The Role of the Colombian Air Force in the National COVID-19 Vaccination Plan (NVP)

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Introduction and Methodology

Since 2020, humanity has suffered from the COVID-19 pandemic, which, as of May 10, 2022, has had 518,330,957 cases of infection and 6,266,376 deaths. However, vaccination processes have been improving over the same period, and according to figures from the John Hopkins Institute, a total of 11,371,321,594 doses of the COVID-19 vaccine had been given.[1]

In terms of the pandemic, the Colombian Armed Forces have been vital in contributing to mitigation of the virus, providing, through their military capabilities, support to civil authorities in fundamental tasks, such as aeromedical evacuations of people infected with COVID-19. Furthermore, these military capabilities have been fundamental in the vaccination processes. This article is based on the findings of the Research Group "Análisis en Contexto" (Analysis in Context) of the Colombian Air Force, which covers the period from February 2021 to December 2021, starting with the initial implementation of Colombia's National COVID-19 Vaccination Plan (NVP) on 15 February 2021. This article's main aim is to analyze the contribution of the Colombian Armed Forces within the framework of the NVP.

This analysis has a qualitative and quantitative methodological approach: "research under the qualitative approach is based on evidence that is more oriented toward the in-depth description of the phenomenon in order to understand and explain it through the application of methods and techniques derived from its conceptions and epistemic foundations, such as hermeneutics, phenomenology and the inductive method,"[2] while on the other hand, it is also based on descriptive and analytical research, through the collection of information from primary and secondary sources, as well as their respective documentary analysis. Moreover, situational analysis is used as a methodological tool since it considers "the environment or reality in which it occurs; with consideration to the following elements: events, scenarios, actors, power relations, and coordination between the structure and the situation."[3] Open sources as well as quantitative and qualitative data were analyzed to support situation analysis as well.

Colombian Armed Forces operations were analyzed, particularly the air mobility function, defined according to the Colombian Armed Forces' Basic Air, Space and Cyberspace Doctrine Manual as "the set of actions aimed at increasing the scope, mobility, projection, and use of the Public Forces. It is the effective increase in the combat power of the Force itself and of the others, in times of peace or war, through the use of air power."[4] Within the air mobility function are air transport operations, which are activities that provide deployment and support to the forces and entities of the national government, applying the very characteristics of airpower.[5] The Colombian Armed Forces contributed to the NVP, using air capabilities to transport vaccines in the most remote territories of the country.

This article is divided into four parts: 1) general considerations regarding the NVP and the role played by the Armed Forces; 2) an analysis of the role of the Armed Forces compared to other countries in the region; 3) an analysis of the Colombian Armed Forces' contribution to the NVP; and 4) conclusions.

The NVP and the Role of the Armed Forces in Colombia

The Colombian Armed Forces have been developing capabilities to face varied national threats and to contribute to the essential purposes of the state. Because of these capabilities, in accordance with the state of emergency authorized under Article 215 of the Colombian Constitution, both the military and police assumed roles and took actions to mitigate and contain the spread of COVID-19. These first actions were undertaken via Decree 457 in 2020, in which guidelines were established by virtue of the health emergency and the maintenance of public order.[6]

The first actions taken ranged from the use of troop capabilities to provide systematic curfew controls and monitor compliance with curfews and preventive isolation—voluntary or mandatory—to actions in support of civil authority.[7] In this regard, the Washington Office on Latin America (WOLA) points out that:

> all countries, however, make exceptions for emergencies. It is normal for the military to have significant involvement internally during natural disasters or other highly unusual and short-lived localized events. The Armed Forces are those who have the logistical capability such as helicopters, transport aircraft, vehicles or field hospitals. The Armed Forces are virtually the only government institution that, under day-to-day conditions, are not operating at their maximum capacity: they are in a state of "readiness" in which most of the personnel and the equipment are not exactly idle, but rather focused on training, planning and maintenance for other eventualities. This makes it the only institution with the "additional response capacity" to respond quickly when an emergency occurs.[8]

At a global level, "the Armed Forces are offering an effective response based on their specific readiness and capabilities, which allow rapid deployments to carry out all kinds of tasks according to the established mandate, and always in coordination with the requirements of the health and government authorities."[9] The most common use of the Armed Forces by their governments during the pandemic has been to expand logistical capabilities. However, the pandemic has shown the importance of creating flexible structures to constantly scale the response to the crisis; as the Armed Forces are trained to mobilize quickly and are used to working under pressure and with limited resources.[10]

Accordingly, the Colombian Armed Forces, in compliance with the constitution and presidential guidelines, carried out operations to support civil authority, provide humanitarian assistance to the population during the emergency caused by the coronavirus, in order to ensure security and tranquility in the different regions of the country.[11] At the same time, the Armed Forces carried out support actions for defense of the civil authority that are defined "as the support provided by the Armed Forces and all the institutions that make up the defense sector, in response to requests for assistance from the national civil authorities for domestic emergencies of any kind, support for law enforcement and other activities with qualified entities for special situations."[12] Thus, considering both its military and police capabilities, the Colombian Government, within the framework of support activities for defense of civil authority, implemented Operation San Roque in 2020 and Operation San Roque II in 2021, under the General Command of the Armed Forces (COGFM).

These operations, undertaken in a joint, coordinated, institutional and multilateral manner, focused its actions on four lines of effort: 1) preservation of the force, where health measures are complied with in order to ensure the health of the military; 2) maintenance of military capabilities through continuous deployments; 3) continuous operations against organized armed groups); and 4) support of civil authorities through humanitarian operations.[13]

These operations were carried out within an institutional effort under the Unified State Action concept. Military doctrine, under this concept, in turn sought to keep the troops at the highest level of readiness through "the synchronization, coordination and/or integration of the activities of government and non-government entities with military operations to achieve unity of effort."[14]

Figure 1 shows what Operation San Roque achieved in terms of results and military deployment. From 18 March to 29 December 2020, 2,848,547 deliveries of food and essential supplies were made to vulnerable populations affected by the socioeconomic crisis generated by the pandemic, according to official data from the COGFM.[15] To enforce the government's closure of borders, the Armed Forces

maintained a unit of more than 27,000 men and women along the 6,386-kilometer border with Brazil, Ecuador, Panama, Peru, and Venezuela, distributed over 19 formal and 183 informal checkpoints.[16] In 2020, the Colombian Air Force flew more than 1,800 hours executing reconnaissance and control missions in border areas, using manned and remotely manned aircraft.[17]

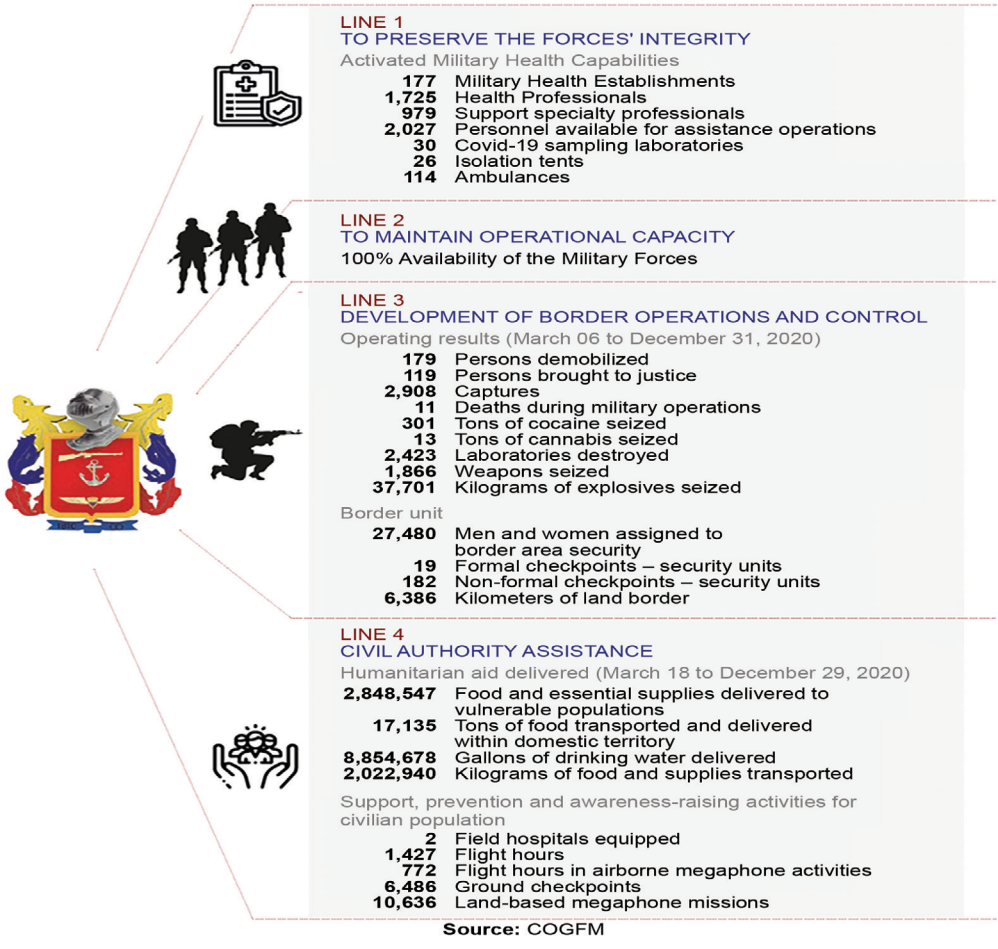

Figure 1. Summary of the Colombian Armed Forces' contribution to the National Government's strategy to tackle the COVID-19 pandemic

Source: COGFM, 2020

Meanwhile, the COVID-19 NVP, which consisted of two phases and five stages, began on 17 February 2021. According to data from the Ministry of Health, 20 million vaccines (40 million doses) were secured through the World Health Organization COVID-19 Vaccine Country Readiness and Delivery (COVAX) bilateral agreement; 10 million doses secured with Pfizer for 5 million

citizens; 10 million doses with AstraZeneca for 5 million citizens; 9 million doses with Janssen for 5 million people; 10 million units with Moderna for 5 million people and, lastly, 2.5 million doses for 1.25 million people through the agreement with Sinovac. In total, between COVAX and bilateral mechanisms, 41.5 million doses were secured for 25,250,000 people in the first phase.[18]

Through Decree 109 of 2021, the National Government designed the NVP, which aimed to establish the target population, the prioritization criteria, the phases, and the routes for administration of the vaccine. Additionally, it designated the responsibilities for the member organizations of both the General Health and Social Security System, and administrators of the special and exemption regimes, as well as the procedures for the payment of the implementation costs. To date, 49,679,345 vaccines have been given, corresponding to 22,103,021 complete vaccination schedules.[19]

> According to Decree 109 of 2021, the Armed Forces and the National Police, in compliance with national security and sovereignty activities, have been supporting the tackling of the pandemic with activities of territorial control, logistical support and compliance with the different measures issued by the national government and territorial governments. Furthermore, within the framework of the COVID-19 NVP, they will support the security plan during the development of vaccination strategies in the different territories of the country.[20]

Within this framework, the aim of the Armed Forces was to contribute to security in the receipt, storage, transport, distribution, and administration of the vaccine within the national territory, in a coordinated and joint manner with the different national, regional and local Armed Forces and National Police. [21]

The Ministry of Defense, through the Armed Forces and the National Police, implemented the Inter-institutional Security Framework Strategy for the COVID-19 NVP, which aimed to generate coordination to mitigate any type of threat.[22]

This strategy considered, among other things, the activation of a National Unified Command Post, headed by the Ministry of Health and in permanent coordination with the Armed Forces for the management, receipt, transport and storage of vaccines. Moreover, it contemplated a special mobility and security plan for the delivery and storage of batches of vaccines in accordance with the vaccination logistics scheme. Likewise, security measures were implemented at the vaccine storage and administration sites. [23] Meanwhile, the Colombian Air Force focused on its air capabilities:

> In coordination with the Colombian Air Force, institutional capabilities shall be readied for the transport by air of the personnel required for the security units in the cities set out by the National Government. Reconnaissance, preventive,

> dissuasive and control overflights shall be carried out in the cities where the delivery and storage of the batches of vaccines shall take place, following coordination with the Civil Aviation Authority and the police commanders in each unit. A geographical location shall be made of the functional heliports of the cities where the delivery and storage of the batches of vaccines shall take place, while coordinating for their use, if necessary, in an emergency, as well as evacuating or transporting personnel or elements set out in the NVP.[24]

In this regard, the Ministry of National Defense activated its support protocol, which was served by 37,754 members of the Armed Forces:

> Within the framework of the National Vaccination Plan (NVP), the Ministry of Defense, with the coordination made by the Ministries of Health and the Interior, has the entirety of the security support process for the receipt, storage, transport, distribution, and administration of the vaccine. We are deploying the capabilities of our Police and Armed Forces to reach all points of the national territory. "Capabilities have been readied from the air, maritime, and river point of view," assured Diego Molano, from the Prevention and Action program of the Presidency.[25]

On behalf of the Joint Environmental and Disaster Risk Management Department, the COGFM prepared the plan to strengthen the four lines of effort contained in Operation San Roque II of the Armed Forces of Colombia, in support of the Ministry of Health and Social Protection's COVID-19 NVP. Monitoring of the daily activities carried out by the Forces in compliance with the vaccine transport and security process was carried out to provide timely information on the percentages of progress in vaccination and transport of vaccines within the national territory.[26]

As of 31 October 2021, according to COGFM data, the Armed Forces had transported 2,959,013 vaccines and 542 health personnel, as part of the national vaccination plan.[27]

Comparative Analysis on the Participation of the Armed Forces of Argentina, Mexico, Chile, Brazil, the United States, and Peru

The Armed Forces in other countries have played a very important role in the logistics of vaccine distribution due to their land and air capabilities. A comparative analysis of Argentina, Brazil, the United States, Mexico, Chile, and Peru, among others, shows that their Armed Forces have supported vaccination plans as well.

Argentina

In 2020, Argentina established a National Vaccination Command with the participation of the Ministry of Health, Defense, and the Interior, which, under Operation General Belgrano, took advantage of the land, air, and logistical capabilities that the Argentine Armed Forces had, to contain and mitigate the effects of the COVID-19 pandemic.[28] During the same year, the second stage, called Operation General Belgrano II, began, whose purpose was to provide logistical support to the community in support of the COVID-19 vaccination plan established by the National Ministry of Health. The operation had to overcome the challenge of collaborating within the framework of the vaccination plan, to include providing facilities for storage and administration of the vaccine through Armed Forces and civilian doctors and nurses throughout the country. [29]

Specifically, the members of the Argentine Armed Forces provided transport and storage of vaccines in various provinces throughout the country. For example, an Argentinian Air Force Twin Otter plane transported vaccines from the city of Comodoro Rivadavia in Chubut to the cities of Río Gallegos, Puerto Deseado and Perito Moreno in Santa Cruz. Additionally, the Argentine Army provided a helicopter to transport doses from Río Gallegos to the town of Gobernador Gregores.[30]

Brazil

Brazil's National Immunization Program aim was to equip the organizations operationalizing the COVID-19 vaccination plan; and its Armed Forces, since the beginning of 2021, focused a large part of their efforts in support of this program. Among the tasks carried out by the Brazilian Armed Forces were providing operational and logistical resources to support passenger and crew control at airports, ports, and maritime terminals; decontamination of personnel and military defense units; and support of health offices' requirements.[31] The Brazilian Air Force deployed its cargo planes (KC-390 Millennium, C-130, EL C-97, C-295 and C-105) to transport COVID-19 vaccines, and by January 2021, they had distributed approximately 4.6 million vaccines to various cities throughout the country.[32] Other branches of the Brazilian Armed Forces also used their aircraft to fulfill the "CoronaVac" distribution plan.[33]

Mexico

In Mexico, a plan to distribute 870,000 doses of AstraZeneca vaccines was carried out through eight principal and nine secondary air routes, using 45 ships (of which 37 were military); in addition to 179 land routes. The total contribution of the

Mexican Army and Air Force consisted of 1,100 soldiers, 120 vehicles and 37 aircraft from the Mexican Air Force, Navy, and the National Guard.[34] By 6 July 2021, the Mexican Army and Air Force had distributed more than 4,600,000 vaccines.[35]

United States

In the United States, active-duty troops were utilized to support private entities providing the vaccinations.[36] By January 2021, approximately 20,000 National Guard members were activated to support the COVID-19 response, including testing and vaccine efforts, and 1,000 military medical personnel were on orders to prepare for deployment. Additionally, 224 US military medical personnel supported an intensive care unit in California, 80 supported three hospitals in Texas, and another 87 were deployed to three hospitals in Arizona; while 40 members of the Army Corps of Engineers supported hospital infrastructure improvements in California and New Mexico.[37]

Furthermore, the country's National Response Plan (NRP) was carried out in coordination with the Community Vaccination Centers program of the Federal Emergency Management Agency (FEMA). While this plan is normally implemented when the president issues a disaster declaration, requesting the support of federal agencies, in the case of hurricanes, tornadoes, floods or forest fires; in this case it applied to the pandemic.

FEMA's implementation of the NRP harnessed doctors, medical assistants, pharmacists, and troops to support the vaccination process. Since February of 2020, approximately 5,150 Army, Marine Corps, Navy, and Air Force medical and support personnel assisted FEMA centers in schools, stadiums, and fairgrounds administering nearly 4.5 million COVID-19 vaccines at FEMA centers in 25 states and the Virgin Islands.[38]

Chile

Chile, under its State of Constitutional Exception Due to Catastrophe support plan, more than 12,000 COVID-19 vaccines were transported to different locations throughout the country, including Antarctica, using their own transport aircraft and helicopters. In total, 447 air operations were recorded, totaling 2,050 flight hours. Overall, almost 30,000 influenza vaccines, 111,177 kilos of cargo (mechanical fans and medical supplies), 5,579 COVID-19 kits, 4,523 COVID-19 test samples, and 10,019 military members of its Armed Forces were transported in support of this effort.[39]

Peru

In Peru, under the framework of their COVID-19 NVP, members of their Armed Forces were trained to support their Ministry of Health during the vaccination process, as per Minister of Defense Nuria Esparch.[40] Overall, by 2020, the Armed Forces had augmented the nation's 25,000 civilian vaccination providers with an additional 10,000 trained military members."[41]

The Army played a significant support role in this effort, providing two Regional Operational Commands (Arequipa and Lambayeque) led by General Officers. The Ministry of Defense also reported that the aircraft of "this institution have been carrying out the transfer of medical material and supplies, samples to be analyzed, as well as health personnel and officials who need to travel to any region of the country. Additionally, members of the Army supported the establishment of a provisional hospital in *Villa Panamericana* with an approximate capacity for 3,000 beds."[42]

"Vaccines in the Air" The Colombian Armed Forces' contribution to the NVP

As promulgated by the "providing air mobility" function in their Basic Air, Space and Cyberspace Doctrine Manual, as of 31 October 2021, the Colombian Air Force had transported a total of 2,959,013 vaccines, as well as of medical supplies to remote territories of the country, which entailed 268.45 flight hours, as of December 2021. To accomplish this effort, they flew a combination of fixed-wing aircraft such as the C-208, Boeing B-767, and Cessna 182, and rotary-wing aircraft such as the UH-60L, B-206, HUEY II, and B-212 helicopters.[43]

The map in figure 2 shows the territorial distribution of the vaccines transported by the Colombian Armed Forces. The largest transport of vaccines was conducted in the Cundinamarca, Antioquia, and Valle del Cauca departments, as can be seen on the map.

The geographical distribution of the vaccines coincided with the vicinity and capability of the military units that transported them. Thus, Colombia's Military Transportation Air Command (CATAM - Comando Aéreo de Transporte Militar), based in Cundinamarca, transported the most vaccines, as they had large transport aircraft such as the Boeing B-767 at their disposal.

Historically, CATAM, since 1968, has been acquiring air transport capabilities and aircraft such as the Hercules C-130B and Boeing B-767 (acquired in 2010), "in order to increase the operational and support capabilities of the ground Forces, through the fulfillment of transport missions. Consequently, the Colombian

Armed Forces increased their operational capability by 100 percent since air support, of all kinds, was able to be carried out 24 hours a day."[44]

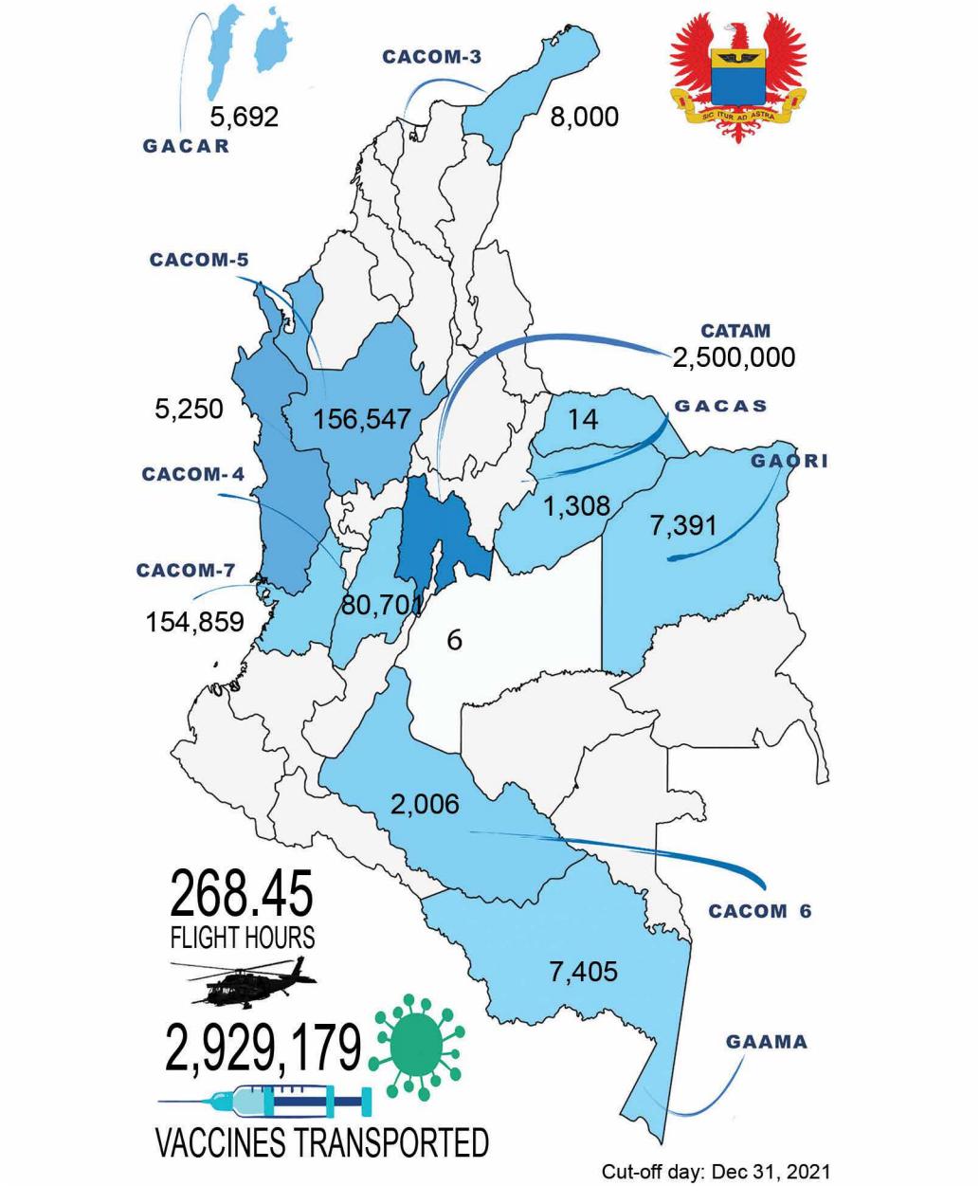

Figure 2. Territorial distribution of vaccines transported by the Colombian Armed Forces

Source: Prepared by author with data from the Colombian Air Force, 2022

Additionally, CATAM augmented two other air units transporting vaccines for the Casanare, San Andrés, and Providencia departments: in Casanare, they augmented the Casanare Air Group (GACAS - *Grupo Aéreo de Casanare*), and in the Andrés and Providencia departments CATAM augmented the Caribbean Air Group (GACAR - *Grupo Aéreo de Caribe*). Even though CATAM is based in Cundinamarca; it was able to augment support to the two other regional Air Groups as CATAM's crews, aircraft, and military/civilian personnel are trained to serve as a force multiplier providing maintenance, security, logistics, and special air transportation throughout all of Colombia and abroad.[45]

Additionally, Air Combat Command (Comando Aéreo de Combate – CACOM) 4, CACOM 5, and CACOM 7 supported the Valle del Cauca, Tolima, and Antioquia departments, providing them with the greatest number of vaccines in the region; while the Meta, Arauca and Caquetá departments had the least amount delivered via the Colombian Armed Forces.

In general, a sociodemographic concentration dynamic developed in which the departments that benefited the most were those in which large cities were located, therefore with a greater concentration of people, thus establishing themselves as a higher priority compared to municipalities in which there are fewer people.

According to the data provided by the Colombian Armed Forces, air bases were key to transporting vaccines, based on the capabilities they had. For example, CATAM, CACOM 5, and CACOM 7 transported the most vaccines, as shown in figure 3.

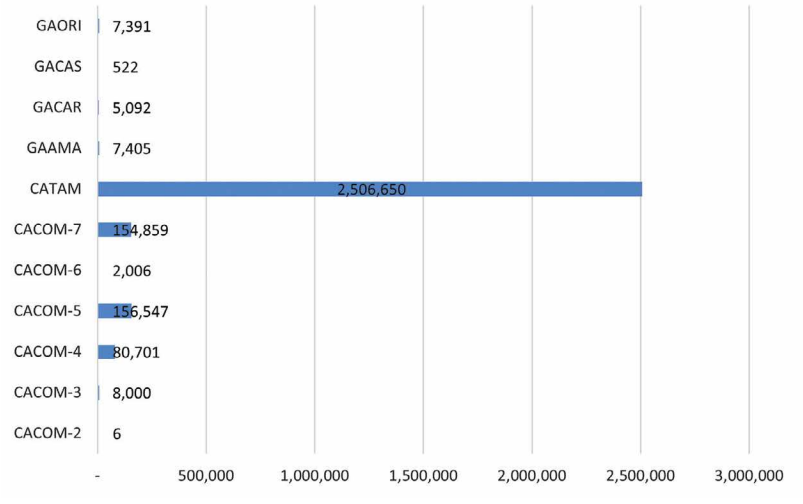

Figure 3. Vaccines transported Colombian Armed Forces

Source: prepared based on information from the Colombian Armed Forces Air and Space Operations Command, 2021

As figure 3 shows, CATAM, located in Bogotá, vastly outnumbered all other units transporting vaccines (2,506,650), comprising 85.8 percent of all vaccines delivered by the Armed Forces.[46]

Of the Air Combat Commands, CACOM 7, based in Cali, Valle del Cauca, transported the most vaccines (154,859 doses). CACOM 5 followed in second place, based in Antioquia, Rio Negro, transporting 156,547 vaccines. In third place was CACOM 4, which transported almost half of the doses of the top two commands (80,701 vaccines). Finally, CACOM-2, based in Apiay, Meta, transported the least number of vaccines (6).

Accordingly, the smaller Air Groups transported the fewest vaccines in comparison with the Air Commands. For example, in the department of Casanare, GACAS transported 522 vaccines, while the Eastern Air Group provided 7,241 vaccines, and the Amazon Air Group (Grupo Aéreo del Amazonas - GAAMA) provided 7,405 doses.

It is important to mention that the rotary-wing aircraft that were most used by the Colombian Armed Forces for carrying out these important missions were the B-206 (230), UH-60 L (70) and HUEY II (27) helicopters, and the C-208 caravan aircraft (however, the records do not correlate the number of journeys made by each aircraft with the number of vaccines transported). Rotary-wing aircraft that transported vaccines are listed in figure 4 below; which shows how the B-206 and UH-60L helicopters transported the largest numbers of vaccines, demonstrating the versatility and capability of these aircraft.

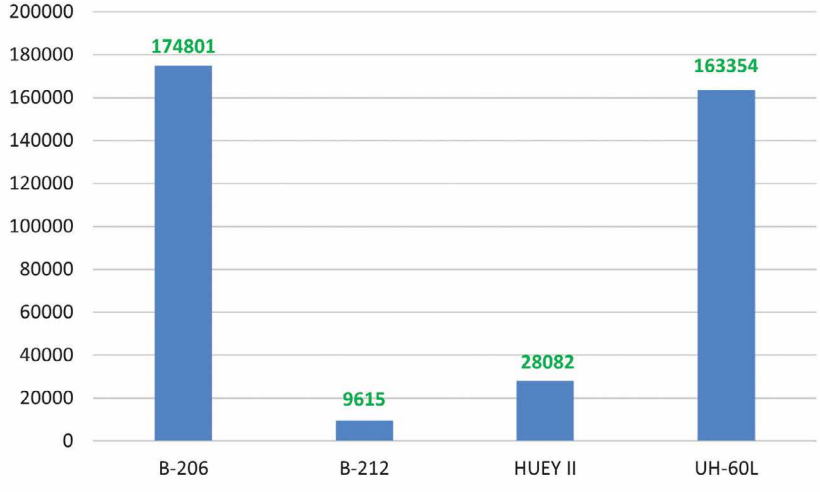

Figure 4. Vaccines transported by type of rotary-wing aircraft

Source: Prepared by author, based on information from the Colombian Armed Forces Air Operations Command, 2021

Meanwhile, the B-767 Boeing fixed-wing aircraft transported the most vaccines, due to its greater versatility and flexibility to transport both personnel and cargo. Figure 5 shows the vaccines transported by fixed-wing aircraft.

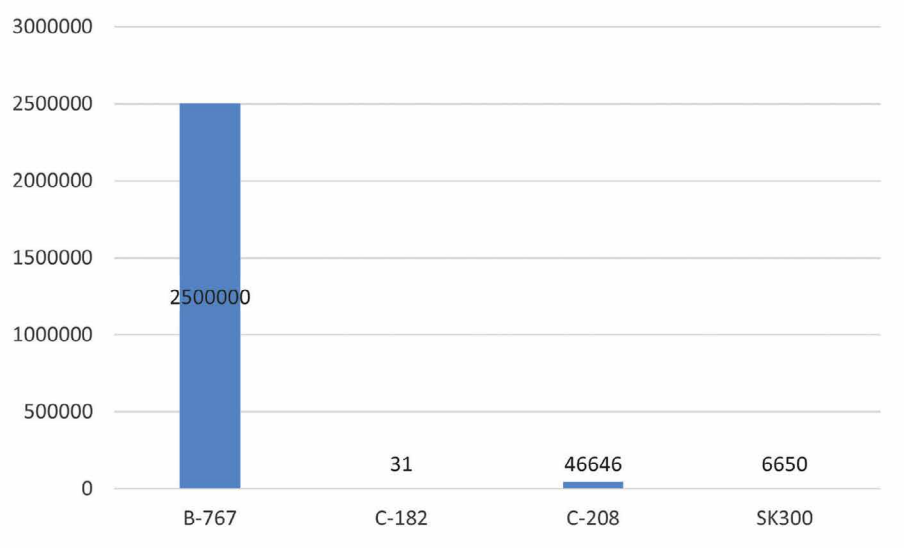

Figure 5. Vaccines transported by type of fixed wing aircraft

Source: Prepared by author based on information from the Colombian Armed Forces Air Operations Command, 2021

The one flight of the B-767 for this effort carried 2,500,000 vaccines, the most vaccines of all other aircraft combined. However, the Bell-206 helicopter recorded the most flights and transported the second highest number of doses. It is important to point out that the cargo and transport capacities of each aircraft are different. For example, the Boeing 767 is an aircraft that has capacity for 200 passengers or 19 463L standard air cargo pallets, which is why this aircraft transported the most vaccines in just one trip.

The air transport capabilities of the Colombian Armed Forces served to reach the most remote territories. For example, the Colombian Armed Forces transported single-dose vaccines to the Alta Guajira area, a department that due to its geographical conditions, is difficult to access.

> In coordination with the Mayor's Office of Uribía, the first transport of single-dose vaccines to Alta Guajira was carried out. The rural area of the municipality of Uribía received the first provision of single-dose vaccines after coordination between the municipality's Department of Health and the Colombian Air Force, with 8,000 vaccines being transported from Uribía to the Nazareth Hospital, which is the closest health center for serving the Wayuu communities in Alta Guajira.[47]

Figure 6. The first single-dose vaccines were transported to Alta Guajira by the Air Force
Source: Strategic Communications CACOM 3, Colombian Air Force, 2021

With the transport of these COVID-19 vaccines, the aim was to increase the percentage of those vaccinated in the "most remote areas of the country and make it easier for families settled in this northern part of the country to complete the required dose in a single trip. This effort sought to reduce the number of deaths in these areas, since due to different ethnic traditions, most of those infected do not regularly go to medical centers and die in their own homes."[48]

Meanwhile, Colombia experienced a National Strike from 28 April 2021 to June of the same year, thus air capabilities became even more vital to the transportation of vaccines, medical supplies, and so forth, due to road blockades. For example, in Valle del Cauca, one of the departments most affected by the blockades, the Colombian Armed Forces was vital in facilitating the transport of vaccines.

A UH-60L Black Hawk helicopter carried out the transport of 35,230 doses to municipalities in the north of the Valley, such as Tuluá, Buga and Zarzal, where they were distributed, in turn, by the health entities to other sectors of the department. Since May of 2021, a total of 158,184 vaccines had been transported from

Cali to municipalities such as Andalucía, Calima, San Pedro, Caicedonia, Zarzal, Tuluá, Buga, La Unión, Roldanillo, Bolívar Versalles, El Dovio, La Victoria and Sevilla, in support of the NVP under the Ministry of Health and the Valle Departmental Ministry of Health.[49]

According to data from the COGFM, the Armed Forces and the National Police carried out a coordinated effort to counteract the effects of COVID-19, both with the transport of vaccines and their administration through the third phase of vaccination. By 22 June 2021, the Armed Forces had transported 455,373 vaccines in compliance with all preservation and biosecurity protocols.[50]

Within the framework of the COVID-19 NVP, CACOM 6 readied all its capabilities to reach the most remote municipalities of Caquetá through helicopters; its Huey II crews carried out flights providing support to the most difficult-to-reach areas in the department.[51] Thanks to these air capabilities, the communities of the most remote territories have benefited from the action of the Colombian Armed Forces.

In 2021, the USA donated 2.5 million Janssen vaccines to Colombia, "which were transported by the Boeing 767 Jupiter aircraft, a US-made transport-tanker plane, with a capability for three crew members and 190 passengers, that belonged to the Colombian Armed Forces," demonstrating the global reach capabilities of the Colombian Armed Forces.[52]

Furthermore, in the department of Vichada, until the inspection of Santa Cecilia in the municipality of La Primavera, the Colombian Armed Forces transported more than 100 COVID-19 vaccines, with the aim of vaccinating families who live in these difficult-to-reach territories. This was after 822 vaccines had been transported to the municipalities of Santa Rosalía, Cumaribo and La Primavera, for a COVID-19 vaccination day that took place over two days, in which 80 percent of the population of these municipalities were vaccinated. "This day, which sought to benefit around 150 people who have limited access to the main population centers in the region, was held in coordination with the Government of Vichada and the Mayor's Office of La Primavera."[53]

In Casanare, an effort between the Air Force, National Army, Mayor's Office of Yopal, and the municipality's Social Manager, delivered 83 COVID-19 vaccines and 203 vaccines against influenza, yellow fever, MMR, pneumococcal disease, and more, to serve the community of the Tizagá trail in Yopal, provided by a UH-60 Black Hawk flight from GACAS.[54]

In Antioquia, a Colombian Armed Forces UH-60 Black Hawk helicopter transported 1,030 COVID-19 vaccine doses to the municipalities of Vigía del Fuerte and Murindó in support of the NVP. Inter-institutional coordination was fundamental, as Colonel Alejandro Vélez, commander of CACOM 5, stated: "We

are fighting this pandemic fully integrated with departmental authorities and following the guidelines that the governor of Antioquia has given at the working group discussion tables."[55]

All the foregoing demonstrates how air capabilities in emergencies such as the COVID-19 pandemic, are vital and become tools that governments can use to contain and mitigate viruses.

Conclusions

Within the framework of the COVID-19 pandemic, the Armed Forces have been vital in supporting state and civil authorities in mitigating and containing the virus. This is a global trend, in which, thanks to the military's capabilities, versatility, and adaptability, their support in emergencies such like these can be considered as a new role.

In the case of Colombia, within the framework of support operations for civil authority, the four lines of effort of Operations San Roque I and II, satisfied their main aim to provide humanitarian assistance to the population.

Operation San Roque II also focused on contributing to the NVP formulated by the National Government, whose main aim was to ensure security in the receipt, storage, transport, distribution, and administration of the vaccine within the national territory in a coordinated and joint manner with the different national, regional, and local authorities; through the Inter-institutional Security Framework Strategy for the COVID-19 NVP.

The Armed Forces in other countries have also played a very important role in the logistics of vaccine distribution, thanks to their land and air logistical capabilities. In a comparative analysis of countries such as Argentina, Brazil, the United States, Mexico, Chile, Peru, among others, it was shown that the Armed Forces have supported vaccination plans, with the creation of special operations such as Operation Belgrano in Argentina or plans such as the National Immunization Program in Brazil, or in Chile, with State of Constitutional Exception Due to Catastrophe. The Armed Forces have demonstrated that their capabilities are essential in times of emergencies such as pandemics.

Thus, it is possible to conclude that air capabilities in emergency situations, such as the COVID-19 pandemic, have become vital tools that governments can use. The actions of the Colombian Armed Forces were fundamental to providing service and support to the most vulnerable communities, in the most remote places. ❑

Notes

1. Center for Systems Science and Engineering, "Datos COVID-19" (COVID-19 Data), John Hopkins University, (4 November 2021), https://coronavirus.jhu.edu/map.html.

2. Fabio Anselmo Sánchez Flores, "Fundamentos Epistémicos de la Investigación Cualitativa y Cuantitativa: Consensos y Disensos," (Epistemic Foundations of Qualitative and Quantitative Research: Consensus and Dissent), Andean University of Cusco, (Cusco, Peru: 15 June 2019), http://www.scielo.org.pe/pdf/ridu/v13n1/a08v13n1.pdf.

3. Julián Darío Bonilla Montenegro, "El análisis de coyuntura, un acercamiento metodológico" (Situation analysis, a methodological approch), Criterios: Cuadernos de Ciencias Jurídicas y Política Internacional, (Criteria: Booklets on Legal Sciences and International Policy), Vol. 4, No. 2, (July-December 2011), 101-120, https://revistas.usb.edu.co/index.php/criterios/article/view/1960.

4. General Ramsés Rueda Rueda, *Manual de Doctrina Básica Aerea, Espacial y Cyberespacial* (Basic Air, Space and Cyberspace Doctrine Manual), Colombian Air Force, (26 November 2020), https://www.scribd.com/document/513275311/FAC-0-B-DBAEC-2020-V-EDICION.

5. Rueda, *Manual de Doctrina Básica Aerea*.

6. Ministry of Commerce, Industry and Tourism, "Decreto 457" (Decree 457), (Colombia: 23 March 2020), https://www.mincit.gov.co/prensa/noticias/general/decreto-457-mediante-el-cual-se-imparten-instrucci.

7. Alejo Vargas Velásquez and Farid Camilo Rondón Raigoza, "El concepto de seguridad y las tareas de la Fuerza Pública frente al Covid -19 en Colombia" (The Concept of Security and the Tasks of the Public Forces in terms of COVID-19 in Colombia), *Revista Sur,* (20 April 2020), https://www.sur.org.co/el-concepto-de-seguridad-y-las-tareas-de-la-fuerza-publica-frente-al-covid-19-en-colombia/.

8. Adam Isacson, "En América Latina, a causa del COVID-19 se está poniendo en riesgo alterar permanentemente las relaciones cívico-militares" (In Latin America, COVID-19 Risks Permanently Disturbing Civil-Military Relations), Washington Office on Latin America, (15 September 2020), https://www.wola.org/es/analisis/america-latina-covid-19-relaciones-civico-.

9. Mar Hidalgo García, "El papel de las Fuerzas Armadas en la gestión de la COVID-19 como generador de confianza" (The role of the Armed Forces in the Handling of COVID-19 as a Builder of Trust), Spanish Institute for Strategic Studies, (10 March 2021), 9, https://www.ieee.es/Galerias/fichero/docs_analisis/2021/DIEEEA11_2021_MARHID_Confianza.pdf.

10. García, "El papel de las Fuerzas Armadas."

11. General Luis Fernando Navarro Jiménez, "Operación San Roque" (Operation San Roque), Revista Fuerzas Armadas de Colombia, 2nd ed., 2020, 7, https://issuu.com/esdeguecol/docs/252.

12. Colombian Army, *Manual fundamental del ejército MFE 3-28, apoyo de la defensa a la autoridad civil público* (Fundamental Manual of the Army, MFE 3-28, Support for Defense of the Public Civil Authority) Colombian Army, (September 2018), https://dicoe.mil.co/recurso_user/doc_contenido_pagina_web/800130633_4/458767/mfe_3_28_apoyo_de_la_defensa_a_la_autoridad_civil.pdf.

13. General Command of the Military Forces, *Doctrina que rige la dirección unificada de las Fuerzas Militares* (Doctrine Governing the Unified Management of the Military Forces), Colombian War College, (2018), https://esdeguelibros.edu.co/index.php/editorial/catalog/download/38/39/638?inline=1.

14. General Command of the Military Forces, *Doctrina que rige la dirección*.

15. General Command of the Military Forces, Operación San Roque, *Síntesis de la contribución de las Fuerzas Militares de Colombia a la estrategia del gobierno nacional para afrontar la pandemia covid-19* (Operation San Roque, Summary of the Contribution of the Military Forces of Colombia to the National Government's Strategy to Tackle the COVID-19 Pandemic), General Command of the Military Forces, (2021), https://www.cgfm.mil.co/es/san-roque.

16. General Command of the Military Forces, *Logros y Retos Misionales. Informe ejecutivo* (Missionary Achievements and Challenges. Executive report), General Command of the Military Forces, (2021), https://www.mindefensa.gov.co/irj/go/km/docs/Mindefensa/Documentos/descargas/Sobre_el_Ministerio/RendicionCuentas/2021/CGFM/LogrosCGFM2021.pdf.

17. General Command of the Military Forces, *Operación San Roque* (Operation San Roque).

18. Ministry of Health and Social Protection, *PNV contra el COVID-19* (COVID-19 NVP), Ministry of Health and Social Protection, (2021), https://sumimedical.com/wp-content/uploads/2021/02/Plan-Nacional-y-lineamientos-PAI-2021-Enero-27.pdf.

19. Ministry of Health and Social Protection, *Así avanza el plan Nacional de Vacunación* (Progress of the National Vaccination Plan), Ministry of Health and Social Protection, (2022), https://app.powerbi.com/.

20. Presidency of the Republic, *Decreto 109 de 2021* (Decree 109 of 2021), Administrative Department of the Presidency of the Republic, (2021), https://dapre.presidencia.gov.co/normativa/normativa/DECRETO-109-29-ENERO-2021.pdf.

21. Ministry of Health and Social Protection, (2021).

22. Ministry of National Defense and Ministry of Health and Social Protection, *Estrategia marco de seguridad interinstitucional para el "PNV Covid 19"* (Inter-institutional security framework for the COVID-19 NVP), Secretariat of Pasto, (2021), https://www.saludpasto.gov.co/repositorio-covid.

23. Ministry of National Defense, *Acompañamiento de la Fuerza Pública al PNV contra el Covid-19* (Support of the Public Forces in the COVID-19 NVP), Ministry of National Defense, (2021), https://www.mindefensa.gov.co/irj/portal/Mindefensa/contenido/noticiamdn?idXml=a0fc7154-5644-3910-81a6-ab1fd0179d0d&date=29002021.

24. Ministry of National Defense and Ministry of Health and Social Protection, (2021).

25. El Espectador, *Plan de Vacunación contara con el apoyo de 37.754 de la Fuerza Pública* (Vaccination Plan with the Support of 37,754 Members of the Public Forces), (2021), https://www.elespectador.com/noticias/judicial/plan-de-vacunacion-contara-con-el-apoyo-de-37754-miembros-de-la-fuerza-publica/.

26. COGFM, "Official Communication No. 0121008271702/MDN-COGFM-JEMCO-SEMPE-CGDJ10-DEGRD" of 19 August 2021 and email communication of 17 December 2021, (2021).

27. COGFM, "Official Communication No. 0121008271702.

28. Info Bae, *Argentina desplegara a sus FFAA para la logística del Plan de vacunación contra el COVID-19* (Argentina to deploy its AF for the logistics of the COVID-19 vaccination plan), *Info Bae,* (2020), https://www.infodefensa.com/latam/2020/11/15/noticia-argentina-desplegara-logistica-vacunacion-contra-covid.html.

29. Joint Chiefs of Staff of the Military Forces, *Operación Belgrano II: Las FFAA continúan con el traslado de vacunas contra el Covid-19* (Operation Belgrano II: The Armed Forces Continue with the Transport of COVID-19 Vaccines), Argentine Armed Forces, (2021), https://www.fuerzas-armadas.mil.ar/Noticia-2021-01-22-vacunacion-ffaa.aspx.

30. Luis Cordeiro, *La Fuerza Aérea de Brasil contra el COVID-19* (The Brazilian Air Force Against COVID-19), *USAF Journal of the Americas*, 1st ed., (2021), https://www.airuniversity.af.edu/Portals/10/JOTA/Journals/Volume%203%20Issue%201/04-Cordeiro_s.pdf.

31. Redacción A 21, *Apoya transporte aéreo al combate de la pandemia* (Air transport supports the fight against the pandemic), *A 21*, (3 February 2021), https://a21.com.mx/index.php/aerolineas/2021/02/03/apoya-transporte-aereo-al-combate-de-la-pandemia.

32. InfoDefensa, *La Fuerza Aérea de Brasil emplea su flota para distribuir 4,6 millones de vacunas A 21,* (The Brazilian Air Force uses its fleet to distribute 4.6 million vaccines), *América-Defensa,* (2021), https://www.infodefensa.com/latam/2021/01/20/noticia-brasil-despliega-potencial-aereo-distribucion-millones-vacunas.html.

33. World Health Organization, "Todo lo que se debe saber sobre la vacuna CoronaVac de Sinovac contra la COVID-19" (What you need to know about the Sinovac CoronaVac COVID-19 vaccine), World Health Organization, (10 June 2022), https://www.who.int/es/news-room/feature-stories/detail/the-sinovac-covid-19-vaccine-what-you-need-to-know.

34. Ministry of National Defense, *El Ejército y Fuerza Aérea Mexicanos distribuyeron más de 4.600.000 vacunas contra el COVID-19* (The Mexican Army and Air Force to distribute more than 4,600,000 COVID-19 vaccines), Mexican Armed Forces, (6 July 2021), https://www.gob.mx/sedena/prensa/el-ejercito-y-fuerza-aerea-mexicanos-distribuyeron-mas-de-4-600-000-vacunas-contra-el-covid-19?idiom=es.

35. Ministry of National Defense, *La Secretaría de la Defensa Nacional da a conocer el Plan de distribución de vacunas contra el COVID-19* (The Ministry of National Defense publishes its COVID-19 vaccine distribution plan), Mexican Armed Forces, (14 February 2021), https://www.gob.mx/sedena/prensa/la-secretaria-de-la-defensa-nacional-da-a-conocer-el-plan-de-distribucion-de-vacunas-contra-el-covid-19.

36. Jennifer Steinhauer, "Overwhelmed, More States Turn to National Guard for Vaccine Help," *The New York Times,* (14 January 2021), https://www.nytimes.com/2021/01/14/us/politics/coronavirus-vaccine-national-guard.html.

37. Patricia Kime, "Active-duty troops may help with nationwide COVID-19 vaccine distribution," *Military.com,* (28 January 2021), https://www.military.com/daily-news/2021/01/28/active-duty-troops-may-help-nationwide-covid-19-vaccine-distribution.html.

38. Aaron Kassraie, "Miembros de las Fuerzas Armadas dan vacunas contra la COVID-19 en las comunidades más afectadas" (Members of the Armed Forces give COVID-19 vaccines in the most affected communities), American Association of Retired Persons (AARP), (24 May 2021), https://www.aarp.org/espanol/hogar-familia/familia-bienestar/info-2021/miembros-de-fuerzas-armadas-vacunan-contra-covid.html?intcmp=AE-HOME-TOESP-TOGL.

39. Ministry of National Defense, "Ministros Prokurica y Paris distinguen a las FFAA por su trabajo sanitario durante la pandemia" (Ministers Prokurica and Paris commend the AF for their health work during the pandemic), Ministry of National Defense, (30 July 2021), https://www.defensa.cl/noticias/ministros-prokurica-y-paris-distinguen-a-las-ff-aa-por-su-trabajo-sanitario-durante-la-pandemia/.

40. El Peruano, "Covid-19: 10 mil efectivos de las FFAA se capacitan para aplicar vacuna" (COVID-19: 10 thousand members of the AF trained to administer the vaccine), *El Peruano,* https://elperuano.pe/noticia/111984-covid-19-10-mil-efectivos-de-las-ff-aa-se-capacitan-para-aplicar-vacuna.

41. Government of Peru, "Minsa capacita a personal del Ejército que brindará soporte durante la vacunación contra la COVID-19" (Ministry of Health trains Army personnel to provide support during COVID-19 vaccination), (31 July 2021), https://www.gob.pe/institucion/minsa/noticias/320825-minsa-capacita-a-personal-del-ejercito-que-brindara-soporte-durante-la-vacunacion-contra-la-covid-19.

42. Vera Delzo, "La labor del Ejército del Perú en el contexto del Covid-19" (The work of the Peruvian Army in the context of COVID-19), (2020), Peruvian Army, 21, https://ceeep.mil.pe/wp-content/uploads/2020/06/La-labor-del-Ejercito-Peruano-en-el-contexto-del-COVID-19-web.pdf.

43. Air and Space Operations Command, "Reporte operacional" (Operational report), Colombian Air Force, (16 February 2022), https://www.fac.mil.co/node/47677.

44. Colombian Air Force, "Comando Aéreo de Transporte Militar, cumple 77 años al servicio de los cumpleaños" (Military Transport Air Command celebrates 77 years of service), Colombian Air Force, (2021), https://www.fac.mil.co/es/noticias/comando-aereo-de-transporte-militar-cumple-77-anos-al-servicio-de-los-colombianos.

45. Colombian Air Force, "Comando Aéreo de Transporte Militar."

46. Colombian Air Force, (2022).

47. Colombian Air Force, "Las primeras vacunas de una sola aplicación fueron transportadas a la Alta Guajira por la Fuerza Aérea" (The first single-dose vaccines have been transported to Alta Guajira by the Air Force), Colombian Air Force, https://www.fac.mil.co/es/noticias/las-primeras-vacunas-de-una-sola-aplicacion-fueron-transportadas-la-alta-guajira-por-la.

48. Colombian Air Force, "Las primeras vacunas de una sola aplicación."

49. General Command of the Military Forces, "Fuerza Aérea Colombiana continúa transporte de vacunas contra COVID-19 a municipios del Valle del Cauca" (Colombian Air Force continues the transport of COVID-19 vaccines to Valle del Cauca municipalities), General Command of the Military Forces, (2021), https://www.cgfm.mil.co/es/blog/fuerza-aerea-colombiana-continua-transporte-de-vacunas-contra-covid-19-municipios-del-valle.

50. General Command of the Military Forces, "Fuerzas Militares han transportado 455.373 vacunas contra COVID" (Military Forces have transported 455,373 COVID-19 vaccines), General Command of the Military Forces, (2021), https://www.cgfm.mil.co/es/blog/fuerzas-militares-han-transportado-455373-vacunas-contra-covid.

51. Colombian Air Force, "Fuerza Aérea continua transporte de vacunas en el Caquetá" (Air Force continues the transport of vaccines in Caquetá), Colombian Air Force, (2021), https://www.fac.mil.co/es/noticias/fuerza-aerea-continua-transporte-de-vacunas-en-el-caqueta.

52. Revista Semana, "Este es el avión de la Fuerza Aérea que traerá los 2,5 millones de vacunas contra la covid-19, que donó EE. UU." (This is the Air Force aircraft that will bring the 2.5 COVID-19 vaccines donated by the US), *Revista Semana,* (2021), https://www.semana.com/nacion/articulo/este-es-el-avion-de-la-fuerza-aerea-que-traera-las-25-millones-de-vacunas-contra-covid-19-que-dono-eeuu-a-colombia/202140/.

53. Colombian Air Force, "Exitosa jornada de vacunación contra el COVID-19 en Santa Cecilia, Vichada" (Successful COVID-19 vaccination day in Santa Cecilia, Vichada), Colombian Air Force, (2021), https://www.fac.mil.co/es/noticias/exitosa-jornada-de-vacunacion-contra-el-covid-19-en-santa-cecilia-vichada.

54. Colombian Air Force, "Vacunas contra Covid-19 son transportadas por su Fuerza Aérea a la vereda de Tizagá en Yopal" (COVID-19 vaccines are transported by its Air Force to the Tizagá

trail in Yopal), Colombian Air Force, (2021), https://www.fac.mil.co/es/noticias/vacunas-contra-covid-19-son-transportadas-por-su-fuerza-aerea-la-vereda-de-tizaga-en-yopal.

55. Caracol Radio, "Fuerza Aérea transportó más de mil vacunas a Murindó y Vigía del Fuerte" (Air Force transported more than one thousand vaccines to Murindó and Vigía del Fuerte), *Caracol Radio,* (2021), https://caracol.com.co/emisora/2021/09/24/medellin/1632486749_960800.html.

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