



COVID-19 Vaccine: Global supply chain security concerns

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Executive summary

- This report outlines several domains in which external risks are most likely to interfere with COVID-19 vaccine supply chains. These risks can be classified into three broad categories: **logistics and storage, distribution and access, and crime.**
- Issues relating to logistics and storage, such as the need to guarantee cold supply chains and cold storage, are more likely to affect countries in the Global South compared to more economically developed regions like North America and Europe.
- The distribution of vaccines may be impaired by various factors. High prices could restrict access to lower-income groups. In the Global South, vaccine rollouts may be encumbered by a lack of properly trained medical personnel or adequate medical facilities.
- Across all regions, declining confidence and mistrust against vaccines could deter some parts of the population from being vaccinated, with Europe having the highest share of vaccine doubters.
- Finally, the risk of criminal groups interfering with the roll out of vaccines affects all regions. Misappropriation of resources through physical threats, production of counterfeit, or corruption is more likely to occur in less economically developed countries with high levels of inequality and lower degrees of institutionalized rule of law, such as Latin America, Asia Pacific and the Middle East. Cyber attacks on supply chains and acts of espionage are also becoming more frequent for vaccine producers.



Introduction

With the recognition of COVID-19 as a global pandemic in March 2020, the world was cast into a state of emergency. As at 24 February 2021, 112 million cases have been registered worldwide, and over 2.48 million deaths have been attributed to the virus¹. Disruption of the global economic system resulting from measures aiming to inhibit the spread of the virus have been grave, leading to a severe global recession with virtually every country being affected in some way. Notwithstanding previous loomy predictions that saw a slow recovery lasting years, global growth in the second half of 2020 has been stronger than expected. Recent projections see global GDP returning to pre-pandemic levels in 2021, much earlier than before thought.² Mainly responsible for this positive reversal is the discovery of vaccines, which have begun to be distributed in some parts of the world.

Yet, in all likelihood, great divergence will prevail between regions and countries in their ability for economic recovery. The degree of success with which governments implement their vaccination schemes will determine to a very large extent how quickly and effectively national economies will recover. This report describes the regional risks that might arise within the global supply chains. The regions covered include Latin America, North America, Asia Pacific, Europe and the Middle East respectively.

Latin America

Latin America has been hit hard by the COVID-19 pandemic. Towards the end of 2020, the region accounted for almost a third of global deaths, despite being home to only 8.4% of the world's population.³ Since then, that number has fallen slightly to 27.8%, but remains very high in relation to the population size.⁴ Of all vaccinations administered so far, South America has received only 4.6%, making it second to last just ahead of Africa (1%) in the global vaccination race. Asia is currently taking the lead, having administered 39% of all globally distributed doses, followed by North America (30.8%) and Europe (24.8%). This is despite the fact that South America's cumulative number of cases is nearing three times the global average, only surpassed by Europe and North America.⁵

Six South American countries have begun vaccinating (Chile, Brazil, Argentina, Peru, Bolivia, Ecuador) while most Central American nations are still waiting to receive their first shipment, with the exceptions of Costa Rica and Panama. Mexico, which together with Brazil has one of the highest death tolls in the world, was the first Latin American country to begin vaccinating in

¹ <https://covid19.who.int/>

² <https://www.weforum.org/agenda/2021/02/a-race-between-vaccines-and-the-virus-as-recoveries-diverge>

³ <https://www.atlanticcouncil.org/in-depth-research-reports/issue-brief/moving-beyond-covid-19-vaccines-and-other-policy-considerations-in-latin-america/>

⁴ https://covid19.who.int/?gclid=CjwKCAiAmrOBBhA0EiwArn3mfOabtkk95dTSu2fBVHBfc5W0woumS6-H4vttxBfc1CtOllxH5wg9fxoCtxkQAvD_BwE

⁵ <https://ourworldindata.org/covid-vaccinations>



December 2020, followed by Costa Rica and Chile.⁶ Forecasts project that widespread availability may be delayed until the end of this year, next year, or even as much as 2023.⁷ Despite being in dire need, Latin America is lagging behind the rest of the world in the process of deploying COVID-19 vaccines. This process is susceptible to various risks. The section below highlights how some factors, relating to logistics and distribution, could jeopardize the rapid, comprehensive and correct rollout of vaccines to the population.

Logistics

As of now, vaccine production is limited to a few European and Asian countries and the United States, but in order to meet demands, other countries will begin to produce locally as well. Cuba is currently testing its own self-developed vaccine, and Brazil, Mexico and Argentina have entered into an agreement with AstraZeneca to locally produce their vaccine in Argentina and Mexico.⁸ Be it the dispatch of locally produced or imported doses, one of the biggest challenges will be ensuring logistics can manage the high volume.

Most vaccines require cold supply chains and temperature-adjusted storage facilities, as they have to be stored at certain below-zero temperatures. Forerunner Mexico has ordered the batches produced by Pfizer-BioNTech, which requires storage at -70°C. While storing the substance reliably at the right temperature conditions will be a challenge in itself, Mexico ordered more vaccines from other producers, all of which will need to be stored at different temperatures.⁹ This, in combination with differing dilution and dosage regulations, complicates matters further.

Another issue will be the coordination between federal states and across different government agencies. Some of the largest Latin American countries like Argentina, Mexico and Brazil, are organized in federal state structures, with governors exercising relative autonomy in the implementation of COVID-19 measures, making coordination more difficult.¹⁰ In one recent case, a cargo of seven million high-end COVID-19 tests was discovered unused at Sao Paulo airport with most of them near the expiration date, while Maranhao state governor Carlos Lula had been pleading with the health ministry to send more tests.¹¹ In addition, many at-risk populations, such as the Amazonian indigenous communities that have suffered severely from the virus, live in areas that are difficult to access and where the reach of the state may not be as extensive as elsewhere.

⁶ <https://www.bbc.com/news/world-latin-america-55440940>

⁷ <https://www.thedialogue.org/analysis/how-well-are-covid-vaccinations-going-in-latin-america/>

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<https://www.mabxience.com/mabxience-enters-into-an-agreement-with-astrazeneca-to-produce-covid-19-vaccine/>

⁹ <https://www.as-coa.org/articles/timeline-latin-americas-race-covid-19-vaccine>

¹⁰

<https://scholarlycommons.law.cwsl.edu/cgi/viewcontent.cgi?article=1270&context=cwilj#:~:text=Four%20Latin%20American%20countries%20have,respective%20polities%20as%20federal%20states.>

¹¹

<https://www.bloomberg.com/news/articles/2020-12-08/covid-blunders-in-latin-america-sow-fears-of-another-on-vaccines>



Distribution

Many Latin American countries have expanded their national immunization systems in the last decade, as is the case with Brazil's national program that can vaccinate up to 300 million people per year.¹² But even if the Americas are among the regions with the highest vaccine coverage levels globally,¹³ infrastructures have failed occasionally even before the pandemic and cannot cope with an unprecedented situation of this kind without major strain.¹⁴ Low health expenditure in the region (about one quarter of OECD-levels) coupled with lower capacities to effectively provide good quality medical services to the most vulnerable groups mean that, in practice, Latin American health officials will have to improvise and resort to makeshift solutions.¹⁵ This could entail applying vaccines in churches, stadiums or similar venues, which they have done before in the past.¹⁶

High corruption levels impede compliance with the envisioned immunization scheme, whereby at-risk groups receive priority treatment. Some actors might try to divert resources either indirectly, by trying to influence the selection of priority groups, or directly, by corrupting the system. In Colombia, for instance, government investigations uncovered 460 cases of contracts issued by public entities to the private sector related to pandemic measures that are suspected of corruption.¹⁷ In one undesirable scenario, which could become more common in the future, outright robberies might increase, with criminal groups raiding deliveries, as happened in mid-2020 in Mexico, where hijackers stole a truck's shipment of the increasingly scarce flu vaccine.¹⁸

Finally, lack of confidence in the vaccine among some parts of the population might result in people foregoing vaccination on their own initiative. Brazilian President Jair Bolsonaro, who repeatedly downplayed the risk of the virus, vowed not to get a vaccine, which might set an example that some of his supporters might follow.¹⁹ But, in comparison with Europe, the share of vaccine skeptics in Central (4%) and South America (9%) is relatively small, notwithstanding some outliers like Uruguay (16%).²⁰

¹² https://www.sabin.org/sites/sabin.org/files/dominguesteixeiracarvalho_v2.pdf

¹³ <https://www.paho.org/en/topics/immunization>.

¹⁴ <https://www.thedialogue.org/analysis/how-well-are-covid-vaccinations-going-in-latin-america/>

¹⁵

<https://www.worldbank.org/en/news/press-release/2020/06/16/latin-america-caribbean-health-emergency-covid-19>

¹⁶

<https://www.bloomberg.com/news/articles/2020-12-08/covid-blunders-in-latin-america-sow-fears-of-another-on-vaccines>

¹⁷

<https://www.eltiempo.com/colombia/otras-ciudades/corrupcion-con-contratos-para-brindar-ayuda-en-la-lucha-contra-covid-19-cronica-de-juan-gossain-549759>

¹⁸

<https://www.bloomberg.com/news/articles/2020-12-08/covid-blunders-in-latin-america-sow-fears-of-another-on-vaccines>

¹⁹ <https://www.reuters.com/article/us-health-coronavirus-brazil-idUSKBN29X2LB>

²⁰ <https://ourworldindata.org/vaccination>



North America

The United States²¹ and Canada²² have authorized two COVID-19 vaccines for emergency use: the Pfizer-BioNTech vaccine and the Moderna vaccine. Mexico²³, meanwhile, has already approved 4 different vaccines, including the Pfizer and AstraZeneca-Oxford vaccines. More vaccine approvals are likely coming in the United States and Canada following the World Health Organization's approval of the AstraZeneca vaccine.²⁴ However, AstraZeneca is expected to wait several more weeks for its US trial data before applying for Emergency Use Authorization with the US Food and Drug Administration (FDA).²⁵ Currently, the United States has the most²⁶ recorded cases in the world, so securing the vaccine supply chain in North America would be a top priority.

Cybersecurity

One of the major security concerns for the COVID-19 vaccine supply chain is cybersecurity. Russia, China, Iran, and North Korea, may use cyberattacks against the United States with the aim of disrupting the vaccine distribution process. Additionally, there are reports of hackers targeting companies that may be lacking in security but are now essential to vaccine distribution.²⁷ Nonetheless, the big pharmaceutical companies which are expected to have more advanced security measures have also reported cyberattacks. Recently, North Korea attempted to hack American company Pfizer to steal vaccine technology.²⁸ It is not yet clear if any data was stolen, however, the incident is indicative of a wider threat to cybersecurity and theft of intellectual property.

IP theft

Intellectual property theft is a growing concern worldwide. Within North America, the United States has been especially wary of China in the wake of the coronavirus pandemic.²⁹ During the

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<https://www.fda.gov/emergency-preparedness-and-response/coronavirus-disease-2019-covid-19/covid-19-vaccines>

²²

<https://www.canada.ca/en/health-canada/services/drugs-health-products/covid19-industry/drugs-vaccines-treatments/authorization/list-drugs.html>

²³ <https://covid19.trackvaccines.org/country/mexico/>

²⁴

<https://www.who.int/news/item/15-02-2021-who-lists-two-additional-covid-19-vaccines-for-emergency-use-and-covax-roll-out>

²⁵

<https://www.reuters.com/article/us-health-coronavirus-astrazeneca-usa/astrazeneca-expects-u-s-trial-results-in-next-4-6-weeks-research-chief-says-idUSKBN2A51U3>

²⁶ <https://coronavirus.jhu.edu/map.html>

²⁷

<https://www.washingtonpost.com/politics/2021/01/26/cybersecurity-202-vaccine-distribution-unleashes-new-cybersecurity-risks/>

²⁸ <https://www.bbc.com/news/technology-56084575>

²⁹ <https://www.voanews.com/usa/us-intensifies-crackdown-china-intellectual-property-theft>



early days of the pandemic, the United States accused China³⁰ of intellectual property theft, and both the United States and Canada accused Russia³¹ of coronavirus research theft. Although it is unclear what information was stolen, any theft or attempt of it is concerning. Beyond intellectual property theft, typically achieved during cyber attacks, there is a real threat of physical theft of the vaccine. There have been some reports in the United States of vaccines being stolen. At the beginning of February 2021, in Florida, a car containing 30 vials of the COVID-19 vaccine was stolen and has yet to be recovered.³² A few weeks prior, a fire captain was arrested for allegedly stealing doses of the Moderna vaccine.³³ Both intellectual property theft and physical theft of the vaccine can pose a risk to the vaccine supply chain.

Espionage

Conjointly with cyberattacks and theft, there is the threat of espionage. Reports indicate every major country is involved in espionage when it comes to COVID-19 research and vaccinations.³⁴ The United States and Canada have accused China, Russia, and Iran of espionage. Conversely, the United States, Canada and international organizations such as the North Atlantic Treaty Organization (NATO) are involved in efforts to counter those threats.³⁵ US security agencies have indicated universities and companies have been targeted and are attempting to protect them from espionage by issuing warnings, investigating alleged attacks, and charging suspected spies.³⁶ Several US companies including Gilead Sciences³⁷, Moderna³⁸, Johnson and Johnson, and Novavax³⁹ have reportedly been targeted by Iran, China and North Korea. However, it is not clear whether spies gained significant information from these companies.⁴⁰

³⁰

https://www.washingtonpost.com/national-security/us-china-covid-19-vaccine-research/2020/07/21/8b6ca0c0-cb58-11ea-91f1-28aca4d833a0_story.html

³¹

https://www.washingtonpost.com/politics/russia-is-hacking-virus-vaccine-trials-us-uk-canada-say/2020/07/16/dc086824-c7cb-11ea-a825-8722004e4150_story.html

³² <https://abcnews.go.com/US/car-stolen-covid-19-vaccines-inside-police/story?id=75681934>

³³ <https://www.cnn.com/2021/01/28/us/anthony-damiano-florida-covid-vaccine-theft-fire-captain/index.html>

³⁴ <https://www.nytimes.com/2020/09/05/us/politics/coronavirus-vaccine-espionage.html>

³⁵ Ibid

³⁶

<https://www.fbi.gov/news/pressrel/press-releases/fbi-deputy-director-david-bowdichs-remarks-at-press-conference-announcing-charges-against-chinese-hackers>

³⁷

<https://www.reuters.com/article/us-healthcare-coronavirus-gilead-iran-ex/exclusive-iran-linked-hackers-recently-targeted-coronavirus-drugmaker-gilead-sources-idUSKBN22K2EV>

³⁸

<https://www.reuters.com/article/us-health-coronavirus-moderna-cyber-excl/exclusive-china-backed-hackers-targeted-covid-19-vaccine-firm-moderna-idUSKCN24V38M>

³⁹

<https://www.reuters.com/article/us-health-coronavirus-north-korea-cyber/north-korea-linked-hackers-targeted-jj-novavax-in-hunt-for-covid-research-idUSKBN28C1UE>

⁴⁰ <https://www.nytimes.com/2020/09/05/us/politics/coronavirus-vaccine-espionage.html>



The COVID-19 vaccine supply chain in North America faces a variety of security threats. The most notable threats are cyber attacks, theft, and espionage. The United States has already faced hacking by China, Russia, Iran, and North Korea. Although the impact of these attacks has been minimal so far, there is potential for the attacks to be much more damaging to the vaccine supply chain.



Asia Pacific

Like most other countries, the Asia Pacific region has been hit hard by the pandemic. UNESCO has warned of a large variety of social and economic consequences to the region, posing significant long term consequences for the region and its inhabitants.⁴¹ For every country in the region, there are three significant security concerns that may threaten their vaccine supply chains: crime, access and distribution. However, the region also exhibits remarkable diversity, with a large number of countries across the economic spectrum that necessitates more nuanced analysis. As such, this section will proceed to analyse the challenges posed to the supply chain in the region between countries that are affluent enough to purchase the vaccine, countries that are producing the vaccine, and countries that do not have sufficient resources to do either.

Access and quality

Inadequate access to vaccines can hinder the ability of supply chains to provide dosage to the population, while increasing its vulnerability to external shocks and events. Vaccine producers such as China and India are able to manufacture their own COVID-19 vaccines, making them key levers in the supply chain that can provide both for themselves and other countries⁴². However, the immensely accelerated approval process has led to concerns about vaccine safety⁴³, which erodes trust and acceptance of the vaccine rollout process.

For the rest of the countries who do not have the capability to produce vaccines, the division lies between those who have the economic capability to obtain vaccines for all of their population and those who do not. For more affluent purchasers, competition for limited amounts of international vaccines can lead to bidding wars and acrimony between those less able to pay⁴⁴. Other countries have to resort to alternate means to procure vaccines, such as in Pakistan where vaccines are being approved for commercial rather than government distribution⁴⁵. In many cases, these countries are heavily reliant on gifts of vaccine stocks from the vaccine producing countries, leading to suspicions of 'vaccine diplomacy' that may cause the supply chain to be tied to foreign policy concerns.⁴⁶

Organised crime and cybersecurity

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<https://en.unesco.org/inclusivepolicylab/e-teams/equitable%C2%A0recovery-covid-19/documents/social-and-economic-impact-covid-19-asia-pacific>

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https://www.business-standard.com/article/current-affairs/india-to-drive-covid-vaccine-delivery-in-asia-pacific-moody-s-analytics-121011800640_1.html

⁴³ <https://www.voanews.com/east-asia-pacific/experts-warn-chinas-emergency-use-covid-19-vaccine>

<https://www.bbc.com/news/world-asia-india-55534902>

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<https://www.cnbc.com/2020/09/14/bill-gates-next-big-question-is-how-to-distribute-coronavirus-vaccines.html>

⁴⁵ <https://www.reuters.com/article/idUSKBN2AE06V>

⁴⁶ <https://www.nytimes.com/2021/02/11/world/asia/vaccine-diplomacy-india-china.html>



INTERPOL has warned of the high risks around vaccines, which could disrupt supply chains either physically or virtually⁴⁷. Theft of vaccines has been regarded as a potential major threat due to their high value, and in many locations extra security has been taken to secure shipments of vaccines in places such as India, which have been performed under heavy police escort⁴⁸. Crime rings have also turned to producing counterfeit vaccines as a lucrative scam, resulting in large amount of resources being devoted to catching such crime.⁴⁹

However, vaccine producers and purchasers have paid less attention to cybersecurity concerns that could affect the supply chain. APAC as a region is particularly vulnerable to such threats, with high amounts of connectivity but relatively poor digital regulation and security infrastructure. Organisations in Asia are 80% more likely to be attacked by hackers than other countries⁵⁰, and vaccine distributors are unlikely to be spared, with a surge in cyber attacks against vaccine makers and hospitals in India over recent months.⁵¹ Cyber-attackers could disrupt the supply chain either by shutting down various systems associated with the vaccination process or by taking over them directly via ransomware, preventing distribution from taking place.

Distribution and storage

Finally, the fragile nature of vaccines and the paucity of infrastructure leads to security concerns in protecting vaccine supply from theft or sabotage. While more affluent countries have better security and storage facilities to ensure that vaccines are kept safe from external tampering, a lack of infrastructure in Asian countries, particularly in cold chain refrigerated storage⁵² indicates that vaccines may be sited within converted storage facilities that are less secure. This potential danger is compounded by the proliferation of conspiracy theories and misinformation in these countries, which tend to have greater issues with educational campaigns and mistrust in the government⁵³. Given the significant amount of damage that can be caused by a single person harbouring malicious intent at the delivery end of the vaccine supply chain⁵⁴, such conspiracy

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<https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-warns-of-organized-crime-threat-to-COVID-19-vaccines>

⁴⁸

<https://www.indiatoday.in/coronavirus-outbreak/story/states-enhance-security-to-prevent-theft-pilferage-misuse-of-covid-19-vaccine-1758453-2021-01-12>

⁴⁹ <https://www.bbc.com/news/world-asia-china-56080092>

⁵⁰

https://www.oliverwyman.com/content/dam/oliver-wyman/v2/publications/2017/may/Cyber_Risk_In_Asia-Pacific_The_Case_For_Greater_Transparency.pdf

⁵¹ <https://telanganatoday.com/surge-in-cyber-attacks-on-india-vaccine-makers-in-oct-nov-report>

⁵²

<https://www.gcca.org/sites/default/files/2018%20GCCA%20Cold%20Storage%20Capacity%20Report%20final.pdf>

⁵³ <https://www.ajtmh.org/view/journals/tpmd/103/2/article-p603.xml>

⁵⁴

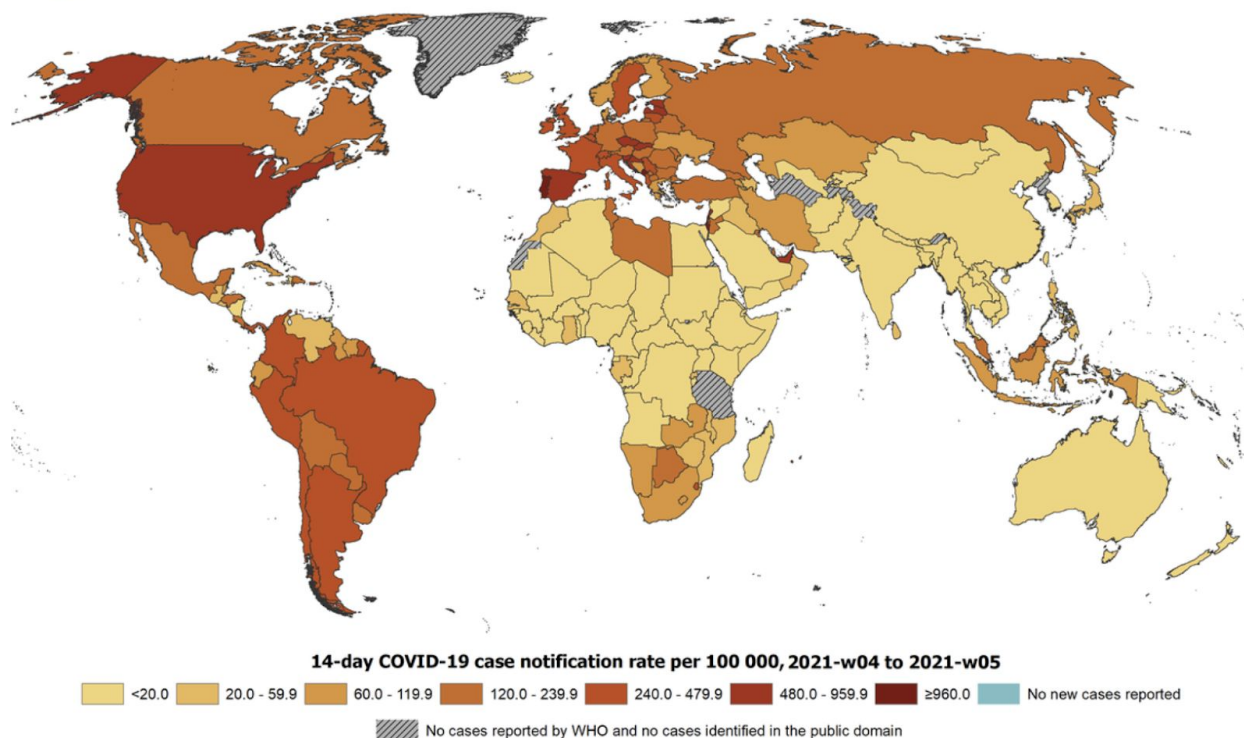
<https://www.nytimes.com/2021/01/04/us/pharmacist-accused-of-tampering-with-vaccine-was-conspiracy-theorist-police-say.html>



theories present a serious obstacle to the successful deployment of the COVID-19 vaccine in APAC.

Europe

According to the European Centre for Disease Prevention and Control, Europe has been the second most affected region by COVID-19 with a total of 36,607,500 confirmed cases at the time of the reporting.⁵⁵ COVID-19 vaccines have therefore become the most viable and optimistic alternative to counter the virus.⁵⁶ In turn, this provides opportunities for criminal organizations, foreign intelligence agencies and others to target their supply chain.



Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat. The boundaries and names shown on this map do not imply official endorsement or acceptance by the European Union. Date of production: 11/02/2021

Cyber security, espionage and sabotage

IBM's threat intelligence task force was one of the first entities to warn about the threats of cyber security in relations to COVID-19 vaccines already in early December of 2020. The concerns were mainly regarded towards the security of global organizations involved in vaccine storage and transport.⁵⁷ Their research exposed a fraudulent email scheme operating in September 2020, which was impersonating Chinese business executives in an attempt to

⁵⁵ <https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases>

⁵⁶ <https://insightcrime.org/news/analysis/false-covid-vaccines-emerge/>

⁵⁷ <https://us-cert.cisa.gov/ncas/current-activity/2020/12/03/ibm-releases-report-cyber-actors-targeting-covid-19-vaccine-supply>



“harvest credentials to gain future unauthorised access.”⁵⁸ Even though cyber threat regarding this particular activity has targeted the global international system, the most affected countries remain European such as Italy, Germany, Czech Republic and “greater Europe’s” organisations being cyber-attacked.⁵⁹ In particular hackers have been targeting the cold chain supply meaning the “organizations involved in their necessary sub-zero storage and transport”.

Furthermore, the German government has repeatedly reported espionage attempts on German vaccine manufacturers and fears for possible efforts of sabotaging the vaccination drive.⁶⁰ In parallel, other European countries that have large supplies of Pfizer vaccine are more prone to sabotaging attempts due to their -70°C storage. It becomes easier for criminals to manipulate refrigerated storage units as sustained energy is required to maintain the optimum temperature.⁶¹

Theft and counterfeit

According to International crime agency, INTERPOL, the pandemic has triggered opportunistic and predatory criminal behavior towards the global supply chain of COVID-19 vaccines specifically referencing falsification, theft and counterfeit⁶². COVID-19 vaccine theft has been reported by numerous countries in Europe. The United Kingdom’s health service, NHS, for instance, has warned its hospital infrastructure about theft involving vaccine packaging which is used to store doses and has further alerted staff towards higher attention for waste management. This ultimately enables criminal organisations to become vaccine scammers and offer counterfeit vaccines in exchange for money.⁶³ The Local Government Association, the British national membership body for local authorities, confirmed that council trading standard teams have received and are continuously receiving reports about scammers and fictitious NHS websites.

Similarly, the European Union crime agency, EUROPOL issued a warning about counterfeit COVID-19 vaccines. This might provoke people to distrust public health organizations and therefore, can ultimately lead to more desperate individuals recurring to other less safe and unregulated vaccine alternatives rather than the regulated and controlled supply chain.⁶⁴ It is hard to predict the effects of fake vaccines. Doctors have outlined some potential drawbacks;

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<https://www.cnbc.com/2020/12/03/ibm-uncovers-global-email-attack-on-covid-vaccine-supply-chain-.html>

⁵⁹<https://www.politico.eu/article/hackers-targeted-commissions-taxation-department-to-infiltrate-covid-19-vaccine-cold-chain/>

⁶⁰<https://www.dw.com/en/coronavirus-digest-germany-fears-attempts-to-sabotage-vaccination-drive-report/a-56327667>

⁶¹ <https://www.nytimes.com/2020/12/07/world/europe/covid-uk-vaccine-pfizer.html>

⁶²<https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-warns-of-organized-crime-threat-to-COVID-19-vaccines>

⁶³<https://www.hsj.co.uk/coronavirus/theft-of-vaccine-packaging-is-significant-security-risk-nhs-warns/7029339.article>

⁶⁴ <https://www.dw.com/en/officials-warn-of-fake-covid-19-vaccines/a-56123830>



often counterfeit COVID-19 vaccines can be simply ineffective in tackling the virus however, in other cases such can be harmful or even deadly.⁶⁵ Therefore, it becomes clear that ensuring the safety of the supply chain is paramount to safeguard citizens and their trust in its institutions.

⁶⁵<https://www.dtnext.in/News/TopNews/2021/01/06021941/1269949/CRISIS-UNFOLDING-Fake-vaccines-a-new-bane-of-the-pandemic.vpf>



Middle East

Plagued by political instability, vaccine supply chains in the Middle East are subject to significant security concerns. Below are outlined some of the security issues caused by overreliance on domestic capacities concerning the access, distribution and storage of the vaccine; as well as those linked to theft and cybersecurity in the region.

Storage

A key security risk the global supply chain faces is the poor quality of the storage available. This risk is extremely high in the Middle East, particularly in unstable political climates of civil wars or financial crises. In the region, Yemen, Syria and Lebanon's healthcare systems are in a state of emergency. They are unable to afford the storing equipment necessary to preserve the vaccine and lack the capacity and facilities needed to preserve the product correctly.⁶⁶ Hospitals in particular are unreliable storage units as they are often targets of war.⁶⁷

Access and Distribution

To guarantee access, vaccine provision has to be entrusted to NGOs or international governments to guarantee access. This, however, would enable governments to manipulate the distribution of healthcare as NGOs must seek approval to gain access to specific areas, or states could simply refuse to distribute the product to certain people.⁶⁸ Indeed, until recently, Israel refused to vaccinate Palestinians or provide them with aid.⁶⁹ Another example would be the current Saudi blockade against Yemen, which restricts access to medical care, food and water supplies. Moreover, the inability to guarantee access to the vaccine could lead to an overreliance on the World Health Organisation COVAX initiative. The program aims to finance vaccine distribution with donations to states unable to afford them, yet is already struggling to acquire the funds necessary.⁷⁰ If too many states depend on the program to receive vaccinations there could be a shortage of supply and increased supply chain volatility.

The distribution of vaccines would be complicated by factors such as migration and population displacement due to civil wars. Civilians may not be contactable for the administration of a second dose, and the continuous influx of refugees would lead to ever-increasing demand. For example, in Jordan, refugees receive a text message informing them when their second dose is due.⁷¹ Consequently, refugees unable to afford phones or cellular data are unlikely to be vaccinated.

⁶⁶ <https://www.eiu.com/n/mena-faces-mixed-prospects-on-vaccine-rollout-in-2021-22/>

⁶⁷ <https://www.theguardian.com/world/2020/mar/18/health-workers-targeted-at-least-120-times-yemen-conflict>

⁶⁸ <https://www.thesouthafrican.com/news/world-news/are-covid-19-vaccines-a-potential-biological-weapon-in-the-middle-east/>

⁶⁹ <https://edition.cnn.com/2021/01/26/middleeast/middle-east-vaccinations-coronavirus-intl/index.html>

⁷⁰ <https://www.eiu.com/n/mena-faces-mixed-prospects-on-vaccine-rollout-in-2021-22/>

⁷¹ <https://www.infomigrants.net/en/post/30023/are-refugees-migrants-and-displaced-people-being-forgotten-in-covid-19-vaccination-programs>



Finally, the vaccine has been described by some leaders such as Ayatollah Ali Khamenei in Iran as “untrustworthy”, and a method through which the west would “contaminate other nations”.⁷² Already in Jordan, only a minority of the population has registered to receive the vaccine, demonstrating a strong lack of trust in the product.⁷³ If the vaccine’s negative reputation persists in the region, additional states could ban the product, consequently impacting supply chain resilience.

Cybersecurity

Cybersecurity has also become an increasingly prominent threat for states in the Middle East. The number of cyberattacks in the UAE, for instance, has increased by 250% in 2020⁷⁴. With the healthcare sector being one of the primary targets, it is foreseeable that hackers could easily access and manipulate private data directly relating to the global supply chain of vaccines. As warned by INTERPOL, this could catalyse the production and sales of counterfeit products, and give these producers leverage in their attempts to identify suitable vaccine storage locations.⁷⁵

Theft

Theft is another security concern as the high demand for COVID-19 vaccines and increasing value on the black market make them a key target for organised crime groups.⁷⁶ Cargos transporting PPE have previously been raided, and this risk is more important in countries that have high crime rates and are unable to effectively monitor the security of shipments.⁷⁷ The quality of the product could also be affected if it was to be damaged in an attack.

⁷² <https://www.hrw.org/news/2021/01/12/iran-khameneis-reckless-ban-covid-19-vaccine>

⁷³ <https://edition.cnn.com/2021/01/26/middleeast/middle-east-vaccinations-coronavirus-intl/index.html>

⁷⁴ <https://www.cnbc.com/2020/12/06/middle-east-facing-cyber-pandemic-amid-covid-19-uae-official-says.html>

⁷⁵ <https://www.interpol.int/en/News-and-Events/News/2020/INTERPOL-warns-of-organized-crime-threat-to-COVID-19-vaccines>

⁷⁶ <https://www.aircargonews.net/policy/air-cargo-security/tapa-covid-19-vaccine-creates-biggest-security-challenge-for-a-generation/>

⁷⁷ <https://theloadstar.com/no-let-up-in-cargo-crime-during-pandemic-as-gangs-target-ppe-shipments/>



Conclusion

Both vaccine producers and distributors may be confronted by risks in logistics and storage, distribution and access, and crime to varying extents. These are broadly contingent on differing levels of economic development, which in turn have significant effects on the health care infrastructure. In Latin America, the Middle East and the Asia Pacific region, the main challenge is in guaranteeing cold supply chains and cold storage in order to ensure that each different vaccine is preserved at the appropriate temperature.

In terms of access, the mitigating factors available are still insufficient to eliminate the difficulties of high prices and resource shortages. While countries like Colombia and China have already pledged to provide vaccinations for free, they are the exception rather than the norm. Although most health professionals in less economically developed countries are used to coping with limited resources, tackling a global pandemic of this scale might lead to major bottlenecks. Should vaccine skepticism go unchecked, vaccine rollouts could also fail to inoculate a sufficiently large proportion of the population.

Crime continues to play a critical role particularly in Latin America, Asia Pacific and the Middle East, especially in terms of physical threats, counterfeit vaccines and corruption. Vaccine producers have to confront the sustained attempt by hostile actors to steal crucial information or to disrupt supply chains through malicious cyber attacks.



Annex: Presentation of London Politica

Iulia Sacalas (Quality Assurance)

Iulia is a mentor at London Politica. She is an independent intelligence analyst and political consultant with over five years of experience in the geopolitical, security and private intelligence industry and over seven years of experience in research and analysis. Iulia works with clients from a variety of regions, but her main areas of expertise are focused on Europe and North and South America. She is knowledgeable in public policy analysis alike. Iulia holds an MA in Intelligence and International Security from King's College London and a Professional Certificate of Public Policy Analysis from the London School of Economics.

Cheyenne Ong (Coordinator/ Quality Assurance)

Cheyenne is a final year History and International Relations student at the London School of Economics, and a Southeast Asia Centre grant holder. As Co-Founder and COO of London Politica, she frequently works with clients in the private security sector. She has been developing her research and OSINT skills through several internships in the Singaporean national security field since 2016, and currently works in a consultancy specialising in fragile and conflict-affected states in Asia and the Middle East.

Oliver Fischer-Fürwentsches (Latin America)

Oliver is currently based in Colombia acquiring practical experience in business and project management. While completing his undergraduate studies in History, Politics and Sociology at Humboldt University Berlin, he gained extensive research experience in foreign affairs, including internships with the German Federal Foreign Office and UNESCO. He consolidated his regional expertise in Latin America through a master's degree in International Relations of the Americas from University College London, for which he conducted fieldwork in Peru.

Shannon Olson (North America)

Shannon Olson currently works in the Global Security team at Boeing in the United States. She has completed several internships with the US government including the US Department of State, US Department of Defense, and the US Senate. Having graduated from the University of Wisconsin-Madison with a bachelor's degree in International Studies-Global Security and Political Science in 2019, Shannon is an incoming master's student in the War Studies department at King's College London.



Calvin Teoh (APAC)

Calvin is a final year Sociology student at the London School of Economics and Political Science. Having worked on enterprise development in the Singaporean government and served on the executive committee of the LSESU ASEAN Society, he has developed an incisive awareness of business risks and opportunities in the Asia Pacific. As a mixed methods researcher, Calvin manages large volumes of data as a part-time analyst for TES Asia. He is proficient in SQL, R and other data science tools.

Eleonora Vassanelli (Europe)

Eleonora Vassanelli is a third year International Relations student at King's College London where she focuses on security and diplomacy particularly in Europe and Latin America. Currently, she is working part-time for the Italian Trade Agency with emphasis on the logistics of Brexit and its impact on Italian businesses. Previously, she completed an internship at Bright Blue, a think tank, where she evaluated the United Kingdom's methods to tackle COVID-19 in early September.

Emily Beuvelet (Middle East)

Emily Beuvelet is a second year International Relations student at the London School of Economics and Political Science. Her work as a translator and press correspondent for COVAID AFRICA (an international humanitarian campaign), and studies on International Security in the Middle East, have enabled her to develop a strong understanding of the MENA region. She was also active in Model United Nations as a delegate and has directed multiple global conferences, including THIMUN Singapore.