Democratic Revolution Party (PRD), created from the dissenting left wing of the Institutional Revolutionary Party (PRI)—the autocratic party that ruled the country for most of the twentieth century. As a member of the PRD, he was the mayor of Mexico City from 2000–2005, and ran for president in 2006 and 2012. After the second defeat, he created his own party (Morena) in 2015, and ran for a third and last time in the 2018 presidential elections.
- <sup>15</sup>Additional evidence that our results are driven by AMLO and not a partisan commitment to Morena (which, in turn, can be related to systematic differences that could drive our results) is the fact that the party with which he ran in the previous two elections (PRD) currently has only 20 seats in the Deputy Chamber (of 500 seats). Hence, at least, in this case, Mexican voters seem to follow the person, not the party. All this evidence sheds some light on the weak and premature formation of ideological voters in Mexican democracy.
- <sup>16</sup>More than 80 million people use smartphones in Mexico (almost two-thirds of the total population). According to the results of the surveys conducted from March to August 2019, by Statista, more than 81% of Mexican mobile-phone users between 18 and 24 years said that they had used Facebook on this device. Meanwhile, 76% of participants aged 25–34 said they used this social network on their smartphone (Burgueño Salas, 2020).
- <sup>17</sup>To generate a data point for a given region, the locations of users who spend evenings there are aggregated. After mapping people to a region, it is ensured that there is enough data to produce meaningful trends and to protect the privacy of individuals. Facebook removes any region with fewer than 300 qualifying people.
- <sup>18</sup>For more information on the elaboration of the indexes, see Herdagdelen et al. (2020).
- <sup>19</sup>The last time a president won by more than 50% was in 2000, when the National Action Party's (PAN) candidate, Vicente Fox, defeated the autocratic PRI after it had been 70 years in power.
- <sup>20</sup>Although we have complete data on only 73% of the municipalities, the resulting sample covers virtually all the population. Most of the municipalities not in our final sample were not included due to a lack of mobility data, which were not available for less densely populated areas.
- <sup>21</sup>As a robustness check, we also conduct our empirical analysis using only the municipalities that perfectly matched Facebook's mobility data. Our results hold under this specification and are available upon request.
- <sup>22</sup>We define this situation to be the case if the share of the votes for López Obrador is higher than the median (55% in the country)
- <sup>23</sup>Appendix Table A1 shows each coefficient plotted in the graphs, with the corresponding confidence intervals.
- <sup>24</sup>With a clear and homogenous message from leaders, people may be able to assess correctly the costs of NPI (not working, going out less) and its benefits (reduced probability of getting sick).

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## APPENDIX A

**TABLE A1** The effect of AMLO's speech on mobility (baseline)

	-1	-2	-3	-4
Day -12	0.004	0.004	0.006	0.000
	-0.006	-0.006	-0.005	-0.006
Day -11	0.004	0.004	0.006	0.001
	-0.006	-0.006	-0.005	-0.006
Day -10	0.007	0.007	0.006	0.001
	-0.005	-0.005	-0.005	-0.005
Day -9	0.008	0.008	0.009	0.005
	-0.005	-0.005	-0.005	-0.005
Day -8	0.007	0.007	0.008	0.004
	-0.005	-0.005	-0.005	-0.005
Day -7	0.005	0.005	0.006	0.003
	-0.005	-0.005	-0.005	-0.005
Day -6	0.007	0.007	0.008	0.006
	-0.007	-0.007	-0.006	-0.006
Day -5	0.003	0.003	0.004	0.002
	-0.005	-0.005	-0.005	-0.005
Day -4	0.007	0.007	0.015*	0.014
	-0.011	-0.011	-0.007	-0.007
Day -3	-0.008	-0.008	-0.006	-0.007
	-0.008	-0.008	-0.007	-0.007

TABLE A1 (Continued)

	-1	-2	-3	-4
Day -2	0.007*	0.007*	0.008*	0.007*
	-0.003	-0.003	-0.003	-0.003
Day -1 (baseline)	0.000	0.000	0.000	0.000
	(.)	(.)	(.)	(.)
Day 0 (statement)	0.007	0.007	0.008*	0.008*
	-0.004	-0.004	-0.004	-0.004
Day +1	0.009	0.011*	0.011*	0.009
	-0.005	-0.005	-0.005	-0.005
Day +2	0.017**	0.022***	0.020***	0.015**
	-0.005	-0.005	-0.005	-0.005
Day +3	0.025	0.030	0.040***	0.035***
	-0.017	-0.017	-0.010	-0.010
Day +4	0.035***	0.046***	0.046***	0.033***
	-0.009	-0.009	-0.007	-0.006
Day +5	0.027***	0.036***	0.036***	0.026***
	-0.008	-0.008	-0.007	-0.006
Day +6	0.031***	0.040***	0.040***	0.031***
	-0.008	-0.009	-0.007	-0.006
Day +7	0.033***	0.042***	0.043***	0.036***
	-0.008	-0.008	-0.006	-0.005
Day +8	0.030**	0.039***	0.040***	0.034***
	-0.010	-0.010	-0.007	-0.006
Day +9	0.042***	0.051***	0.052***	0.043***
	-0.011	-0.011	-0.009	-0.007
Day +10	0.021*	0.031**	0.034***	0.025***
	-0.010	-0.010	-0.008	-0.007
Day +11	0.016	0.026*	0.030***	0.022**
	-0.011	-0.010	-0.008	-0.007
Day +12	0.014	0.023*	0.027***	0.020***
	-0.009	-0.009	-0.007	-0.006
Day +13	0.008	0.018*	0.021***	0.015**
	-0.009	-0.008	-0.005	-0.005
Day +14	0.009	0.019*	0.022***	0.016**

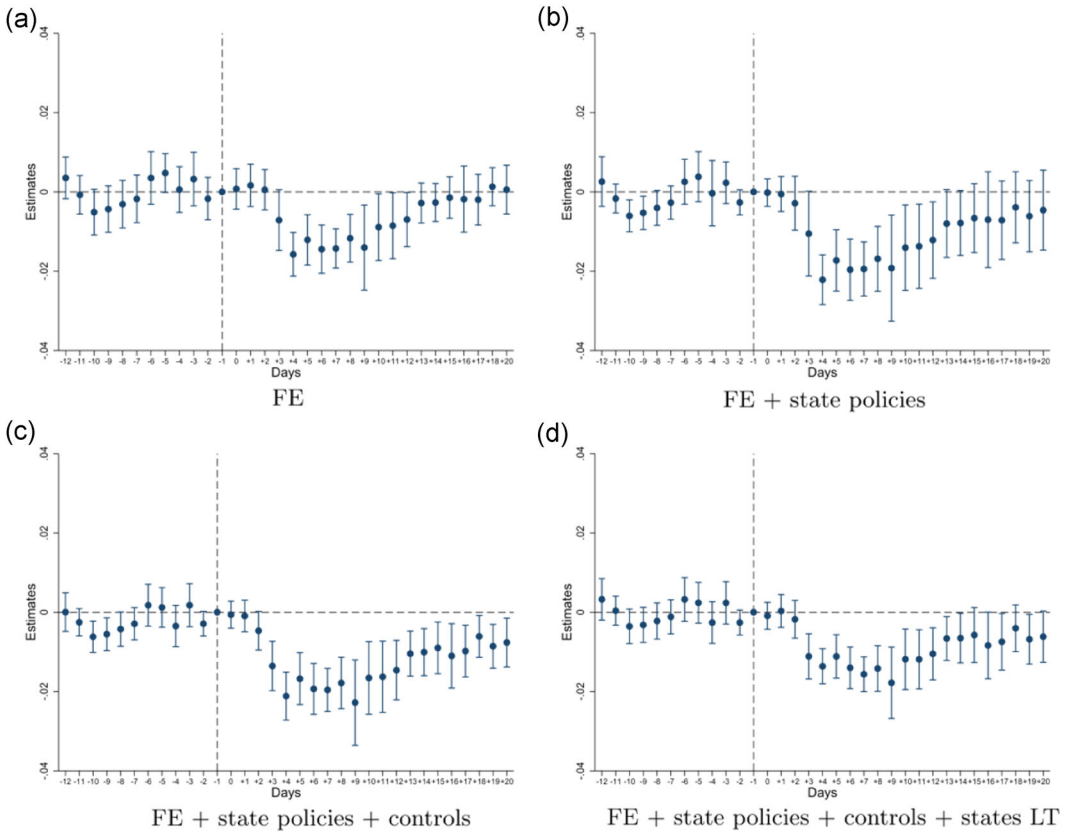
(Continues)

TABLE A1 (Continued)

	-1	-2	-3	-4
	-0.009	-0.008	-0.006	-0.006
Day +15	0.012	0.021*	0.024***	0.018**
	-0.009	-0.009	-0.006	-0.006
Day +16	0.020*	0.030***	0.031***	0.027***
	-0.008	-0.008	-0.006	-0.006
Day +17	0.011	0.020*	0.023***	0.019**
	-0.009	-0.009	-0.006	-0.006
Day +18	0.000	0.009	0.012*	0.009
	-0.009	-0.009	-0.005	-0.005
Day +19	0.004	0.013	0.017***	0.014**
	-0.008	-0.008	-0.005	-0.005
Day +20	0.003	0.012	0.017**	0.014**
	-0.009	-0.009	-0.005	-0.005
Observations	204,500	204,500	204,500	204,500
Adjusted $R^2$	0.884	0.886	0.913	0.932
Mean Outcome:	-0.140	-0.140	-0.140	-0.140
Days FE	Yes	Yes	Yes	Yes
City FE	Yes	Yes	Yes	Yes
Controls	No	Yes	Yes	Yes
States-LT	No	No	No	Yes

Source: Authors' elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); INEGI (2010, 2019).

\* $p < .10$ ; \*\* $p < .05$ ; \*\*\* $p < .01$ .



**FIGURE A1** Event study analysis using the “stay put” metric of mobility. In graph (a) we include only time and municipality fixed effects, in (b) we also include state-level social distancing policies as controls, in (c) we additionally control for municipal-level features, and 67 in (d) we add state-time trends. FE refers to municipality-level fixed effects. State LT indicates the addition of state-level linear time trends. *Source:* Authors' elaboration, based on Facebook (2021); INE (2018); Secretaria de Salud (2020); INEGI (2010, 2019)