

# New Variants of COVID-19 Disinformation in Taiwan

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## Executive Summary

The onset of the COVID-19 pandemic shook the world as many countries experienced high infection rates and overburdened healthcare systems throughout 2020 and 2021 while attempting to rapidly develop vaccines, obtain vaccines from foreign manufacturers, and identify new treatments. However, throughout the early months of the pandemic, Taiwan, an island country of over 23 million people, experienced mostly single digit case numbers and no deaths. In January 2020, the Taiwan Center for Disease Control (CDC) responded rapidly upon learning of the new disease outbreak in Wuhan, China by sending two experts to assess the situation. Throughout the early months of 2020, Taiwan's government made early calls to start implementing then novel COVID-19 regulations, now common practice globally. These regulations included imposing travel restrictions on entering Taiwan, contact tracing requirements across the country, and lengthy quarantine timelines. The island remained relatively untouched by the COVID-19 pandemic until May 2021, over a year into the global health crisis.

On May 12, 2021, Taiwan experienced its first COVID-19 outbreak. For Taiwan's residents, the pandemic went from being a distant year-long global health crisis, to being all too real and life altering. As Taiwan's residents switched to a new reality of increased societal stress, Taiwan also became a hotbed of COVID-19-related disinformation and misinformation. Following the May 2021 outbreak, online false content fanned distrust of government COVID-19-related policy decisions and local officials while a panicked general public eagerly sought information regarding the virus. Taiwan has long been a target for disinformation and has an advanced civic tech community dedicated to countering false narratives with the support of Taiwan's government. However, although the debunking process in Taiwan was swift, it was powerless in the face of conspiracy theories built slowly over time, from various sources.

Countering COVID-19 related disinformation has been a high-priority for most governments throughout the pandemic as misinformation and disinformation has slowed vaccination rates; encouraged ineffective, and at times dangerous, treatments; and exacerbated societal and political tensions. Taiwan was no exception in this case. However, since disinformation is generated by domestic and international sources, an onlooker could easily underestimate or overestimate foreign influence, especially in Taiwan where such external campaigns are common and expected. To understand the intended impact of COVID-19-related disinformation in Taiwan, it is imperative to first understand the how and why behind the spread of these campaigns, to identify the most likely source and reason.

This study used Facebook, the top social media platform in Taiwan, to archive posts related to the pandemic from May 12 through the end of 2021, and then categorized them into groups to determine foreign influence. It was found that vaccine propaganda from China flooded Facebook starting in mid-May with the help of over 700 fake accounts and several YouTube channels registered in Algeria, Cambodia, Russia, as well as China. Accounts would remain dormant and post anodyne content unrelated to the COVID-19 pandemic until becoming active in a coordinated fashion to spread specific false narratives. Judging by the criteria this study proposes—including timing, consistency, persistence, latency, stealth, credibility, and availability—these all-out disinformation campaigns were often significant, creating challenges for Taiwan's defense frameworks.

From this study, the following key takeaways have been identified in relation to how and why the COVID-19 disinformation campaigns occurred:



Figure 1: Disinformation campaigns were creating challenges for Taiwan's defense frameworks.<sup>1</sup>

1. The outsourcing of information operations to organizations in Southeast Asia might play a significant role in China dissemination campaigns. This method can be identified by analyzing information outside of China's official media outlets. Marketing companies, hacker communities, universities, state-owned companies, and online influencers are all potential third parties of the Chinese Information Operation (CIO) ecosystem.
2. The outsourced accounts and channels used a familiar tone to pretend to be local citizens who cared about politics. The content did not promote pro-China messages, but instead was aimed at creating chaos, distrust, and division within Taiwan's society.
3. Domestic events in Taiwan may not serve as the only or even most relevant indicator of predicting foreign information operations. The domestic policy environment in China and the international policy environment are also relevant indicators. Foreign information operations that appear to be against Taiwan may in fact be aimed at China's domestic audience. International politics and other factors are more likely to influence how and why CIOs work.
4. Conspiracy theories generated by outsourced CIOs were constant in regard to focus on specific subjects and pattern of posting on social media platforms. These patterns were recognizable and link the groups together, as demonstrated by the research completed here.
5. Outsourced CIOs pose a new and unique challenge to those combatting disinformation campaigns. Chinese government representatives are increasingly coordinating with domestic and international groups that are not explicitly connected with Beijing, enabling more latitude and engagement with communities that would not trust official sources.
6. Facebook botnets and YouTube channels have become key players in the dissemination of COVID-19 related disinformation in Taiwan. These accounts have collaborated, relayed information, and resonated with China's official media outlets, indicating a multi-platform, multimedia approach of amplified network effects.

<sup>1</sup> Photo by Henry & Co.: <https://www.pexels.com/photo/people-using-their-mobile-phones-2600754/>

## Introduction

COVID-19 was under control in Taiwan before May 12, 2021. The Taiwan Centers for Disease Control (CDC) held press conferences daily to release COVID-19-related information.<sup>2</sup> Disinformation and conspiracy theories regarding COVID-19 were baseless from mid-2020 to mid-2021, and most disinformation studies produced during this time focused on elections and other political issues.

Nevertheless, discussion on COVID-19 cases on May 12 changed Taiwan's information environment, which had negative implications offline. Taiwan's May 2021 COVID-19 outbreak started when pilots infected with COVID-19 failed to comply with a self-health management policy. With the outbreak in May, there was suddenly a high demand for vaccines, which Taiwan's government could not provide. This created tension and stress within society that served as a perfect foundation for information manipulation conducted by domestic and foreign sources. Millions of messages discussing the validity of vaccines circulated online from May 2021 through the end of November 2021; the producers of the messages are everywhere, especially considering that vaccine conspiracies have their roots in Western society, not China.<sup>3</sup> However, as a Chinese-speaking country, Taiwan receives a lot of information from other Chinese-speaking countries (e.g., China and Singapore), and according to a 2019 study by V-Dem, Taiwan was the top target of foreign disinformation starting in 2013.<sup>4</sup> Previous research suggests CIOs may have produced half of the messages people in Taiwan received in Facebook groups during the 2020 election,<sup>5</sup> but it is unknown whether this applies to COVID-19 disinformation. Thus, the role of CIOs within the disinformation Taiwan receives is a valuable consideration.

Research has focused on disinformation from China targeting Taiwan, with some researchers analyzing specific narratives from China and others concentrating on the victims consuming manipulated knowledge. The mechanism for this phenomenon—in other words, how and why disinformation spreads—has seldom been discussed. Furthermore, the definition of a CIO is also blurred, making it difficult for researchers to attribute harm to a particular country. For example, disinformation created by Taiwan's local media, which is then cited and amplified by China's official media outlets, could be considered a form of CIO. Nevertheless, since people in Taiwan generally do not read official media from China, there is little impact in Taiwan. If the reach of disinformation is limited, one might focus on the wrong aspects of the CIO concept. On the other hand, online influencers, in Taiwan or in any other Chinese-speaking country, might have a substantial societal impact, but their efforts would seldom be viewed as a form of CIO.

In sum, even though Taiwan being a testing ground for CIOs has not been disputed, some assumptions are vaguely driven by general understanding, not solid analysis. This is because an understanding of measuring scale and impact has not been reached, and the mechanism has seldom been explored. Therefore, to analyze the information environment in Taiwan following the May 2021 COVID-19 outbreak, this report must answer three questions. First, what was the source of disinformation and misinformation spread in Taiwan following the outbreak? Second, how does one measure the scale and impact of CIOs in the case of COVID-19-related disinformation in Taiwan? And finally, what factors contribute to the scale and impact of a CIO? To establish a model, this

2 Kao, S-S. (2021). Taiwan's Response to Disinformation: A Model for Coordination to Counter a Complicated Threat. NBR, September 16.

3 Oliver, J. E., & Wood, T. (2014). Medical conspiracy theories and health behaviors in the United States. *JAMA internal medicine*, 174(5), 817-818.

4 Taiwan received the most false information disseminated by foreign governments between 2013 and 2019, followed by Latvia, Bahrain, Qatar, Hungary, Yemen, Kosovo and Syria, as well as other countries.

<https://www.cna.com.tw/news/firstnews/201909270355.aspx>

<https://www.taipeitimes.com/News/taiwan/archives/2019/09/28/2003723046>

5 Shen (2021), *The Chinese Cognitive Warfare Model: The 2020 Taiwan Election*, Prospect Quarterly, 1-66.

report proposes a framework for understanding CIOs<sup>6</sup> and analyzes why this model speaks to political and economic tension within China.

## Background

According to previous research, there are three forms of CIOs: information flow, money flow, and human flow.<sup>7</sup> Information flow CIOs are defined as information produced and disseminated by actors in China, including the People's Liberation Army (PLA), cyber warriors, trolls, content farms, etc. Money flow CIOs are defined by information that is not produced by China but created using funds invested by China, which includes industries that China invests in (e.g., Livestream, gaming, entertainment). Human flow CIOs focus on the power of the United Front Work Department, which approaches like-minded citizens to impact numerous domains, such as military, media, policy, etc. This study focuses on information flow and money flow CIOs as human flow CIOs are often initiated in offline activities.<sup>8</sup> Distinguishing between information flow and money flow CIOs can be a difficult task since attribution is challenging.<sup>9</sup> However, no matter who produces and disseminates disinformation, examples of disinformation can be viewed and collected through the platforms on which they are shared. Thus, collecting data holistically provides an overview of the information space during specific time periods.

When numerous COVID-19 cases appeared on May 12 in Taiwan, the Taiwan Affairs Office started to criticize the Taiwan's government on the same date, claiming that it was the government's refusal to use China's vaccine that led to this situation.<sup>10</sup> The same day, numerous Facebook pages started to disseminate

content claiming Taiwan's government was covering up COVID-19 cases and more people died than the government claimed. Fake death reports were generated on Facebook, Twitter, and LINE (Taiwan's most popular peer-to-peer messaging app). On May 13, a manipulated 40-second recording spread on LINE claiming that many cases were concealed by the local government. A rumor on May 14 claimed that sanitized water provided by the government was noxious.<sup>11</sup> Starting on May 15, some Facebook pages began to state that the COVID-19 situation was due to Taiwan's resistance to China and that China could provide what was needed to solve the problem. Finally, on May 17, a local anonymous citizen wrote an opinion piece claiming that the government's anti-China ideology was resulting in the government not addressing COVID-19 the correct way, implying that the correct way is the China way. On the same date, a fake Liberty Times (a pro-Taiwan newspaper) Twitter account appeared to disseminate fake news regarding death numbers and a fake website for the CDC and the Ministry of Education was created to release false information regarding COVID-19.

Except for the last rumor, which originated in Taiwan, all other disinformation was generated in either simplified Chinese or used Chinese terms and a Chinese IP address. The rumors were amplified by several fake accounts, posted to neutral groups such as second-hand sale groups and fortune-telling groups, and cited by pro-China groups in Taiwan. The narratives created chaos, generated distrust towards the government, and cultivated a positive narrative of China, constituting a classic example of a CIO.

Drawing from current Operations Research (OR), effective psychosocial warfare is characterized by good timing, credibility, availability, and consistency.<sup>12</sup> An

6 This study quantifies the indicators of CIO by drawing from the military's Operations Research (OR), which includes measures of persistency, timing, speed, reach, latency, stealth, availability for use, credibility, vulnerabilities, resistance, and consistency.

7 Shen (2022), How China Initiates Information Operations Against Taiwan, *Taiwan Strategists* 12, 19-34.

8 Ibid.

9 <https://link.springer.com/article/10.1007/s42001-020-00091-8>

10 [https://live01.people.com.cn/zhibo/Myapp/Html/Member/html/202105/15\\_2575\\_6099d593233df\\_quan.html](https://live01.people.com.cn/zhibo/Myapp/Html/Member/html/202105/15_2575_6099d593233df_quan.html)

11 <https://tfc-taiwan.org.tw/articles/5447>

12 Kerchner, P. M., Deckro, R. F., & Kloeber Jr, J. M. (2001). Valuing psychological operations. *Military Operations Research*, 45-65.

effective hacker's attack should be latent and stealthy while fake news should be persistent and reach vulnerable people to be effective.<sup>13</sup> Since information warfare is the combination of disinformation, fake news, and hacker activities, it is possible that we could combine all criteria to measure potential impact. Take the aforementioned disinformation campaign as an example, the timing was advantageous and it was widely available to the public; whether the information in the attack was consistent depends on what kind of message would be delivered next. The messages lasted for several days—a sign of persistence—and it used stealth. Most messages were shared in closed groups and posted to apolitical groups. In the Taiwan context, apolitical people tend to believe in conspiracy theories more frequently,<sup>14</sup> thus a six-day attack could indicate a potentially significant and dangerous CIO.

On the other hand, there was also information generated locally during the same period, which supported Taiwan's government, denounced China, and debunked the fake news. Thus, we might overestimate the CIO's impact and underestimate the impact of local information. An overview of online volume is a good way to observe the reality of potential impact for such campaigns.

## May to June: An Overview

This study uses Facebook post data from May 15 to July 25, which is when Taiwan experienced a level 3 epidemic alert. The vaccine was the most discussed topic during this time (see Figure below), so this study used various terms to amass 54,913 total posts on FanPages and Facebook groups. These posts include those written in traditional Chinese but exclude posts from Malaysia and Hong Kong. We also excluded CIO attacks from other Chinese-speaking countries

by limiting the scope of our search, and simplified Chinese posts were also discounted.<sup>15</sup>

Using the topic modeling technique,<sup>16</sup> the top sub-topic that emerged in the vaccine posts was on how to get the vaccine (8.4%) and followed by the topics daily confirmed cases and how to receive a stipend during the pandemic (8.3% each). Vaccine-related conspiracy theories and cover-up schemes constitute 8.1% of the posts. The comparison of the Taiwan-produced vaccine Medigen to other vaccines, including the China-produced vaccine Sinovac constituted 7.8% of the posts. Information that supports the government, denounces China, or debunks fake news did not make it into the top 30 topics (constituting less than 1% of content).

In terms of the 8.1% of posts about conspiracy theories and cover-up schemes (around 4,447 posts), most posts are short messages with links from several content farms or YouTube channels. Ten FanPages simultaneously shared the same websites and eight channels that uploaded 3 to 4 videos daily. The FanPages were based in China, Alegria, Cambodia, Russia, and Hong Kong but disseminated Taiwan domestic COVID-related messages. Most FanPages had less than 100 likes,<sup>17</sup> but they still served as centers of disinformation dissemination. Simultaneously, multiple fake accounts would share messages with numerous Facebook groups that reached more than 100,000 readers in total.

Due to their inauthentic source, fake accounts, and identical behavior, this study chose this cluster (746 accounts) as a proxy for observing the following trend of possible attacks.

13 Haertling, K. P., Deckro, R. F., & Jackson, J. A. (1999). Implementing information warfare in the weapon targeting process. *Military Operations Research*, 51-65.

14 <https://opinion.udn.com/opinion/story/121057/5103315>

15 Although people in Taiwan read simplified Chinese, including simplified Chinese data would also include posts that only target Chinese or overseas Chinese, which will reduce the data's validity.

16 Topic modeling is a technique that detects words and phrases within a document, applying machine learning to determine the overlap of topics.

17 One exception is a page that has 10,000 followers and continues to be updated.





Figure 2: 2011 Google trends in Taiwan (vaccines in blue, weight loss in red, and the Olympics in yellow. Google also announced that “vaccine” was the second-most-trending topic people in Taiwan searched for in 2021, while the top topic was “pandemic.”<sup>18</sup>

From May to June, multiple Facebook Pages and YouTube channels appeared with identical features and behavior; these accounts contributed to a significant volume of online information, which created an “information flow” in early May.

However, their activity suddenly went down after this 6-day attack and they returned to normal activity, sharing neutral vaccine news every three to four days.



Figure 3: The sharing (interaction rate) behavior of collected FanPages; all have the same spike.

18 <https://trends.google.com/trends/yis/2021/TW/>

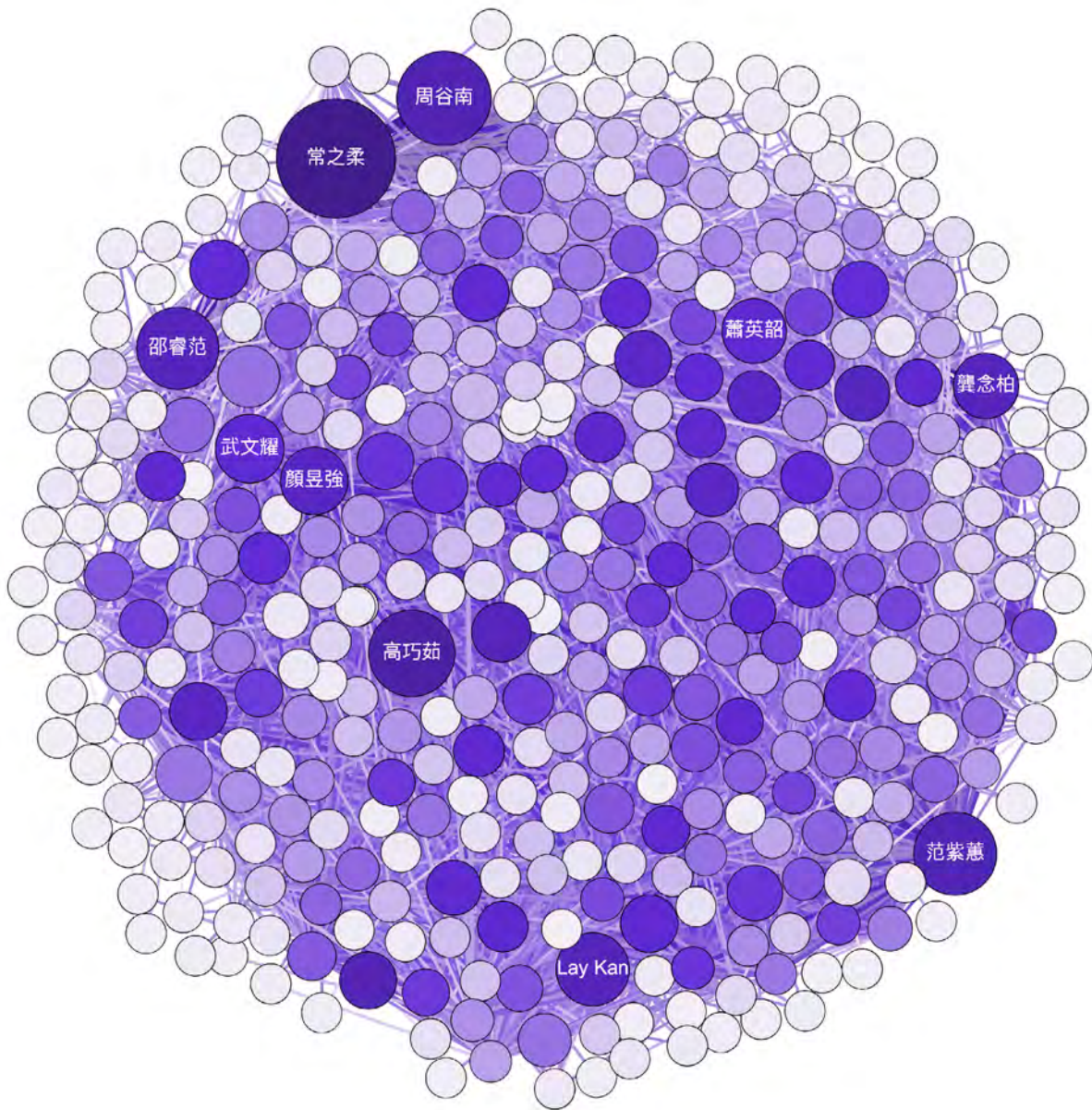


Figure 4: The cluster of fake accounts this study observed, produced by “ForceAtlas 2” in Gephi. Even with this algorithm, which is good at exploring clusters, all those accounts actually formed as “one” cluster—an indicator of only “one” malicious operator behind the behavior.<sup>19</sup>

<sup>19</sup> The threshold of “coordinated behavior” was set as three.

## July to August: A Light Attack on CDC

On August 4, 2021, China's official media initiated an attack, stating that the Taiwan CDC is responsible for 817 deaths after the outbreak of COVID-19 in May due to the government's policy of 3+11.<sup>20</sup> Similar posts from China's official media outlets lasted for a month and certainly contributed to the debate on the DPP's responsibility.

Some may argue that these posts serve as propaganda and constitute a CIO against Taiwan. This study, however, claims the opposite. First, the news articles are all in simplified Chinese, which means they do not target users in Taiwan. Even though people in Taiwan can read simplified Chinese, they seldom browse simplified Chinese media websites. The posts would only have an impact if they were transitioned onto Facebook posts or YouTube channels, which are popular platforms in Taiwan. Second, the original post is from an opposition party in Taiwan, the KMT, not China. The origin is not exclusively considered when determining what constitutes a CIO, as the messages should be either amplified or distributed in Taiwan by China. As stated above, the attacks on CDC were only cited by China and were not amplified on popular platforms in Taiwan. Thus, while the KMT was the main amplifier of this debate, posts from China did not amplify the argument and instead only confirmed this debate by sharing the news locally in China.

However, there is still some evidence indicating inauthentic behavior. For example, some of the accounts this study observed in May and June still shared vaccine-related posts and used hashtags such as # 換大頭照提醒無能蔡政府 (#change your profile picture to remind the incompetent TSAI government) to disseminate messages that align with the voice of

China's official media outlets, also sharing screenshots of Twitter posts to support their claims. Although their reach is limited, this is indeed suspicious. Nevertheless, since those accounts merely overlap the accounts this study collected in May, the conclusion—that it was simply a light attack from China's official media—remains salient.<sup>21</sup> On the other hand, it is plausible that China's media, quoting Taiwan's opposition party's arguments, was only targeting China's citizens to maintain stability, which indicates that this event is more about China's domestic issues rather than it being characterized as an international attack.

Here, what should be noticed is why China's actors were dormant in July and August when Taiwan was still in a severely vulnerable condition. A possible explanation is that the U.S. strongly reacted to the Xinjiang and Hong Kong issues in July 2021. From June to July, more and more pressure towards China was applied by the U.S. and Australia regarding investigations into the source of COVID-19. Additionally, the Tokyo Olympics began, which means that reporters and influencers had to move their attention to the game and engage in cheerleading tasks. The prioritization of COVID-19 and the Olympics led to other forms of attack that tried to distract international attention, including the Wilson Edward case<sup>22</sup> and the Fort Detrick conspiracy<sup>23</sup>.

These two cases were spearheaded mainly by the Publicity Department of the Central Committee of the Communist Party of China, and targeted an international audience, aiming to confuse the public on the source of COVID-19. The attacks were produced or amplified by China's officials and used

20 Although the opposition party in Taiwan blamed the "3+11" policy implemented by the CDC (3 days of isolation and 11 days of self-health management, which had previously been 5 days of isolation and 9 days of self-health management), there was no evidence that the change to the 3+11 policy contributed to the outbreak since the two pilots violated the self-health management policy on the 6th day and the 11th day after entering Taiwan. They violated the policy no matter which policy (3+11 or 5+9) applied. Still, "3+11" became a hot topic raised by the opposition party, becoming the core of the conspiracy theories this study discusses.

21 Despite Chinese actors on Facebook being dormant, YouTube channels were still active. Those channels uploaded video simultaneously, using the same video structure, and used AI-generated voice to read news articles with subtitles. There was a sudden spike from week 30-week 34 indicating these videos discussed Medigen. Those messages, however, did not speak to China's official media, this behavior will be analyzed later.

22 A fake biologist quoted in China's media, criticizing the World Health Organization and investigations into the origin of COVID-19.

23 Claims asserting the U.S. Army installation in Maryland as the origin of the virus.



Figure 5: China’s official and commercial media outlets commented on flight crew issues. From left to right: “The Commander Chen refused to say 3+11 is the reason of outbreak: the netizens in Taiwan said it’s all crap” “No data from Medigen, the DPP is doing experiments on its citizen.”



Figure 6: The discussion of the flight crew issues on Facebook

bait channels, WeChat public accounts, and Twitter to create confusion.<sup>24</sup> In the Wilson Edward case, the Chinese government even outsourced the attack to hacker companies and state-owned enterprises to circulate the fake scientist’s statement.<sup>25</sup> The case study this paper covers could be a combination of the techniques applied in the Wilson Edward and Fort Detrick events. China’s official media was involved in the attack against Taiwan, and additional attackers, which could be from Cambodia or Malaysia, were also involved. Thus, the attack against Taiwan could be broken into two parts: the “outsourcing part” (money flow) was constant, working on sharing articles, while

the “official part” (information flow) was limited, focusing on international events such as promoting the China-produced vaccine and counteracting international pressure.

The accounts and FanPages, which were linked to additional companies, were inactive in July and August. China’s officials and state-owned companies were much more active, especially in late July, but this was the case because of a need to counteract international pressure against China rather than to target Taiwan.

24 This form of attack was associated with the “spamouflage” Graphika defined. Most posts on Facebook were in simplified Chinese or English, targeting non-Taiwanese users, and these conspiracy theories discussed Guo Wengui’s scheme as well as the plot of the U.S. biological weapon experiment, which perfectly fits the theme Graphika found when identifying the spamouflage of CIO.

25 <https://about.fb.com/wp-content/uploads/2021/12/November-2021-CIB-Report.pdf>

## September to October: A Heavy Attack on the Medigen Vaccine

The collected accounts started to move in late August. The Taiwan-produced vaccine, Medigen, was used for the first time on August 24. China's actors chose this date as the perfect time to initiate a disinformation campaign. After almost two months of latency, those Facebook accounts were prepared. The narratives they chose to establish involved a conspiracy theory concerning the following points:

1. Taiwan's government deliberately let an outbreak happen in May, and there were more deaths than the public knew about.
2. The chaos due to the outbreak was designed to urge the public to receive the Medigen injection.
3. Taiwan's government rejected the importing of vaccines from other countries to ensure that Medigen was the only choice.
4. The phase 2 clinical trial of Medigen failed, and the subject in the study almost died.
5. Taiwan's government tried to kill Taiwan's people to make money.

To make sense of this conspiracy, one needs to evaluate the fake news regarding the failed clinical trial. The 10 FanPages this study observed used screenshots of several discussion boards (PTT and CK101, Reddit's counterparts in Taiwan) to provide proof of the failed trial. However, checking the authors of the posts from the discussion board makes it clear that they are all fake accounts, as they wrote only one article and closed their accounts immediately after posting it. Those FanPages even manipulated a post from PTT, deleted the author's name and the IP addresses, and changed content on the screenshot (see below). Another post from the discussion board also used a TV screenshot to try to prove that the subject

was in danger by receiving the vaccine (also see below). However, this news was a piece of debunking news regarding X-rays. Since the news source is pro-Taiwan, anti-China, the screenshot makes this rumor look reliable. This screenshot of a screenshot, so to speak, made it hard for readers to trace the origin of the information, leading them to believe the conspiracy conveyed.

These FanPages, however, did not have many followers. They therefore serve only as "porters" of disinformation. The figure below shows that one of the posts in question had no likes but 139 shares; there are hundreds of posts that look like this. Sharing was accomplished by fake accounts, and posts were shared with numerous public groups. Most of the groups are apolitical, including migrant worker groups, food lover groups, live-streamer groups, and marketing groups. Within two weeks, all 10 FanPages shared different conspiracy theories using different screenshots from different sources, and the fake accounts used hashtags to connect posts. The hashtags include:

1. #Medigen, the biggest winner of the 3+11 incident
2. #Would the government please stop vaccinating with Medigen
3. #Devote your body to Taiwan values
4. #Endorse Medigen with your life
5. #non-transparency

In the end, there were 772 fake accounts<sup>26</sup> participating in the activities of the analyzed 10 FanPages; these accounts had low activity and connections in the Middle East or Southeast Asia.<sup>27</sup> Also, by investigating the accounts' behavior, this study found another 12

<sup>26</sup> The number of fake accounts in this period are more than the accounts collected in May. Although most of them overlap.

<sup>27</sup> Until the end of March 2022, about 60% were deleted by Facebook. Also, another machine-like feature these posts have is that some hashtags failed because of the "+" used in "3+11." This is a simple error that could be discerned by any citizen, but a machine does not notice it and eventually shares the related articles automatically according to the operator's "default schedule."

FanPages that share characteristics with the previous 10 FanPages: almost no followers; based in China, Cambodia, or Algeria; and having minimal likes but lots of shares. These FanPages' articles were shared using the aforementioned random hashtags starting from August 24 and also began to use precise wording while sharing FanPages' posts starting on September 7. Although they use traditional Chinese characters, some sentences contain errors from converting simplified Chinese to traditional Chinese, which suggests that the origin of posts is likely China, which only uses simplified Chinese. The FanPage posts eventually entered into 406 Facebook groups, providing 4,020 articles.

In terms of timing, the attacks also speak to topical social events in Taiwan. As shown below, sharing increased on August 24 and September 7. August 24 was the date the Medigen vaccine was first made available, and September 7 is when the government

announced the walk-in policy for Medigen. These attacks were a form of information operation with fake accounts and inauthentic coordinated behavior. This study asserts that these attacks were from China, with our reasoning based on the following points:

1. There was a conversion from simplified Chinese to traditional Chinese characters.
2. The attacks were consistent with what China's official media outlets stated in July and August, which set the tone of the information operations.
3. The 10 FanPages were administered by individuals in China, Hong Kong, and/or Cambodia. Although VPN use is a possible explanation, lazy sharing behavior indicates otherwise.
4. One of the pages led to a simplified Chinese content farm website.
5. The name associated with several FanPages is identical to the name of a Weibo online influencer which is not a popular platform in Taiwan.

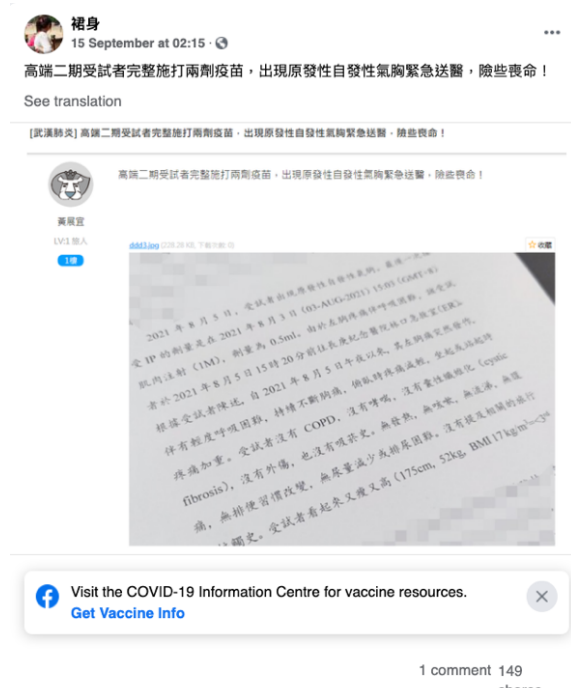


Figure 7: The screenshot of screenshot examples that involve fake accounts and/or manipulated images.

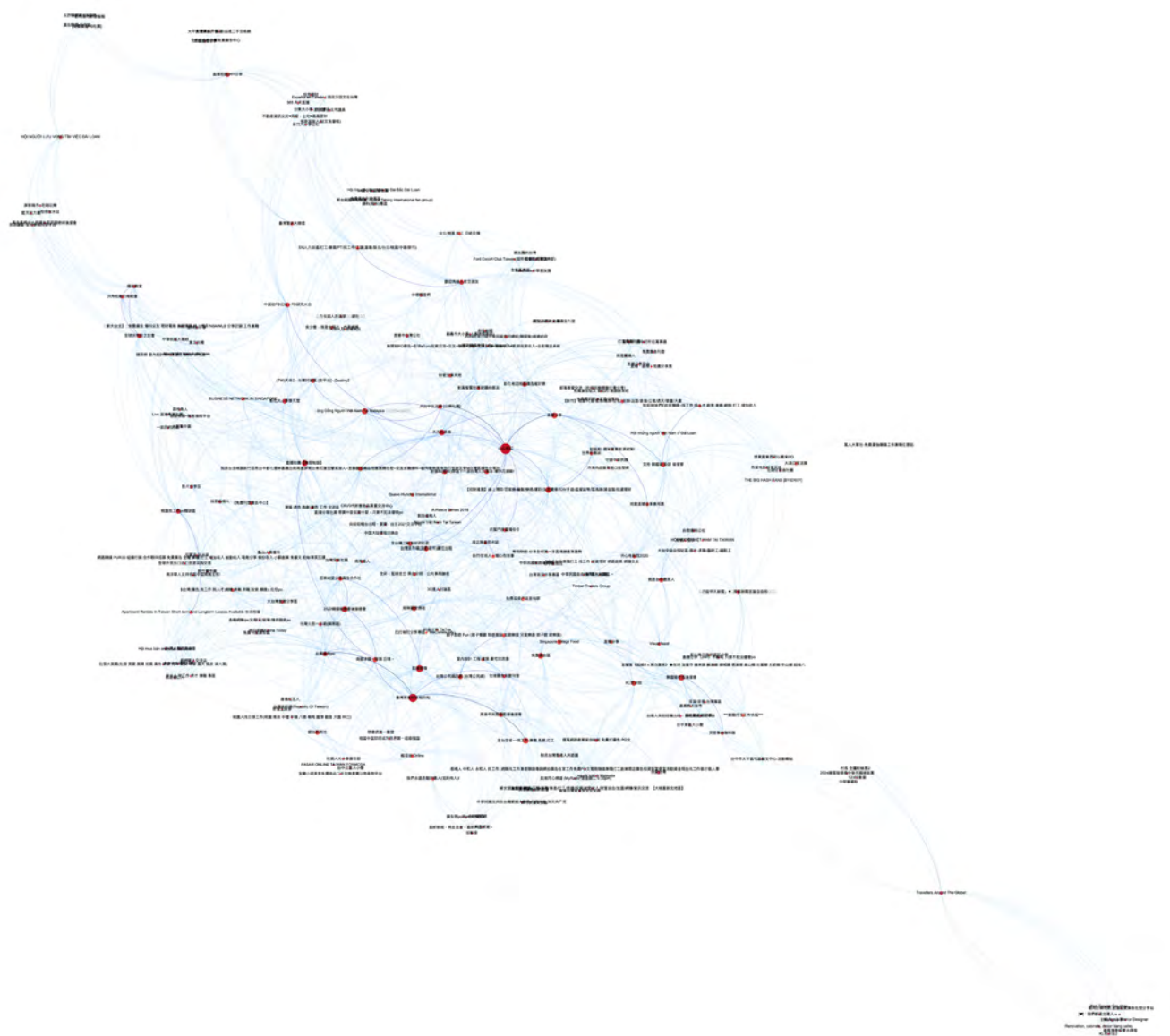


Figure 8: Social network maps of sample hashtags: “#Devote your body to Taiwan values” and “#3+11 and Medigen.” There are two items of importance here: First, the network centers decentralized. Second, information was spread in a way that did not create an echo chamber, as it was instead distributed to multiple diverse groups.

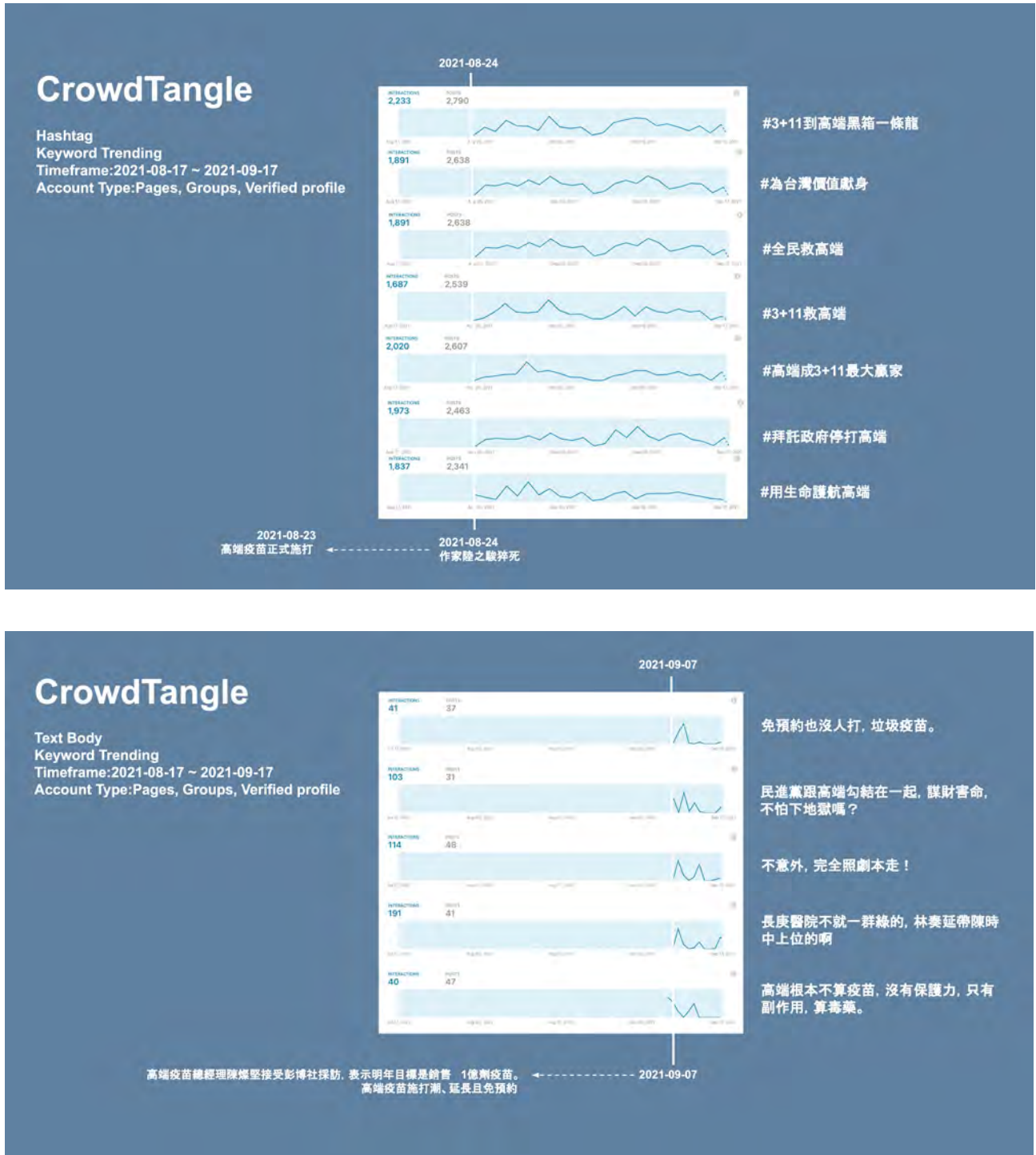


Figure 9: The sudden rise in sharing and identical wording on August 24 and September 7.



The impact of this attack on Medigen was significant. The episode's timing is perfect, and the “screenshot of a screenshot” method makes the rumor look credible. These pages shared regular articles from Taiwan’s media only when there was no attack, which established credibility. The hashtags make the messages easy to share, and the hashtags speak to the initial attack in May and China’s official media statement in July. The FanPages were quiet for several months before the attack, which means that the attackers were patient and latent. Numerous fake accounts represent the stealth part of these efforts,

and since the attack on Medigen lasted for four weeks, it was somewhat long-term. Lastly, most of the attacks were presented in apolitical groups, which means that vulnerable citizens were exposed. These accounts also shared articles to the same groups every 3-4 days, ensuring that these members read them through the algorithm.

	Initial Attack in May	Chinese Official Media Statement in July	The Attack on Medigen in August and September
Timing	V		V
Credibility	V		V
Availability for use	V		VV
Consistency		V	VV
Latency	V		V
Stealth	V		V
Duration	V		VV
Vulnerability of target individuals	V		V

Table 1: “V” indicates the characteristics observed. Two “V”s indicate the characteristics were more apparent than others.

Two questions remain at this point: Why did an attack happen in September, not July? Why were accounts in Southeast Asia involved? A possible explanation is that the attacks on the CDC and Medigen were not produced by China but outsourced to companies in Southeast Asia. This indicates the presence of the hypothesized money flow CIO—that China is outsourcing companies to disseminate specific propaganda, and the task of these companies is to create chaos regarding public perception of vaccines. The money flow CIO, although consistent, does not speak to other events that are not included in the contract. For example, the most significant event in October was the recall election of Chen Po-wei, who is known for his anti-China positions. China wanted Chen to be recalled, so China's official media, TikTok, and Weibo were flooded with articles against Chen. The FanPages were either still posting articles with hashtags attacking the Medigen vaccine or remained dormant.

Although the attacks against Medigen were aligned with China's previous official media's focus, the division of labor is clear through analysis. Compared to the Wilson Edward or the Fort Detrick case, the attack in September was not officially linked to China's media and was hard to trace and debunk. The Wilson Edward and Fort Detrick case was cited and amplified by China's media, creating a backfire internationally. Although the international attack involved a private hacker company and state-owned enterprises, they still took orders from the Chinese Communist Party (CCP) since they were officially contracted, and most companies have an internal CCP branch. On the other hand, the Southeast Asia company may not understand the targeted country's actual flow of public opinion, and overseas operators share articles automatically. A detailed comparison of different attacks is provided below.

The only significant attack in September was the Medigen attack. A possible explanation is that August and September were when China was preparing for the Biden-Xi talk, and China was under public pressure given the China Evergrande Group case,<sup>28</sup> which led to the 2021 financial crisis. When the international situation created a rest period and China had its crisis, any direct attack from China aimed at Taiwan would not seem wise. However, outsourced CIOs would not be affected by the scenario, which contributed to the aforementioned Medigen case.

Interestingly, the Medigen attack might be predicted by YouTube channels. In August, while Facebook accounts were dormant, there was a sudden spike regarding the discussion of Medigen on YouTube channels this study collected, which talked about a possible failed trial of Medigen. Right after August 24, these channels stopped discussing Medigen and moved to a discussion of Ya-Chung Chang, a candidate running for KMT president. After the debate about Medigen on YouTube, these FanPage accounts took over the task. These eight channels were influential since they reached 30 million views by uploading more than 2000 videos.<sup>29</sup>

We can see those conspiracy theories were initiated in May and June on all platforms. In July, China's official media amplified the narrative, later focusing on international events. YouTube channels took over to lay out conspiracy details in August. In turn, Facebook Pages and Facebook accounts accomplished their own task with fake news in September. These behaviors were not organic—if one cares about vaccines or Medigen, one keeps talking about it, not choosing to suddenly stop. The division of labor among those actors, shown below, makes it challenging to understand if there is no holistic view.

28 Stevenson, Alexandra, and Cao Li. "What to know about China Evergrande, the Troubled Property Giant." *New York Times*. 9 December 2019. <https://www.nytimes.com/article/evergrande-debt-crisis.html>

29 Most channels started to upload videos starting in February 2020 and stated that they were based in China or Hong Kong. Although using traditional Chinese, most of them contain many errors from the conversion of simplified Chinese to traditional Chinese. They all uploaded three videos per day at exactly the same time (11am, 3pm, and 7pm) and used an AI-generated voice with a person's mouth covered by a microphone. All channels were deleted by YouTube in late October. A detailed analysis from Austin Wang can be found at the following link: <https://voicetank.org/youtube%E4%B8%AD%E5%9C%8B%E5%81%87%E4%B8%BB%E6%92%AD%E9%A0%BB%E9%81%93%E8%A2%AB%E6%8F%AD%E9%9C%B2%E5%BE%8C%E4%B8%8B%E5%A0%B4%E5%A6%82%E4%BD%95/>

Case	Medigen	Fort Detrick	Wilson Edward
Organizer	Private companies and local collaborators	Publicity Department of the Central Committee of the CCP and spamouflage	Publicity Department of the Central Committee of the CCP, private companies, and state-owned companies
Target	Taiwan citizens	International audience and the Chinese diaspora (never discuss Taiwan)	International audience
Platform	Website Facebook YouTube	Twitter Facebook YouTube WeChat	Chinese official media Facebook Twitter
Forms of CIO	Money flow	Information flow + money flow	Information flow
Features	Disseminating screenshots of websites; parallels to YouTube channels	Fake persona to attract followers, transferring from irrelevant channels/FanPages	Directly from the Chinese government
Impacts	Hard to discern, hard to debunk, readers are vulnerable	Amplified by the official media, which makes the rumors "public"	Coming directly from official media, which makes the rumors "public"

Table 2: Comparison between the three disinformation campaigns.

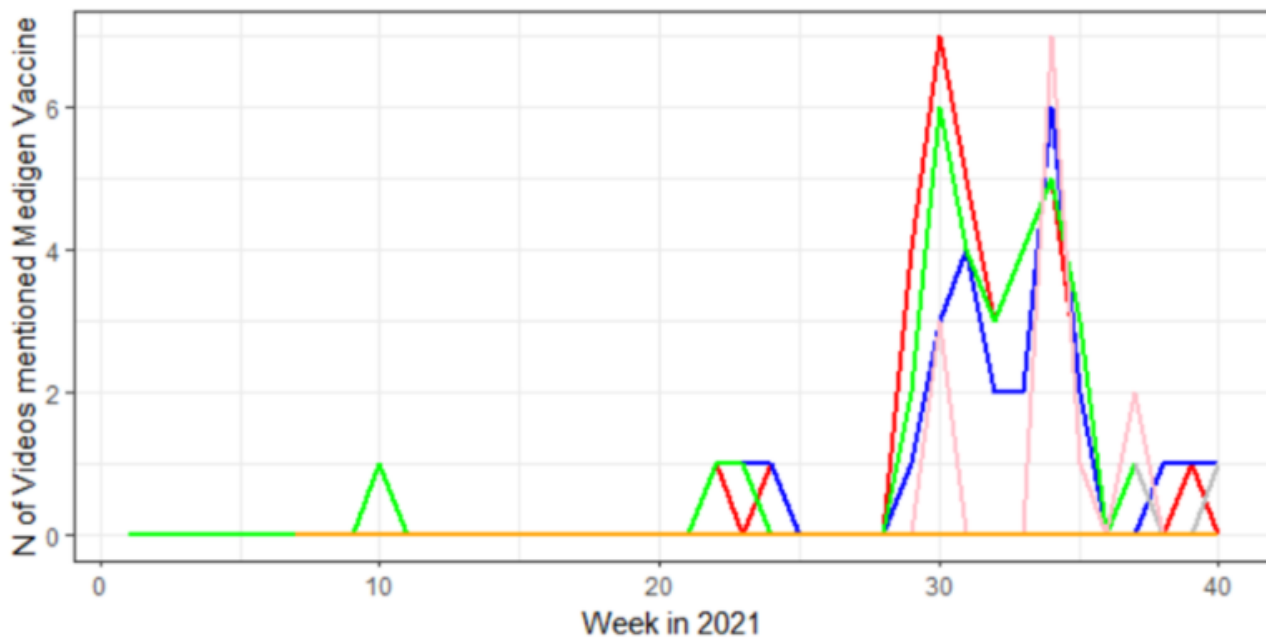


Figure 10: Figure provided by Austin Wang, indicating how those YouTube channels suddenly stopped discussing Medigen after August 24th.

	China's official media	YouTube channels	Facebook accounts
Conspiracy: the outbreak was due to the rejection of the China-made vaccine (May and June)	V	V	V
Conspiracy: letting the flight crew enter (July)	V	Quiet	Quiet
Conspiracy: Medigen killed subjects during the trial (August)	Quiet	V	Quiet
Conspiracy: Medigen injection caused severe harm (September and October)	Quiet	Quiet	V
Conspiracy: The CDC commander did not focus on COVID-19 (November and December)	V	Removed	V

Table 3: "V" indicates participation, "quiet" indicates no participation, and "removed" indicates that the related content was removed from the platform.

## November to December: An Integrated Attack

Most of the 10 Facebook Pages ceased to have updates in November. Although 4 of the additional 12 Pages still exist, their posts receive far fewer shares than before. Since Google has also removed the YouTube channels, the only botnet sharing activities in early November were of the CDC commander Chen being criticized for not wearing a face mask and singing with friends during the pandemic. A video was released to make this rumor look authentic, but the footage was shot in 2020, when there were no local COVID-19 cases in Taiwan. The false information provided and the video were indeed disinformation aiming to discredit the CDC. Nevertheless, this attack was not started from the bot network this study specifies. It was from one famous Weibo account and further amplified by China's official media, and later by the bot network this study observed before the rumor was quickly figured out and debunked on the same date (November 10).

Although it was swiftly debunked, the actors did not stop: on November 11, the *Global Times* and *Strait Today* went on to share two more videos of Commander Chen. The FanPages first used the screenshot of a screenshot technique to post a meme of Chen with the subtitle "Singing, dining, smoking without facemasks." Then the botnet started to share this post to 313 groups. Each day, they shared content around ten times, using various hashtags, and the attack behavior continued until early December. Interestingly, their behavior stopped right before the Summit for Democracy hosted by the Biden administration, which started on December 9.

The hashtags they used were also different from those used in September. Since this instance of sharing lasted for a month, they used hashtags that spoke to hot topics unrelated to the Chen event (such as hashtags for baseball games). They also used everyday, specific hashtags such as #facemask #tokyo, #Olympics, #AZ, #COVID, etc. While sharing, they

also used Simple sentences to stress their point, such as "only a government official could do that," "no apology," and "corruption." However, there were also hashtags such as "EU" and "Denmark" that indicate the person behind the botnet did not understand the public's opinion precisely or was reluctant to do so. This fits this study's hypothesis that these attacks were outsourced.

Although the hashtags were randomly used, there is still a pattern.<sup>30</sup> Apparently, those hashtags were active before August, but they came back again in the November-December attack; on the other hand, the Medigen attack hashtags were only engaged in September and October, which means that the attackers were likely switching hashtags to "categorize" their attacks on the back end. With the hashtags, the reach of the associated posts was higher than that of the posts from August. Below is a representation of the social network of the top 8 hashtags as analyzed through the application of different thresholds. The centers of disinformation were still decentralized and hard to trace; many more groups were involved compared to previous attacks, and apolitical groups—such as renting, auction, and live streaming groups—were highly involved.

The integrated attack in November, judging from the new Weibo players and the role of China's media, looks like a final attack that might have been planned in May 2021. The only reason YouTube channels were absent was that those channels had been removed. Since the latency period of this attack was long, lasting for six months, and reaching hundreds of groups, it was a comprehensive and harmful form of CIO. However, since the outsourced attack was task-oriented, the episode never speaks to an event like the referendum; instead, it relates to international events like the Summit for Democracy.

Almost all attacks stopped in early December,

30 There are more than 20 hashtags used during this period, and since many of them are apolitical hashtags, this study uses related hashtags that discuss the vaccine or conspiracy theories to compare them to the hashtags used in August and September.



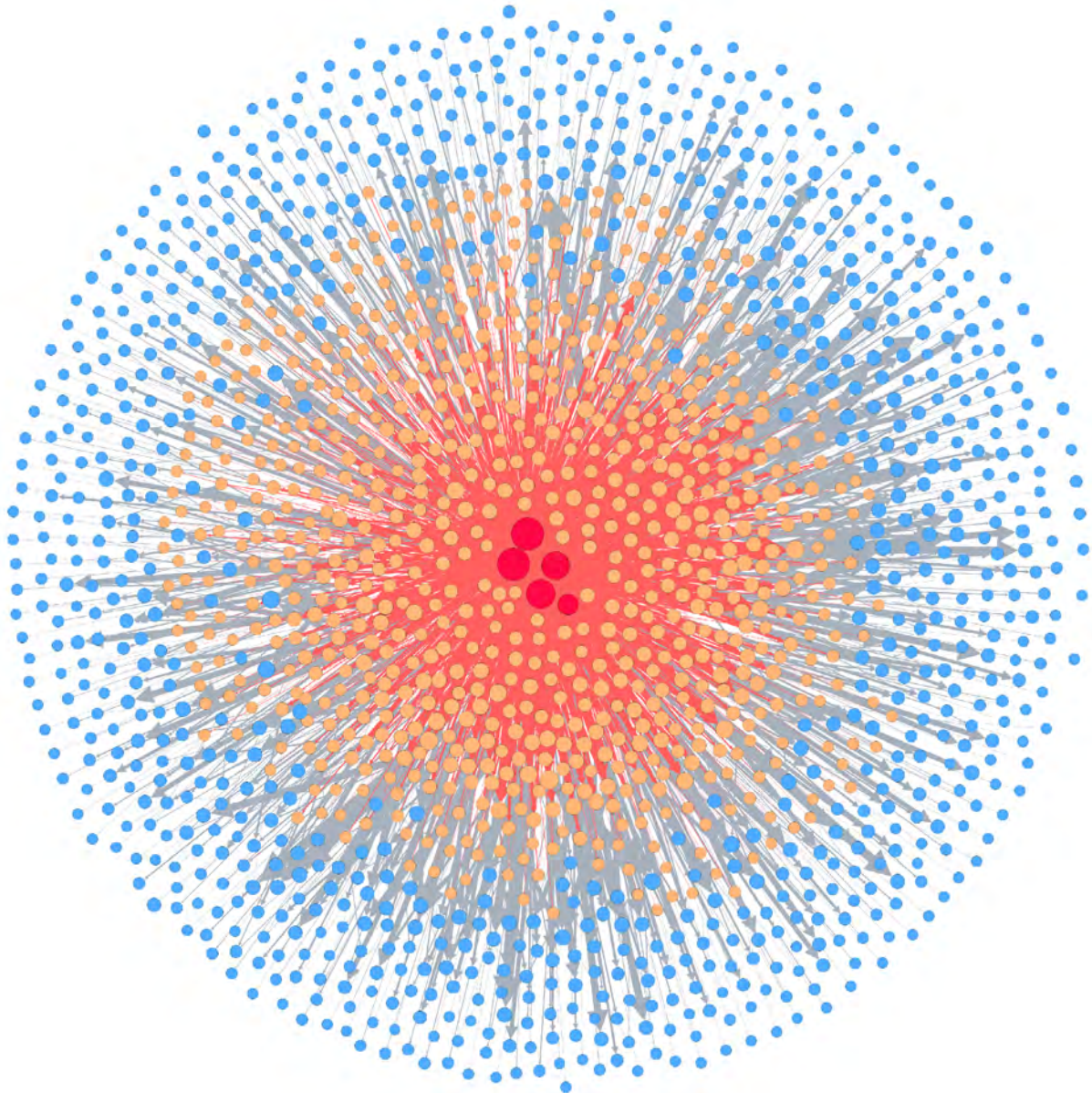


Figure 12: The red dots represent the 21 FanPages this study collected, while the yellow dots represent the 772 fake accounts. The decentralization of posts to Facebook Groups (by using Fruchterman-Reingold in Gephi) could be easily observed in this graph by the blue dots. The number of shares from May to December was 19,336, and the potential reach to the groups amounts to 19,978,840. This scenario is just ONE topic (vaccine) this study observed.

## Conclusion

In 2022, the behavior pattern remains seemingly benign, and unrelated social media pages remain dormant until coordinated sharing activity occurs. For example, many posts that align with local Taiwanese news had limited reach, but the Winter Olympics event (in which a player from Taiwan accidentally wore a China uniform) and the meme of Pompeo's visit to Taiwan suddenly were shared through this network. Events in Taiwan might not always be the trigger of CIOs. Disinformation studies that focus on China often analyze China's official media outlets. However, this study shows that "money flow" CIOs—the outsourcing of information operations—might play a significant role in disseminating Chinese propaganda.

The content pushed by fake accounts analyzed in this study did not promote pro-China messages; instead they aimed to create chaos, distrust, and division within Taiwan's society. While the Publicity Department openly used its official media outlets to attract attention and TikTok used soft power to tell stories about China, other content farm websites,

FanPages, fake accounts, and YouTube channels were stealthy, often experiencing periods of latency before suddenly collaborating with each other to generate conspiracy theories attractive to general public. Different from the "positive" tone on TikTok and "aggressive" tone used by the Publicity Department, the outsourcing accounts and channels used a familiar tone with which they pretended to be local citizens who cared about politics, creating further division within the targeted society.

Taiwan's government and civil society are experienced in facing the Publicity Department's agenda and TikTok-like fake news. However, the conspiracy theories generated by money flow CIOs are a new challenge; the stealth and persistence of CIO attacks are hard to debunk, and it may gradually affect certain groups of people, particularly the most vulnerable to politically aimed information manipulation. This is a trend that other governments and civil society organizations in the region should also be aware of and be prepared to monitor and address.



## Appendix A: Events and CIOs Compared

	International Events	Domestic Events (China)	Domestic Events (Taiwan)	CIO Targeted Taiwan	Global CIO
May-June	A global call for investigation of the origin of COVID-19; G7's stress on human rights issues in Xinjiang and Hong Kong	Avoid discussion about 「the June Fourth Incident」 ; Anti-foreign sanction law passed;Preparation for the 7/1 event	The outbreak of COVID 19; Vaccine issue; The U.S. senator visit	Conspiracies: Taiwan government cover-up of COVID-19 cases	Conspiracies: the origin of COVID-19
July-August	The U.S. sanction on Chinese companies; Tokyo Olympics; US-China meeting in Tianjin	Beidaihe meeting	COVID-19 cases	3 + 11 policy	Wilson Edward Fort Detrick
September-October		Preparation for Biden-Xi talk; China Evergrande Group case	Recall election; Injection of Medigen	Medigen COVID-19 Vaccine	None
November-December	Biden-Xi talk; Summit for Democracy	Biden-Xi talk, Third-ever historical resolution	Europe and the U.S lawmakers visit Taiwan; Referendum	Commander Chen's case	China is the real democracy

## Appendix B: Methodology

The Facebook data used in this study was downloaded via CrowdTangle, the official platform-supported dataset that includes all posts for FanPages, public groups, and verified profiles. While looking into the behavior of China’s official media outlets, this study also used Weibo data, downloaded through a service provided by Doublethink Lab. This archiving service is reliable since the web crawler was designed using the search feature on Weibo; if the posts are searchable (which means that the platform allows the posts to be seen), the dataset includes them. The dataset is updated daily, so the deleted posts will not be missing. All datasets from Facebook and Doublethink Lab include the posts themselves and all likes, shares, and other metadata. The videos were also transcribed by Yating Service—a transcribing service provided by Taiwan AI Labs, a research organization specializing in AI technology.

This study has archived a dataset of vaccine-related posts from May 15, 2021 (the outbreak date of COVID-19 cases in Taiwan) to June 15, 2021 via CrowdTangle, a service provided by Meta. Within the month of analysis, 485,934 posts were downloaded using the keyword “vaccine” in Mandarin Chinese. The dataset shows an overview of vaccine-related posts, which is significant for this research since vaccine stock was a hot topic in Taiwan in May and June, and Facebook has been the top social media platform in Taiwan (94.2% of Taiwan residents).<sup>31</sup> A qualitative analysis of all posts is possible but time-consuming; thus, this paper utilizes AI to determine the hot topics included. With data cleaning, topic modeling, and intruder analysis, several topics are presented to highlight the information circulated

during the pandemic. This provides an overview of what disinformation looks like and how we may attribute it to any given actor.

Tracing abnormal posts from May and June, we spotted several FanPages and YouTube channels and started to archive them starting on May 12. More than half of the FanPages and all YouTube channels were removed by the platform in 2022. The term “abnormal” means that: a) the source of information is unknown or from foreign countries, b) the transmitter (a platform such as FanPages or a website) is latent, and c) the behavior of circulating messages is bot-like. This abnormality test was first developed by the author in the report, *Deafening Whispers*, the study that investigated CIOs during the 2020 presidential election. In the end, 10 FanPages and 8 YouTube channels that fit the criteria were archived, and with the cluster analysis conducted by this study, 11 more FanPages were also archived. The FanPages and channels are analyzed by this study in the context of political events in China and Taiwan. In addition, this paper will also assess the CIO attack in Europe in July—the Wilson Edward event, which has already been investigated by Facebook.

The referendum in December 2021 drew great attention in Taiwan. Thus, an analysis of how abnormal FanPages and YouTube channels work provides us with knowledge about the mechanisms of the CIO. Using the dataset of Facebook posts in November and December, this study will provide an analysis of how CIOs may work and concludes with several suggestions.

31 [https://report.twinc.tw/2020/assets/download/TWNIC\\_TaiwanInternetReport\\_2020\\_CH.pdf](https://report.twinc.tw/2020/assets/download/TWNIC_TaiwanInternetReport_2020_CH.pdf)

## The National Democratic Institute

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