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

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Abstract

To achieve foreign policy goals and boost domestic prestige states try to influence how they are perceived by foreign publics. Particularly in times of crisis the need to avoid a negative image may see states mobilize resources to change the global narrative about events or policies. This paper engages broader questions about states' image management and strategic narratives by investigating if China's "mask diplomacy" efforts helped mitigate any reputational damage resulting from Covid-19's origins in Wuhan. We validate and apply a semi-supervised scaling method to 1.5 million English statements in newspapers mentioning China and Covid-19. Multi-period difference-in-differences models reveal that media tone improves significantly after the onset of mask diplomacy efforts in a given country. Using its Covid-19 White Paper to determine China's preferred narratives, we also find that a country's independent media reproduced these key terms much more after having received support from China.

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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 gave an interview for *Xinhua* in which he spoke 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 was not the only recipient of Chinese medical aid during the initial stages of the Covid-19 pandemic. Beijing engaged in this sort of "mask diplomacy" with many states around the world in the six months following the outbreak of the disease (Fuchs et al. 2021). The events have been 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). 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 (Carter and Carter 2021; Scharpf et al. 2021; Dukalskis 2021; Bush and Zetterberg 2021). Image management strategies can help states achieve foreign policy goals and boost domestic prestige for the government by showing that the state is respected abroad (Holbig 2011). At a deeper level, such strategies can influence the terms on which international discourse takes place so that it reflects the state's preferred narratives (Miskimmonn et al. 2013).

This can shape discussion in a more fundamental way than merely achieving a positive public image because it influences the standards and frames by which behavior is normatively evaluated (see Owen 2010, 69; Bettiza and Lewis 2020).

Empirically, 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 medical aid like the Serbian example above boosts Beijing's image in media that it does not control. We evaluate this question on two levels. First, we use a research design that allows us to assess the impact of this kind of "mask diplomacy" on the tone with which 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 instances of mask diplomacy in each country during the pandemic's initial stages in 2020.

Second, we investigate underlying discourse change by assessing differences in word usage before and after a country received mask diplomacy. We find that articles mention terms that are prioritized in China's self-presentation of its Covid-19 policies much more in the week after having received support. Key formulations like "assistance", "commitment", "help", "solidarity", "fight", "support", and "prevention" that are stressed in the PRC's foreign-facing Covid-19 White Paper are among the terms in which the PRC wants foreign audiences to discuss China's pandemic approach. Mask diplomacy appears to have induced recipient country media to adopt China's strategically preferred terms. Taken together these findings suggest that not only were China's mask diplomacy efforts successful in changing the diffuse tone of its role in the pandemic, but they were even able to embed key terms associated with China's specific narratives in the texts of foreign media.

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 2021; Trubowitz and Watanabe 2021) to over 1.5 million English statements from online newspapers from 99 countries that mention China in the context of Covid-19. We then construct a novel measure of the first instance of mask diplomacy in 120 countries drawing on a database of over 1,600 mask diplomacy records developed from a range of media and official sources. Our approaches to identifying causal effects of mask diplomacy utilize the temporal nature of our data to employ a multi-period difference-in-differences approach.

Our findings shed light on several important 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 and public diplomacy. PRC authorities have long wanted to change the international conversation about issues important to Beijing (e.g. Nathan 2015; Brady 2015). This research design allows us to measure its effectiveness on one of the biggest international news stories of the century thus far, and in turn builds on literature that tries to assess the outcomes of authoritarian propaganda and public diplomacy (Carter and Carter 2021; Mattingly and Sundquist 2021; Dukalskis 2021). Third and finally, the findings advance studies of public diplomacy and image management that concentrate on attitudes toward the state in question, adding a focus on the underlying content that shapes how the state's policies are presented and understood (Goldsmith et al. 2021).

International Discourse, China, and Covid-19 Pandemic

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. At a deeper level, states attempt to influence the terms of international discourse through strategic narratives, which can in turn improve the state's image by altering the reference points of discussion. Second, it shows how contemporary China, specifically, wishes to craft positive views of itself abroad and shape how the state is discussed. 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 these arguments, it derives two hypotheses to be tested.

Image Management and Influencing Discourse

States pay attention to how they are perceived abroad. Scholarship on soft power (Nye 1990), international status (Larson et al. 2014), state branding (van Ham 2002), state framing (Jourde 2007), strategic narratives (Miskimmon et al. 2013), and state prestige (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. Contemporary states are mindful not only about perceptions among elites, but also among foreign mass publics (Allan et al. 2018).

Having a positive image abroad is beneficial. As a practical matter, it may help states 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; del Sordi and Dalmasso 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 et al. 2014, 19). Usually at minimum states wish to avoid having a negative reputation and will often enact strategies to correct or address a perceived negative or "distorted" portrayal (e.g. Wilson 2015, 294; Kiseleva 2015, 322; Adler-Nissen 2014).

One mechanism through which a relatively more positive image can be achieved is by influencing the terms on which international discourse about the state takes place. States advance "strategic narratives" in which they represent themselves as well as events, systems, identities, and issues to their advantage (Miskimmon et al. 2013; Roselle et al. 2014). Strategic narratives are important because they can help shape the environment in which international interactions take place, thus potentially altering the assumptions and reference points used to assess a state's image (Miskommon et al. 2013, 152). If the state can influence the narrative in this way and get other actors to speak on those terms, then a more positive international image is likely to result. Analyzing the projection of strategic narratives requires tracing their flow and spread throughout international discourse (Roselle et al. 2014, 79), something we attempt to do below.

China, Image, and Discourse Power

China is perhaps even more attuned to its external image and narratives about it 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 arguably over (Doshi 2021). 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 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).

Two indicators of how well this discourse war is going for China are how the country is portrayed in international media and the terms on which China's policies are discussed. While the PRC will of course be portrayed positively in China's own external propaganda outlets like *Xinhua* or China Global Television (CGTN), coaxing different coverage from outlets one does not control is an indication that Beijing's emphasis on influencing international discourse is making headway. Below we investigate whether publicity surrounding the PRC's mask diplomacy was able to do this.

The PRC, Mask Diplomacy, and Covid-19

Covid-19 and China's relationship to it provide a useful ground to investigate these arguments about image management, strategic narratives, and China's discourse power. 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." 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 2021; Lin 2021).

The PRC therefore has unique incentives to manage its image and influence international discourse when it comes to Covid-19. The pandemic originated in Wuhan

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, including to not be associated with or blamed for the origin of the disease.

The Chinese government has sought to control information about its domestic response. Beijing is 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). 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). Presumably to deflect from culpability, the country's officials and media streams advanced a series of unsubstantiated claims about the origins of the virus, even suggesting that the United States military brought it to Wuhan (Hernandez 2020; Yang 2021, 17–23).

On top of controlling the domestic information environment, Beijing 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 2020b).

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 stressed the success of China's actions, its charity 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 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. These efforts can be seen as a form of more general "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." 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 2021; on Central and Eastern Europe, see Kowalski 2021).

These three arguments, namely that states attempt to influence how they are perceived including through advancing strategic narratives, that China is attuned to its

image and discourse power, and that Covid-19 presented incentives for China to advance its image management efforts, lead to two main hypotheses. They address China's preferred image and its preferred narrative content when it comes to Covid-19, respectively. Mask diplomacy provides useful markers to test the extent of China's ability to advance its aims in these areas. Thus:

> **Hypothesis 1**: *PRC mask diplomacy mitigated reputational damage associated with Covid-19.*
>
> **Hypothesis 2**: *PRC mask diplomacy changed the terms international media used to describe China's Covid-19 response.*

Data, Scaling, and Validation

We employ quantitative text analysis to test our 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 measures, 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.[1] Some of the

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[1] We developed a scraper that loads each URL, checks whether the page exists, asks for permission to scrape using the *polite* R package (Perepolkin 2019), and saves the title and body of the news article.

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.

In the next step, we only keep websites that 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.[2] 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 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*. Based on these strict filters, 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 1,553,275 statements

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[2] For instance, pages ending in *.ie* are classified as "Ireland", websites ending on *.jp* are classified as "Japan".

published on 1,593 domains from 100 countries.[3]

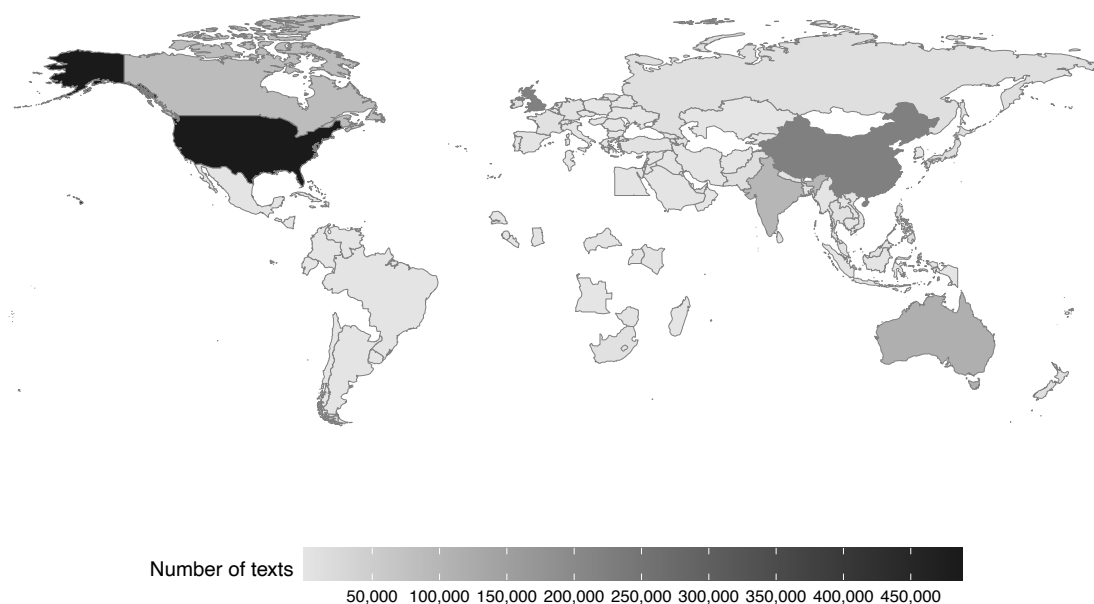*Figure 1: Geographical distribution of relevant English statements*

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.

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[3] The difference-in-differences regression models consider 99 countries. China is not considered in this analysis we assess media tone in countries that could receive mask diplomacy support from China.

Figure 2: Number of relevant statements per week
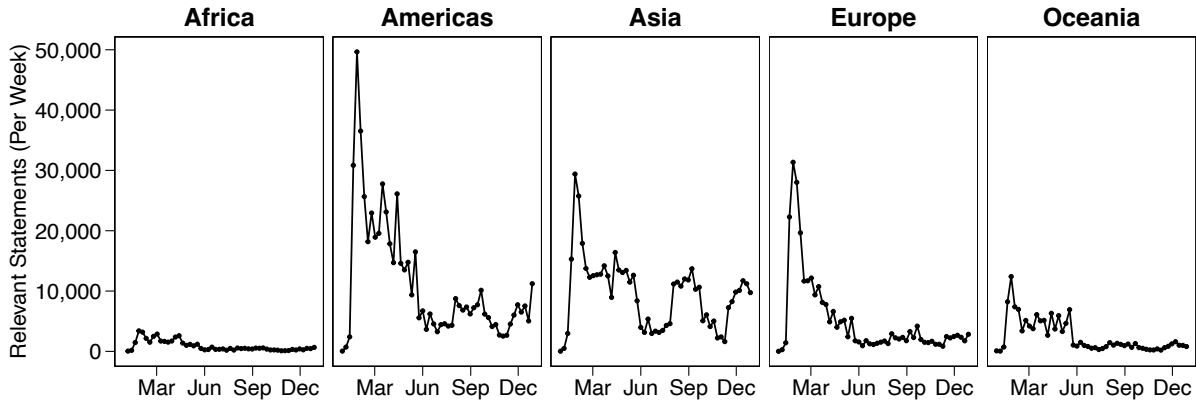
Scaling Method

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). 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. Instead, we expect that newspaper articles frame China on a *continuous scale* ranging from very negative to very positive. 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 continuous scale (Watanabe 2021; 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. The 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

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the text corpus.[4] Words that do not appear systematically more often with terms from 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 scale and apply the trained LSS algorithm to the entire text corpus, resulting in a score for each statement.
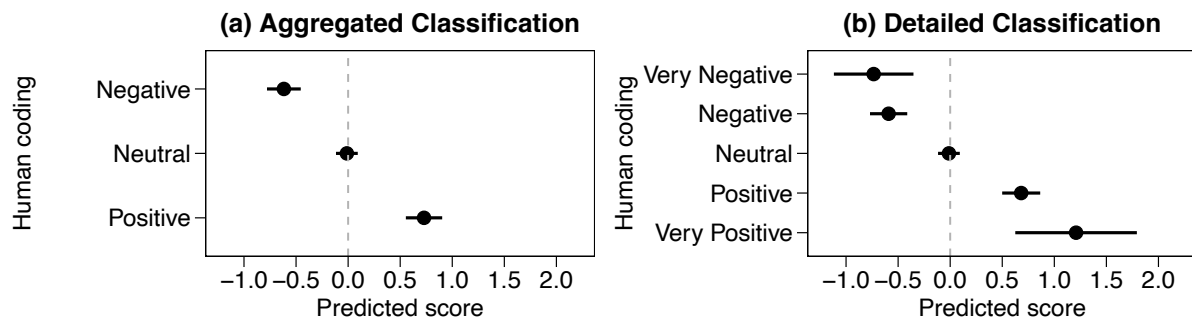
Validation

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, while 5 implies a very positive portrayal of China. We report the exact coding instructions in *SI Section B*. 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

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[4] We follow the approach described extensively in Watanabe (2021) and Trubowitz and Watanabe (2021).

statements about China have the highest scores, offering strong support for the measurement validity of our scaling approach (Baden et al. 2021).

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

(a) Aggregated Classification

Human coding (y-axis): Negative, Neutral, Positive
Predicted score (x-axis): −1.0 −0.5 0.0 0.5 1.0 1.5 2.0

(b) Detailed Classification

Human coding (y-axis): Very Negative, Negative, Neutral, Positive, Very Positive
Predicted score (x-axis): −1.0 −0.5 0.0 0.5 1.0 1.5 2.0

Note: The plots report predicted values of media tone conditional on the human classification of a statement. Error bars show 95% 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. The following sentences have some of the lowest (very negative portrayal) and highest (very positive portrayal) 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…"*

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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 are over 0.82 standard deviations more positive than media tone in other countries.

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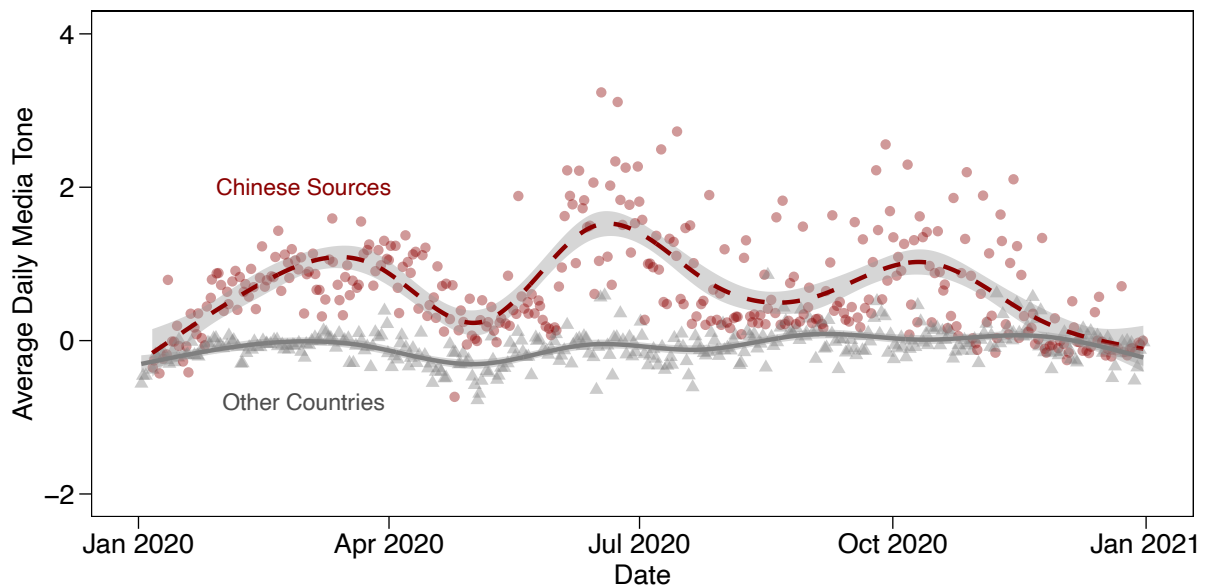

Note: Each dot indicates the daily media tone in Chinese sources and sources from other countries. Lines are generalized additive models with integrated smoothness.

Figure 5 shows the development of media tone per week, aggregated to the level of continents. The horizontal dotted lines indicate the unstandardized average

tone across the entire year for news outlets in each continent. Two patterns stand out. First, media tone is most positive in African countries, possibly because many of the outlets are in countries that enjoy relatively good relations with the PRC. Asian outlets (excluding China) have the second most positive tone. Media 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
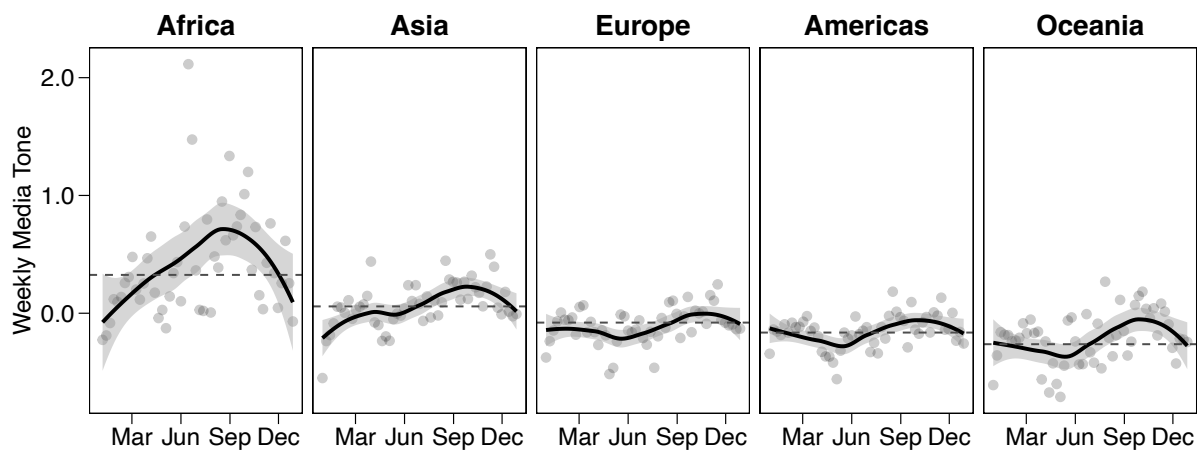
Note: Each dot marks the media tone in a given week for all domains from a continent. Lines are generalized additive models with integrated smoothness. Graph does not consider news articles from Chinese sources.

As a final validation measure, we map our scoring onto the COVID "death peaks" in each country. Full details can be found in *SI Section C*, but briefly, using weekly country-level data on Covid-19 related deaths that come from the European Centre for Disease Prevention and Control, we run fixed-effects models to evaluate if tone towards China is more negative during the peak weekly Covid-19 deaths in each country. We would expect tone towards China to be more negative during "death peak" weeks because of pandemic othering (Dionne and Turkmen 2020), and indeed that is

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what we find. We take this as a further validation that our measure is accurately capturing sentiment towards China and Covid-19 in foreign media.

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 *hypothesis 1*. 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.

To construct our primary explanatory variable, the mask diplomacy "treatment", we create a novel dataset of individual mask diplomacy *events* at a country-week level. The PRC 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). 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

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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 sorted 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 over 1600 mask diplomacy records across 168 countries.[5] While many of these records discuss the same event, in our primary analysis we focus on identifying the *first* instance of mask diplomacy in each country. In all instances we use the earliest date available, either from the media record dateline or from a date mentioned in the media record. As a final check, we conducted targeted searches for each country for which we found any mask diplomacy record in an attempt to ensure that we had accurately recorded the *first* instance of diplomacy. We use that data to code a binary variable equal to "1" in the first week in which a country received some form of Chinese mask diplomacy. Additional details on the coding methodology and descriptive statistics and graphs can be found in *SI Sections G* and *H.*

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[5] 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 (2021) 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).

Identification Approach

We use this data to conduct a multi-period difference-in-differences 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-differences average treatment effect of the treated (ATT). As discussed above, the 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 adopt an unconditional parallel trends assumption as we have insufficient variation on the pre-treatment covariates for which we have weekly data, namely Covid-19 cases or deaths.[6] 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: 206) 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 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 6 months (26 weeks) of 2020 (through June) as by this week all but one country in our sample had received mask diplomacy.[7] We can match sufficient media data with mask diplomacy data for 98 countries and territories.

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[6] The 'did' package utilized in R encounters a singular matrix when including pre-treatment covariates.

[7] New Zealand would receive mask diplomacy in Week 30.

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 the 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 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, as a "hard test" for our hypotheses, 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.[8]

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[8] 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. 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

Results

In *Figure 6*, we consider the aggregate ATT using different windows around the treatment. A window of ±2 means that we assess the treatment effect of considering two weeks before and two weeks after the treatment. We estimate the aggregated differences for windows ranging from ±2 weeks to ±5 weeks. The left-hand panel reports results for the full sample of texts. The panel in the middle limits the content to mentions of China and Covid-19 that exclude mask diplomacy content. The right-hand panel uses only "substantive events" as a measure of mask diplomacy (excluding events such as online medical consultations). In all three scenarios and for the time windows between ±2 and ±5 weeks, we observe a positive and sizeable effect. For instance, in the full sample the treatment effects of receiving mask diplomacy correspond to a more positive coverage of China of around 0.25 to 0.36 standard deviations.

Figure 6: Overall aggregate ATT of receiving mask diplomacy support on media tone, for a window of ±2 to ±5 weeks around the treatment
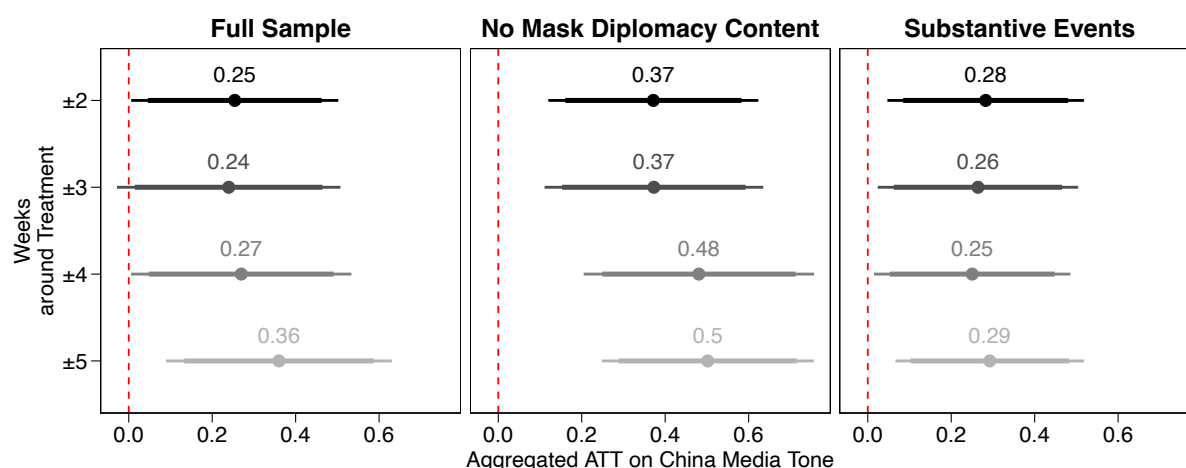
Note: Horizontal error bars show 90% and 95% confidence intervals.

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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.

When focusing on coverage that does not comment on mask diplomacy itself, the effects remain positive and statistically significant, and the effect size even increases slightly. Using substantive events only does not change the conclusions. In sum, the effect size is quite stable to using alternative treatment windows, measures of media content, and mask diplomacy events.

Overall, we take these results as clearly supporting *hypothesis 1*. 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]*

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[9]https://www.kitco.com/news/2020-01-30/WHO-declares-China-virus-outbreak-an-international-emergency.html (accessed 22 January 2022).
[10]https://www.digitaljournal.com/world/wuhan-residents-decry-fake-work-as-chinese-official-tours-city/article/568275 (accessed 22 January 2022).

In contrast, articles at a 0.40 standard deviation (approximately corresponding to the largest observed effect size) 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 (or less negative) 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.

Influencing the Substance of the Narrative

We now turn to *hypothesis 2*, moving beyond positive/negative tone to measure whether mask diplomacy was able to change the substance of news about China and Covid-19. Recall that "strategic narratives" are those in which the state represents itself and its role in events in its preferred ways. The pioneers of this approach

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[11] https://nationalpost.com/pmn/health-pmn/test-test-test-who-chiefs-coronavirus-message-to-world-2 (accessed 22 January 2022).
[12] https://www.cp24.com/world/time-to-revenge-shop-china-s-virus-hot-spot-reopens-1.4873783 (accessed 22 January 2022).

recommend that to understand the projection of strategic narratives requires tracing their flow and spread throughout international discourse (Roselle et al. 2014, 79).

To identify the PRC's preferred narrative terms about Covid-19, we turn to China's June 2020 official White Paper on the topic, *Fighting COVID-19: China in Action*.[13] White Papers (WPs) are official documents issued by the State Council Information Office (SCIO) that summarize and explain China's policies, preferences, and formulations to external audiences. WPs can be taken as an aggregate of the official perspective and the PRC's preferred narrative on a given topic. They are typically produced in English, thus indicating an external target audience, and they are usually widely publicized by PRC external media streams, meaning they are meant to be seen. In China's political system, the SCIO is overseen by the party's Propaganda Department, and SCIO itself describes its function as "to propel domestic media further along the path of introducing China to the international community, including China's domestic and foreign policies"[14]

The Covid-19 WP can thus be taken a reasonable approximation of the story the PRC wishes to tell about its relationship to Covid-19. To extract key terms underpinning the WP's narrative, we first conducted a word frequency analysis of the WP. Based on that we extracted key terms that were central to the paper's narrative and unique to be identified (excluding, for example, "Covid-19", "meeting", "also"). The

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[13] Full text available here:
https://english.www.gov.cn/news/topnews/202006/07/content_WS5edc559ac6d066592a449030.html
[14] See "About SCIO" here: http://english.scio.gov.cn/aboutscio/index.htm

resulting key narrative terms included "prevention", "fight", "help", "assistance", "support", "coordination", "commitment", "guide", and "solidarity".

Figure 7: LSS scores and logged word frequencies
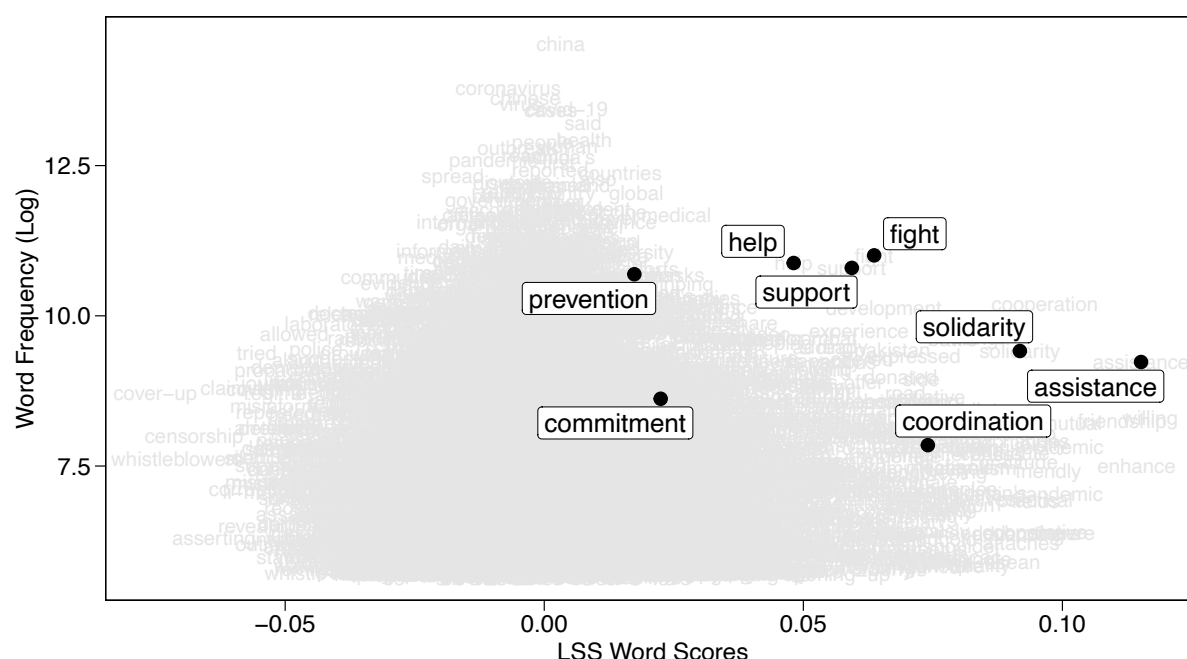
Note: The points and boxes show the word scores of the key terms identified in the white paper. The grey labels show the scores of words that appear at least 300 times in our corpus of statements mentioning China and Covid-19.

As *Figure 7* shows, these words generally score higher on our LSS measure of positivity, which suggests that if they appear more in the aftermath of mask diplomacy instances, then the PRC's ability to change the underlying narrative can help explain the more positive tone we discovered when testing *hypothesis 1*.

To identify the diffusion of key PRC terms in the international media, we select all full texts of English articles that have been published in the week before, the week of, and the week after the mask diplomacy treatment in each country. This sample consists of 35,198 newspaper articles, with each mentioning China and the pandemic. We count how often the key terms appear in each newspaper article and store the

counts of each word in each article. Afterwards, we run a negative binomial regression with the count of a word in each article as the dependent variable, and the timing (before, during, after mask diplomacy) as the main independent variable. We add country fixed effects for each regression model. Following Chang (2022), we estimate incidence rate ratios from negative binomial regression models for each word. More specifically, we show the relative ratio of word usage increases or decreases in the week *after* a country received mask diplomacy, relative to the week *before* the mask diplomacy treatment. A value of 1.3 implies that word usage increased by 30%, a value of 2 means that the word count increased by 100%. *Figure 8* shows that terms such as "solidarity" and "commitment" have more than doubled. The words "coordination", "assistance, "help, and "fight" are used over 50% more often after the country received support from China, while "support" and "prevention" also increased by around 20%.

Figure 8: Incidence rate ratios showing the relative ratio of word usage increases after a country received mask diplomacy, relative to the week before the mask diplomacy support
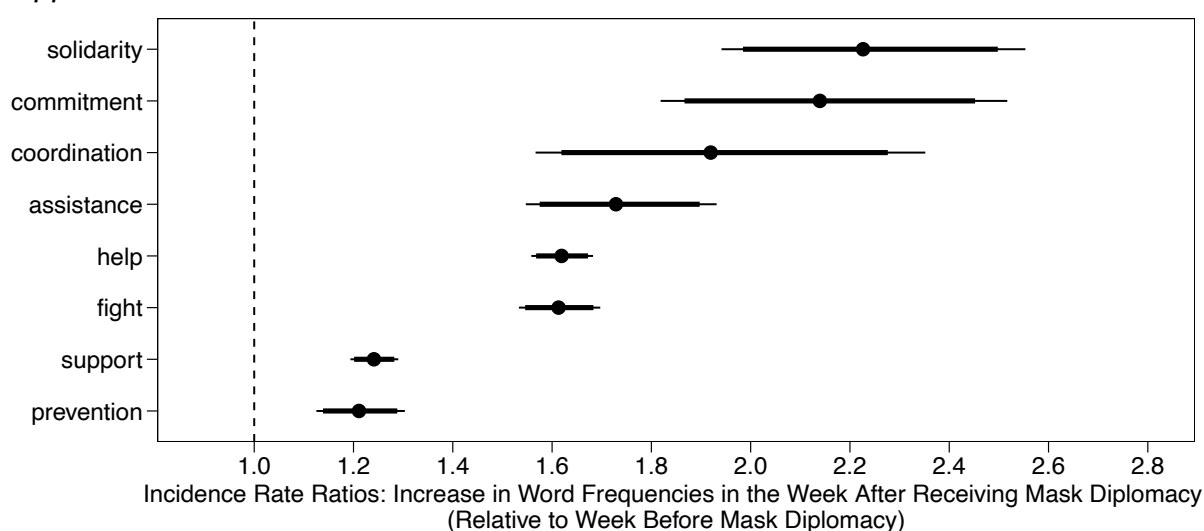
Note: Results based on separate negative binomial regressions for each word. Horizontal bars show 90% and 95% confidence intervals. Regression coefficients are reported in Table A6.

These results suggest that a key mechanism driving the PRC's more positive image in a country after the provision of mask diplomacy had to do with the changing underlying narrative about China and Covid-19. Key terms that the PRC prefers like "assistance", "support", "fight", and "solidarity" became markedly more common in a country's press during and after its initial receipt of mask diplomacy. This indicates that the PRC was able to change the underlying discussion about China and Covid-19, which is powerful because it alters the standards and terms of reference in international discussion such that the state fares better.

Discussion and Conclusion

Our results show that Beijing's mask diplomacy worked to offset reputational damage from the Covid-19 pandemic and to change the international conversation about the PRC and Covid-19. 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, these effects were 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. Not only did the PRC's portrayal improve, but the terms in which it was discussed changed.

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; this research speaks to that tradition.

Beyond the case of China and Covid-19 these results suggest that external image management can not only change the way states are portrayed for foreign audiences, but also change the terms on which they are discussed. 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 ordering 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 terms of international discourse.

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 portrayal 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 discourse.

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Supporting Information

A   Classification and Latent Semantic Scaling: Additional Information and Validation

Figure A1 describes the workflow for building the dataset for Hypothesis 1. The process is described extensively in the section "Data, Scaling, and Validation" in the main paper.

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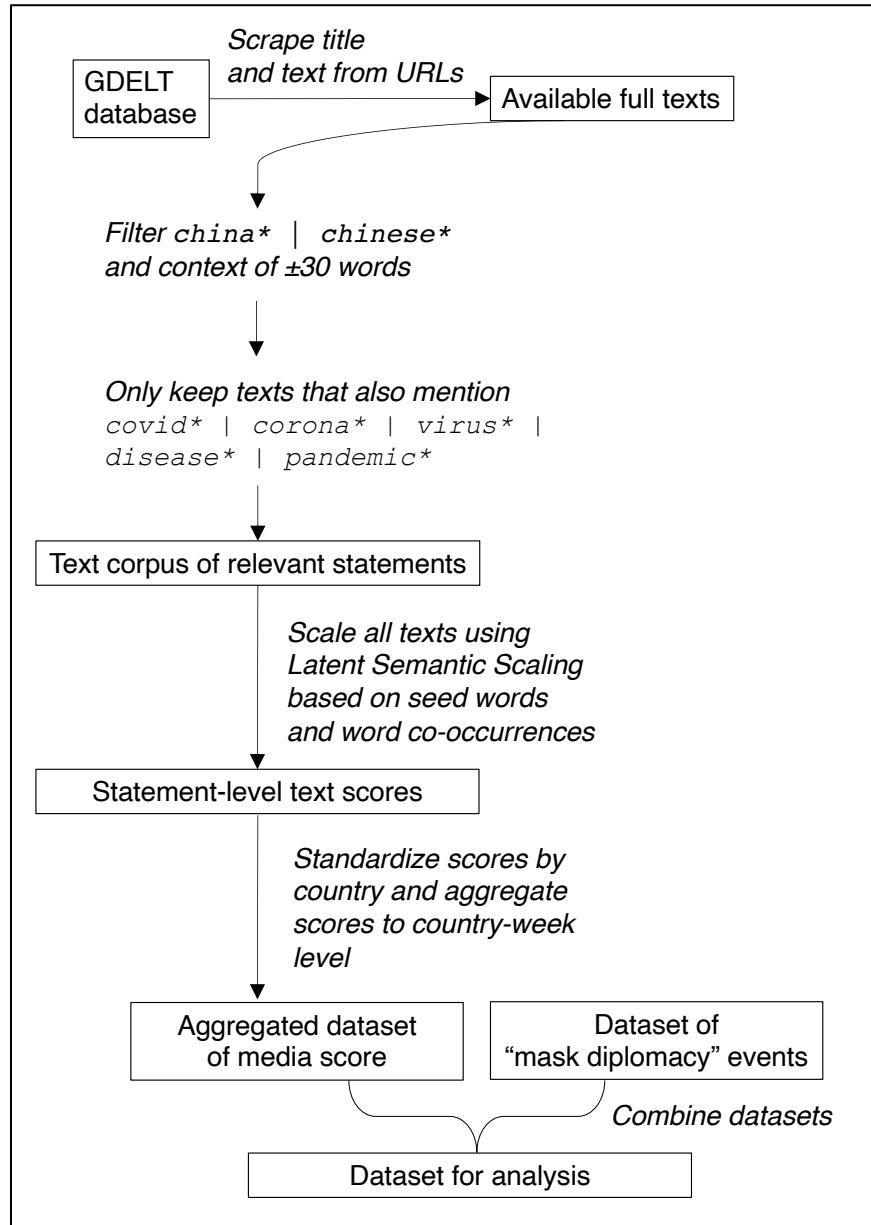
Table A1 lists the seed words for training the LSS scaling model. The terms listed below "Culprit" describe the negative end of the scale, while the "Savior" terms outline the positive end of the scale. All other terms in the corpus receive word scores based on their semantic proximity with these seed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

Figure A2 shows the most negative and positive terms from the LSS scaling analysis. The graph provides high validity for the scaling method. Many terms that appear as the most negative or positive ones indeed imply a negative or positive portrayal of China. Examples include corruption, silence, censorship, lying, cover-up, outrageous (negative) and assistance, enhance, friendship, mutual, friendly, cooperation, and solidarity (positive).

Figure A2: The most negative and positive terms in the text corpus according to LSS results
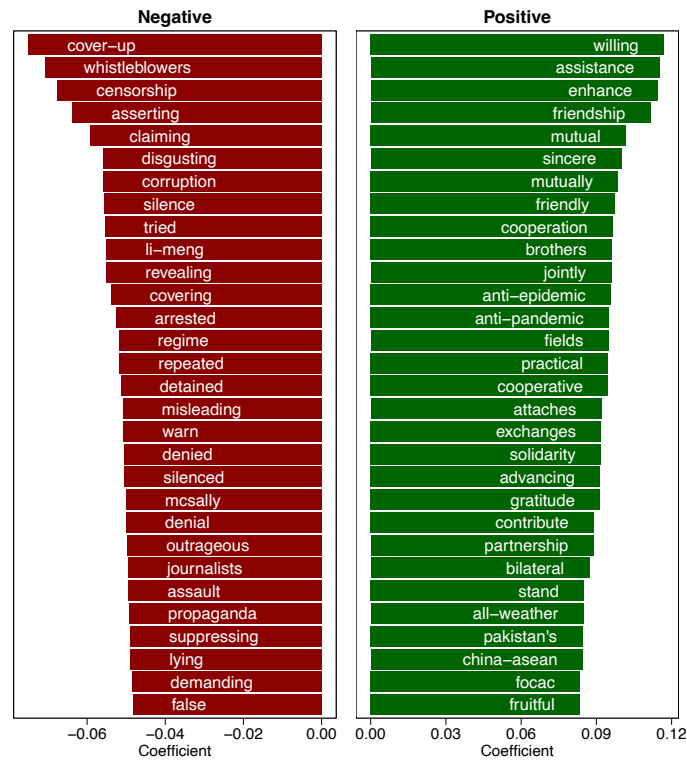
The models in *Table A2* predict the weekly media tone in a country using linear regression with robust standard errors. The model includes fixed effects for each week. Standard errors are clustered by country. Media Tone from Chinese sources on Covid-19 is over 0.45 higher than the media tone in other countries. This difference is substantive, corresponding to over 0.8 standard deviations of the dependent variable.

Table A2: Predicting weekly media tone

	Model 1
(Intercept)	-0.438***
	(0.055)
Chinese Sources	0.448***
	(0.023)
N	4119
R2	0.120
R2 Adj.	0.108

Note: Standard errors in parentheses. Week-fixed effects are omitted from table.

B   Coding Instructions for Validation of Scaling Results

Note: this section lists the coding instructions to validate the results from the semi-supervised scaling approach.

Coding instructions: 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 lists the 30 most negative and most positive statements, based on LSS text scores. This qualitative assessment of the output corresponds with comparison of LSS scores and human coding of the same set of sentences. Statements with higher scores portray China more positively.

Table A3: The 30 most negative and positive statements (based on LSS text scores)

Text Score	Text	Category
11.48	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	Positive
11.33	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	Positive
10.75	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	Positive
9.59	In his keynote speech at the Extraordinary China-Africa Summit on Solidarity against COVID-19, President Xi stressed that China and Africa must stay committed to fighting COVID-19 together, enhancing China-Africa cooperation, upholding multilateralism, and taking China-Africa friendship forward, in the endeavor to build a China-Africa community of health for all and a stronger China-Africa community with a	Positive
9.53	militaries of African countries in the fight against COVID-19. Answer: In his keynote speech at the Extraordinary China-Africa Summit on Solidarity against COVID-19, President Xi stressed that China and Africa must stay committed to fighting COVID-19 together, enhancing China-Africa cooperation, upholding multilateralism, and taking China-Africa friendship forward, in the endeavor to build a China-Africa	Positive
9.27	Cuba to continuously carry forward the friendly tradition between the two countries, consolidate political mutual trust, and expand bilateral win-win cooperation and consequent	Positive

results. He said that China will work with Cuba to build the Belt and Road and push forward anti-pandemic cooperation between the two sides, so as to promote China-Cuba relations in the new era

9.21 they work together in a spirit of solidarity and cooperation. We are in this together and we can only stop it together. "   Positive

9.18 at a virtual Extraordinary China-Africa Summit on Solidarity Against the COVID-19 co-hosted by the Forum for China-Africa Cooperation (FOCAC). President Buhari told the summit, co-hosted by Chinese President Xi Jinping, South African President and AU Chairperson Cyril Ramaphosa, and Senegal President and co-chair of FOCAC Macky Sall, that Nigeria would support and join any   Positive

9.18 Cuba to continuously carry forward the friendly tradition between the two countries, consolidate political mutual trust, and expand bilateral win-win cooperation and consequent results. He said that China would work with Cuba to build the Belt and Road initiative and push forward anti-pandemic cooperation between the two sides, to promote China-Cuba relations and to take them to   Positive

9.16 will work with Kenya to take forward Belt and Road cooperation and the implementation of the outcomes of the Beijing Summit of the Forum on China-Africa Cooperation and the Extraordinary China-Africa Summit on Solidarity against COVID-19, and in that context, strive for new progress in the China-Kenya comprehensive strategic and cooperative partnership and deliver greater benefits to the people   Positive

9.14 a virtual Extraordinary China-Africa Summit on Solidarity Against the COVID-19 co-hosted by the Forum for China-Africa Cooperation (FOCAC). The Nigerian leader told the summit, co-hosted by Chinese President Xi Jinping, South African President and AU Chairperson Cyril Ramaphosa, and Senegal President and co-chair of FOCAC Macky Sall, that Nigeria would support and join any   Positive

9.08 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   Positive

8.99 He spoke on Wednesday at a virtual Extraordinary China-Africa Summit on Solidarity Against the COVID-19 co-hosted by the Forum for China-Africa Cooperation (FOCAC) The summit was co-hosted by Chinese President Xi Jinping, South African President and AU Chairperson Cyril Ramaphosa, and Senegal President and co-chair of FOCAC Macky Sall, that Nigeria would support and join any   Positive

8.77 The Extraordinary China-Africa Summit on Solidarity against COVID-19 will soon be held. President Xi Jinping will chair the Summit and deliver a keynote speech. He will have in-depth exchanges with leaders   Positive

8.77 By Yi Fan The Extraordinary China-Africa Summit on Solidarity against COVID-19 will soon be held. President Xi Jinping will chair the Summit and deliver a keynote speech. He will have in-depth exchanges with leaders   Positive

8.77 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   Positive

8.73 greater solidarity and cooperation, peace and development, and vitality and prosperity with Africa. The Extraordinary China-Africa Summit on Solidarity Against COVID-19 has made a new blueprint for China-Africa cooperation and injected new energy into Africa's economic revival, signaling a bright future for the China-Africa community with a shared future that the two sides have been striving for   Positive

8.71 new cooperation potential, consolidate their traditional areas of cooperation, and foster new highlights of cooperation in the new economy. Both parties agreed to chart the course for China-Africa cooperation in a post-COVID-19 era, and work together to on the 2021 FOCAC calendar, as they promised in the Joint Statement of the Extraordinary China-Africa Summit on Solidarity   Positive

8.70 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   Positive

8.66 will jointly build a China-Africa community of health for all and an even stronger China-Africa community with a shared future. The Summit issued a Joint Statement of the Extraordinary   Positive

	China-Africa Summit On Solidarity Against COVID-19, sending to the international community a strong message of China-Africa solidarity and cooperation. Held via video link, the Summit was a joint	
8.62	Summit on Solidarity against COVID-19, President Xi stressed that China and Africa must stay committed to fighting COVID-19 together, enhancing China-Africa cooperation, upholding multilateralism, and taking China-Africa friendship forward, in the endeavor to build a China-Africa community of health for all and a stronger China-Africa community with a shared future. China and Africa have a	Positive
8.59	Statement of the Extraordinary China-Africa Summit On Solidarity Against COVID-19. China and Africa are determined to deepen friendship and strengthen mutual support as they work toward an even stronger China-Africa community with a shared future. The two sides will enhance solidarity and cooperation, and support the UN and the WHO in leading and coordinating their joint efforts to	Positive
8.59	and Africa must stay committed to fighting COVID-19 together, enhancing cooperation, upholding multilateralism and taking their friendship forward. Together, China and Africa will jointly build a China-Africa community of health for all and an even stronger China-Africa community with a shared future. The Summit issued a Joint Statement of the Extraordinary China-Africa Summit On Solidarity Against	Positive
8.52	Extraordinary China-Africa Summit on Solidarity against COVID-19 in Pretoria, South Africa, June 17, 2020. The summit, held via video link, was jointly proposed by China, South Africa, the rotating chair of the African Union (AU), and Senegal, the co-chair of the Forum on China-Africa Cooperation (FOCAC).	Positive
8.51	, when Chinese and African leaders got together for the Extraordinary China-Africa Summit on Solidarity Against COVID-19. The summit, held via video link, was jointly proposed by China, South Africa, the rotating chair of the African Union (AU), and Senegal, the co-chair of the Forum on China-Africa Cooperation (FOCAC).	Positive
8.49	and long-term perspective. China will work with Kenya to take forward Belt and Road cooperation and the implementation of the outcomes of the Beijing Summit of the Forum on China-Africa Cooperation and the Extraordinary China-Africa Summit on Solidarity against COVID-19, and in that context, strive for new progress in the China-Kenya comprehensive strategic and cooperative partnership and deliver	Positive
8.47	the Beijing Summit of the Forum on China-Africa Cooperation and the Extraordinary China-Africa Summit on Solidarity against COVID-19, and in that context, strive for new progress in the China-Kenya comprehensive strategic and cooperative partnership and deliver greater benefits to the people of both countries. No matter what stage of development it reaches, China will always see the	Positive
8.42	. 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	Positive
8.33	. 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). In recent years, China-Senegal political mutual trust has continued to increase and the win-win cooperation between the two countries has benefited both peoples.	Positive
8.31	promoting regional practical cooperation and trade exchanges and advancing regional economic integration. Voice of Vietnam: What do you think of ASEAN-China anti-pandemic cooperation? In which areas does China hope to enhance cooperation with ASEAN? Zhao Lijian: China and ASEAN member states are friendly, close neighbors. We've had fruitful cooperation in fighting COVID-19. We	Positive
-4.00	EDITION China named Li Wenliang - the doctor who sounded the alarm about the coronavirus that later killed him - a" martyr" following a campaign to silence him by police	Negative
-4.00	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. A virologist who fled China after studying the early outbreak of COVID-19 has published a new report claiming the coronavirus likely came from a lab. Doctor Li-Meng Yan, a scientist who studied some	Negative
-4.02	Li Wenliang, a 34-year-old ophthalmologist, raised the alarm in late December about the novel coronavirus As outrage grows in China over the death of a whistleblower doctor, Chinese social media users are accusing the country's communist government of a cover up. Doctor Li Wenliang, a 34-year-old ophthalmologist, raised the alarm in late December about the	Negative

-4.02	was because authorities initially suppressed information of the outbreak. At the beginning of January, eight doctors were detained by police for spreading information about the outbreak, which Chinese authorities called" rumours". One of them was Doctor Li Wenliang, who sounded the alarm on the virus and later died after he contracted it. Wuhan's	Negative
-4.03	sentenced to 4 years in prison for covering the start of the pandemic in her country, the government accuses her of seeking altercations and causing problems. Chinese journalist Zhang Zhan was sentenced to 4 years in prison for covering the start of the pandemic in her country, the government accuses her of seeking altercations and provoking problems	Negative
-4.05	The Chinese doctor who was reprimanded for" spreading rumours" after he sought to warn colleagues about the emergence of Covid-19 has been officially exonerated by an investigation into his death	Negative
-4.08	China named Li Wenliang - the doctor who sounded the alarm about the coronavirus that later killed him - a" martyr" following a campaign to silence him by police	Negative
-4.12	Chinese Whistleblower Dr. Li-Meng Yan has been making headlines after alleging that the coronavirus actually came from a laboratory in Wuhan and was produced by the Chinese Communist Party.	Negative
-4.12	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	Negative
-4.13	SHANGHAI (Reuters) - A Chinese report into the coronavirus death of a young doctor reprimanded by police for" spreading rumors" when he tried to raise the alarm about the disease drew quick criticism	Negative
-4.14	Reuters CORONAVIRUS	A Chinese report into the coronavirus death of a young doctor reprimanded by police for" spreading rumours" when he tried to raise the alarm about the disease drew quick criticism	Negative
-4.14	Doctor Li Wenliang, a 34-year-old ophthalmologist, raised the alarm in late December about the novel coronavirus As outrage grows in China over the death of a whistleblower doctor, Chinese social media users are accusing the country's communist government of a cover up. Doctor Li Wenliang, a 34-year-old ophthalmologist	Negative
-4.15	Jump to navigation Speak Now A Chinese report into the coronavirus death of a young doctor reprimanded by police for" spreading rumours" when he tried to raise the alarm about the disease drew quick criticism	Negative
-4.22	Fox News host Tucker Carlson interviewed Chinese virologist Dr. Li-Meng Yan, who claimed that the Chinese government created Covid-19 and released it intentionally on the world. Yan's claim that the coronavirus was intentionally created in a lab is unfounded, and has been repeatedly debunked	Negative
-4.25	as has been widely speculated. Dozens of Chinese doctors, journalists, and whistleblowers attempted to raise the alarm in December and January but were silenced or intimidated by Chinese authorities. There is well-documented evidence that China tried to cover up the spread of the coronavirus, muzzled whistleblowers, misled the World Health Organization, kicked out journalists	Negative
-4.25	doctor Li Wenliang. Who was Li Wenliang, the doctor who tried to warn about the coronavirus (and whose death causes outrage) But discrimination against China and its citizens is not new: Sinophobia is a well-documented phenomenon that has existed for centuries. The many ways in which it has manifested itself during the	Negative
-4.26	The Chinese whistleblower, who fled China alleging that her government had intentionally created COVID-19 in a military lab, claims her mother has now been arrested by the ruling Communist Party	Negative
-4.26	Chinese doctors, journalists, and whistleblowers attempted to raise the alarm in December and January but were silenced or intimidated by Chinese authorities. There is well-documented evidence that China tried to cover up the spread of the coronavirus, muzzled whistleblowers, misled the World Health Organization, kicked out journalists, and attempted to block outside health experts	Negative
-4.27	Chinese censors in overdrive to silence billions after whistleblower Li Wenliang dies The death of a Chinese doctor who was punished for blowing the whistle on the coronavirus outbreak has triggered	Negative
-4.45	SHANGHAI - A Chinese report into the coronavirus death of a young doctor reprimanded by police for" spreading rumours" when he tried to raise the alarm about the disease drew quick criticism	Negative
-4.47	newspaper described him as" one of the eight ' whistleblowers ' who tried to warn other medics of the coronavirus outbreak but were reprimanded by local police". Chinese doctor	Negative

	#LiWenliang, one of the eight" whistleblowers" who tried to warn other medics of the coronavirus outbreak but were reprimanded by local police, died from #coronavirus	
-4.53	Health The coronavirus kills the Chinese doctor who sounded the alarm WHISTLE LAUNCHER A true hero in China, he was initially accused by the regime of spreading rumors Published on 02/07/20 at 5:34 am - Updated the	Negative
-4.54	Li Wenliang, the Chinese doctor who tried to raise the alarm about the coronavirus in 2019 and was muzzled by the government before himself succumbing to the disease, has become a symbol of	Negative
-4.55	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. A Chinese doctor who fled her home country	Negative
-4.76	The Chinese whistleblower, who fled China alleging that her government had intentionally created COVID-19 in a military lab, claims her mother has now been arrested by the ruling Communist Party. Li-Meng Yan, one	Negative
-5.15	Chinese doctor Li Wenliang, one of the eight whistleblowers who tried to warn of the virus, was arrested for his actions and later contracted the deadly bug Want the	Negative
-5.22	Tel,WhatsApp + 37258973482.info@lounaeestlane.ee Hiina veebisait alvdas ilmselt kogemata tegelikud,ilusta andmed Hiina koloonaviiruse point,kus was 154 023 nagged and 24 549 mourned. Healthy-neuid was the only 269. Neid numbreid pevad	Negative
-5.24	Chinese doctor Li Wenliang, one of the eight whistleblowers who tried to warn of the virus, was arrested for his actions and later contracted the deadly bug News,	Negative
-5.48	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	Negative
-5.49	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	Negative

C   Semantic Scaling Validation via use of Covid-19 "Death Peaks" Weekly Deaths and China's Image

In this validation check, we measure 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 2021, 414). 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 indictor 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 for 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.

Table A4: Predicting media tone about China

| VARIABLES	(1) OLS	(2) Country FE	(3) Trend	(4) TWFE	(5) CPFE
Death Peak	-0.279***	-0.283***	-0.349***	-0.261***	-0.210
	(0.103)	(0.105)	(0.110)	(0.098)	(0.143)
Observations	3,699	3,699	3,699	3,699	3,699
Countries	98	98	98	98	98
Country-Period FE	NO	NO	NO	NO	YES
Time Trend	NO	NO	YES	NO	NO
Country FE	NO	YES	YES	YES	NO
Time FE	NO	NO	NO	YES	NO

Clustered standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Our results are presented in *Table A4.* 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 "death peak" week of COVID deaths is a 0.35 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, providing validation of our measure. As measured by media tone, China suffered a reputational hit due to Covid-19.

However, 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 A3.* As seen there, the difference tone is consistently negative and statistically significant in the weeks running up to the peak week, with the largest impact in that 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.

Figure A3: Impact of lagged and lead death peak on media tone in a country towards China
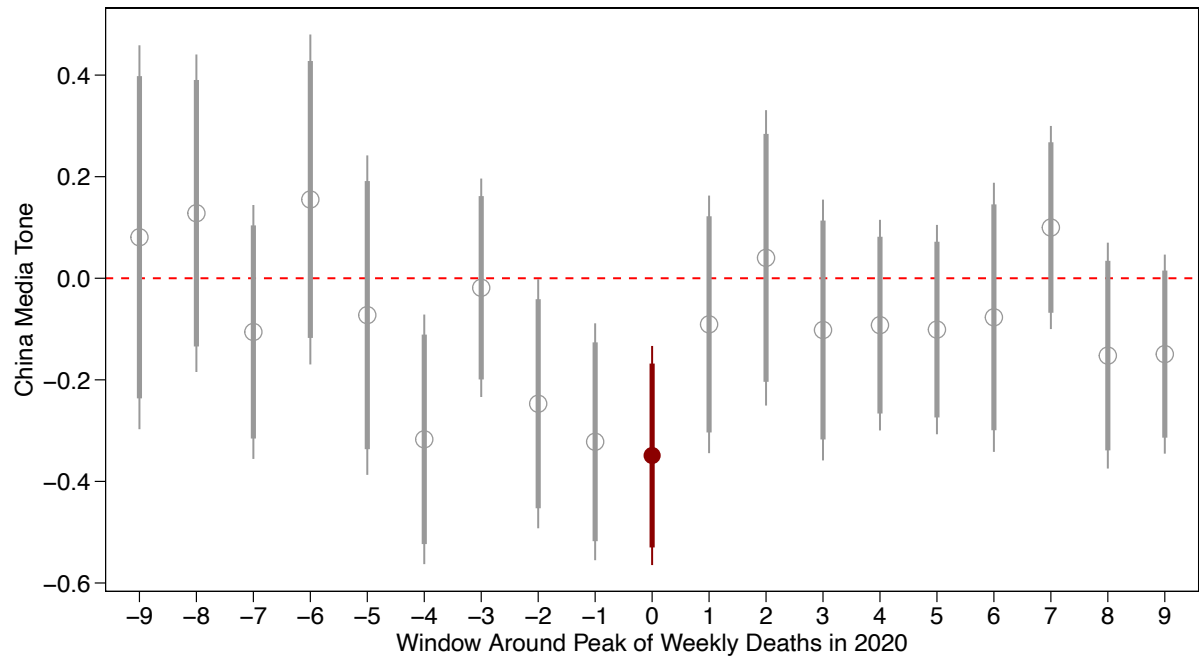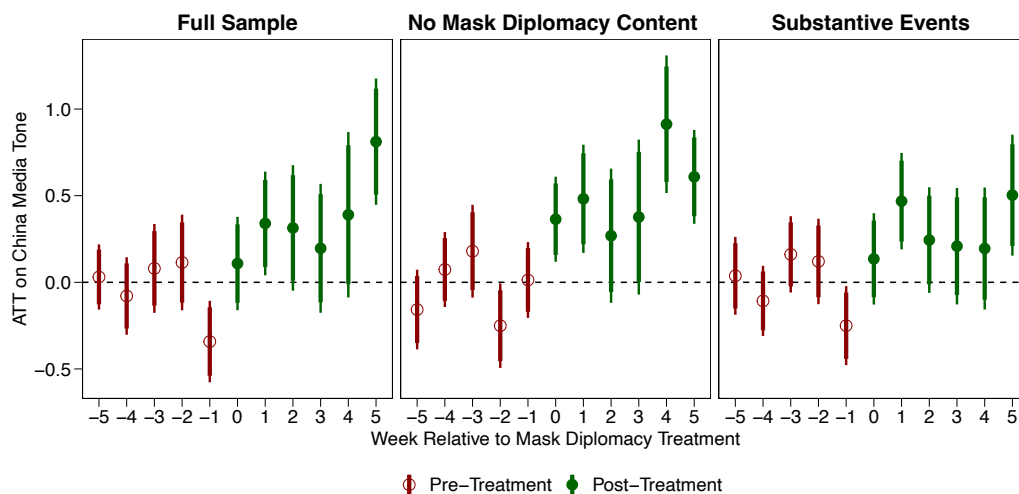

Note: Vertical error bars show 90% and 95% confidence intervals.

E   Additional Analysis for Multi-Period Difference-in-Difference Analysis

Figure A4 report results from the dynamic models. The unconditional parallel trends assumption appears to hold in most weeks, especially in "late" pre-treatment periods (3–5 weeks prior to the treatment). We observe positive and sizeable effects across the three scenarios. While the ATT is not statistically significant for all weeks, the effect sizes are sizeable. The positive tone towards China increased by 0.3–0.5 standard deviations after a country receive mask diplomacy. Mask diplomacy appears to give the PRC an image boost in the target country.

Figure A4: Mask diplomacy differences-in-differences at different weeks

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

F   Workflow and Analysis of the Keyword Occurrence Before, During, and After Mask Diplomacy Events

Hypothesis 2 posits that PRC mask diplomacy changed the terms international media used to describe China's Covid-19 response. To test this hypothesis, we focus on all English newspaper articles that were published in the week before, during, and after a country received "mask diplomacy" from China. For this subset of around of 35,198 newspaper articles, we apply a dictionary of terms emphasized in the White Paper "Fighting COVID-19: China in Action".[15] For each news article, we count how often a term or phrase has been mentioned. Given that the dependent variable is a count variable, we run negative binomial regression models with the word count as the dependent variable, and the timing (the week before, during, or after receiving "mask diplomacy") as the main independent variable and add country-fixed effects to control for unobserved heterogeneity across countries. We run separate models for each term and calculate incidence rate ratios. *Table A6* reports coefficients and standard errors for each negative binomial regression model.

Table A6: Predicting the count of word frequencies in newspaper articles using negative binomial regressions

	Solidarity	Commitment	Coordination	Assistance	Help	Fight	Support	Prevention
(Intercept)	-2.382***	-4.341***	-2.868***	-3.602***	-0.440**	-1.074***	-0.249	-2.095***
	(0.362)	(0.747)	(0.428)	(0.558)	(0.145)	(0.184)	(0.141)	(0.295)
Mask Diplomacy Week	0.493***	0.260**	0.334**	0.161**	0.293***	0.390***	0.090***	0.049
	(0.072)	(0.087)	(0.109)	(0.059)	(0.020)	(0.026)	(0.020)	(0.038)
Week After Mask Diplomacy	0.800***	0.761***	0.652***	0.547***	0.482***	0.478***	0.216***	0.192***
	(0.070)	(0.083)	(0.104)	(0.057)	(0.020)	(0.026)	(0.020)	(0.038)
N	35198	35198	35198	35198	35198	35198	35198	35198
AIC	15015.4	10543.1	6800.0	20235.5	100786.3	66861.0	91051.1	34323.1
BIC	15515.1	11042.8	7299.7	20735.1	101286.0	67360.7	91550.8	34822.8
Log. Lik.	-7448.723	-5212.575	-3340.999	-10058.744	-50334.161	-33371.522	-45466.558	-17102.560

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

Note: Country-fixed effects included in all models, but omitted from table.

G   Mask Diplomacy Coding Methodology and First Mask Diplomacy Instance List

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[15] Full text available here:
https://english.www.gov.cn/news/topnews/202006/07/content_WS5edc559ac6d066592a449030.html

This section includes the codebook for detecting "mask diplomacy" events and explains how we identify the first mask diplomacy instance in each country.

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:

- o Testing Kits and Supplies
  - ▪ Reagents
  - ▪ Swabs
- o Surgical equipment
- o ICU Equipment
  - ▪ Mechanical ventilators
  - ▪ Defibrillators
  - ▪ Monitors
- o 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 GDELT for Reported Instances

As a starting point, we will leverage the Global Database of Events, Language and Tone (GDELT), Global Knowledge Graph 2.0 https://blog.gdeltproject.org/introducing-gkg-2-0-the-next-generation-of-the-gdelt-global-knowledge-graph/ to scrape media records using Google's BigQuery tool https://cloud.google.com/bigquery.

Step 1 – Querying and Extracting GDELT References Based on "Corona" and "China"

Google's BigQuery GDELT database, gdelt-bq, contains "the GDELT 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 GDELT 2.0 Event Database, the GKG 2.0 also leverages GDELT Translinugal to provide 100% machine translation coverage of all monitored content in 65 core languages, with a sample of an additional 35 languages hand translated."[16]

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"
- Navigate to "big query" (Search "big query" in blue searchbar)

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[16] https://blog.gdeltproject.org/the-datasets-of-gdelt-as-of-february-2016/

- Run the following script in Query Editor to pull all articles coded for "Corona" and "China"

SELECT
 V2Themes, date, locations, GKGrecordid, 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, GKGrecordid, documentidentifier
limit 100000000;

- Save results using "Save Results" button at "Query Results"
  - Files will likely be to 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

Step 1

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.

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.

H   Details on Mask Diplomacy Event Data and Weekly Deaths

Figure A5 shows the development of mask diplomacy support for the countries included in our analysis. Darker color indicate that a country received their first mask diplomacy support at a later stage in 2020. *Table A7* lists the first instance of mask diplomacy for each country included in our sample of newspaper articles. *Figure A6* summarizes the distribution of mask diplomacy events across each weeks in 2020.

Figure A5: 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.

First Mask Diplomacy Event (Week in 2020)
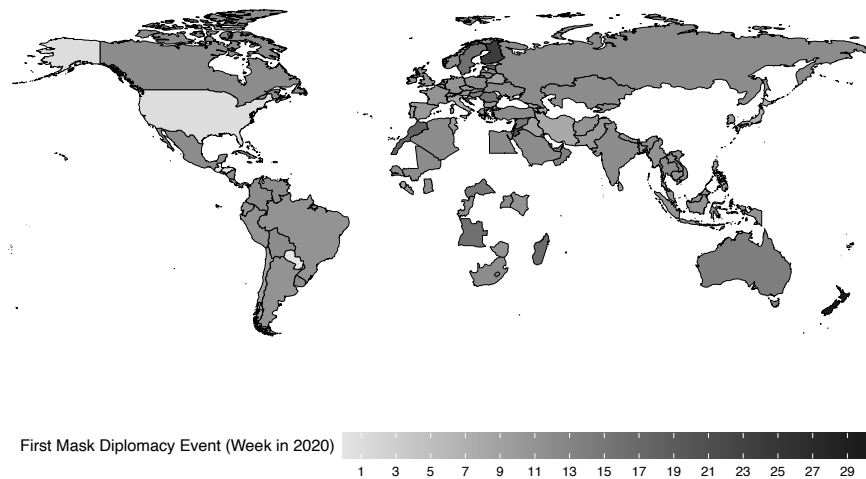
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29

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
Algeria	12
Angola	16

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Argentina	11
Armenia	9
Australia	14
Austria	11
Azerbaijan	9
Bahamas	12
Bahrain	0
Bangladesh	11
Barbados	12
Belarus	9
Belgium	11
Bolivia	12
Brazil	11
Brunei	5
Bulgaria	10
Cambodia	11
Canada	12
Central African Republic	15
Chile	9
Colombia	12
Congo - Brazzaville	12
Costa Rica	11
Croatia	10
Cuba	11
Cyprus	11
Czechia	10
Dominican Republic	11
Ecuador	11
Egypt	12
El Salvador	12
Estonia	19
Fiji	10
Finland	24
France	11
Georgia	9
Germany	11
Ghana	12
Greece	11
Guatemala	0
Haiti	12
Honduras	0
Hungary	14
India	12
Indonesia	11
Iran	8
Iraq	9
Ireland	12
Israel	13
Italy	8
Jamaica	12
Japan	7
Jordan	21
Kazakhstan	12
Kenya	11
Kuwait	12
Kyrgyzstan	12
Laos	11

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Latvia	12
Lebanon	10
Liberia	11
Lithuania	12
Luxembourg	11
Madagascar	17
Malaysia	11
Maldives	11
Mali	12
Malta	12
Mauritius	4
Mexico	12
Monaco	0
Morocco	18
Myanmar (Burma)	11
Nepal	11
Netherlands	11
New Zealand	30
Nicaragua	12
Nigeria	12
Norway	12
Oman	14
Pakistan	10
Palestinian Territories	10
Panama	12
Paraguay	0
Peru	11
Philippines	11
Poland	12
Portugal	9
Puerto Rico	0
Qatar	12
Romania	15
Russia	12
Saudi Arabia	12
Senegal	12
Seychelles	8
Sierra Leone	9
Singapore	20
Slovakia	11
South Africa	12
South Korea	10
Spain	10
Sri Lanka	11
Sweden	16
Switzerland	11
Syria	15
Thailand	12
Trinidad & Tobago	11
Tunisia	10
Turkey	12
Uganda	12
Ukraine	12
United Arab Emirates	15
United Kingdom	11
United States	1
Uruguay	12

Venezuela	12
Vietnam	12
Zimbabwe	11

Figure A6: Histogram of first "mask diplomacy" by week
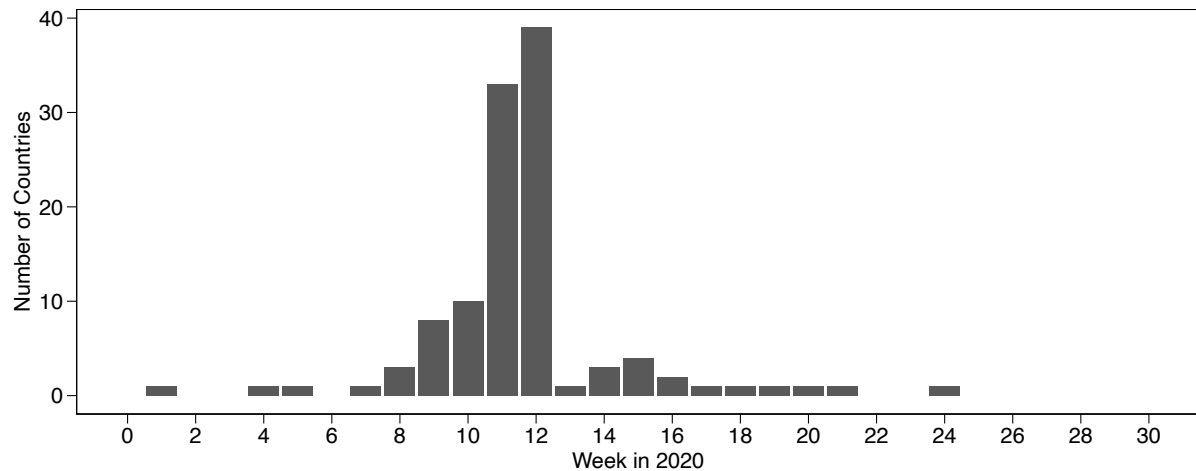
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