



AIDDATA

A Research Lab at William & Mary

WORKING PAPER 109

June 2021

Discourse Wars and 'Mask Diplomacy': China's Global Image Management in Times of Crisis

Stefan Müller

Assistant Professor and Ad Astra Fellow
School of Politics and International Relations
University College Dublin

Samuel Brazys

Associate Professor
School of Politics and International Relations
University College Dublin

Alexander Dukalskis

Associate Professor
School of Politics and International Relations
University College Dublin

Abstract

States try to influence how they are perceived abroad. Doing so helps them achieve foreign policy goals, alleviate pressure to change their domestic political systems, and influence international norms to be more conducive to their interests. In times of crisis the need to avoid a negative image may see states mobilize resources and networks to change the global narrative about a particular event. This paper tackles broader questions about authoritarian image management and the global response by investigating if, due to Covid-19's origin in the country, China was blamed for the pandemic and if Beijing's public "mask diplomacy" efforts mitigated this damage. Using novel data on the media tone of 1.3 million statements mentioning China and Covid-19, we evaluate how media tone in a country compares to periods of peak Covid-19 deaths before developing a further novel database of unique "mask-diplomacy" events from around the world. Using both fixed-effects and a multi-period difference-in-differences approaches, we find that media tone on articles about China in the context of Covid-19 is significantly more negative during periods of higher deaths, but that mask diplomacy efforts offset, to some degree, these impacts.

Author Information

Stefan Müller

Assistant Professor and Ad Astra Fellow
School of Politics and International Relations
University College Dublin
stefan.mueller@ucd.ie

Samuel Brazys

Associate Professor
School of Politics and International Relations
University College Dublin
samuel.brazys@ucd.ie

Alexander Dukalskis

Associate Professor
School of Politics and International Relations
University College Dublin
alexander.dukalskis@ucd.ie

The views expressed in AidData Working Papers are those of the authors and should not be attributed to AidData or funders of AidData's work, nor do they necessarily reflect the views of any of the many institutions or individuals acknowledged here.

Introduction

Throughout 2020 and 2021, Serbian president Aleksandar Vucic was not shy about publicizing the fact that his country imported medical equipment, teams of doctors, and vaccines from the People's Republic of China (PRC). He showed up at the Belgrade airport to welcome the aid and even kissed the PRC flag in gratitude. Vucic received glowing coverage in China's official press, and in February 2021 gave an interview for *Xinhua* in which he spoke at length about the PRC's generosity, explaining: "I went to the airport, I waited for the goods... whether they were ventilators or vaccines and I did say many thanks to our Chinese friends" (Xinhua 2021).

Serbia has not been the only recipient of Chinese medical aid during the still ongoing Covid-19 pandemic. At least partly to help boost its image, Beijing has engaged in this sort of "mask diplomacy" with many states around the world. The events are trumpeted in the PRC's party-controlled press both internally and externally to show China's leadership and generosity to domestic and international audiences.

This episode speaks to broader theories about images, narratives, status, and reputations in international relations (e.g., Allan et al., 2018; Gunitsky 2017; Larson et al., 2014). More specifically, recent literature has argued that non-democratic states in an international order that rhetorically privileges democracy and human rights make concerted efforts to influence the ways foreign audiences perceive them (e.g. Carter and Carter 2021; Gamso 2021; Scharpf et al. 2021; Dukalskis 2021; Bush and Zetterberg 2021). Image management strategies help alleviate pressure on authoritarian states to change domestically by, for example, undermining the "naming and shaming" efforts of human rights activists (e.g. Hendrix and Wong 2013; Hafner-Burton 2008). Through external propaganda, image crafting, and proffering counter-norms authoritarian states aim to alter the international conversation so that the normative status of democracy is eroded and replaced with ideas friendlier to authoritarian rule (Cooley 2015; Gamso 2021).

In this conceptual context, videos, photos, and interviews of grateful Covid-19 aid recipients are beneficial for the sending state because they can help build its positive image, or at least mitigate its negative image. However, while it is no surprise that China's press presents an upbeat assessment of the PRC's activities during the pandemic, it is not clear if these activities boost Beijing's image in media that it does not control. It is this issue of the effectiveness of authoritarian image management practices that we investigate in this paper. We consider two related questions regarding Covid-19 and the presentation of China in the media.

First, to establish a baseline assessment, we evaluate the extent to which China suffered damage to its global image because of the pandemic's initial emergence in the country. Specifically, we consider if the tone regarding China becomes noticeably more negative during periods of high Covid-19 deaths in the media in those countries. We find a strong association between "death peaks" and increased negative tone in media discussion about China.

Second, we conduct a causal evaluation to examine China's ability to mitigate negative press through mask diplomacy efforts like the Serbian example above. We show that, consistent with the more general theoretical literature highlighted above as well as China-specific research (e.g. Pu 2019; Tsai 2017), PRC authorities are keen to craft the country's image among foreign publics, with Covid-19 being among the highest-profile examples. China's political leaders, diplomats, and external propaganda workers went to great lengths to try to ensure that the pandemic did not tarnish the country's image. We investigate whether this strategy was effective with a research design that allows us to assess the impact of mask diplomacy on the way China and Covid-19 are talked about in a country's press. We find that these efforts markedly improve media tone regarding China, especially during the immediate aftermath of the first "instance" of mask-diplomacy.

These evaluations draw on data from a diverse range of sources. To construct our novel outcome measure of media tone, we apply a semi-supervised scaling method (Watanabe 2020; Trubowitz and Watanabe 2021) to over 1.3 million English statements from online newspapers that mention China in the context of Covid-19. These statements come from over 365,000 unique news articles published on 1,584 domains from 109 countries. We aggregate media tone to the level of countries and weeks and combine the scores with information on Covid-19 deaths.¹ We further extend this corpus by machine-translating another set of over 300,000 non-English statements. All results hold for the English texts and the sample that also includes the translated statements. We then construct a novel measure of 592 individual mask-diplomacy events from a range of media and official sources. Our identification approaches to identifying causal effects of mask diplomacy utilize the temporal nature of our data to employ both fixed effects and multi-period difference-in-differences approaches.

These findings are important because they shed empirical light on several theoretical questions. First, they help us understand the effects of a state's image management efforts amid a deadly global crisis that emerged in that country. If China can mitigate its reputational damage in these difficult circumstances, then this shows that a negative image or stigma can be alleviated through concerted countereffort (Adler-Nissen 2014). Second, they help us understand the effectiveness of China's external propaganda. PRC authorities have long wanted to change the international conversation about several issues important to Beijing (e.g. Nathan 2015; Brady 2015; Foot 2020; Gamso 2021). This research design allows us to measure its effectiveness on one of the biggest international news stories of the century thus far, and thus builds on literature that tries to assess the outcomes of authoritarian propaganda and public diplomacy (Carter and Carter 2021; Mattingly and Sundquist 2021). Third and

¹ <https://www.ecdc.europa.eu/en/Covid-19/data>.

finally, this study provides evidence about the effects of health diplomacy (Fazal 2020), which also has relevance for questions about the reputational effects of foreign aid more generally.

Image Management, the Covid-19 Pandemic, and China

This section elaborates a three-step argument in descending order of specificity. First, it establishes that states generally wish to be seen positively and take steps to shape their image among foreign audiences, at minimum by trying to avoid negative connotations. Second, it shows how contemporary China, specifically, wishes to craft positive views of itself abroad. Third, it demonstrates that in the specific case of Covid-19, Beijing took an active approach to manage the narrative abroad both to avoid blame for the pandemic's emergence, but also to be seen as a savior through its external propaganda and "mask diplomacy" efforts. Based on this argument, it derives two hypotheses to be tested.

Image Management and Avoiding Stigma

States pay attention to how they are perceived abroad. Scholarship on soft power (e.g. Nye 1990), international status (e.g. Larson, Paul, and Wohlforth 2014), state branding (e.g. van Ham 2002), state framing (e.g. Jourde 2007), strategic narratives (e.g. Miskimmon, O'Loughlin, and Roselle 2013), and state prestige (e.g. Fordham and Asal 2007) vary in their specific foci, but all emphasize a similar essential point: states care about and try to influence how foreign audiences regard them. Indeed, throughout history this issue has been so important to some states that they forcibly try to impose ideological loyalty on foreign populations (Owen 2010). Contemporary states are mindful not only about perceptions among elites, but also among foreign mass publics (Allan, Vucetic, and Hopf 2018).

Having a positive image abroad is beneficial for states in a variety of ways. As a practical matter, it may help them be seen as a good source for foreign investment, tourism, or international aid (e.g. Wells and Wint 1990; Avraham 2015; Bush and Zetterberg 2021). A

positive reputation abroad can help boost legitimacy at home by showing domestic audiences that the country is an attractive and respected model in the eyes of foreign publics (Holbig 2011; Hoffmann 2015; del Sordi and Dalmaso 2018). Particularly for great powers, being viewed positively can help states earn prestige, which can in turn help them amplify their preferred norms and values in the international system and thus secure more deference on issues important to them (see Fordham and Asal 2007, 33; Ambrosio 2010, 386; Larson, Paul, and Wohlforth 2014, 19).

The resources that states devote toward cultivating how they are perceived suggests that at minimum they wish to avoid having a negative reputation. While they take active steps to cope with being stigmatized (Adler-Nissen 2014), those efforts are not necessary if they can avoid ignominy in the first place. States will often enact strategies to correct or address a perceived negative or “distorted” portrayal (e.g. Wilson 2015, 294; Kiseleva 2015, 322). Elites from authoritarian states invest heavily in laundering their reputation in part to distance themselves from negative connotations associated with the politics of their home countries (Cooley, Heathershaw, and Sharman 2018). Consider the former Kazak dictator Nursultan Nazarbayev, who reportedly paid millions to former UK Prime Minister Tony Blair’s firm to help portray Nazarbayev as a modernizer (ibid., 47). Indeed, keeping public relations firms on retainer to perpetually manage the image of a state and/or its elites is a hallmark of what Morgenbesser (2020) calls “sophisticated authoritarianism”.

A transnational crisis or exogenous shock can challenge a state’s ability to avoid reputational damage, particularly if questions of blame enter the picture. A pandemic like Covid-19 is one such point of crisis. Pandemics have long been blamed on others or outsiders, often in racialized terms, a process Dionne and Turkmen (2020) describe as “pandemic othering.” Former United States president Donald Trump’s insistence on calling Covid-19 “the China Virus” or even the “kung flu” while in office is a blunt manifestation of the tendency to rely on racist and othering modes of blame attribution. Research has already begun to map

the contours of blame attribution for the spread of Covid-19, but clearly culpability for the pandemic has been a feature of international discourse since the disease's outbreak (Flinders 2020; Jaworsky and Qiaoan 2020; Lin 2021). Elites often locate blame for domestic crises or governance failures to other actors to avoid being blamed themselves and communicate those claims via the media. The first step in our empirical analysis below therefore investigates the following hypothesis:

Hypothesis 1: The PRC suffered reputational damage because of Covid-19.

China Wants to Be Seen Positively and Crafted its Image During Covid-19

However, states do not sit idly by and let others define them. They take steps, particularly in a crisis, to shape foreign perceptions. China is perhaps even more attuned to its external reputation than most states. PRC leaders care deeply about how China is perceived abroad and invest considerable resources into advancing positive impressions of the country and countering negative ones (see, e.g. Brady 2015; Hartig 2016; Tsai 2017). For most of the post-Mao era, the main driver of China's external image efforts had to do with its desire to grow more powerful without being perceived as threatening to others (Brady 2015, 51; Zhao 2015, 195).

In the Xi Jinping era (2012 – present), however, Deng Xiaoping's famous dictum that China should bide its time and hide its brightness is clearly over. China under Xi wishes to advance itself more as a model and leader by changing the terms of reference for global discourse. The PRC wishes to articulate its own vision of international politics and gain followers for that project, particularly on issues like human rights or sovereignty in international institutions (Nathan 2015, 165-167; Brazys and Dukalskis 2017; Foot 2020). In an influential August 2013 speech at the National Propaganda and Ideology Work Conference, Xi told his listeners that they should "tell a good Chinese story, and promote China's views

internationally” (quoted in Brady 2015, 55). He instructed his audience to “tell China’s story well, disseminate China’s voice, and enhance its right to speak in the international arena” (quoted in Tsai 2017, 208).

A key Chinese foreign policy concept in this regard is “discourse power”, apparently first used officially in 2008 (Rolland 2020, 53; see also Zhao 2016). This concept is rooted in the idea that “China faces a hegemony of discourse” because “Western” media outlets and political ideas disproportionately influence international discourse, with the result that China is portrayed as not living up to that implied standard (Wang 2008, 265; Liu 2020, 280–283). Enhancing China’s discourse power thus equates with improving Beijing’s ability to “speak” or communicate internationally and compel others to listen (Rolland 2020, 7, 10–12; see also Zhao 2016). Put more starkly, the Chinese Communist Party (CCP) believes that it is in a “discourse war” with the West (Shambaugh 2015, 103). As is well-known by now, China has invested heavily in its external propaganda apparatus (Brady 2015; Tsai 2017) and become more assertive in articulating its preferred concepts in international fora (Rolland 2020; Foot 2020; Fung 2020).

One indicator of how well this discourse war is going for China is how the country is portrayed in international media. While the PRC will of course be portrayed positively in China’s own external propaganda outlets like *Xinhua* or China Global Television (CGTN), coaxing more positive coverage from outlets one does not control is an indication that Beijing’s emphasis on being seen more positively abroad is making headway. Of course, China takes steps to influence even independent foreign media coverage by, for example, repressing access of foreign correspondents to the country to control the information that leaves China or trying to cultivate friendly foreign journalists through junket trips or fellowships (Dukalskis 2021, 83-110). It also tries to pressure foreign outlets to cover China well – sometimes penalizing them when they do not – and purchases advertising space for pro-CCP “advertorials” in leading foreign news outlets (Lim and Bergin 2018).

Covid-19 and China's relationship to it provide a useful ground to investigate these arguments about state image, crisis blame and blame avoidance, China's discourse power, and wider issues of authoritarian image management. The pandemic originated in Wuhan, China in late 2019. Information about the disease was initially suppressed, with local doctors and citizen journalists who sounded the alarm punished. In January 2020, the central government took control of the pandemic response and initiated a "prevention and control" strategy, which entailed "an interweaving of public health with authoritarian tools of surveillance, policing, and securitization" (Greitens 2020, E171). The PRC wishes for its Covid-19 response to be considered a success domestically, including to not be associated with or blamed for the origin of the disease. Furthermore, it aims for its response to be seen as generous abroad. Each of these points will be elaborated in turn.

The Chinese government has sought to control information about its domestic response. Presumably to deflect from culpability, the country's officials and media streams advanced a series of unsubstantiated claims about the foreign origins of the virus, even suggesting that the United States military brought it to Wuhan (Hernandez 2020; Xinhua 2020b; Yang 2021, 17–23). Beijing, for a time, was wary of welcoming investigative teams from the World Health Organization to examine the origins of the virus, erecting barriers to their access and the independence of their work (Hernandez 2021). Chinese journalists or researchers investigating the initial outbreak have been detained, disappeared, and/or jailed (Garrick and Bennett 2021). An *Associated Press* investigative report based on leaked documents and interviews with Chinese scientists found that the government has been centralizing and controlling the release of scientific publications about the disease's origins since at least March 2020 at the highest levels of the government, with dissenters facing punishment (Kang et al. 2020).

On top of controlling the domestic information environment, the PRC has sought to build an image of success in overcoming the disease (Verma 2020, 253; Wen 2021). The

contrast was often drawn directly with failures in the pandemic responses of the United States and Europe (Verma 2020, 253). China's domestic Covid-19 victory was often attributed to the ostensibly unique wisdom and leadership of Xi Jinping. *Xinhua*, the country's main state news agency, in the "Xi Focus" section of its website, ran a lengthy hagiographic "chronicle of Xi's leadership in China's war against coronavirus" about China's success in containing the disease (Xinhua 2020c).

The Chinese government has touted both the wisdom of its model and its generosity abroad (Greitens 2020, EE174-E178; Brazys and Dukalskis 2020, 70). A June 2020 State Council White Paper argued that "China is not exporting its model, nor is it pursuing selfish geopolitical interest" (Xinhua 2020a, n.p.). However, the document stressed the success of China's actions, its generosity and cooperation abroad, its ostensible openness and transparency, and Xi Jinping's personal leadership role in promoting international cooperation (Xinhua 2020a). China's external propaganda streams regularly feature content with foreign political leaders thanking China for its apparent generosity during the pandemic, with headlines like "Serbia thanks China for aid, blasts lack of EU help" (CGTN 2020a), "Zimbabwean president thanks China for COVID-19 vaccine donation" (CGTN 2021), "EU's Von der Leyen thanks China for support including 2 million masks" (CGTN 2020b), and "Pakistani senate passes resolution to thank China for support in COVID-19 fight" (CGTN 2020c).

These efforts can be seen as a form of "health diplomacy", which Fazal (2020, E78) defines "as international aid or cooperation meant to promote health or that uses health programming to promote non-health-related foreign aims." China has a long history of providing health-related financial assistance and was quick in responding to the Covid-19 pandemic (Morgan and Zheng 2019a, 2019b). These efforts became colloquially known as "mask diplomacy" given the prevalent image of face masks as an everyday marker of the pandemic as well as China's role as the main mask producer globally, but the assistance took

on many forms. More will be explained below, but China's provision of aid, equipment, expertise, training, and person power to other countries played a key role in its Covid-19 image crafting (on mask diplomacy in Latin America, see Telias and Urdinez forthcoming; on Central and Eastern Europe, see Kowalski 2021). The fact that the country's propaganda streams are so keen to publicize these efforts is clear evidence that image was at least part of the motivations for these interventions.

The second part of our empirical investigation examines the effectiveness of China's image management strategies. It assesses whether the PRC's mask diplomacy efforts have helped mitigate reputation damage that the country may have faced due to being blamed for or associated with the outbreak of Covid-19. Given the resources devoted to the task, the foundation of information control domestically, and previous literature suggesting that such efforts can be effective in changing the conversation, we derive our second hypothesis:

Hypothesis 2: PRC mask diplomacy mitigated reputational damage associated with Covid-19.

Data, Scaling, and Validation

We employ quantitative text analysis to test these hypotheses. In this section, we describe the data collection procedure, provide summary statistics, outline the scaling approach, and validate the scaling results based on human coding, face validity checks, and cross-country comparisons.

Data

To establish our outcome measure, we build a novel text corpus of online newspaper articles to test how the media portrayed China during the first year of the pandemic. More specifically, we retrieved the URLs for all articles in the GDELT database that mention China and Covid-19 between January 1, 2020 and December 31, 2020. We retrieved the headings and full texts

of all these articles.² Some of the websites did not allow content retrieval, were blocked for certain IPs, or did not contain standard html fields to access the full text. We identify the language of an article using Google’s Compact Language Detector (Ooms 2021), a neural network model for language identification.

Since multilingual text analysis could potentially induce systematic measurement error in our dependent variable, we choose the corpus of English texts as the primary data source. We also extend this sample by machine-translating 324,000 statements and adding the translated statements to the corpus. As we show below, the results do not substantively change when using the more extensive text corpus, which offers support for the robustness of our analysis.

In the next step, we only keep websites that have published at least 50 articles relating to Covid-19 and China in 2020. We add this filter to focus on legitimate news outlets and avoid results driven by websites that did not cover the topic of interest throughout the entire year. We then classify the country of a website. The initial classification relies on the ending of a domain. For instance, pages ending in *.ie* are classified as “Ireland”, websites ending on *.jp* are classified as “Japan”. For all websites that could not be classified unambiguously, either because the domain ending does not match with a country or because the domain ending is general (e.g., *.com* or *.org*), we hand-coded the country of origin. We visited the website and looked up contact information to identify the country of the news outlet. Domains that could not be matched with a specific country are excluded from the empirical analysis.

We next extract the terms *china** or *chinese** in each article (or its translation in over 100 languages) and keep the terms and their context of ± 30 words using the *quanteda* R package (Benoit et al. 2018). We further limit this subset of statements by keeping only statements that also include at least one of the following terms: *covid**, *corona**, *virus**, *disease**, *pandemic** (or translations of these terms for non-English texts). Based on these

² We developed a scraper that loads each URL, checks whether the page still exists, and saves the title and body of the news article.

strict filters, all texts in our limited corpus mention China and contain an unambiguous reference to the global pandemic. *Figure 1* visualizes the geographical distribution of available and relevant English statements. Overall, the English text corpus includes over 1.3 million relevant statements from 1,584 domains and 101 countries.

Figure 1: Geographical distribution of relevant English statements

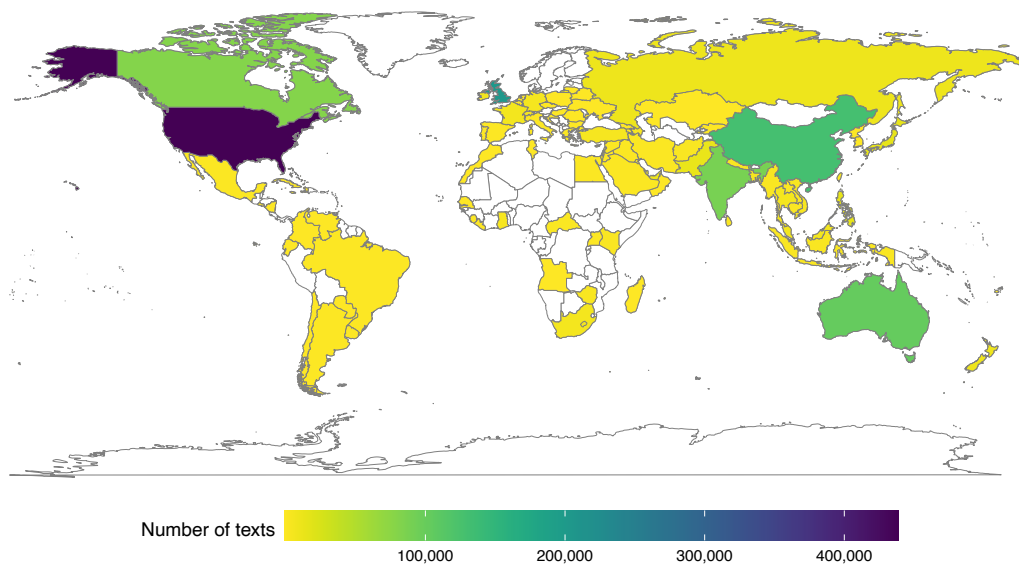
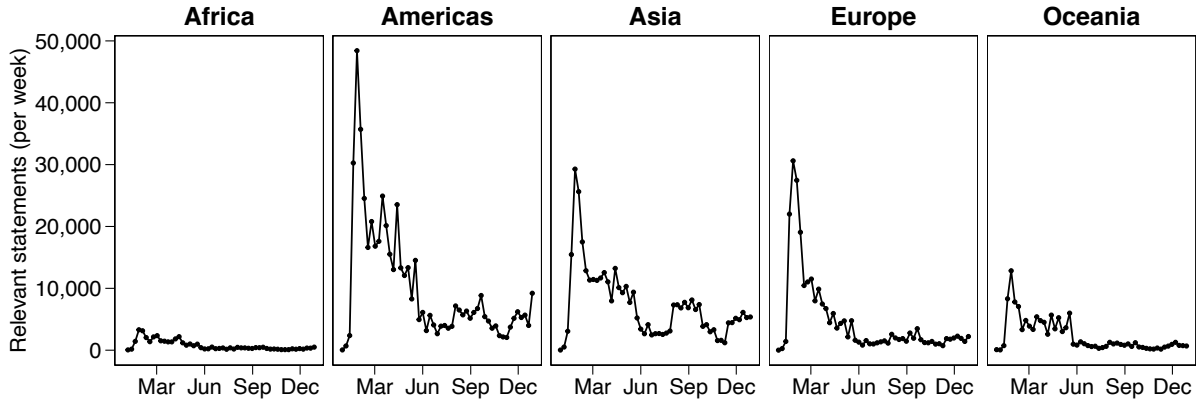


Figure 2 plots the weekly number of statements by continent from 1 January until 31 December 2020 to illustrate variation over time. Most articles come from websites published in the Americas, followed by European and Asian domains. The plot also underscores that most articles were published in the first half of 2020. This pattern is reasonable since the global outbreak of the pandemic, the potential blaming of China as the culprit, and China’s “mask diplomacy” efforts took place largely between January and June 2020.

Figure 2: Number of relevant statements per week



Scaling Method

One could consider two approaches to retrieve media tone about China from the texts. The first approach would rely on supervised machine learning. In this approach, human coders label a large corpus of sentences in terms of the text's framing of China (e.g. Barberá et al. 2021; Müller 2021). While this approach offers flexibility and a straightforward interpretation, there are two drawbacks to this approach for our research question. First, the sentences are not necessarily categorical, i.e. *either* savior, *or* neutral, *or* culprit. Instead, we expect that newspaper articles frame China on a *continuous scale* ranging from very negative (=culprit) to very positive (=savior). Therefore, we opt for a semi-supervised scaling method, Latent Semantic Scaling (LSS). LSS is a semi-supervised scaling method that positions documents on a pre-defined scale (Watanabe 2020; Trubowitz and Watanabe 2021). LSS relies on the intuition that “you shall know a word by the company that it keeps” (Firth 1957, 11). From this perspective, the context provides crucial information on a word's meaning. LSS method requires a relatively small set of keywords (so called “seed words”). These seed words describe both ends of a unidimensional scale. The LSS algorithm estimates the semantic proximity based on cosine similarity scores between the pre-selected seed words and all other terms in the text corpus.³ Words that do not systematically appear more often with terms from

³ We follow the approach described extensively in Watanabe (2020) and Trubowitz and Watanabe (2021).

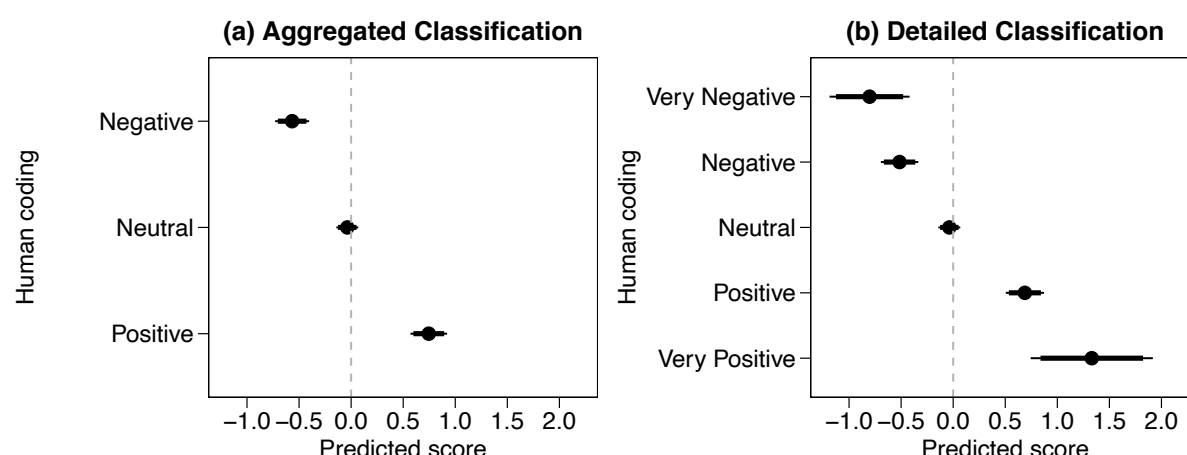
one of the two seed word categories get a score approaching 0. Having estimated polarity scores for all words in the text corpus, LSS allows us to predict scores for each text in the corpus.

Based on our domain-specific knowledge, we assign words like spread*, origin*, cover*, silence*, and fraud* to the “negative” end of the scale (culprit), while terms such as help*, friend*, solidarit*, and donate* are assigned as seed words for the “positive” end of our unidimensional scale (see Table A1). We train the LSS algorithm using seed words for our culprit-savior scale and apply the trained LSS algorithm to the entire text corpus, resulting in a score for each statement.

Validation

We validate the scaling results extensively, following best practices in text-as-data approaches. First, we extracted a random sample of 500 sentences. An instructed coder read these sentences (without having any information on the LSS scores for each text) and coded them on a scale from 1 to 5, where 1 means that China is portrayed very negatively as the culprit, while 5 implies a very positive portrayal of China as the savior. We report the exact coding instructions in *Appendix A*. We compare the human coding with the scaling results by running a linear regression with the continuous scaling score as the dependent variable and the human classification as the independent variable. *Figure 3* plots the fitted values of the continuous scores for each category. We observe a high correspondence between both measures. Very negative mentions have the lowest scores, followed by negative and neutral mentions. Positive and very positive statements about China have the highest scores.

Figure 3: Predicting media tone based on the human coding of the same set of statements



Note: The plots report predicted values of media tone conditional on the human classification of a statement. Error bars show 90% (thick) and 95% (thin lines) confidence intervals.

Second, based on the scaling results, we report the 30 most negative statements (observations with the lowest values) and the 30 most positive statements (highest values) in Table A3. The scaling approach differentiates between negative and positive mentions. Statements with lower values tend to describe China as the culprit, while positive values describe China as a savior. The following sentences have some of the lowest (culprit) and highest (savior) values. They underscore that the selection of seed words in combination with the LSS method provides intuitive and interpretable scaling results.

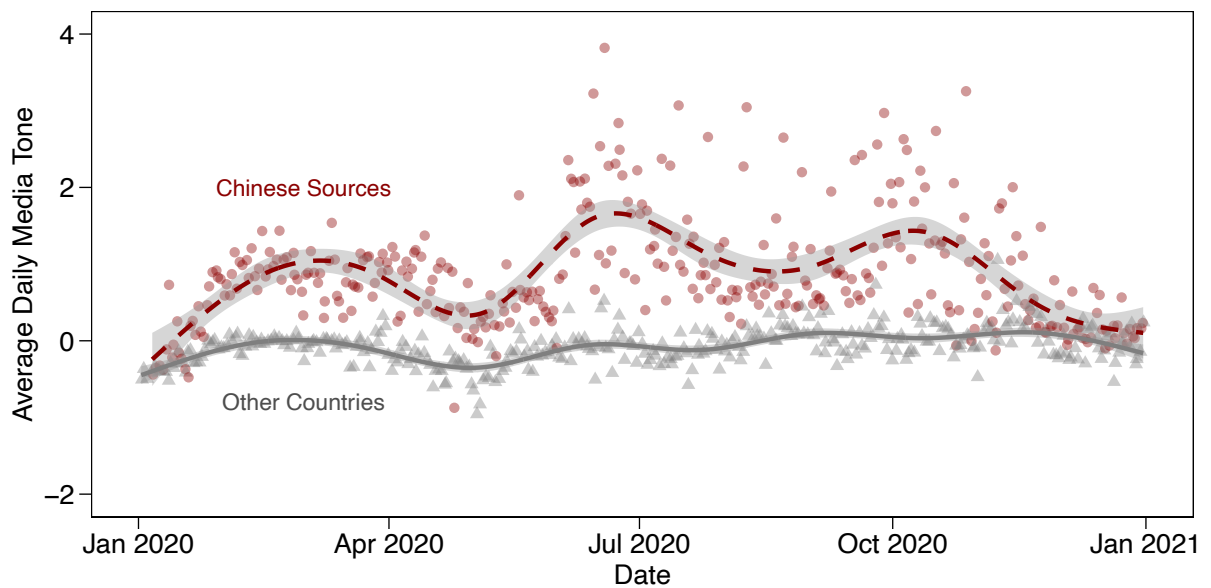
Very negative score: *“...China deliberately suppressed or destroyed evidence of the coronavirus outbreak in an ‘assault on international transparency’ that cost tens of thousands of lives, according to a dossier...”*

Very positive score: *“face of COVID-19, China and Africa have offered mutual support, fought shoulder to shoulder with each other, and enhanced solidarity and strengthened friendship and mutual trust. China shall always remember the invaluable support Africa gave us at the height of our battle with the coronavirus. Over 50 African leaders have expressed solidarity and support in phone...”*

Third, we test the face validity of our scores by comparing articles from official Chinese sources (written in English) with all other sources (written in English). We would expect Chinese sources to have higher values than sources from other countries given official media

controls in the PRC. *Figure 4* compares the weekly scores for both groups. The red dashed line indicates the scores for China, the grey line shows scores for the remaining countries. As expected, the scores from Chinese sources are much more positive than sources from other countries, especially beginning around late January 2020 when the PRC central government took firmer control of the pandemic response. Running regression models with media tone as the dependent variable confirms the visual evidence (*Table A2*). The tone in Chinese sources is over 1.15 standard deviations more positive than media tone in other countries.

Figure 4: Comparing media tone in Chinese sources and all other sources



Note: Each dot indicates media tone in one country on a given day. Lines are generalized additive models with integrated smoothness.

Having validated the scaling model and classified every relevant statement, we aggregate the scores to the level of country-week observations. More specifically, we estimate the mean scores of all articles published in a country in a given week. This gives us a panel of country-week mean scores. We then create a country-standardized measure of the LSS score discussed above where the mean score, by country, is 0 with a standard deviation of 1. This is our principal outcome measure for both research questions. This standardization better enables us to make cross-country comparisons by helping to account for country-specific

unobservable factors that may affect the “latent” China LSS score. It also allows us to mitigate the differences in variance due to variation in the number of articles by country (where countries with fewer articles are likely to have higher variance in their LSS scores). Moreover, the standardization takes into consideration differences in the ideological positions of newspapers across countries. The selection of outlets relies on the domains available in the URL database. Our sample includes ideologically moderate and extreme domains. The standardization across countries takes this heterogeneity into account and allows us to test how media tone changes *within* a certain country, using the average tone as the baseline.

Weekly Deaths and China’s Image

Our first analysis investigates *Hypothesis 1*, namely whether China suffers a reputational hit due to Covid-19. In these models, our main explanatory variable is Covid-19 deaths. Weekly country-level data on Covid-19 related deaths come from the European Centre for Disease Prevention and Control. Since these deaths are not only likely to be serially correlated, but also likely to come in “waves”, our primary approach is to generate a binary variable equal to “1” at the peak of weekly Covid-19 deaths, per country. This is the week in which we would expect blaming effects to be strongest, as the peak is likely culminating several weeks of increasing death tolls but also precedes any sentiment that the “tide is turning” which may lessen feelings of blame.

To account for unobserved confounders on media tone towards China, we employ several fixed effects strategies. Initially, we simply use country fixed effects to account for any (mostly) time-invariant confounders that may influence media tone towards China including economic ties, diplomacy, or regime similarity (see Flores-Macias and Kreps 2013; Strüver 2016; Brazys and Dukalskis 2017). However, we recognize that in addition to these time-invariant factors, there may also be a temporal dimension to Chinese media tone during the pandemic. While we estimate a two-way fixed effects model, recent work has shown that this

approach can have some drawbacks as it “is equivalent to the weighted two-way fixed effects regression estimator, but some observations have invalid (i.e., negative) weights” (Imai and Kim 2020, p. 9). Accordingly, our preferred model is to use country fixed effects with a weekly trend variable to account for any general temporal trend in the media tone regarding China. Finally, we include a model that uses country-period fixed effects, using a 4-week period. This approach is similar to that employed by Christensen (2019) in his investigation of the impact of mining on conflict to account for unit-specific temporal variation. The drawback with this approach is that as our “peak” variable is a binary indicator for a particular week, some of that effect will be absorbed into the country-period fixed effect, particularly if we expect a “fuzzy” effect in the weeks around the peak. The reduced form specification for our country fixed effects, trend, model is given by:

$$Y_{it} = \beta_1 * DeathPeak_{it} + \alpha_i + \lambda_t + \varepsilon_{it}$$

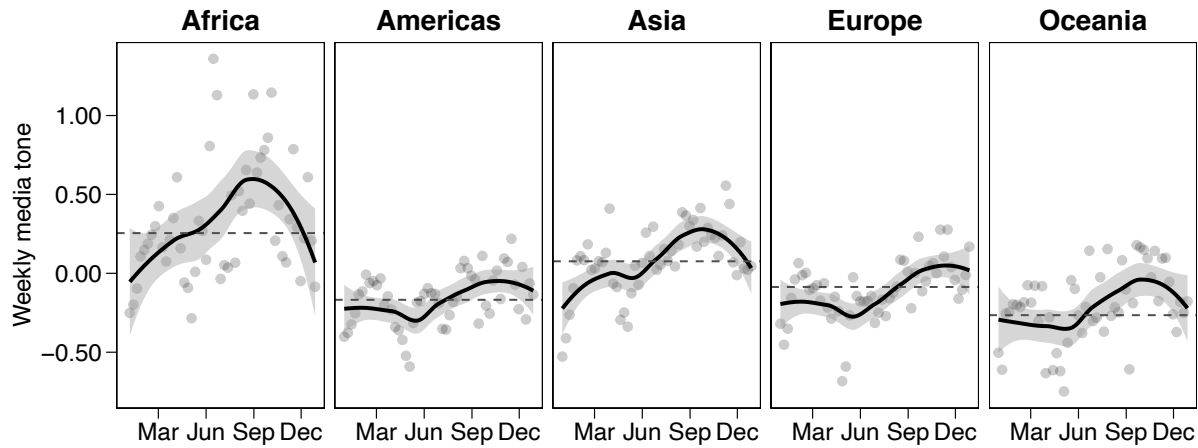
Where Y is the standardized media score for country i at week t , and α is a fixed effect for country i and λ is the temporal trend. In all models, we cluster standard errors, ε , by country to account for any remaining unit-specific serial correlation.

Results

We begin by providing a descriptive overview of the media tone surrounding China and Covid-19. We then test whether the peak of Covid-19 related deaths correlates with more negative coverage of China. *Figure 5* shows the development of media tone per week, aggregated to the level of continents. The horizontal dotted lines indicate the average tone across the entire year for news outlets in each continent. Two patterns stand out. First, media tone is most positive in Asian countries (excluding China). African outlets have the second most positive tone, possibly because many of the outlets are in countries that enjoy relatively good relations with the PRC. The tone is most negative in the Americas, Europe, and Oceania. Second, we

observe waves in most continents, with the media tone becoming more positive in the spring and summer of 2020.

Figure 5: The development of media tone across continents



Note: Each dot marks the media tone in a given week for all domains from a continent. Lines are generalized additive models with integrated smoothness.

Next, we test the relationship between deaths and media tone in articles from the same country. Our results are presented in *Table 1*. We find a consistently negative relationship between Covid-19 deaths and China media score across all our estimation approaches. In our preferred country fixed effects, trend, model (3) the substantive impact of the “peak” week of COVID deaths is a 0.37 standard deviation decrease in the media score about China in the context of Covid-19 within a country. This result is substantively similar to our other models (Models 1, 2, 4, and 5). Notably, the OLS estimates (Model 1) do not differ markedly from our country and two-way fixed effects models. We take this as consistent with our expectation that standardizing the media tone measure absorbs most time-invariant and country-specific factors which might influence that tone. These results suggest a clear negative impact on the PRC’s image during periods of peak Covid-19 deaths within countries, and provide evidence supporting *Hypothesis 1*. As measured by media tone, China suffered a reputational hit due to Covid-19.

Table 1: Predicting media tone about China

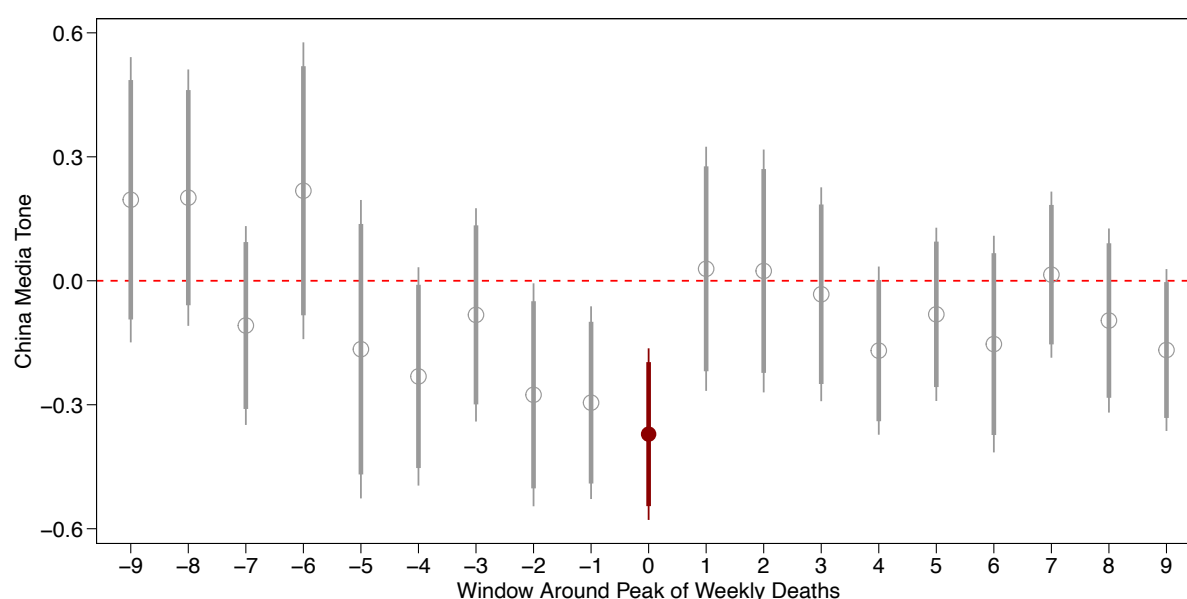
	(1) OLS	(2) Country FE	(3) Trend	(4) TWFE	(5) CPFE
Peak	-0.283*** (0.097)	-0.289*** (0.099)	-0.371*** (0.106)	-0.259** (0.099)	-0.266* (0.155)
Observations	3,651	3,651	3,651	3,651	3,651
Country FE	NO	YES	YES	YES	NO
Country-Period FE	NO	NO	NO	NO	YES
Time FE	NO	NO	NO	YES	NO
Time Trend	NO	NO	YES	NO	NO
Countries	99	99	99	99	99

Clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

As mentioned above, the impact of deaths on media tone about China may be “fuzzy” around the peak. Indeed, many of the peaks come after a few weeks of (often dramatically) increasing deaths. Accordingly, we run our preferred model (3), for 9-week lags and 9-week leads around the peak. These results are presented graphically in *Figure 6*. As seen there, there is no statistically significant difference in media tone until two weeks before the peak. At that point, the substantive effect and precision of the estimate decreases to the peak week. Interestingly, immediately after and in all 9 periods following the peak the difference in media tone is no longer distinguishable from other periods. We conjecture that once the “corner is turned” blame for China dissipates, and/or tone regarding China may be improve because of mask-diplomacy interventions, which we explore below. Overall, we take the results presented in this section as strongly supporting *Hypothesis 1*.

Figure 6: Impact of lagged and lead death peak



Note: Vertical error bars show 90% and 95% confidence intervals.

Mask Diplomacy and China's Image

Having established that China suffered reputational damage, in this section we test *Hypothesis 2*. We aim to determine whether the PRC's mask diplomacy initiatives mitigated China's Covid-19-related reputational hit. To do so we again describe our data, identification approach, and results.

Data

To conduct our evaluation, we create a novel dataset of individual mask diplomacy *events* at a country-week level through August 1, 2020. To gather this data, we used both media and official sources, including the Chinese International Development Cooperation Agency's (CIDCA's) official press releases in Mandarin and English. Trained coders manually recorded event data from all *Xinhua* articles that mentioned "China" and "Corona*" and all CIDCA press releases. We then applied mask diplomacy keyword searches to all non-Chinese news sources and manually coded those where at least 5% of the article's terms were relevant to mask diplomacy. These records were then de-duplicated into a set of unique country-date

mask diplomacy events across the following categories: medical supplies, medical team assistance, financial assistance, and remote medical assistance. In all, we recorded 592 unique events across 158 countries.⁴ We use that data to code a binary variable equal to “1” in any week in which a country received some form of Chinese mask diplomacy. The full coding methodology and descriptive statistics and graphs can be found in *Appendix D* and *E*.

Identification Approach

Using this data, we identify the first week in which a country received PRC mask-diplomacy assistance. We use this information to conduct a multi-period difference-in-difference analysis with variation in treatment timing following Callaway and Sant’Anna (2020) who show the equivalence of that approach to a classic two-period difference-in-difference average treatment effect of the treated (ATT). Our treatment is an indicator variable in the week of the first instance of media reporting of mask diplomacy in a country. As nearly all countries in our sample eventually receive mask diplomacy, we use countries who are “not-yet-treated” at the time a given country is treated as our comparator group. We use an unconditional parallel trends assumption as we have insufficient variation the pre-treatment covariates for which we have weekly data, namely Covid-19 cases or deaths.⁵ However, as shown in the results below, the unconditional parallel trends assumption appears to hold in any case. As discussed by Callaway and Sant’Anna (2020, p. 6) the major drawback of using the “not-yet-treated” comparison group is that parallel trends may evolve differently in “early” and “late” periods. As they note, it is important to consider context when considering the parallel trends assumption. In this case, we *do* expect parallel trends to hold in “late” periods only as we expect to see a

⁴ While we think our data is reasonably complete, we cannot be sure we have captured the entire universe of mask diplomacy events. Indeed, the number of events reported in Telias and Urdinez (forthcoming) seems to indicate more events in Latin America than we uncovered in that region. However, our primary analyses rely solely on detecting the *first* event in a given country, and the logic of our argument relies on the event being widely publicly visible in order to influence China’s image. On both counts, we suspect that this data is largely accurate. In any event, to the extent any omitted events introduce bias into our results, we strongly suspect that such bias would tend our results to a *null* finding as it would result in us comparing treated units to “untreated” units whose actual treatment was unobserved (and thus should be less dissimilar to the observed treated units).

⁵ The ‘did’ package utilized in R encounters a singular matrix when including pre-treatment covariates.

treatment response to mask diplomacy once (news about) the pandemic “took hold” globally in late February and March 2020 which was relatively close to the first instances of mask diplomacy in many countries. Accordingly, we think this comparator group is appropriate.

Our analysis spans the first 28 weeks of 2020 (mid-July) as by this week all countries in our sample had received mask diplomacy. We can match sufficient media data with mask diplomacy data for 99 countries when using only English language texts. The resulting panel is unbalanced as we do not have media score observations for all countries in all weeks because China may not have been mentioned in relation to Covid-19 in the media of all countries in all weeks. We account for this in our modelling. In results below, we calculate both aggregate ATTs and plot dynamic treatment effects which, as discussed further by Callaway and Sant’Anna (2020), are comparable to an event-study type approach. In essence, this allows us to evaluate if mask diplomacy generated a long-lasting boost in media tone regarding China or if the effect was more ephemeral.

In the main models we assume that the media did not have any advance indication of when China would provide mask diplomacy, or if they did, they would publish that information immediately. Indeed, a handful of our observations come from media reports indicating a *future* delivery of mask diplomacy. Thus, any anticipation in the actual event by the media is captured in the treatment data itself, which is based on the date of first media mention of the mask diplomacy event.

We consider models using only English texts and rerun all analyses for English and translated texts in *Appendix C*. We also recognize the fact that it is likely that the media coverage of the mask diplomacy events themselves may be responsible for more positive tone. This is not necessarily problematic to our investigation because part of the CCP strategy in using mask diplomacy is to generate positive stories *about* mask diplomacy. However, out of caution we also consider models where we remove any mask diplomacy text from the computation of the tone score to see if mask diplomacy efforts influence the media narrative

in stories about China and Covid-19 that do *not* mention mask diplomacy itself.⁶ Finally, we also consider mask diplomacy efforts using the fixed-effects approaches we employed in the death analysis in Table 2. For those models, we code a binary variable “1” in *any* week in which a country received Chinese mask-diplomacy. Again, as our data recorded no further mask diplomacy after week 28, we restrict the analysis to treatment windows within those dates.⁷

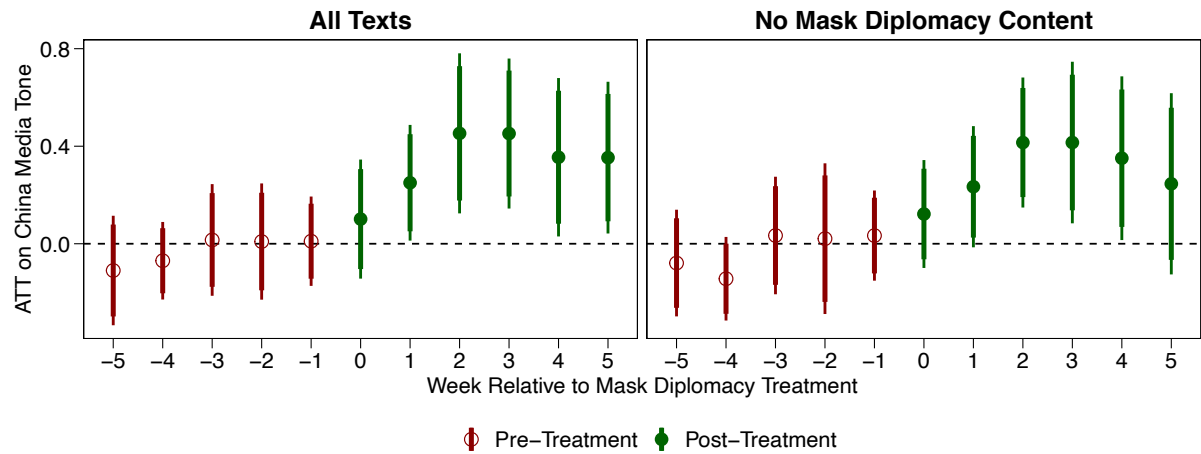
Results

The dynamic results from our two primary models are presented in *Figure 7*. The unconditional parallel trends assumptions appear to hold in each model for at least five pre-treatment weeks, but especially in the “late” pre-treatment periods (3 weeks prior to treatment). Both models show dynamic treatment effects that are substantially similar, with the largest effect observed in the second post-treatment period for each model. The effect size in that period is roughly 0.40 of a standard deviation shift in media tone. However, in both models, this effect begins to decay from the third post-treatment period. Put differently, mask diplomacy appears to give the PRC an image boost in the target country, thus lending credence to *hypothesis 2*, but the effect may not be permanent.

⁶ To conduct this analysis, we identify and remove mask diplomacy articles from our main corpus. To stack the deck against finding effects, we opt for a restrictive approach and exclude all statements that mention one of over 60 terms or multi-word expressions that could potentially describe PRC mask diplomacy. *Figure A1* plots the 30 most frequent terms of this lists in the full text corpus. The most frequent terms include vaccine*, mask*, respirator*, test*, medical supply*, donate, and Chinese doctors. All these terms clearly could relate to China supporting other countries. To test whether the media tone also changed when ignoring texts about China’s support, we remove all text segments that mention one or more of these terms (around 15% of all statements). Afterwards, we aggregate the media tone to the levels of country-weeks.

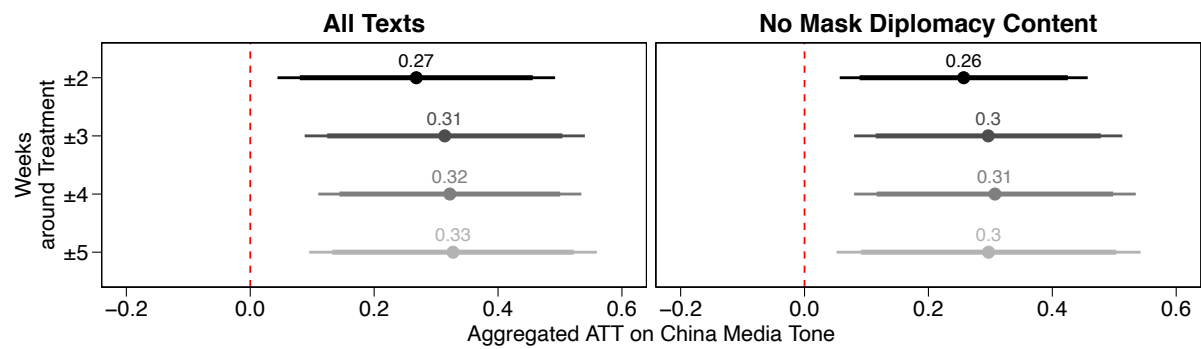
⁷ China began a second wave of “vaccine diplomacy” efforts in 2021. These efforts have not yet been coded and the study focuses on the initial mask diplomacy efforts only which had largely concluded by August 2020.

Figure 7: Mask diplomacy differences-in-differences at different weeks



Note: Vertical error bars show 90% and 95% confidence intervals.

Figure 8: Overall aggregate ATT of receiving mask diplomacy support on media tone, for a window of ± 2 to ± 5 weeks around the treatment



Note: Horizontal error bars show 90% and 95% confidence intervals.

In Figure 8, we consider the aggregate ATT using different windows around the treatment. Considering windows of two to five weeks, we see an *aggregate* ATT of roughly 0.3 of a standard deviation for models using all text and models using scores derived only from articles without mask diplomacy content. The effect size is quite stable to using alternative treatment windows.

Table 2: Mask Diplomacy Fixed Effects Models (all texts)

	(1) OLS	(2) CFE	(3) Trend	(4) TWFE	(5) CPFE	(6) All Weeks	(7) Peak
Mask	0.271*** (0.055)	0.310*** (0.068)	0.314*** (0.064)	0.053 (0.070)	0.048 (0.081)	0.134** (0.060)	0.133** (0.061)
Peak							-0.350*** (0.111)
Observations	1,273	1,197	1,197	1,197	1,273	3,732	3,732
Country FE	NO	YES	YES	YES	NO	YES	YES
Country-Period FE	NO	NO	NO	NO	YES	NO	NO
Time FE	NO	NO	NO	YES	NO	NO	NO
Time Trend	NO	NO	YES	NO	NO	YES	YES
Countries	98	98	98	98	98	99	99

Clustered standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

We next turn to our fixed-effects models. Again, these models capture *any* instance of mask-diplomacy. We consider the same models as in the “peak” investigation, again with the time-trend model our preferred approach. While our primary models include only the “mask” measure and are temporally restricted to periods of significant mask diplomacy activity, we also include a model (6) that includes all weeks in our dataset to compare to a model that includes all weeks and the “peak death” indicator (model 7).⁸

As shown in Table 2, the impact of mask diplomacy in our preferred trend model (3) is a 0.31 change in the standard deviation of media tone on China in a given country. Substantively, this is nearly identical to the aggregate ATTs from the multi-period differences-in-differences results shown in *Figure 8*, and similar to the OLS (model 1) and country fixed effects (model 2) approaches. The exceptions are the two-way and country-period fixed effects models (4 and 5) which, while showing a positive relationship (albeit of a greatly reduced size), show no statistically significant relationship. However, this is also unsurprising as mask diplomacy events were heavily concentrated in a few weeks as shown in histogram in

⁸ Where models 1 to 5 use the first 19 weeks of 2020, which accounts for greater than 95% of all instances mask diplomacy in our data. This temporal restriction also better approximates the treatment windows of our differences-in-differences approaches.

Appendix E, and, as such, much of the impact is likely captured by the weekly or period fixed effect, respectively, which cover those weeks. Notably, the “mask” result in model 6 is almost identical in model 7 which includes the “death peak” measures, both of which include all weeks. Likewise, the estimate on “peak” in model 7 does not change substantively from the effect in *Table 1*. In other words, it appears as though the “blame” and “savior” effects are independent of one another. Again, looking at the raw data this is somewhat unsurprising. While the mask diplomacy is clustered in the early part of the year, especially in April/March, in many countries the death peaks do not occur until the autumn. Accordingly, the first instances of mask diplomacy in most instances could not have been directly in response to these death peaks.

Overall, we take these results as clearly supporting *Hypothesis 2*. Examples from our sample illustrate what our observed shift in media tone associated with mask diplomacy looks like in practice. Using scores from Canadian media, we see that samples at the standardized mean (0.00) of all Canadian articles about China and Covid-19 are not particularly positive, with some straightforward descriptions of the unfolding of the pandemic’s origins in China:

*“The World Health Organization declared on Thursday that the coronavirus epidemic in China now constitutes a public health emergency of international concern. Tedros Adhanom Ghebreyesus, WHO director-general, announced the decision after a meeting of its Emergency Committee, an independent,,,”*⁹

With others intimating that the PRC may have some responsibility for the outbreak due to its political system:

*“Videos showing residents at the centre of China’s coronavirus epidemic haranguing a top Chinese official have highlighted persistent anger at how authorities have handled the crisis. The clips, which have been circulating online since Thursday...”*¹⁰

⁹<https://www.kitco.com/news/2020-01-30/WHO-declares-China-virus-outbreak-an-international-emergency.html> (accessed 24 May 2021).

¹⁰<https://www.digitaljournal.com/world/wuhan-residents-decry-fake-work-as-chinese-official-tours-city/article/568275> (accessed 24 May 2021).

In contrast, articles at a 0.40 standard deviation are considerably more positive, including examples that discuss China's effective internal response to the pandemic:

*"the strategy to contain the disease - identifying people with infections and rapidly isolating them - was still the best approach, and had shown positive effects in China, South Korea and Singapore."*¹¹

or Wuhan re-opening after effectively suppressing the disease:

*"The city at the centre of China's virus outbreak was reopening for business Monday after authorities lifted more of the controls that locked downs tens of millions of people for two months..."*¹²

These latter articles are notably more positive than those scores at the mean. These examples illustrate how the tone change associated with mask diplomacy manifests in real articles in our sample, showing that even an apparently modest change can substantively change how China is portrayed.

Mask Diplomacy: Heterogenous Effects? An Exploratory Look

Finally, we explore if there are heterogeneous mask diplomacy treatment effects depending on characteristics of the receiving country or the type of mask diplomacy. Here we anticipate potential questions like: will countries that have strong existing ties with China be more swayed by Chinese mask diplomacy, or will they "expect" it based on their affinity? Will countries with weaker ties to the PRC be suspicious of Chinese mask diplomacy or will its provision adjust their prior beliefs? China's aid has previously been shown as being tied to these types of affinities (Brazys and Dukalskis 2017), and preliminary work by Fuchs et al. (2020) also suggests mask diplomacy allocations were based on economic and/or political ties.

¹¹ <https://nationalpost.com/pmnl/health-pmnl/test-test-test-who-chiefs-coronavirus-message-to-world-2> (accessed 24 May 2021).

¹² <https://www.cp24.com/world/time-to-revenge-shop-china-s-virus-hot-spot-reopens-1.4873783> (accessed 24 May 2021).

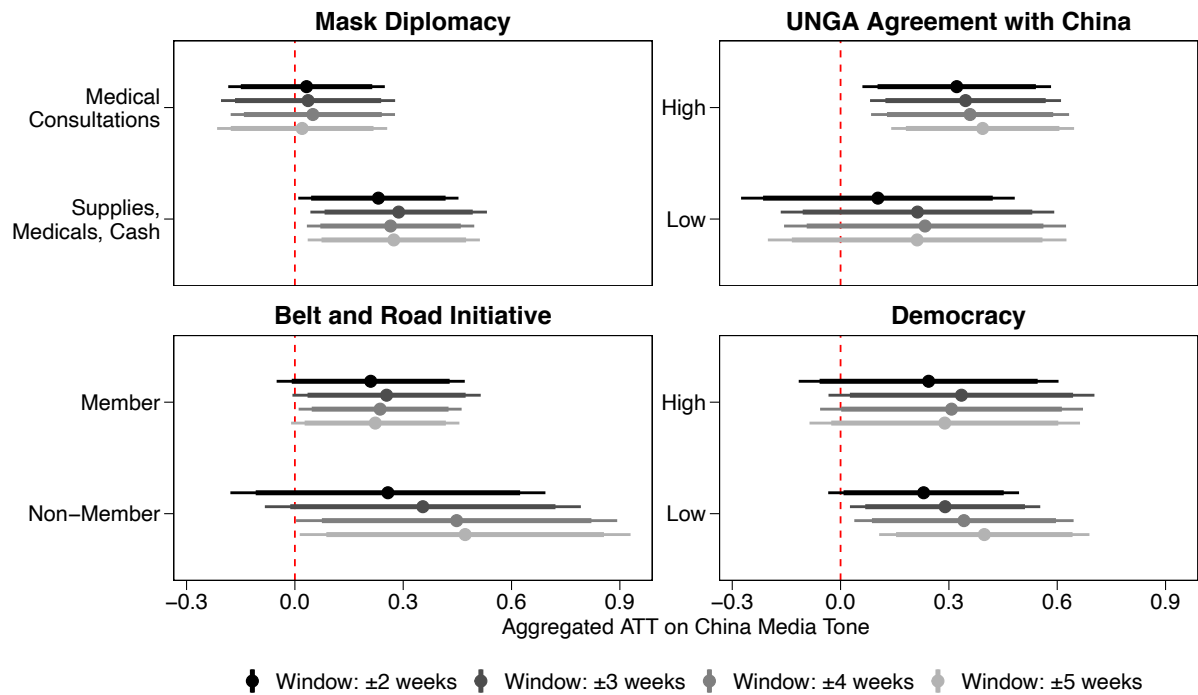
In order to investigate this heterogeneity, we split our sample along the median value of two characteristics: the degree of democracy in the receiving country and the level of a country's UNGA voting affinity with China.¹³ We also split the sample between those countries that have signed onto the Chinese Belt and Road Initiative (BRI) and those who have not.¹⁴ As a final extension, we also explore if different types of mask diplomacy have different treatment effects. To this end, we classify our mask diplomacy data based on "material" and "non-material" support. The former includes supplies and equipment, cash, and on-site visits by Chinese medical personnel. The latter consists primarily of what we deem "remote medical consultations" where Chinese experts provided a country with assistance via telephone or video conference.

The results in *Figure 9* suggest there may indeed be some heterogeneity in mask diplomacy treatment. Starting with the type of mask diplomacy, there appears to be a clear differentiation in the effect of "material" vs. "non-material" assistance, with the former having a larger positive effect while the latter largely has a null effect. This is perhaps unsurprising as material support is likely to be more costly but also more visible and more persuasive. Photos of planes unloading crates of supplies or Chinese doctors in the wards of local hospitals are likely to have a stronger impact than Zoom squares filled with experts.

¹³ The most recent data (as of March 2021) are retrieved from Voeten et al. (2009). We use the Varieties of Democracies dataset for information on the degree of democracy (Coppedge et al. 2021).

¹⁴ Based on the compiling by Nedopil (2021).

Figure 9: Heterogeneous mask diplomacy treatment effects



Note: Horizontal error bars show 90% and 95% confidence intervals.

With respect to country characteristics, the results are less stark but still may be illustrative of country-characteristic heterogeneity. In particular, Chinese mask diplomacy seems to play better in countries that are aligned with China in the UNGA, but there seems to be little difference between the effect in democracies and non-democracies. Likewise, mask diplomacy efforts might have a slightly larger effect in *non*-BRI countries, but the uncertainty around those estimates is also considerably larger than the confidence intervals around the BRI country estimates. Digging into the mechanisms behind some of this apparent heterogeneity goes beyond the scope of this manuscript but could be a useful avenue for future research. None of these investigations change our main results.

Discussion and Conclusion

Collectively, the results reveal two main findings. First, China's association with the Covid-19 pandemic did lead to the country taking a reputational hit as measured by the way the country was talked about in foreign media. These results were exacerbated at times when the pandemic was more intense in a given country. It is difficult to discern precisely *why* this is the case, but it may be due to any number of factors, including China's suppression of information about the disease initially, the tendency for pandemic othering in racial terms, top-level United States politicians at the time explicitly trying to blame the PRC for the disease, or perhaps some combination of these or other factors. Whatever the reason, it is clear from these results that China suffered damage to its image.

Second, the results show that Beijing's mask diplomacy worked to offset reputational damage. High profile exchanges or donations of medical equipment or expertise with a country helped boost the PRC's portrayal in that country as measured by how it was talked about in the press as related to Covid-19. Importantly, the effect was not just driven by positive coverage about the mask diplomacy itself, but also extended to coverage about China and Covid-19 that was not directly about mask diplomacy. It appears that Beijing's health diplomacy charm offensive worked. While cynical observers sometimes dismiss China's external outreach as clumsy and unable to influence proceedings in independent outlets, these results suggest that those assumptions should be questioned.

Theoretically, these results build our knowledge about international image management and associated concepts. Faced with an image crisis of global proportions, China's political system adopted a multipronged strategy of controlling domestic information, amplifying its preferred messages, challenging critics, and getting foreign "friends" of the PRC to speak positively about its Covid-19 response. These efforts were not able to completely avert damage to China's image stemming from the pandemic, but when combined with mask diplomacy, they were effective. It is difficult to spin a positive image out of nothing; success or

generosity gives material to work with. Scholars of ideas and reputations in international relations have long examined the nexus between material and normative power (see Gunitsky 2017); this research speaks to that tradition.

Beyond the case of China and Covid-19 these results suggest that external image management can indeed change the way states are portrayed for foreign audiences. It adds to a growing body of literature particularly about the external propaganda and image management strategies of authoritarian states being able to change global discourse (Carter and Carter 2021; Scharpf et al., 2021; Bush and Zetterberg 2021; Dukalskis 2021). In an age of unravelling liberal international orders this finding has serious implications as authoritarian states promote counter-norms to replace them (Cooley and Nexon 2020: 95). The findings of this article suggest that the external image management strategies of such states can help change the principles undergirding international order.

Finally, future research may consider several avenues. Researchers may wish to combine results like this that rely on media sentiment analysis with surveys (De Vries et al. 2021) and discussions on social media (Lu et al. 2021; Gilardi et al. 2021) to understand how these positive impressions translate, if at all, to public opinion. It may also be worthwhile to consider China's reputation amid the Covid-19 pandemic in a dynamic relationship with its main international rival, the United States. When the two countries were mentioned together in non-Chinese and non-US sources, how were they portrayed? Was there a difference between the Trump and Biden administrations in this regard? Answering questions like these may allow even further insights into how image management works when a rival state acts as a comparator, and illuminate even deeper insights about the future of international order.

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Online Appendix

A Latent Semantic Scaling: Additional Information and Validation

Table A1 lists the seed words for training the LSS scaling model. The terms listed below “Culprit” describe the negative end of the scale, while the “Savior” terms outline the positive end of the scale. All other terms in the corpus receive word scores based on their semantic proximity with these seed words.

Table A1: Selected seed words

Culprit	Savior
spread*	help*
origin*	assist*
lax*	donate*
china virus	friend*
wuhan virus	partner*
wuhan flu	collaborat*
allow*	thank*
culprit*	grateful*
escape*	savior*
cover*	saviour*
silence*	cooperat*
detain*	support*
conceal*	aid*
fraud*	advi*
corrupt*	solidarit*
criminal*	win*
evil*	co-operat*
outrageous*	achieve*
excuse*	progress*
assault*	

The models in Table A2 predict the weekly media tone in a country using linear regression with robust standard errors. The model includes fixed effects for each week. Standard errors are clustered by country. Model 1 uses the sample of English texts; Model 2 adds machine-translated texts before aggregating the scores to the level of country-week observations. Media Tone from Chinese sources on Covid-19 is over 0.6 higher than the media tone in other countries. This difference is substantive, corresponding to over 1.15 standard deviations of the dependent variable.

Table A2: Predicting weekly media tone

	(1) English texts	(2) All texts
(Intercept)	-0.408*** (0.047)	-0.397*** (0.047)
Chinese Sources	0.635*** (0.021)	0.643*** (0.016)
N	4348	5825
R2	0.143	0.123
R2 Adj.	0.132	0.115

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Note: Robust standard errors clustered by country in parentheses.

B Coding Instructions for Validation of Scaling Results

In this project, we analyze how China is portrayed in the media. More specifically, we want to find out whether China is portrayed as the culprit or savior (or whether China portrays itself as positive) in excerpts of newspaper articles that mention China and COVID-19.

You will be asked to code random samples of English texts. Higher values indicate a positive (1) or very positive (2) portrayal of China. The value 1 corresponds to a very negative portrayal of China, while the value 2 should be assigned for negative portrayals. Note that it is often difficult to distinguish between -2 and -1, or 1 and 2. We may aggregate -2/-1 and 1/2 into two categories.

If China is portrayed in a neutral way, assign the value 0. For texts that are irrelevant or not codable into any of these categories, assign the value 99.

Please use the following numeric codes:

-2: Very negative portrayal of China

-1: Negative portrayal of China

0: Neutral

1: Positive portrayal of China

2: Very positive portrayal of China

99: not codable

If you coded an excerpt as Positive or Very Positive, please evaluate whether China is portrayed as a **Savior** or as a **Model**. Savior implies that China is supporting other countries. Model implies that the text outlines, for example, that China has reacted well to limiting the spread of the virus or made decisions that helped to deal with the pandemic domestically. If neither option applies, but the statement is still positive/very positive, leave this column blank.

If a sentence mentions that the virus originated in China/Wuhan, add the value 1 to "origin_china". You still code the sentence itself as neutral (=0).

Examples: Very Negative

- "...Sasse said in a statement. Communist Party is 'lying'. 'Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied, is lying, and will continue to lie about coronavirus to protect the regime.' In a statement responding to the report, Michael..."
- "...is titled 'Coronavirus Compensation? Assessing China's Potential Culpability and Avenues of Legal Response.' The report states that the People's Republic of China (PRC) or Chinese Communist Party (CCP) deliberately covered up the true extent of the coronavirus as it did in 2002–03 with the SARS outbreak." The CCP sought..."
- "bill letting citizens sue China for" mishandling" the pandemic. State Sen. Jim Holzapfel and Assemblymen Greg McGuckin and John Catalano said in a statement that they believe Chinese leaders did little to stop the spread of the virus and that residents and local governments should be legally allowed to recover some of what they lost financially. It's not clear
- "President Donald Trump and some of his officials are flirting with an outlier theory that the new coronavirus was set loose on the world by a Chinese lab that let it escape. Without the weight of evidence, they're trying to blame China for sickness and death from COVID-19 in the United States."

Examples: Neutral

- "...Another 2,009 people in China were confirmed infected with the Covid-19 disease on Saturday, bringing the country's total to 68,584, official data show (link in Chinese). The death toll rose..."
- "...a virus that originated in China in 2002 and killed 770 worldwide. By the end of the month, the WHO declared a global emergency as China reported more than 7,000 cases and 170 deaths. It took a few more days for the virus to spread to outside China. First, new cases were confirmed..."

Examples: Very Positive

- "...The strength of the bond between Africa and China is clear in the fight against the coronavirus, Rwandan President Paul Kagame said Wednesday during the Extraordinary China-Africa Summit on Solidarity against COVID-19. 'The solidarity we have seen during this difficult time has once again demonstrated the productivity' of the Forum on China-Africa Cooperation..."

- "... (UN) Secretary-General Antonio Guterres and the WHO for their respective actions and measures to help developing countries in Africa to tackle the pandemic. Buhari acknowledged that China's support had tremendously strengthened Nigeria's effort in combating COVID-19, adding that President Xi's strong support has further demonstrated the spirit of solidarity and enhanced the bond of partnership..."
- "...recent years, our two countries have maintained close high-level exchanges. The China-Kenya relationship is in its best shape. Our fruitful and wide-ranging practical cooperation stands out in China-Africa cooperation. Our cooperation and mutual assistance in the fight against COVID-19 represents a prime example of solidarity in the face of a disease. Indeed, the brotherly South-South..."

Examples: Positive and Savior

- "...Qingying signed a Letter of Intent for Twinning and Friendly Cooperation during a videoconference in which they also shared experience in the fight against the virus." As the Chinese embassy in Ecuador, we are willing to continue to provide strong support for bilateral local exchanges to build a bridge of mutual understanding and communication between the two peoples..."
- "...economic support to Pakistan During the pandemic, China has provided material support to Pakistan, including masks, ventilators, medicines and all kinds of supplies. And when China was struggling against the virus, Pakistan immediately expressed its solidarity and offered donations and assistance despite its own difficulties. Both countries committed to continue cooperation on the CPEC..."
- "...Pakistan in combating Covid-19 as their top priority, the ambassador added. Pakistani premier conveyed sincere gratitude to China for supporting Pakistan." The medical equipment provided by China will greatly strengthen Pakistan's capacity" to fight the virus, PM Imran Khan said. Pakistan will receive around 20 tonnes of medical goods and 20 ventilators on an..."

Examples: Positive and Model

- "...the remarkable experience of the battle, summarized the great anti-epidemic spirit, and pounded on the important enlightenment of the fight against COVID-19. The major achievements made by China is inspiring for the world, injecting strong confidence to global anti-pandemic cooperation and global governance. China's spirit of combating the COVID-19 epidemic features putting people's lives first..."
- "...Throughout January, the World Health Organization publicly praised China for what it called a speedy response to the new coronavirus. It repeatedly thanked the Chinese government for sharing the genetic map of the virus" immediately," and said its work and commitment to transparency were" very impressive, and beyond words..."

- "...control in Hubei province. China has now restarted its economy, after having defeated the pandemic. Just imagine if every country would have had a health system like China and was able to mobilize like China did ; just imagine that if every country - Mexico, Haiti, Peru, and all the other countries - Mali -..."

Example: Origin in China/Wuhan

- "...and the risk of impact of COVID-19 to very high at global level, " WHO chief Tedros Adhanom Ghebreyesus told reporters . **The outbreak appeared to be easing in China**, where the virus originated. China's National Health Commission reported 427 new cases and 47 deaths Saturday. China has a total of 79,251 cases. South Korea..."

Table A3: The 30 most negative and positive sentences (based on LSS scaling scores)

Text	Score	Category
of these articles were true. But others pushed exaggerated or false claims, like the unproven theory that the virus was engineered in a lab as part of a Chinese biological warfare strategy. Some of the claims were repeated in a documentary that both NTD and The Epoch Times posted on YouTube, where it has been viewed more	-4.90	Negative
A Chinese virologist who claims the coronavirus was cooked up in a military lab has revealed that Chinese authorities have arrested her mother. Li-Meng Yan, who claims to be a	-4.54	Negative
Dr Li Meng-Yan, who claims the coronavirus came from a military lab in China. Picture: Fox NewsSource:Supplied A Chinese virologist who fled to the US after claiming China covered up the coronavirus outbreak has vowed to publish proof the virus was made in a lab. Dr Li Meng-Yan has previously backed claims Beijing tried to silence anyone	-4.17	Negative
A Chinese virologist who fled to the US after claiming China covered up the coronavirus outbreak has vowed to publish proof the virus was made in a lab. Dr Li Meng-Yan has previously backed claims Beijing tried to silence anyone	-4.23	Negative
of law firms and conservative think tanks are demanding financial compensation from China for its mishandling of the outbreak. A Chinese virologist who fled to the US after claiming China covered up the coronavirus outbreak has vowed to publish proof the virus was made in a lab. Dr Li Meng-Yan has previously backed claims Beijing tried to silence anyone	-4.20	Negative
US after Beijing tried to silence her has vowed to publish" proof" of her controversial virus claims. A Chinese virologist who fled to the US after claiming China covered up the coronavirus outbreak has vowed to publish proof the virus was made in a lab. Dr Li Meng-Yan has previously backed claims Beijing tried to silence anyone	-4.26	Negative
A Chinese virologist who alleges the coronavirus was cooked up in a military lab has published a report which she claims backs up her theory. Li-Meng Yan, who alleges to	-4.20	Negative
Dr Li-Meng Yan fled China under threat to reveal her country's cover-up about the origin of coronavirus. She is now in hiding in the US. Dr Li-Meng Yan fled China to reveal her	-4.52	Negative
Li-Meng Yan fled China under threat to reveal her country's cover-up about the origin of coronavirus. She is now in hiding in the US. Dr Li-Meng Yan fled China to reveal her country's cover-up about the origin of coronavirus. She is now in hiding in the US. Dr Li-Meng Yan fled China which she has revealed suppressed	-4.55	Negative
US intelligence report today, Republican Senator Ben Sasse dismissed China's figures as "garbage propaganda". "The claim that the United States has more coronavirus deaths than China is false," Mr Sasse said. "Without commenting on any classified information, this much is painfully obvious- the Chinese Communist Party has lied, is	-4.48	Negative

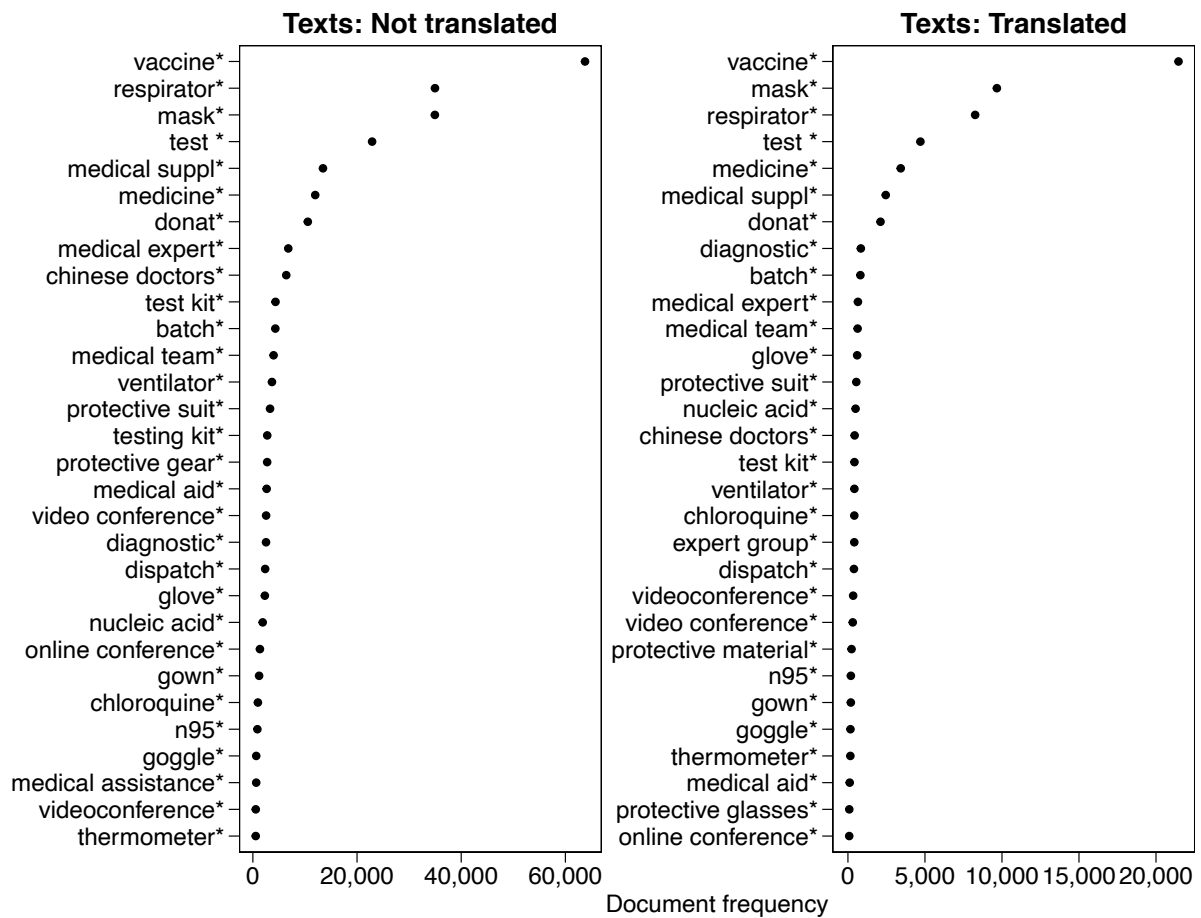
China deliberately suppressed or destroyed evidence of the coronavirus outbreak in an "assault on international transparency" that cost tens of thousands of lives, according to a dossier	-4.19	Negative
The Chinese Communist Party(CCP) intentionally destroyed evidence and covered up news about the Wuhan coronavirus outbreak to the "endangerment of other countries", a leaked intelligence report	-4.21	Negative
China deliberately suppressed or destroyed evidence of the coronavirus outbreak in an "assault on international transparency" that cost tens of thousands of lives, a Western governments dossier	-4.37	Negative
(WHO) has denied Donald Trump's claims that the coronavirus was created in a laboratory. Last month, the US President suggested the disease originated was manmade in China. When asked if he had seen anything to suggest Covid-19 was created in a laboratory, Trump replied:" Yes, I have. Yes, I have	-4.25	Negative
out the possibility it was engineered by humans. President Donald Trump and some officials are flirting with a theory that coronavirus was set loose on the world by a Chinese lab that let it escape. Without presenting evidence, they are trying to blame China for sickness and death from COVID-19 in the United States." More and	-4.18	Negative
(CNSNews.com)- As evidence of Chinese Communist Party culpability in trying to cover up the coronavirus outbreak grows, Americans impacted by its actions should be able to sue, Rep. Dan Crenshaw(R-Texas	-4.35	Negative
than China is false," Nebraska senator Ben Sasse said in a statement." Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied, is lying, and will continue to lie about coronavirus to protect the regime." A: We have written letters to these media	-4.44	Negative
and without morality." Republican Senator Ben Sasse attacked Beijing's numbers as "garbage propaganda." The claim that the United States has more coronavirus deaths than China is false," Sasse said in a statement." Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied	-4.44	Negative
" The claim that the United States has more coronavirus deaths than China is false. Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied, is lying, and will continue to lie about coronavirus to protect the regime."- Sen. Ben Sasse Political futures:"	-4.17	Negative
about Beijing's apparent deception. Republican Senator Ben Sasse attacked China's numbers as "garbage propaganda." The claim that the United States has more coronavirus deaths than China is false," Sasse said in a statement. Communist Party is 'lying'" Without commenting on any classified information, this much is painfully obvious:	-4.91	Negative
false," Sasse said in a statement. Communist Party is 'lying'" Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied, is lying, and will continue to lie about coronavirus to protect the regime." In a statement responding to the report, Michael	-4.81	Negative
so far. Calling Beijing's numbers as "garbage propaganda," Republican Senator Ben Sasse said," The claim that the United States has more coronavirus deaths than China is false. Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has lied, is lying, and will continue to	-4.54	Negative
virus." Yan doubled-down on her claims during an interview with Fox News host Tucker Carlson Tuesday. Carlson specifically asked Dr. Li-Meng Yan whether she believed the Chinese Communist Party released the virus "on purpose." "Yes, of course, it's intentionally," she responded on "Tucker Carlson Tonight." Yan	-4.39	Negative
," she said. Republican Senator Ben Sasse attacked Beijing's numbers as "garbage propaganda." The claim that the United States has more coronavirus deaths than China is false," Mr Sasse said in a statement." Without commenting on any classified information, this much is painfully obvious: The Chinese Communist Party has	-4.27	Negative
, nor will bleach), conspiracy theories claiming the virus is a bioweapon that was stolen from Canada(it's not) or accidentally released from a lab in China(genetic evidence shows it came from an animal, not a lab) and baseless claims that a vaccine for coronavirus exists but is being kept under wraps(-4.48	Negative
Ben Sasse called Beijing's numbers "garbage propaganda." "The claim that the United States has more coronavirus deaths than China is untrue," Sasse said in a statement." Without commenting on any confidential information, this is all painfully obvious: the Chinese Communist Party lied, it is lying	-4.34	Negative

China deliberately suppressed or destroyed evidence of the coronavirus outbreak in an "assault on international transparency" that cost tens of thousands of lives, according to a dossier	-4.19	Negative
coronavirus in Europe and the US than in Asia The 5 weapons to go on the offensive against the coronavirus False quarantines, torture and disappearances: China's brutal method of silencing those who dared to denounce the lies of the regime about the coronavirus	-4.45	Negative
Ben Sasse called Beijing's numbers "garbage propaganda." "The claim that the United States has more coronavirus deaths than China is false," Sasse said in a statement. "Without commenting on any confidential information, this is all painfully obvious: the Chinese Communist Party lied, it is lying	-4.68	Negative
China deliberately suppressed or destroyed evidence of the coronavirus outbreak in a "assault to international transparency" that cost tens of thousands of lives, according to a dossier	-4.19	Negative
medical supplies Africa needs, share anti-pandemic experience with its African brothers, dispatch medial experts, assist in the purchase of goods and materials in China, and deepen China-Africa cooperation in the public health sector, he said. Wang pledged that China will stand firmly with Africa and fight COVID-19 in unity with its African brothers and sisters	7.53	Positive
China's Foreign Minister Wang Yi. I Photo Credit: AP BRICS countries should jointly deal with the challenges of the COVID-19 pandemic, deepen cooperation and strengthen coordination so as	7.54	Positive
. In a telephone conversation with Moroccan Foreign Minister Nasser Bourita, Wang said under the leadership of Chinese President Xi Jinping and King Mohammed VI of Morocco, the China-Morocco strategic partnership has withstood the test of the COVID-19 pandemic and further grown. China cherishes its friendship with Morocco and is willing to continuously deepen strategic cooperation with the	7.58	Positive
supplies Africa needs, share the anti-pandemic experience with its African brothers, dispatch medial experts, assist in the purchase of goods and materials in China, and deepen China-Africa cooperation in the public health sector, he said. Wang pledged that China will stand firmly with Africa and fight Covid-19 in unity with its African brothers and sisters	7.61	Positive
philosophy and focusing on building a community with a shared future for mankind, working with other countries against the pandemic and providing mutual assistance. The anti-pandemic efforts of China and Senegal are a typical example of this. Senegal is a comprehensive strategic partner of China and the co-chair of the Forum on China-Africa Cooperation (FOCAC).	7.62	Positive
Moroccan side, he said, firmly supports China's legitimate stance in safeguarding its core interests such as sovereignty and security. King Mohammed VI also expressed his gratitude for China's valuable support to Morocco in the fight against the pandemic, expressing hope that bilateral cooperation in vaccine research and development, procurement and production will be strengthened. SINA	7.64	Positive
virus. These are indeed hard-won results. In the face of COVID-19, China and Africa have offered mutual support and fought shoulder to shoulder with each other. China shall always remember the invaluable support Africa gave us at the height of our battle with the coronavirus. In return, when Africa was struck by the virus,	7.67	Positive
solidarity and cooperation among countries as the basic conditions for tackling this challenge, and vaccines as the "golden key" to overcoming the pandemic. He stressed that China attaches great importance to the development of a comprehensive strategic partnership with Algeria, and is willing to enhance strategic mutual trust, deepen pragmatic cooperation and promote the construction	7.67	Positive
Moroccan side, he said, firmly supports China's legitimate stance in safeguarding its core interests such as sovereignty and security. King Mohammed VI also expressed his gratitude for China's valuable support to Morocco in the fight against the pandemic, expressing hope that bilateral cooperation in vaccine research and development, procurement and production will be strengthened. Protesters	7.70	Positive
, solidarity and cooperation present a sure way for humanity to defeat this novel coronavirus, Xi said. China stands ready to work with Pakistan to build a closer China-Pakistan community with a shared future, jointly promote regional solidarity and cooperation, and safeguard the good momentum of peace and development in the region. Alvi had previously sent	7.72	Positive
people. Solidarity in the anti-pandemic battle has once again attested to the long-lasting and iron-clad China-Africa relations. After weathering the tests of the pandemic, the friendship	7.79	Positive

between China and Senegal will be deeper and firmer. Solidarity and mutual assistance will further lead both sides to win the battle against the pandemic. The author is the Chinese offered mutual support and fought shoulder to shoulder with each other, Xi said, adding that China will always remember the invaluable support from Africa at the height of China's battle with the coronavirus. Over 50 African leaders expressed support in phone calls or public statements. In return, when Africa was struck by the virus, China	7.87	Positive
the leadership of Chinese President Xi Jinping and King Mohammed VI of Morocco, the China-Morocco strategic partnership has withstood the test of the COVID-19 pandemic and further grown. China cherishes its friendship with Morocco and is willing to continuously deepen strategic cooperation with the country and strengthen mutual understanding and support, Wang said. China, he added	7.87	Positive
Moroccan side, he said, firmly supports China's legitimate stance in safeguarding its core interests such as sovereignty and security. King Mohammed VI also expressed his gratitude for China's valuable support to Morocco in the fight against the pandemic, expressing hope that bilateral cooperation in vaccine research and development, procurement and production will be strengthened. â–	7.87	Positive
will continue to cooperate with the Syrian side to counter the COVID-19 pandemic. He said that COVID-19 is a "mutual enemy" to humanity, adding that the Chinese side is committed to the concept of the mutual future of humankind." We will continue to enhance cooperation with the Syrian side to counter this pandemic and to	7.89	Positive
. These are indeed hard-won results.- In the face of COVID-19, China and Africa have offered mutual support and fought shoulder to shoulder with each other. China shall always remember the invaluable support Africa gave us at the height of our battle with the coronavirus. In return, when Africa was struck by the virus,	7.93	Positive
broke out, the global fight had fully demonstrated that mutual support, solidarity and cooperation present a sure way for humanity to defeat this novel coronavirus," the Chinese president said." China stands ready to work with Pakistan to build a closer China-Pakistan community with a shared future, jointly promote regional solidarity and cooperation, and condolences to their families. He said that in the face of COVID-19, China and Africa have offered mutual support and fought shoulder to shoulder with each other. China shall always remember the invaluable support Africa gave us at the height of our battle with the coronavirus. In return, when Africa was struck by the virus,	7.94	Positive
, solidarity and cooperation present a sure way for humanity to defeat this novel coronavirus, Xi said. China stands ready to work with Pakistan to build a closer China-Pakistan community with a shared future, jointly promote regional solidarity and cooperation, and safeguard the good momentum of peace and development in the region. Enditem	7.94	Positive
WHO and ICAO will be respected," Geng said. He also praised Pakistan Senate resolution expressing full solidarity and support to China in combating the coronavirus." China and Pakistan are iron-clad friends and all-weather strategic cooperative partners with a tradition of mutual assistance," Geng said. China stands ready to strengthen cooperation with Pakistan and	7.97	Positive
fight had fully demonstrated that mutual support, solidarity and cooperation present a sure way for humanity to defeat this novel coronavirus," the Chinese president said." China stands ready to work with Pakistan to build a closer China-Pakistan community with a shared future, jointly promote regional solidarity and cooperation, and safeguard the good momentum of	8.06	Positive
Qingying signed a Letter of Intent for Twinning and Friendly Cooperation during a videoconference in which they also shared experience in the fight against the virus." As the Chinese embassy in Ecuador, we are willing to continue to provide strong support for bilateral local exchanges to build a bridge of mutual understanding and communication between the two peoples	8.24	Positive
Boliviaâ€™s case highlighted cooperation to provide medical equipment, such as artificial respirators, and training for those responsible for the fight against COVID-19. China's ambassador, Huang Yazhong, expressed his country's willingness to strengthen cooperation with Bolivia in the fight against COVID-19."We are ready to collaborate with inputs	8.32	Positive
China-Africa Cooperation and the China-Arab States Cooperation Forum, draw a new blueprint for people-to-people exchanges and cooperation in the post-pandemic era, and push for new achievements in the China-Morocco strategic partnership. Recalling that he and Xi jointly announced the establishment of the Morocco-China strategic partnership during his visit to China in 2016, King Mohammed VI said Morocco	8.35	Positive
	8.50	Positive

out, the global fight has fully demonstrated that mutual support, solidarity and cooperation present a sure way for humanity to defeat this novel coronavirus, Xi said. China stands ready to work with Pakistan to build a closer China-Pakistan community with a shared future, jointly promote regional solidarity and cooperation, and safeguard the good momentum of	8.54	Positive
recent years, our two countries have maintained close high-level exchanges. The China-Kenya relationship is in its best shape. Our fruitful and wide-ranging practical cooperation stands out in China-Africa cooperation. Our cooperation and mutual assistance in the fight against COVID-19 represents a prime example of solidarity in the face of a disease. Indeed, the brotherly South-South	8.63	Positive
in Morocco, and stands ready to work with Morocco to steadily bolster cooperation in various fields within such frameworks as the Belt and Road Initiative, the Forum on China-Africa Cooperation and the China-Arab States Cooperation Forum, draw a new blueprint for people-to-people exchanges and cooperation in the post-pandemic era, and push for new achievements in the China-Morocco	8.82	Positive
stands ready to work with Morocco to steadily bolster cooperation in various fields within such frameworks as the Belt and Road Initiative, the Forum on China-Africa Cooperation and the China-Arab States Cooperation Forum, draw a new blueprint for people-to-people exchanges and cooperation in the post-pandemic era, and push for new achievements in the China-Morocco strategic partnership. Recalling	9.23	Positive
they work together in a spirit of solidarity and cooperation. We are in this together and we can only stop it together."	9.72	Positive
face of COVID-19, China and Africa have offered mutual support, fought shoulder to shoulder with each other, and enhanced solidarity and strengthened friendship and mutual trust. China shall always remember the invaluable support Africa gave us at the height of our battle with the coronavirus. Over 50 African leaders have expressed solidarity and support in phone	10.36	Positive

Figure A1: The most frequent terms (measured as document frequency) in articles classified as relating to “mask diplomacy” efforts. Articles containing one or more of these terms are excluded from the corpus for the second difference-in-differences analysis.



C Rerunning all Models Using English and Translated Texts

Figure A2: Number of relevant statements and geographical distribution for English and translated texts

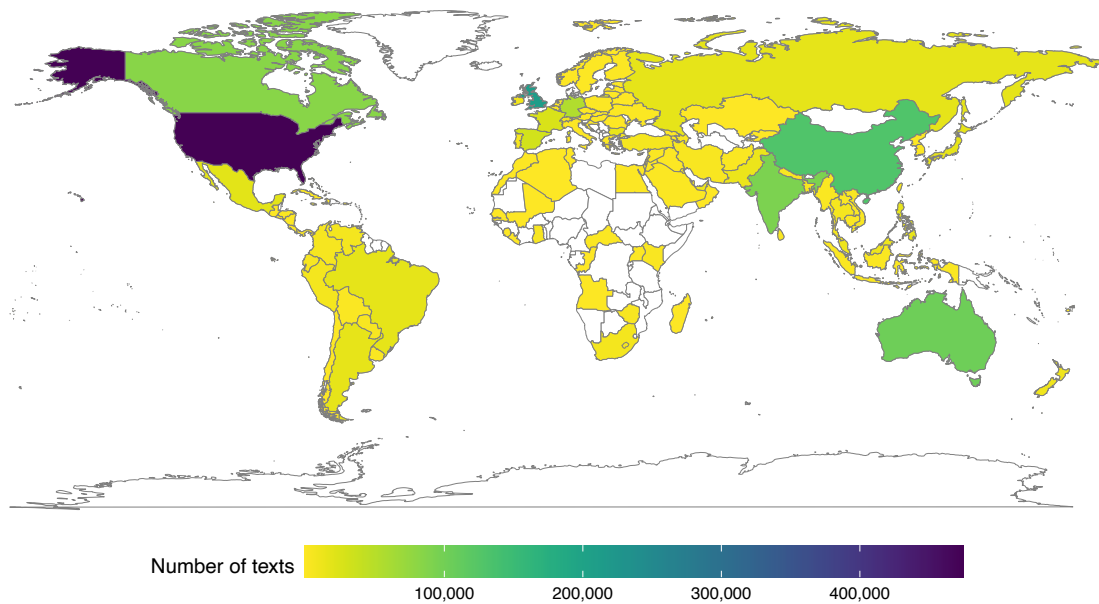
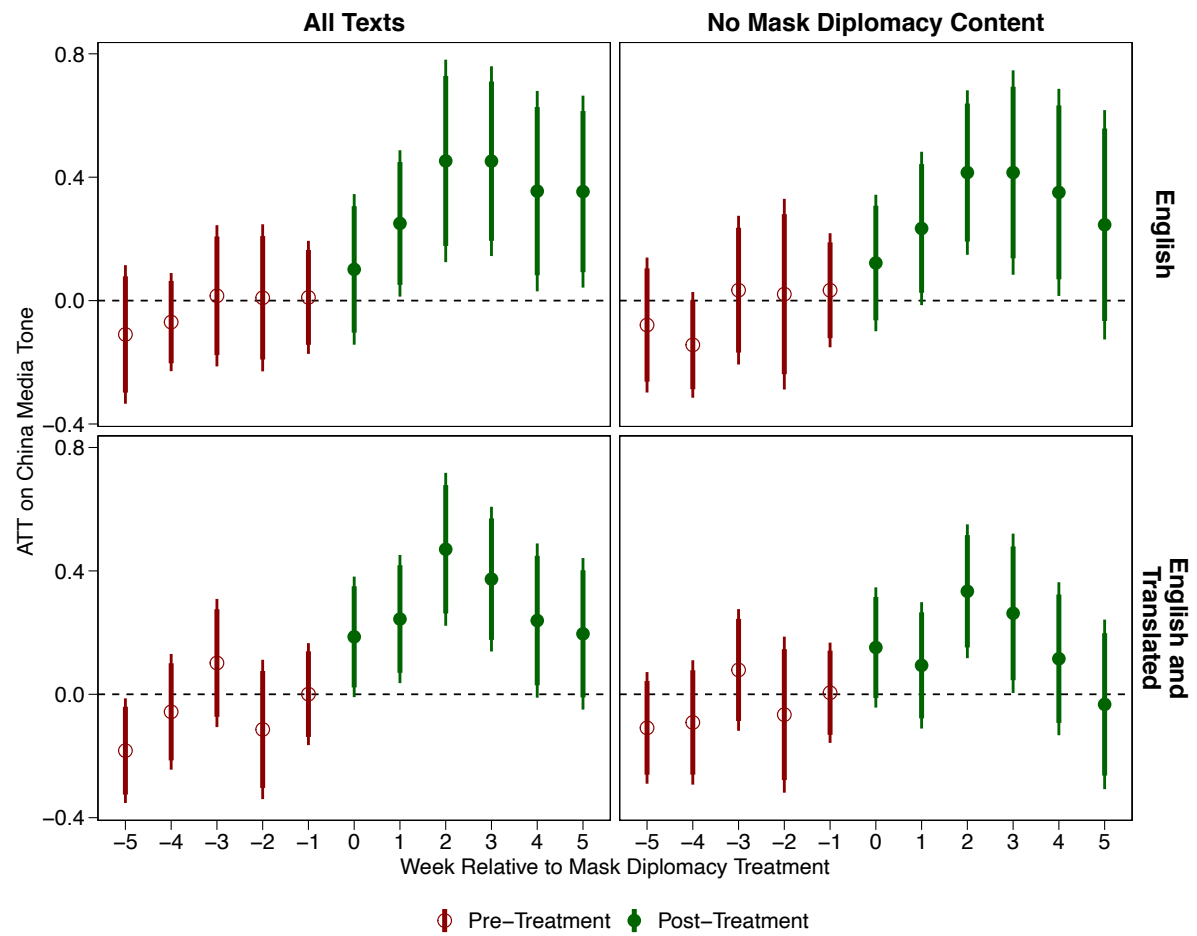
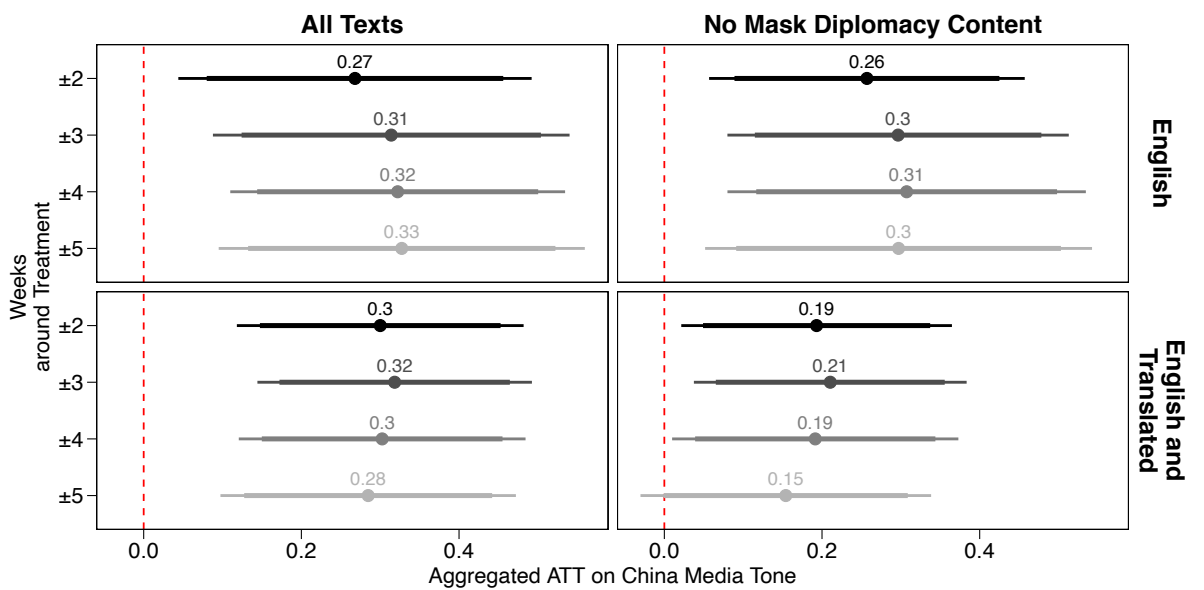


Figure A3: Mask diplomacy differences-in-differences at different weeks, comparing estimates for English only and English and translated texts



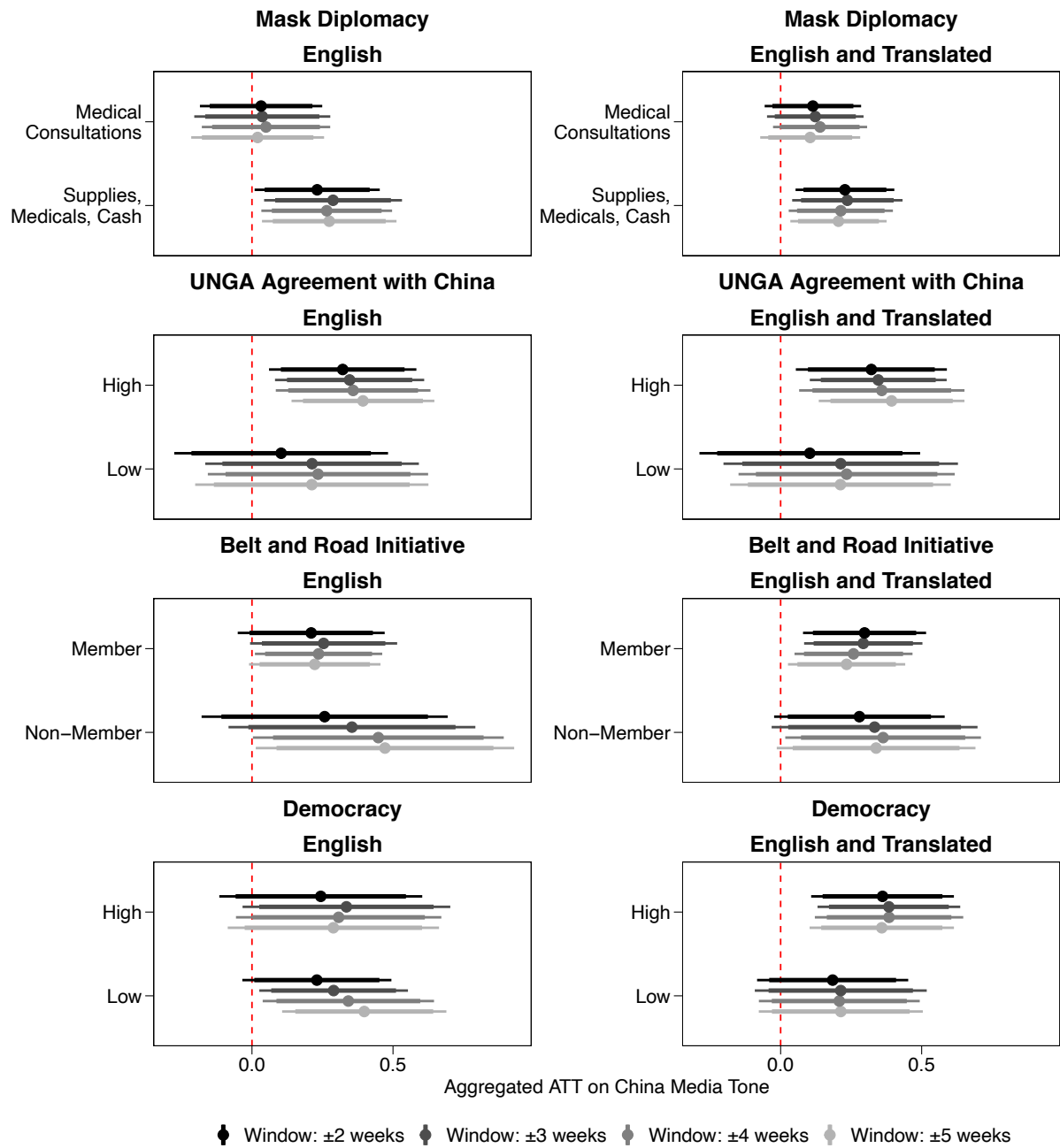
Note: Vertical error bars show 90% and 95% confidence intervals.

Figure A4: Overall aggregate ATT of receiving mask diplomacy support on media tone, for a window of ± 2 to ± 5 weeks around the treatment (separately for English and English and translated texts)



Note: Horizontal error bars show 90% and 95% confidence intervals.

Figure A5: Heterogeneous mask diplomacy effort treatments



Note: Horizontal error bars show 90% and 95% confidence intervals.

Table A4: Death Peak Fixed Effects Models (English and Translated Texts)

	(1) OLS	(2) CFE	(3) Trend	(4) TWFE	(5) CPFE
Peak	-0.046 (0.046)	-0.093 (0.087)	-0.172* (0.087)	-0.080 (0.084)	-0.047 (0.120)
Observations	5,111	5,111	5,111	5,111	5,111
Country FE	NO	YES	YES	YES	NO
Country-Period FE	NO	NO	NO	NO	YES
Time Trend	NO	NO	YES	NO	NO
Week FE	NO	NO	NO	YES	NO
Countries	125	125	125	125	125

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A5: Mask Diplomacy Fixed Effects Models (English and Translated Texts)

	(1) OLS	(2) CFE	(3) Trend	(4) TWFE	(5) CPFE	(6) All Weeks	(7) Peak
Mask	0.304*** (0.055)	0.388*** (0.062)	0.390*** (0.059)	0.120* (0.061)	0.066 (0.076)	0.190*** (0.058)	0.191*** (0.058)
Peak							-0.175** (0.088)
Observations	1,686	1,576	1,576	1,576	1,686	5,193	5,193
Country FE	NO	YES	YES	YES	NO	YES	YES
Country-Period FE	NO	NO	NO	NO	YES	NO	NO
Time FE	NO	NO	NO	YES	NO	NO	NO
Time Trend	NO	NO	YES	NO	NO	YES	YES
Countries	125	125	125	125	125	125	125

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

D Mask Diplomacy Coding Methodology and First Mask Diplomacy Instance List

China COVID-19 “Mask Diplomacy”

Code Book, v1.0 | August 2020

1. Background

A consortium of scholars have identified four indicators to examine the extent and impact of China’s “Mask Diplomacy” instances around the world during the COVID-19 pandemic.

The four indicators are as follows:

- Instances of provision (commercial or non-commercial) medical supplies
- Instances of medical team dispatch
- Instances of remote medical consultation
- Instances of COVID-19 related financial assistance

This codebook outlines definitions and protocols for coding instances of donation of medical supplies, dispatching of medical teams, instances of remote medical consultation and instances of COVID-19 related financial assistance. It should be noted that this version of the codebook is preliminary and will likely be updated based upon lessons learned in implementation.

2. Definitions and Parameters

In this section, we define key terms to assist those charged with identifying and coding instances of Chinese “mask diplomacy”.

2.1 Provision of (Commercial or non-Commercial) Medical Supplies.

For the purpose of this project, medical supplies refer to any tangible medical supplies or goods whose purpose includes the prevention, mitigation, treatment, or protection from the novel COVID-19 coronavirus.

This definition is inclusive of a broad range of supplies which includes, but is not limited to:

- Personal Protective Equipment (PPE), including but not limited to:
 - Masks, including but not limited to:
 - N95/FFP2 Respirator
 - Surgical Masks
 - Cloth Masks

- Face Shields
 - Skin Protection, including but not limited to
 - Gloves
 - Medical
 - Protective
 - Surgical Gowns
 - Hazardous Material Suits
 - Levels A-D (US Standard)
 - Type 1-6 (European Standard)
 - Eye Protection
- Medicines, including but not limited to those intended for:
 - Treatment
 - Palliative Care
 - Vaccination
- Equipment and Testing Kits, including but not limited to:
 - Testing Kits and Supplies
 - Reagents
 - Swabs
 - Surgical equipment
 - ICU Equipment
 - Mechanical ventilators
 - Defibrillators
 - Monitors
 - Lab equipment including
 - Thermal Cyclers (PCR Machine)
 - Microscopes
 - Lab materials

This project is particularly interested in understanding the composition and extent of China’s “mask diplomacy” efforts. The project ultimately hopes to quantify all instances of “mask diplomacy”. Accordingly, as much detail as possible on the types and amounts of supplies.

2.2 *Medical Team Dispatch*

For the purpose of this project we are interested in any instance of Chinese, or Chinese-funded, medical teams dispatched to any 3rd country to assist in the diagnosis, treatment, planning of public health response, or any other activity related to the novel COVID-19 coronavirus.

Medical teams may include, but are not limited to:

- Doctors

- Nurses
- Medical technicians
- Public health professionals
- Non-specialist volunteers

Medical teams may be dispatched to one or more locations. Each city visited by the medical team should be coded as a separate location, with a unique medical team identifier. Details about the arrival and duration and each location should be captured where available as well as the activity(ies) in which the medical team engaged.

When possible, the origin and institution of the medical team should be captured. This information may including a sending province, city or hospital and may indicate if the workers were public or private sector employees.

2.3 Remote Medical Consultation

For the purpose of this project, we are interested in capturing any remote medical consultation in which Chinese, or Chinese Funded, health care professionals engage in in the diagnosis, treatment, planning of public health response, or any other activity related to the novel COVID-19 coronavirus via teleconference, video-conference, or any other remote means.

Consultation include, but is not limited to, consultation with Chinese or Chinese-funded:

- Doctors
- Nurses
- Medical technicians
- Public health professionals
- Non-specialist volunteers

Consultations may occur with multiple, simultaneous, receiving parties. Each receiving party should be coded as a separate instance. Where possible, the nature, duration and frequency (including recurring consultations) should be recorded.

2.4 COVID-19 related Financial Assistance

For the purpose of this project, we are interested in capturing any COVID-19 related Financial Assistance from Chinese state actors or non-state actors based in China that is to be used to mitigate, treat, compensate or alleviate COVID-19 medical, social or economic impact.

Financial assistance may include:

- Official Finance (State to State), including, but not limited to:
 - Grants

- Concessional loans
- Non-concessional loans
- Other official flows
- Charitable finance to non-state actors or individuals

In all instances, the source, recipient, amount, timing and duration/frequency of the assistance should be recorded.

3. *Stage 1: Identification of Reported Instances*

In this section, we outline the first stage of the process of identifying the universe of reported instances of China's Mask Diplomacy. The project will start with identifying records from January 1, 2020 through August 30, 2020.

3.1 *Mining GDEL T for Reported Instances*

As a starting point, we will leverage the Global Database of Events, Language and Tone (GDEL T), Global Knowledge Graph 2.0 <https://blog.gdel tproject.org/introducing-gkg-2-0-the-next-generation-of-the-gdel t-global-knowledge-graph/> to scrape media records using Google's BigQuery tool <https://cloud.google.com/bigquery>.

Step 1 – Querying and Extracting GDEL T References Based on “Corona” and “China”

Google's BigQuery GDEL T database, gdel t-bq, contains “the GDEL T 2.0 Global Knowledge Graph extracts each person name, organization, company, disambiguated location, millions of themes and thousands of emotions from each article, resulting in an annotated metadata graph over the world's news each day. Totaling over 200 million records and growing at a rate of half a million to a million articles a day, the GKG 2.0 is perhaps the world's largest open data graph over global human society. Similar to the GDEL T 2.0 Event Database, the GKG 2.0 also leverages GDEL T Translunual to provide 100% machine translation coverage of all monitored content in 65 core languages, with a sample of an additional 35 languages hand translated.”¹⁵

In order to use Google BigQuery one needs to establish a Google Cloud Platform Account at <https://cloud.google.com/>

The steps for pulling the raw files are:

- Log in to Google Cloud Platform at <https://console.cloud.google.com/>
- Create a new project “China_Mask_Diplomacy”

¹⁵ <https://blog.gdel tproject.org/the-datasets-of-gdel t-as-of-february-2016/>

- Navigate to “big query” (Search “big query” in blue searchbar)
- Run the following script in Query Editor to pull all articles coded for “Corona” and “China”

```
SELECT
  V2Themes, date, locations, GKRecordid, documentidentifier
FROM
  `gdelt-bq.gdeltv2.gkg_partitioned`
Where V2Themes like '%CORONA%'
and locations like '%China%'
and _PARTITIONTIME >= TIMESTAMP("2020-01-01")
and _PARTITIONTIME <= TIMESTAMP("2020-08-01")
group by V2Themes, date, locations, GKRecordid, documentidentifier
limit 100000000;
```

- Save results using “Save Results” button at “Query Results”
 - Files will likely be too large to save as one table – click on “Job History” and use “Export” button, selecting “Export to GCS” option
 - Create a bucket “DATE_results” and file name “DATE_results*” which will populate the bucket with the table files
 - Go to “storage browser” and click on the bucket “DATE_results”
 - Click on the individual files and select “download”
 - In Windows explorer, add “.csv” prefix to each of the downloaded files

Step 2 – Combine and Clean raw GDELT .csv files in STATA

3.2 Scanning General News Aggregator Sites for Mentions of Related Instances

Building upon the foundation of the GDELT GKG dataset, we will develop a query to pull relevant articles on reported instances of Chinese Mask Diplomacy captured in news databases such as Factiva and Dow Jones News and Analysis.

3.3 Mining CIDCA articles on China’s Official Health Aid

Building upon the foundation of the GDELT GKG dataset, we will review and code both English and Mandarin language articles on China’s Official Health Aid from the Chinese International Development Cooperation Agency (CIDCA) at <http://en.cidca.gov.cn/medicalaid.html> and <http://www.cidca.gov.cn/ylyw.htm>.

4. Stage 2: Classification, Coding, and Documentation of Reported Instances

As you begin to isolate possible instances of China’s “Mask Diplomacy” in Section 3, we need to begin documenting instances in a systematic fashion. For this purpose, you will use the workbook format outlined in the google doc “Mask Diplomacy Master WorkBook”. This workbook has several tabs, divided into four different “event types”: (i) medical supplies; (ii) medical teams; and (iii) remote medical consultations (iv) financial assistance.

For each instance you identify as meeting our criteria in section 2, record this as a separate entry in the appropriate tab. Every distinct location that you can identify should be treated as a separate entity. So, for instance, if a single medical team visits 5 cities, each city should have its own entry. Each entry should have its own assigned row and you should fill out all the fields in that row to the extent possible. Instructions on how to fill out the majority of fields is provided in Table 2 below. We will provide additional instructions on how to fill out the field related to verification of reported instances in section 5.

Table A6: Coding Instructions for Specific Fields in the Master Workbook

Field Name	Instructions	Relevant Tabs
Recipient Country	List the name of the country which received the Mask Diplomacy event	All tabs
Recipient City	List the name of the city which received the Mask Diplomacy event	All tabs
Origin Province	List the name of the province which supplied the Mask Diplomacy event	All tabs
Origin City	List the name of the city which supplied the Mask Diplomacy event	All tabs
Origin Entity Name	List the name (Ministry, Agency, Company, Organization) of entity originating the Mask Diplomacy event	All tabs
Origin Entity Type	List the type (State, State Owned Enterprise, Non-State for Profit, Non-State not for Profit) of entity originating the Mask Diplomacy event	All tabs
Action Date: format YYMMDDY (200101)	List the earliest date of the Mask Diplomacy Event. This date is not necessarily the record date. (Note, you may have to be referenced by the record date – i.e. an article may say “last Tuesday” – the date of the article then needs to be referenced to ascertain the date of the event).	All tabs
Event Type	List the appropriate event type for the tab: (i) medical supply; (ii) medical team; (iii) remote medical consultation (iv) financial assistance.	All tabs
Supply Type 1 through 10	List all types of supplies mentioned with the event. Add each different type of supply to a unique column. Use the descriptions from 2.1 or add a new description if the supply is not covered there	Medical Supplies Only
Supply Quantity 1 through 10	List the amount of supplies, where available, for Supply Type 1 through 10. Please ensure the number of the “Supply Type X” column matches the number of Supply Quantity X”. If Supply Quantities are not available for a given Supply Type, please leave that column blank.	Medical Supplies Only

Supply Donation	Indicate if the supplies were donated, sold commercially or unknown	Medical Supplies Only
Team Size	The number of team members	Medical Teams Only
Team Makeup	Where possible, list the make up of the team by profession and quantity. Separate different professions by commas. Example: 6 Doctors, 2 Nurses, 2 Technicians.	Medical Teams Only
Team Duration	If available, record the number of days the team spent in the event location.	Medical Teams Only
Consult Type	List the type of consultation: Internet (Video), Audio, Asynchronous (E-mail, Fax, Text)	Remote Medical Consultation Only
Consult Makeup	Where possible, list the make up of the consulting team by profession and quantity. Separate different professions by commas. Example: Doctors, Nurses, etc	Remote Medical Consultation Only
Finance Amount	Amount of financing	Financial Assistance Only
Finance Currency	Currency of financing listed in Finance Amount with a three letter abbreviation: RMB, USD, EUR, JPY	Financial Assistance Only
Finance Type	List type of finance from choices in 2.4	Financial Assistance Only
Finance Interest	If the finance is loan, list the interest rate	Financial Assistance Only
Finance Duration	If the finance is loan, list the duration of the loan (loan term)	Financial Assistance Only
Event Conditions	If any other conditions are attached to the assistance add them here. For example, recognition of S. China Sea territorial claims.	All tabs
Notes	A catch all column for any other information which looks like it might be pertinent but doesn't fall into one of the other categories. In particular, if there are vague quantities for supply types this is a good place to put that information.	All tabs
Source URL	The URL of the source (if applicable)	All tabs
URL Access	Date the source URL was accessed	All tabs
Recorded By	Include the names of the source articles and documents you used to identify the instance, along with links and the name of the organization/outlet/agency.	All tabs

5. *Stage 3: De-Duplication and Verification of Reported Instances*

Once we have assembled a dataset of reported instances of Mask Diplomacy that meet our criteria we then need to take two final steps before finalization: de-duplication and verification.

First, we will deduplicate the records so that there is only one record for each instance (i.e., if you identified three mentions of a single medical team, this should be collapsed into one record and any additional sources or information can be included in supporting notes). For this process, we should identify any duplicate entries and incorporate any relevant information from those entries into one master record.

5.1 *Verification*

Second, since the earlier stages relied heavily on media articles and reports from third-party websites we will want to attempt to verify the final set of instances against country-level documentation or records (best case) or other corroborating sources (second best case). Ideally, we will want to verify instances against government records from the China and/or the receiving country.

E Details on Mask Diplomacy Event Data and Weekly Deaths

Figure A6: Distribution of mask diplomacy support across the globe for countries with available media reports. Darker colors indicate that a country received support later at a later stage in 2020.

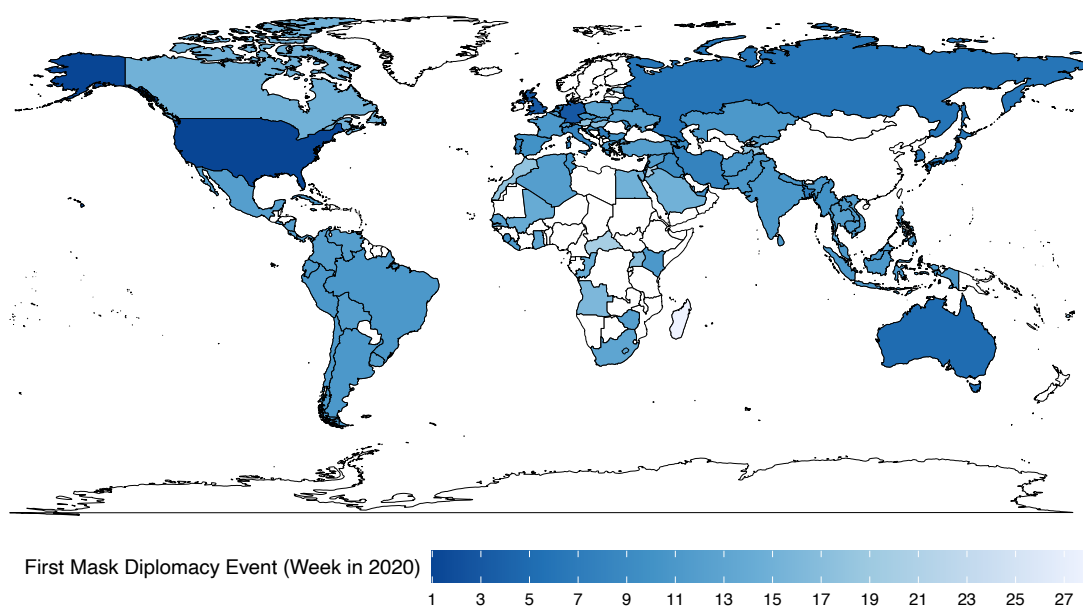


Table A7: Countries and First Week of Receiving China Mask Diplomacy (Week 1= January 1, 2020)

Country	First week of mask diplomacy support
Afghanistan	11
Albania	10
Algeria	12
Angola	16
Antigua and Barbuda	12
Argentina	11
Armenia	9
Australia	5
Austria	18
Azerbaijan	9
Bahamas	12
Bangladesh	7
Barbados	12
Belarus	9
Belgium	11
Benin	15
Bhutan	12
Bolivia	12
Bosnia and Herzegovina	10
Botswana	21
Brazil	11

Britain	10
Bulgaria	10
Burkina Faso	9
Cambodia	11
Cameroon	
Canada	15
Cape Verde	16
Central African Republic	20
Chile	11
Colombia	12
Congo - Brazzaville	14
Costa Rica	12
Cote d'Ivoire	15
Croatia	10
Cuba	11
Cyprus	13
Czechia	10
Democratic Republic of Congo	19
Denmark	11
Djibouti	19
Dominica	12
Dominican Republic	11
Ecuador	11
Egypt	15
El Salvador	12
Equatorial Guinea	15
Estonia	19
Ethiopia	11
Europe	6
Federated States of Micronesia	15
Fiji	18
France	11
Gabon	16
Gambia	16
Georgia	9
Germany	3
Ghana	13
Greece	11
Grenada	12
Guinea-Bissau	14
Guyana	12
Holland	11
Hungary	17
India	11
Indonesia	11
Iran	8
Iraq	9
Israel	8
Italy	8
Ivory Coast	
Jamaica	12
Japan	6
Jordan	21
Kazakhstan	11
Kenya	11
Kiribati	19
Kuwait	12
Kyrgyzstan	12
Laos	11
Lebanon	9
Liberia	11
Libya	12
Madagascar	17
Madagascar	28

Malawi	13
Malaysia	11
Maldives	11
Mali	14
Mauritania	18
Mexico	12
Moldova	9
Mongolia	11
Morocco	18
Mozambique	9
Myanmar (Burma)	10
Namibia	11
Nepal	11
Netherlands	8
Nicaragua	12
Niger	23
Nigeria	6
Niue	19
Pakistan	11
Palestinian Territories	12
Panama	12
Papua New Guinea	19
Peru	11
Philippines	11
Poland	13
Portugal	8
Qatar	12
Romania	
Russia	6
Rwanda	24
Samoa	17
Sao Tome and Principe	14
Saudi Arabia	15
Senegal	12
Serbia	7
Sierra Leone	9
Singapore	6
Slovakia	11
Slovenia	11
Somalia	
South Africa	13
South Korea	6
South Sudan	11
Spain	10
Sri Lanka	11
Sudan	13
Suriname	12
Switzerland	11
Syria	12
Tajikistan	18
Thailand	12
The Cook Islands	19
The Republic of Guinea	15
The Solomon Islands	19
Togo	14
Tonga	19
Trinidad & Tobago	11
Tunisia	10
Turkey	12
Turkmenistan	9
Uganda	17
Ukraine	12
United Arab Emirates	9
United Kingdom	3

United States	0
Uruguay	12
Uzbekistan	11
Vanuatu	18
Venezuela	12
Vietnam	12
Yemen	9
Zanzibar	17
Zimbabwe	12

Figure A7: Histogram of “peak death” by week

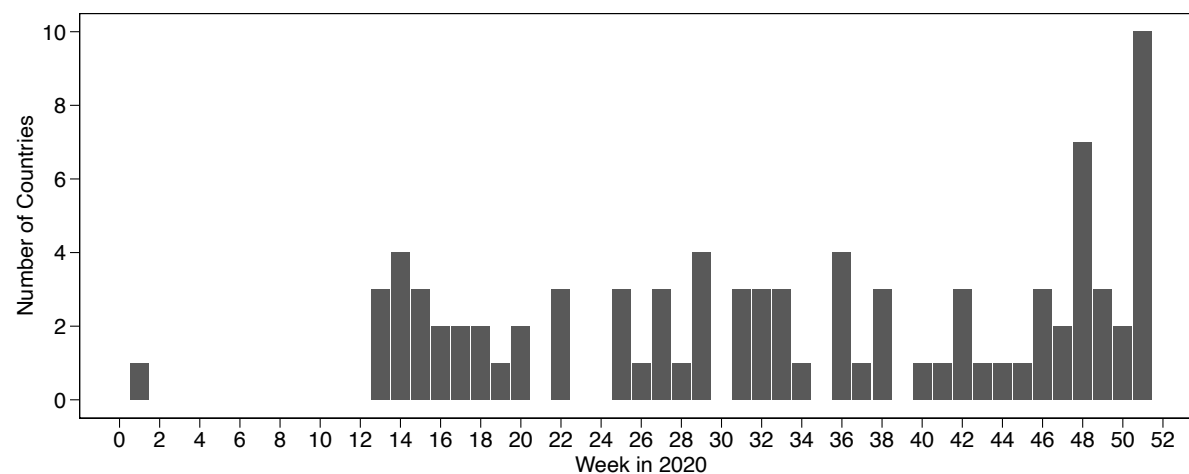


Figure A8: Histogram of first “mask diplomacy” by week

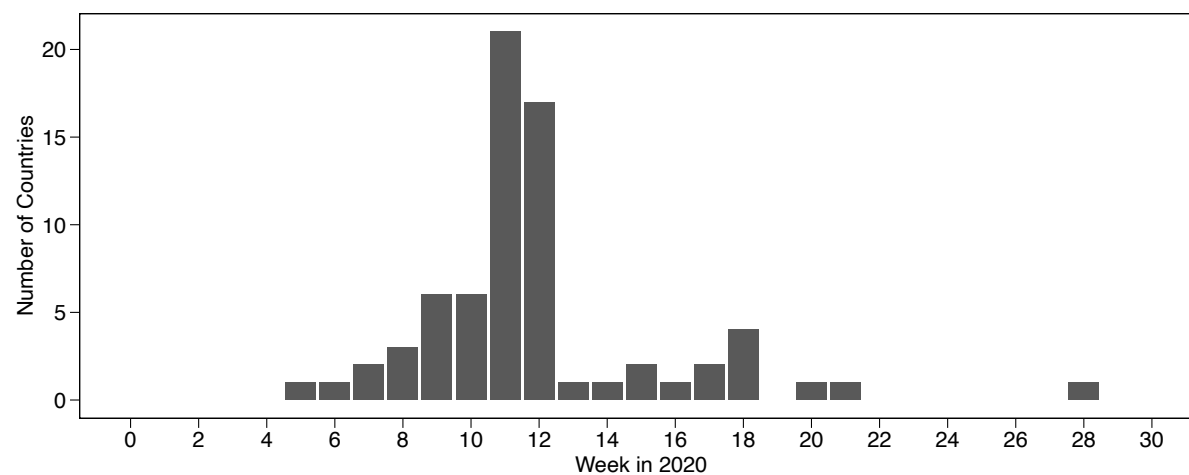


Figure A9: The (non-existing) relationship between mask diplomacy efforts and peak deaths

