
# COVID-19 VACCINATION: STATUS QUO

A STATISTA DOSSIERPLUS ON THE COVID-19 VACCINES AND THE ONGOING VACCINATION CAMPAIGNS. LAST UPDATE:

APRIL 29, 2021

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# Started in late 2020, the vaccination campaigns are feeding the hope for the pandemic to lose momentum in 2021

## Executive summary

The spread of the SARS-CoV-2 virus, responsible for the COVID-19 disease, has pushed most of the world's countries into prolonged crisis mode. One year after the first cases of COVID-19 were recorded in China, the pandemic totaled, as of April 2021, 149.6 million infections and 3.2 million casualties worldwide in official records. Similar to the influenza virus, the spread of SARS-CoV-2 has been occurring in waves. During phases of peak contagion, national health systems were put under enormous – sometimes even unbearable – pressure. This compelled the national governments to find strategies to reduce the spread of the virus.

Since the beginning of the pandemic, the curtailment of SARS-CoV-2 has been attainable only through mobility-reducing measures (lockdowns), social distancing, and increased hygiene standards (e.g., wide usage of face masks). Vaccines are now offering hope to deescalate the pandemic without these strict measures. As early as summer 2020, some potential vaccines cleared the rigid testing and licensure processes of national and international health authorities, a step which offered the concrete possibility of reaching a generalized immunity against COVID-19 and bringing the pandemic to an end. Whereas the development of multiple safe, effective, and protocol-compliant vaccines within one year is already an unprecedented achievement in the history of vaccines, producing, distributing, and administering them on a global scale also presents complex challenges. Moreover, eleven on the 12 vaccines currently in use and the majority of those in the latest stage of testing require two injections to be fully effective, thus doubling the number of needed resources.

As of April 2021, the mass vaccination campaigns have started in most parts of the world, targeting to attain herd immunity against COVID-19 perhaps within 2021. In terms of sheer numbers, this translates to administering a vaccine twice per patient in a little more than 365 days to, at least, 70 percent of the population. Focusing on the United States and large European countries (Germany, United Kingdom, France, and Italy), Statista is tracking the number of COVID-19 vaccines issued per day and comparing these figures with the average numbers needed for reaching herd immunity by the 31st of December 2021. As of April 2021, all the abovementioned countries appear to have reached the critical number of average daily vaccinations in order to achieve herd immunity against SARS-CoV-2 by the end of 2021.


## The COVID-19 pandemic: one year later

- Timeline of the pandemic
- Reduced mobility
- The COVID-19 vaccines
- SARS-CoV-2 mutations

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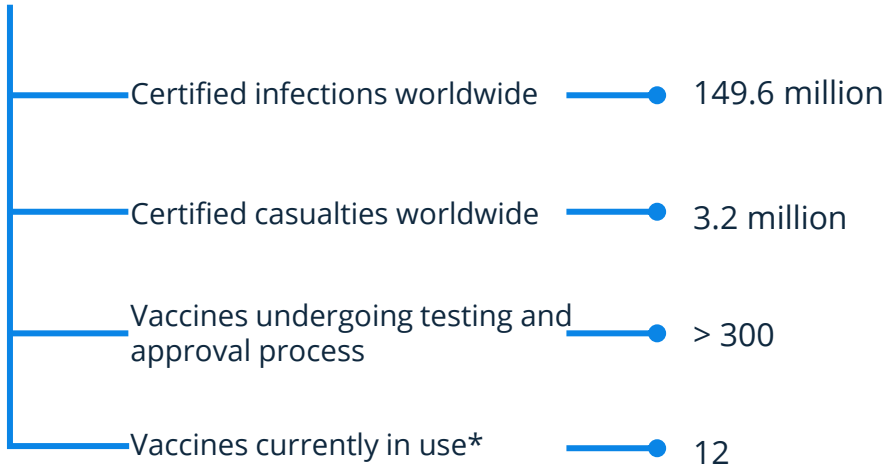
# One year after SARS-CoV-2 was first identified in Hubei, China, its pandemic spread has triggered a global race for the vaccine

## Overview

First detected in the Chinese province of Hubei between the end of 2019 and January 2020, the novel SARS-CoV-2 virus, responsible for the COVID-19 disease, rapidly reached a pandemic spread. From China's cancellation of the events related to the Lunar New Year, planned for the last weekend of January 2020, to the WHO statement officially declaring the spread of the SARS-CoV-2 pandemic, less than 50 days passed. The spread of the virus, already in the so-called first wave of January-May 2020, was confirmed to be a serious threat for most of the world's population and for all the national health systems, including those of the most advanced countries.

The countries' response to the pandemic followed two approaches: One was that the population was asked (or, in some countries, ordered) to reduce time spent outside and avoid contact with other people, to obstruct the virus' spread. The second was that the pharmaceutical industry and research facilities began research into developing more effective medicine and, most importantly, a vaccine. Despite not having any precedent in the modern history of medicine, one year later, over 300 candidate vaccines against SARS-CoV-2 have been submitted to the various health authorities for approval. Of these, 12 were officially approved and are currently being administered to a wide share of the world's population.

The pandemic in number as of April 29, 2021

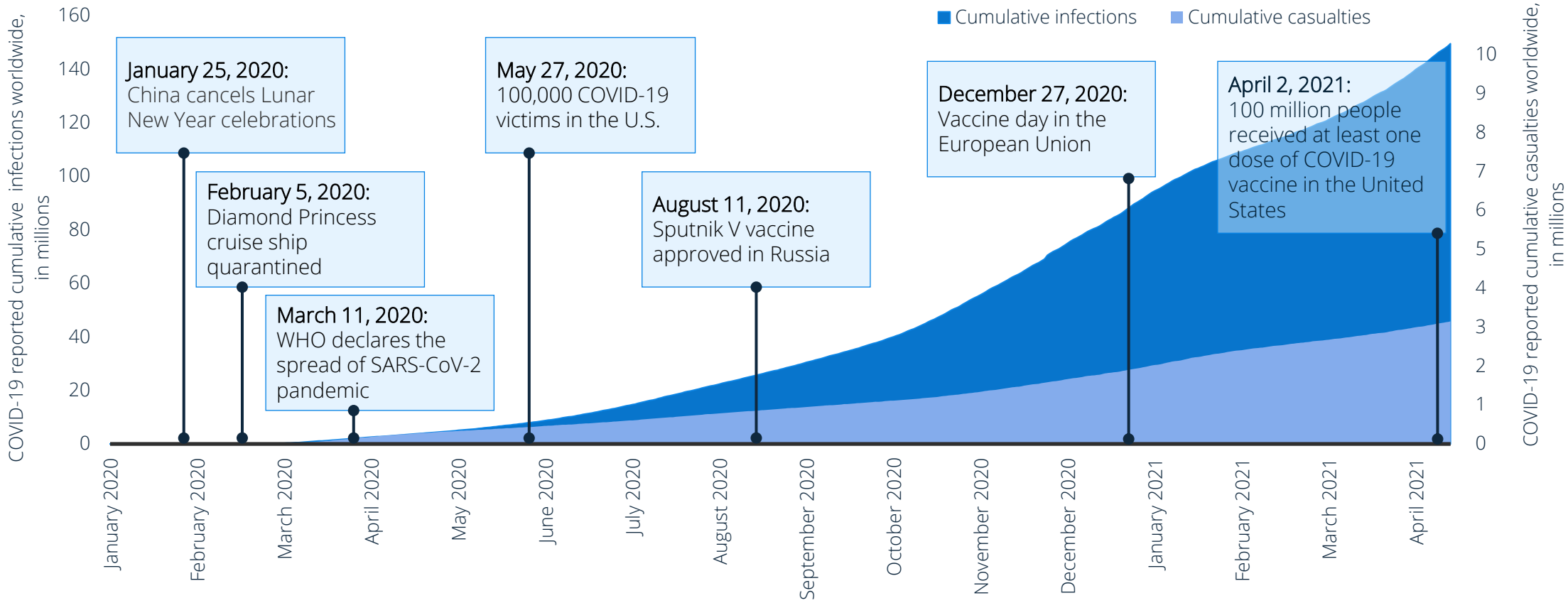





**Note(s):** *intended as vaccines approved by at least one national health authority in the world and widely administered to the population (outside a testing scheme)
**Source(s):** John Hopkins University, WHO, Statista

# COVID-19 has infected over 149.6 million people and caused 3.2 million deaths so far; now it's gaining momentum

COVID-19 cumulative infections (left axis) and casualties (right axis), as of April 29, 2021

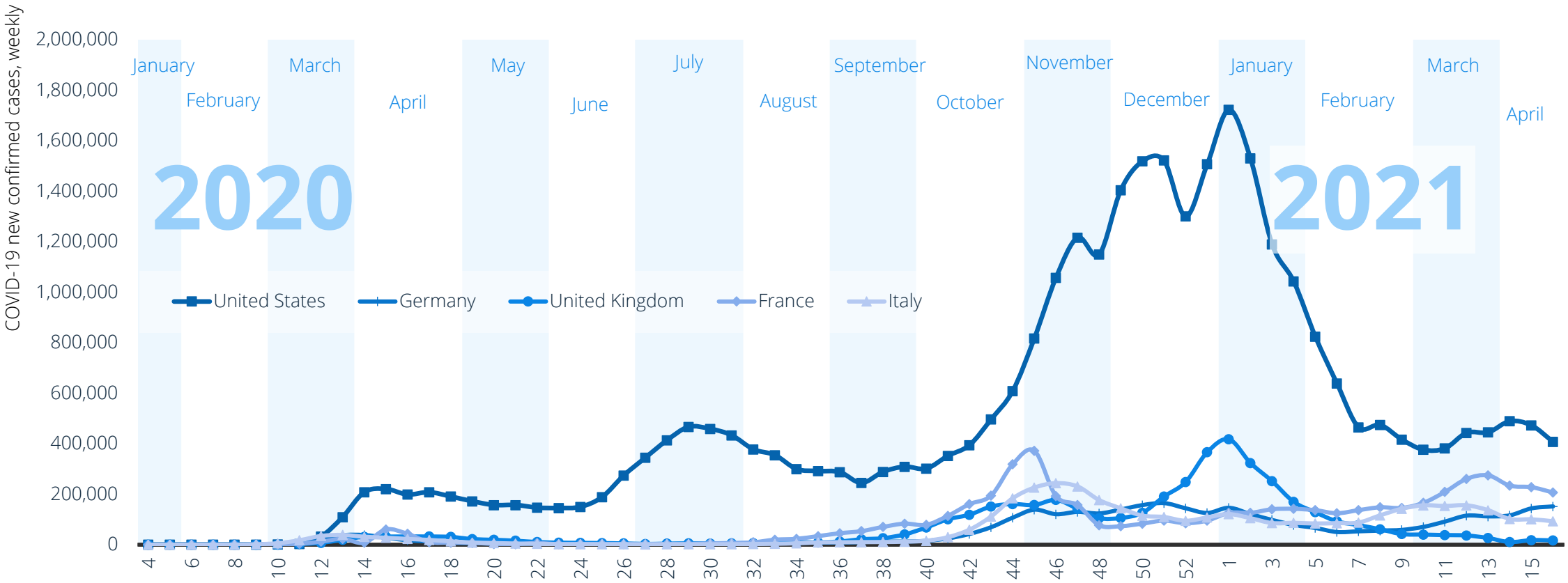





**Source(s):** ABC news, Johns Hopkins University, Statista

# The spread of SARS-CoV-2 took place in waves; the highest numbers were recorded in December 2020 and January 2021

COVID-19 daily cases, selected countries and aggregated by calendar week

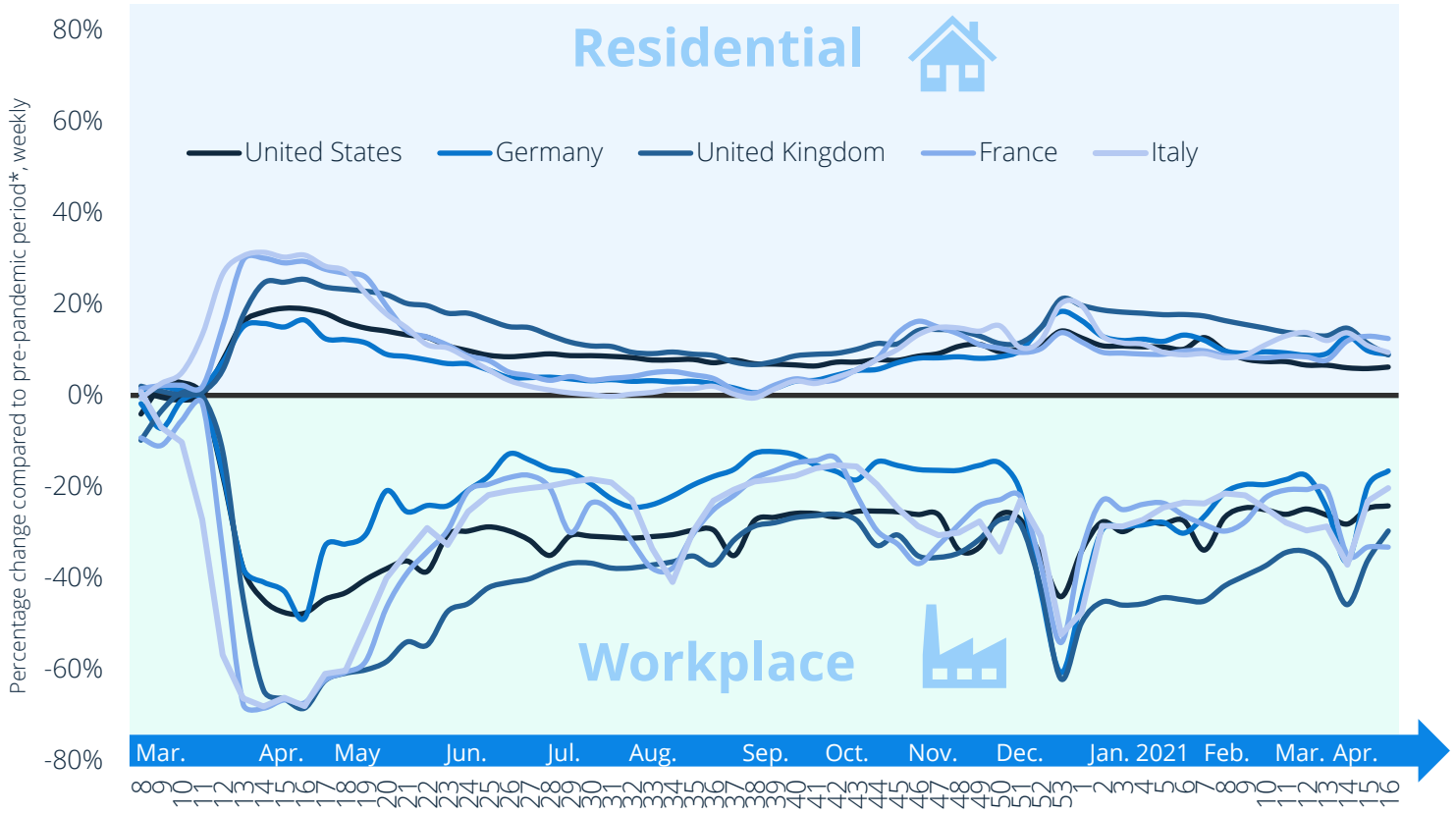





**Source(s):** Johns Hopkins University, Statista

# The most common solution to reduce the spread of SARS-CoV-2 was to ask people to reduce their mobility and stay home

Google mobility trends, selected countries




The widening spread of SARS-CoV-2 in March 2020, first in Europe and in the United States shortly afterwards, made it necessary for these countries to introduce measures to reduce the mobility of their citizens.

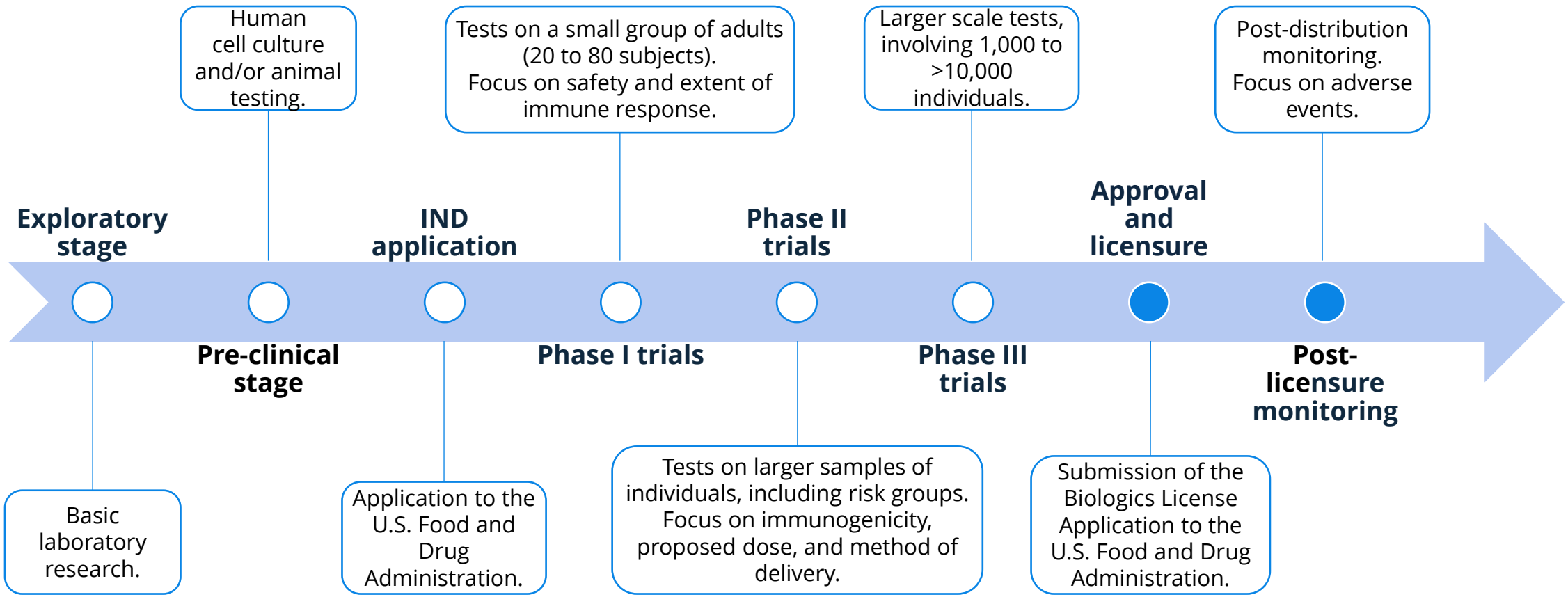
The strategy of national lockdowns included the temporary closures of public spaces (schools, universities) and recreational spaces (restaurants, cinemas, theaters, sports facilities) and required employers to facilitate working from home for those employees that could do so.

As a result, people's time spent at home increased both within March and May 2020 (first wave), and again from October 2020 onward (second wave). The time spent in the workplace was inversely proportional, declining the most during the peaks of the two waves.

**Note(s):** *Defined as the days between January 3, 2020 and February 6, 2020.
**Source(s):** Google mobility trends, our world in data

# Developing vaccines for COVID-19 became pivotal, yet adhering to official protocols to ensure safety and efficacy is crucial

Development and licensure of a newly developed vaccine, United States regulations

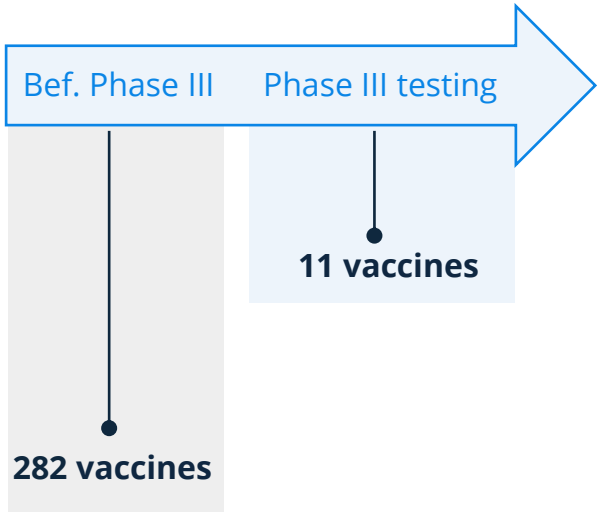





**Source(s):** historyofvaccines.org, The New York Times

# Within the year 2020, 304 candidate COVID-19 vaccines have been developed; 12 of them are already in use

COVID-19 vaccines in the latest stage of testing and in use, as of April 13, 2021




Vaccines currently in use — **12 vaccines**

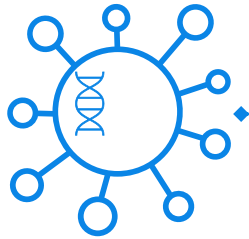
| Manufacturer | Country of origin | Countries where the vaccine is used |
|---|---|---|
| Pfizer/BioNTech | U.S./Germany | WHO countries |
| AstraZeneca/Oxford | UK | UK, EU, India, Argentina, Dominican Republic, El Salvador, Mexico, Morocco |
| Gamelaya Research Inst. (Sputnik V) | Russia | Russia, Belarus, Argentina, Serbia, Paraguay, Palestine |
| Moderna | U.S. | U.S., Canada, EU, Israel, UK, Switzerland |
| Anhui Zhifei | China | China |
| Sinopharm | China | China, UAE , Bahrain, Egypt, Hungary |
| Sinovac | China | China, Azerbaijan, Brazil, Chile, and Colombia |
| CanSino | China | China, Mexico, Pakistan |
| Wuhan/Sinopharm | China | China, UAE |
| Vector institute (EpiVacCorona) | Russia | Russia |
| Bharat | India | India (emergency use) |
| Johnson & Johnson | U.S. | U.S., EU, Bahrain, South Africa |



**Source(s):** London School of Hygiene & Tropical Medicine, WHO

# Vaccines against viral diseases are based on three different approaches; the various COVID-19 vaccines explored them all

Type of vaccines against viral diseases



| | | |
|---|---|---|
| **Whole-virus approach** | The vaccine is based on the entire disease-carrying virus, containing either an attenuated or inactivated virus, or some of its proteins. | Example from other diseases: **Influenza**<br><br>Exemplary COVID-19 vaccines based on this approach: **Oxford/AstraZeneca** |
| **Subunit approach** | The vaccine is based only on very specific parts of the virus that the immune system has to recognize to hinder the virus' reproduction. The vaccine contains only these parts. | Example from other diseases: **Hepatitis B**<br><br>Exemplary COVID-19 vaccines based on this approach: **Anhui Zhifei** |
| **Genetic approach** | The vaccine is based on a section of the genetic material of specific proteins. The vaccine contains the genetic instructions (mRNA) for the protein against which the immune system has to respond | Example from other diseases: **Human papillomavirus**<br><br>Exemplary COVID-19 vaccines based on this approach: **Pfizer/BioNTech** |

**Further insights:** World Health Organization infographic



**Source(s):** WHO

# Mutations of the spike protein of SARS-CoV-2 generate concern worldwide, especially B.1.351

COVID-19: overview of prominent virus variants that include mutated spike proteins

| Variant | B.1.1.7 | B.1.351 | P.1 |
|---|---|---|---|
| **Alternate Name** | 501 Y.V1 | 501 Y.V2 | 501 Y.V3 |
| **Mutations*** | 23 | 21 | 22 |
| **Spike mutations*** | 8 | 9 | 10 |
| **Suspected state of origin** | United Kingdom | South Africa | Brazil |
| **First detected** | Sept. 2020 | Oct. 2020 | Jan. 2021 |
| **Countries reported** | 130 | 80 | 45 |
| **Concern** | Increased transmissibility (confirmed >40% increase) | Increased transmissibility and very likely reduction of vaccine efficacy | Increased transmissibility and possible reduction of vaccine efficacy |

In general, viruses are constantly adapting and mutating. When these mutations create a selective advantage such as increased transmissibility, they prevail and spread quickly.

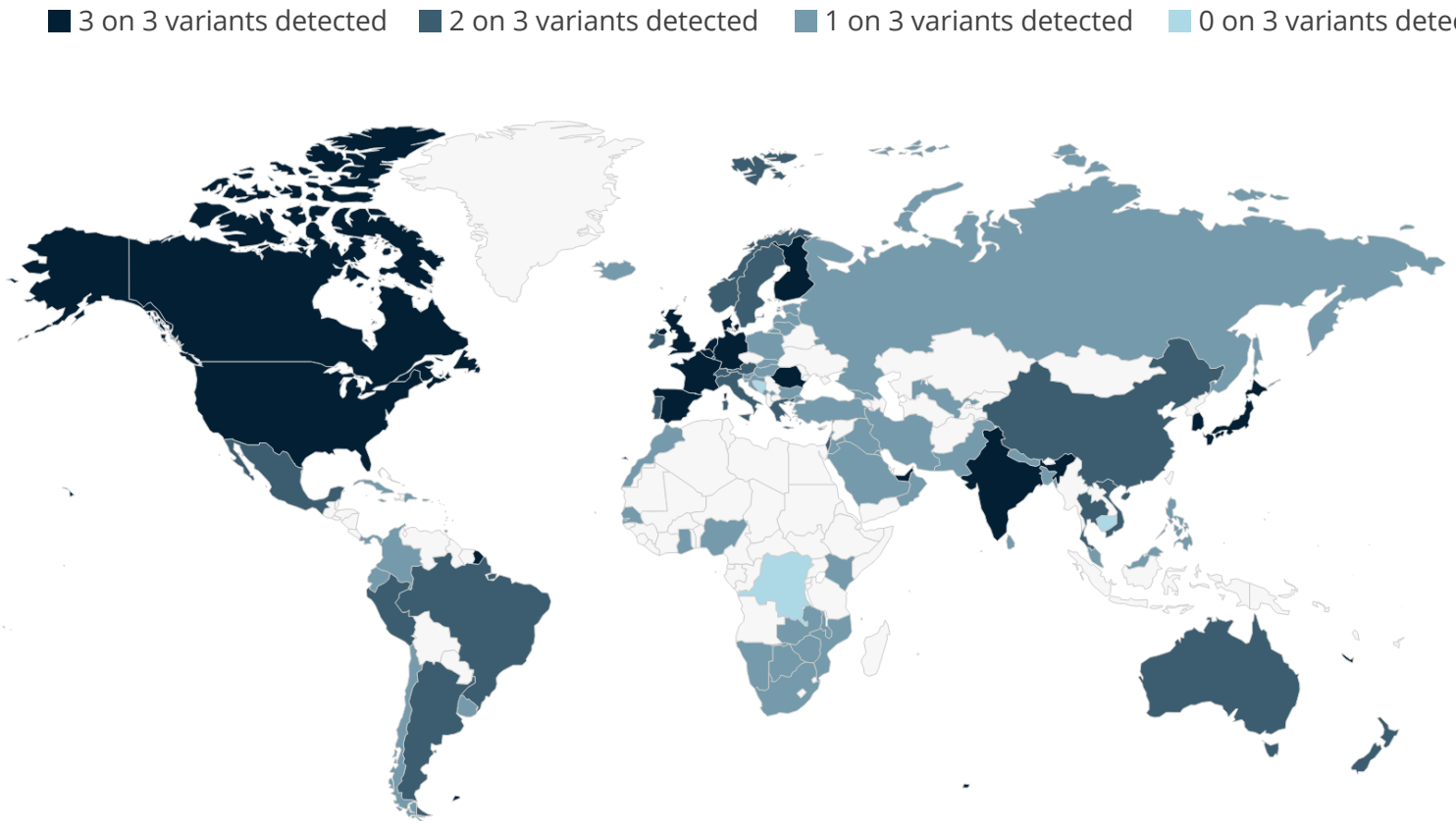
The SARS-CoV-2 mutations B.1.1.7 (UK), B.1.351 (South Africa), and P.1 (Brazil) quickly became the predominant variants in their countries of origin and started to spread around the globe. As almost all the approved vaccines are addressing the spike protein of SARS-CoV-2, mutation within this protein may endanger the effectiveness of the vaccines. Whereas this seems to not be true for the B.1.1.7 and P.1 variants, B.1.351 generates more concerns, remarking how the effectiveness of the vaccines against other mutations is a key factor in the global challenge to overcome the pandemic.

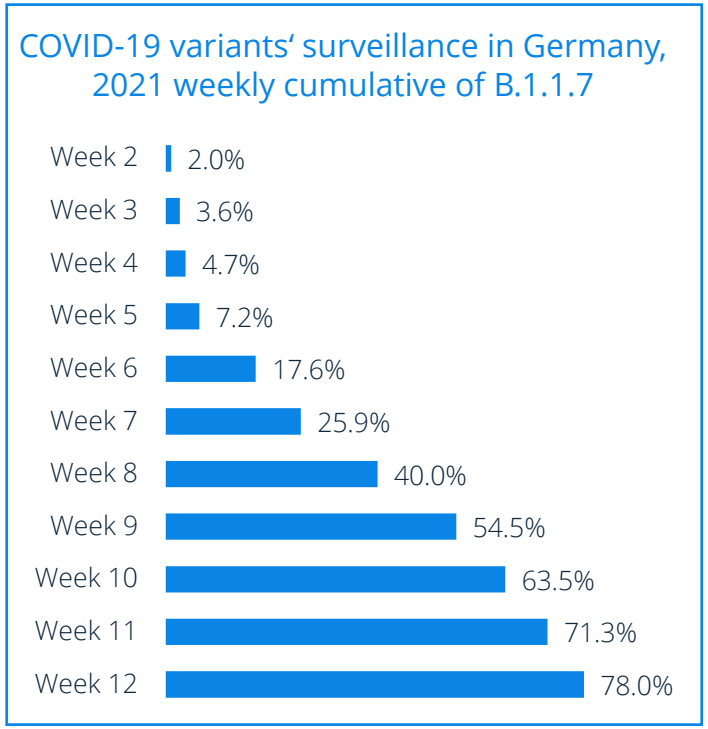


**Note:** *Number of mutations in comparison to the most frequent SARS-CoV-2 virus
**Sources:** European Centre for Disease Prevention and Control; European Molecular Biology Laboratory

# COVID-19 variants have been detected in more than 100 countries and are overcoming the original virus, as B.1.1.7 in Germany

Detection of variants B.1.1.7 (UK), B.1.351 (South Africa), and P.1 (Brazil) worldwide and Germany




**Note(s):** as of April 6, 2021
**Source(s):** Robert Koch Institut, WHO, Statista


## 02 Vaccination strategies

- COVID-19 vaccines' landscape
- International vaccines' portfolios
- Acceptance of the COVID-19 vaccine

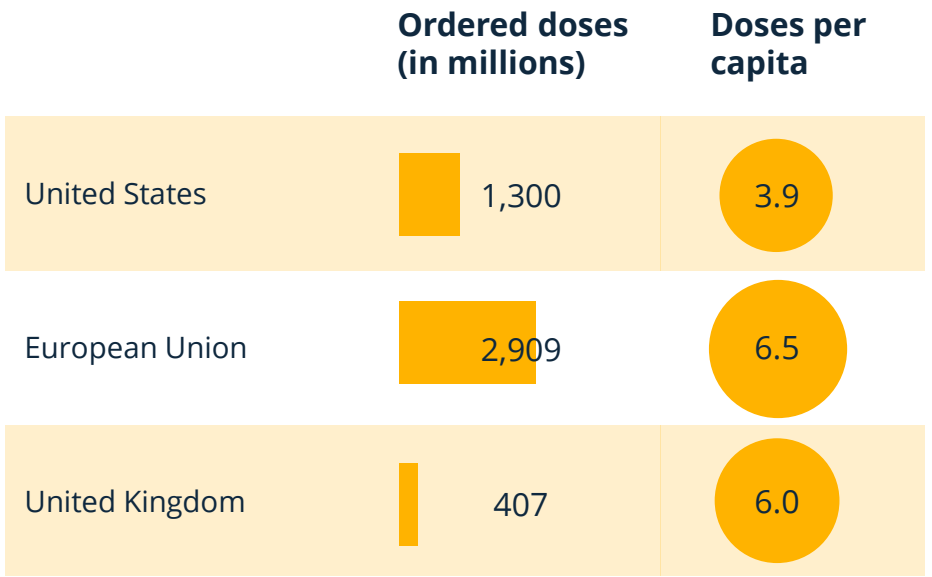
# To finally stop the COVID-19 pandemic, countries worldwide are (pre-)ordering sizable quantities of the so-far developed vaccines

## Overview

The pandemic spread of SARS-CoV-2, the pressure that it generated on national health systems, and the grim number of casualties it caused have highlighted a trade-off between guaranteeing the public health and swiftly returning to normal activities. The mass vaccination campaigns against SARS-CoV-2 emerged as the most convincing solution that would balance both needs. Once more than 70 percent of the population is immunized in each country, the health crisis could finally be brought under control.

While the first important step for the mass vaccinations – the development of safe and effective vaccines – has been successfully concluded in the record-breaking span of one year, the challenge for 2021 will be to immunize the largest amount of people within the shortest timeframe possible. Focusing on the United States, the European Union, and the United Kingdom, these countries have committed sizable resources to guarantee enough doses of COVID-19 vaccines to their respective populations, having ordered (or pre-ordered) over 4 single doses per citizen on average. As the large majority of approved and (likely) soon-to-be-approved vaccines require double administration to grant the highest immunity, the ordered quantities are more than sufficient. The main challenge remains the speed and efficacy of execution and constraints in the recommended usage of the available vaccines (most prominently, the so-far approved vaccines are not suitable for children).

**COVID-19 vaccine supplies, selected countries**






**Source(s):** Unicef, WHO, Statista

# The effort to timely develop a COVID-19 vaccine resulted in eleven vaccines, 5 of which are widely administered in several countries

COVID-19: vaccines in use* as of April 29, 2021, by ordered quantities worldwide, top 5

| Vaccine | Doses ordered** | Efficacy | Type of vaccine | Administration method | Production sites | Required temperature for maximum shelf life | Price per dose |
|---|---|---|---|---|---|---|---|
| AstraZeneca/Oxford | 2,230 million | 70% | | 2 injections | Germany, Netherlands, Belgium, India | +2/8°C | 3 USD |
| Pfizer/BioNTech | 1,159 million | 95% | | 2 injections | United States, Germany, Belgium | -70°C | 17 USD |
| Johnson & Johnson | 943 million | 66% | | 1 injection | United States, Europe | +2/8°C | 9 USD |
| Moderna | 502 million | 90% | | 2 injections | United States, Switzerland | -20°C | 17 USD |
| Sputnik V | 494 million | 91% | | 2 injections | Russia | +2/8°C | <5 USD |


**Note(s):** *Approved by at least one national health authority
** Total of ordered doses worldwide, as officially disclosed

**Source(s):** Unicef, WHO, Statista

# Other vaccines currently in use have been approved only by few national health authorities

COVID-19: vaccines in use* as of April 29, 2021, by ordered quantities worldwide, remaining approved vaccines

| Vaccine | Doses ordered** | Efficacy | Type of vaccine | Administration method | Production sites | Required temperature for maximum shelf life | Price per dose |
|---|---|---|---|---|---|---|---|
| Sinovac | 368 million | n.a. | | 2 injections | China | +2/8°C | <20 USD |
| CanSino | 39 million | n.a. | | 1 injection | China | +2/8°C | 30 USD |
| Bharat | 39 million | n.a. | | 2 injections | India | +2/8°C | <5 USD |
| Sinopharm | n.a. | 79% | | 2 injections | China | +2/8°C | 70 USD |
| Wuhan/Sinopharm | n.a. | n.a. | | 2 injections | China | +2/8°C | n.a. |
| Vector Institute | n.a. | n.a. | | 2 injections | Russia | +2/8°C | n.a. |

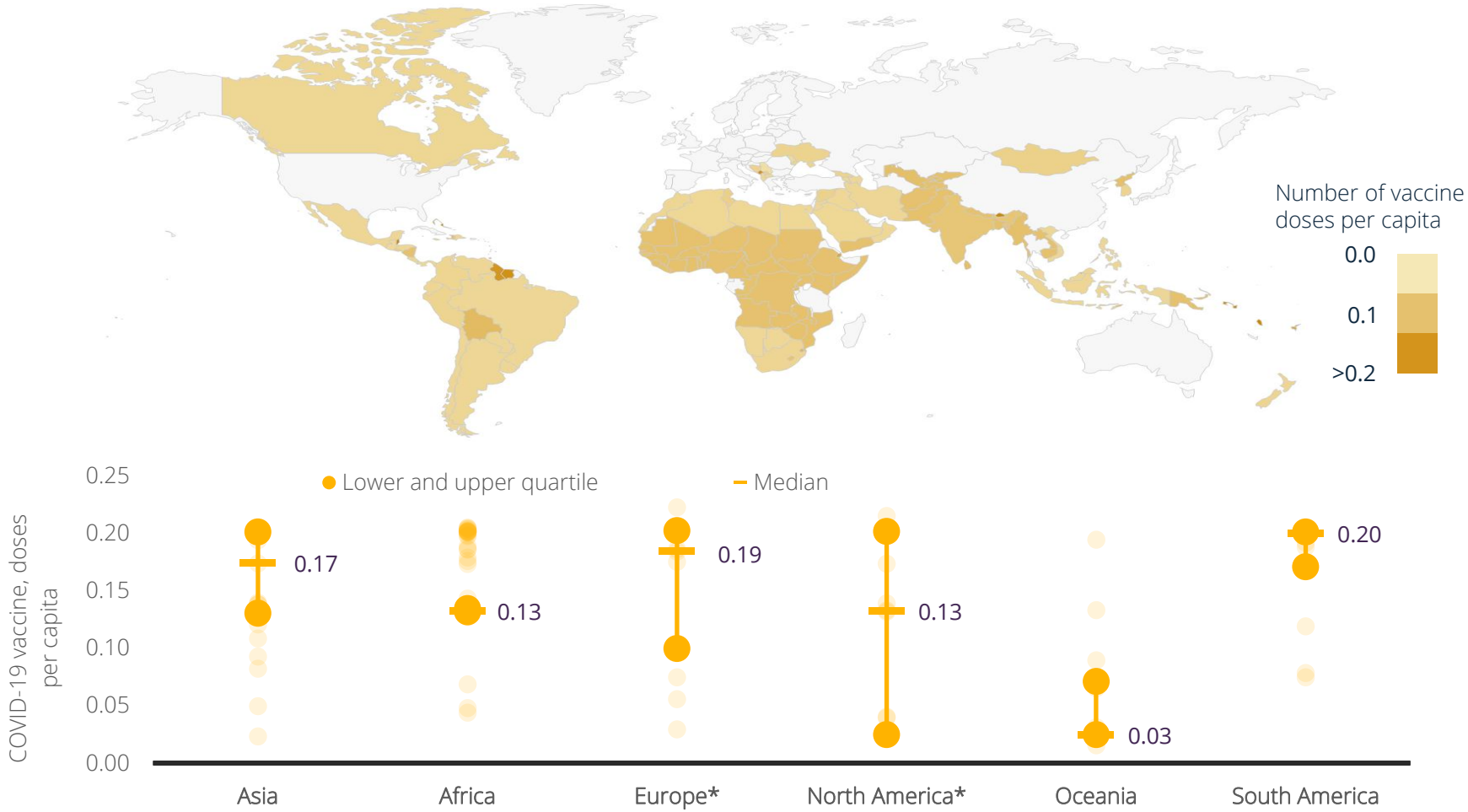
Whole virus | Genetic (mRNA) | Subunit

**Note(s):** *Approved by at least one national health authority
** Total of ordered doses worldwide, as officially disclosed

**Source(s):** Unicef, WHO, Statista

# The WHO initiated the global initiative COVAX aiming at an equitable access to COVID-19 vaccines for all countries

## COVID-19 vaccines distributed by the COVAX program per capita




The WHO initiated the COVAX program to jointly negotiate, purchase, and distribute the COVID-19 vaccines. While most G7 countries prefer to handle their vaccination campaigns independently, 140 countries across all continents joined the initiative. In the beginning, the distribution aims at the protection of health care workers and groups at higher infection risk.

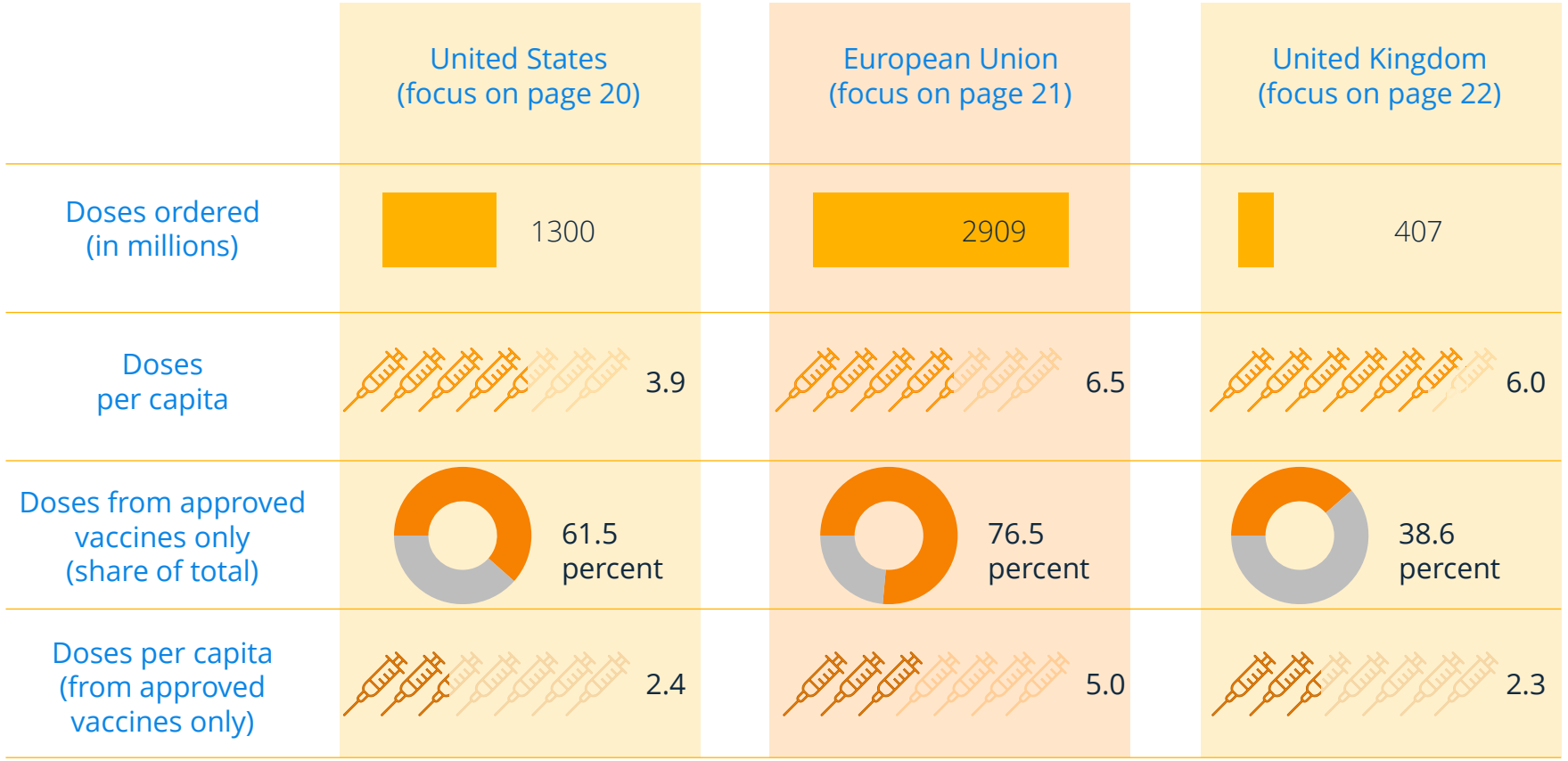
In participating African countries, the median of doses distributed by COVAX is expected to be 13.3 doses per 100 citizens, thus less than one dose per capita.



**Note(s):** * The countries participating the COVAX program in these regions are those colored in the above map. Last COVAX update February 3. 2021
**Source(s):** COVAX, Our World in Data

# The United States, European Union, and United Kingdom ordered sizable quantities of the available (or soon-to-be available) vaccines

Doses of COVID-19 vaccine ordered and pre-ordered, selected countries, as of April 29, 2021




The United States, European Union, and United Kingdom, in response to the still-increasing records of COVID-19 infections and casualties, ordered sizable quantities of the available and soon-to-be available COVID-19 vaccines.

As of April 2021, these countries have secured, on average, more than 4 COVID-19 vaccine doses per citizen. The uncertainty around the overall vaccines' supply chain, the many ongoing approval processes, and the spreading of SARS-CoV-2 variants drove this precautionary excess of orders.

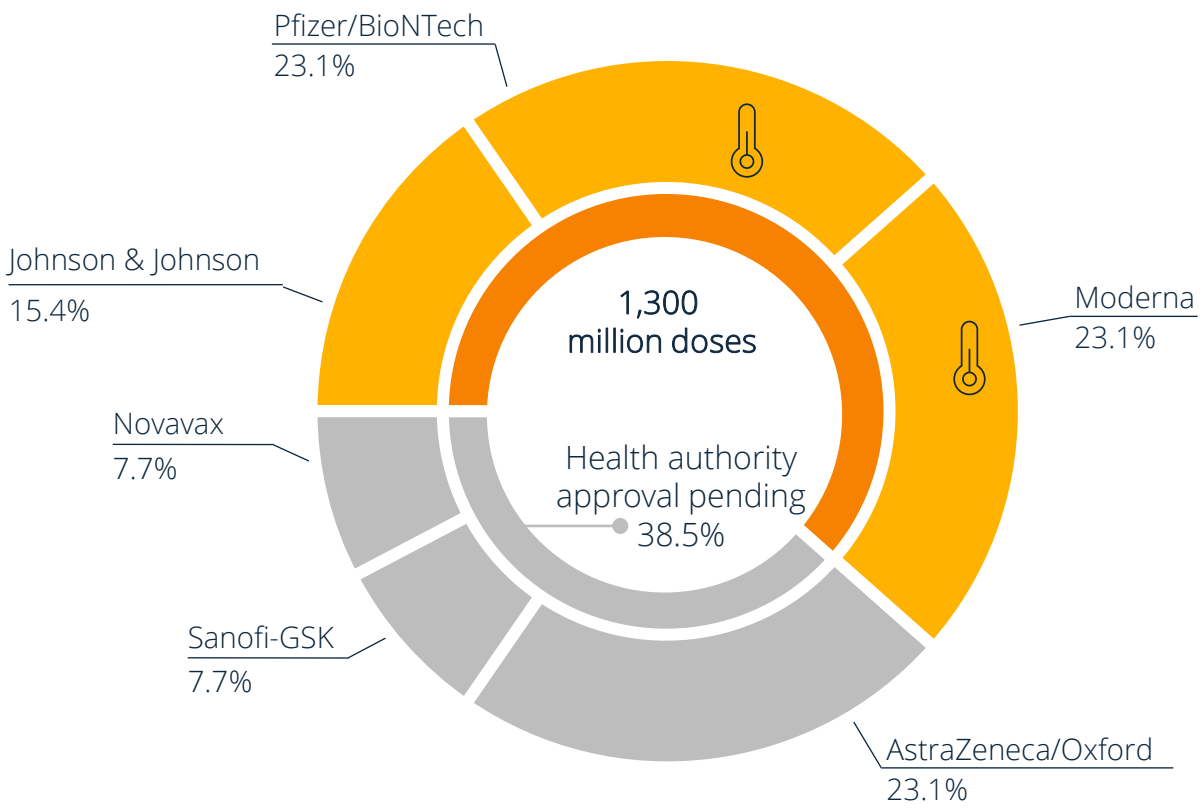


**Source(s):** Unicef, WHO, Statista

# Out of 1.3 billion doses ordered by the United States, 0.8 billion consists of vaccines already approved by the national authorities

Doses of COVID-19 vaccine ordered and pre-ordered by the United States, as of April 29, 2021

United States




The United States has ordered and pre-ordered 1.3 billion doses of COVID-19 vaccines from six different providers.

Among them, AstraZeneca has received the largest commission. In fact, over 3 vaccines out of 10 are expected to be provided by this pharma company in the United States.

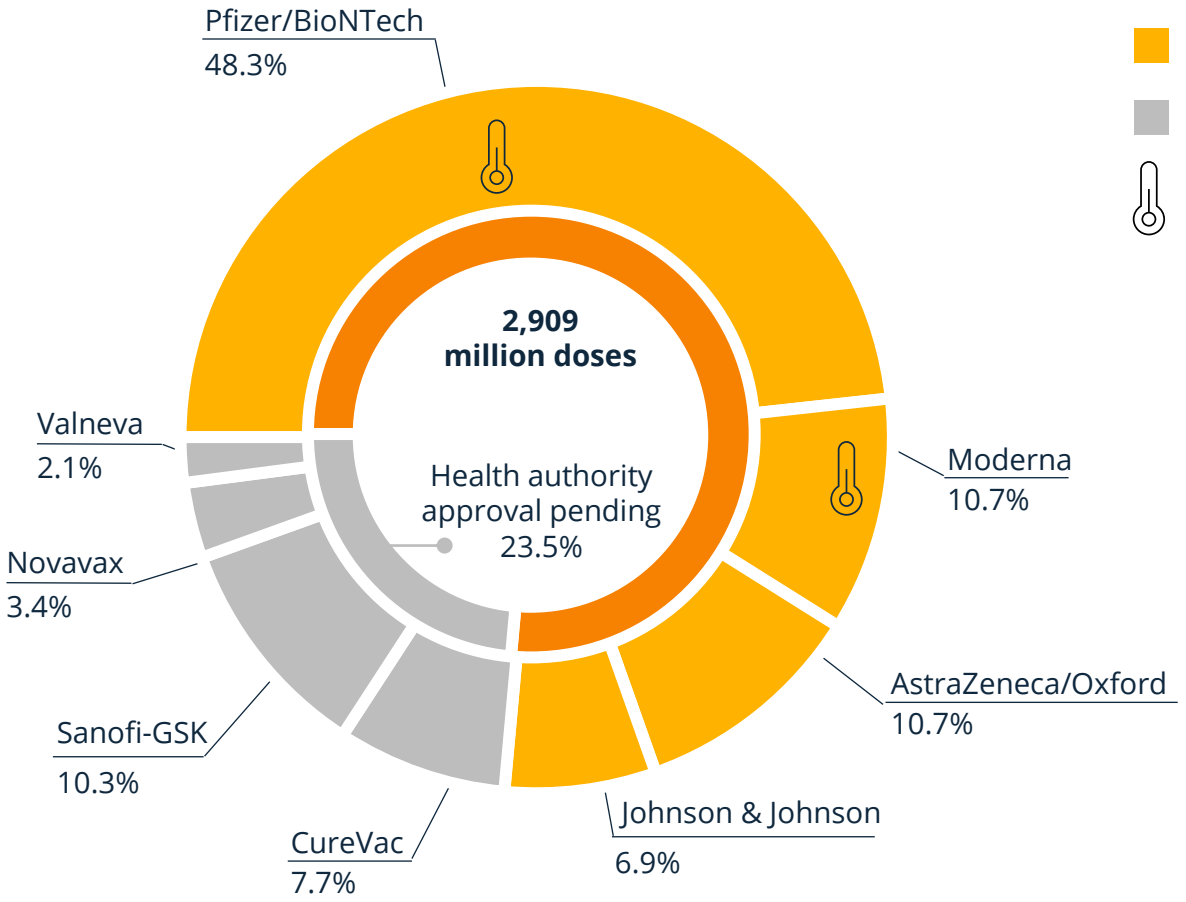


**Source(s):** Unicef, Statista

# The European Union secured 2.9 billion doses of COVID-19 vaccines and candidate vaccines from 8 different providers

Doses of COVID-19 vaccine ordered and pre-ordered by the European Union, as of April 29, 2021

European Union




The European Commission, on behalf of the 27 member states of the Union, signed agreements worth over 20 billion U.S. dollars to secure almost 3 billion COVID-19 vaccine doses.

The first candidate vaccine being approved by the European Medicines Agency was developed by the Pfizer-BioNTech cooperation and is expected to be the most used in the Union. As of April 2021, however, around 30 percent of the European Union's portfolio consists of candidate vaccines for which the final approval is still pending.

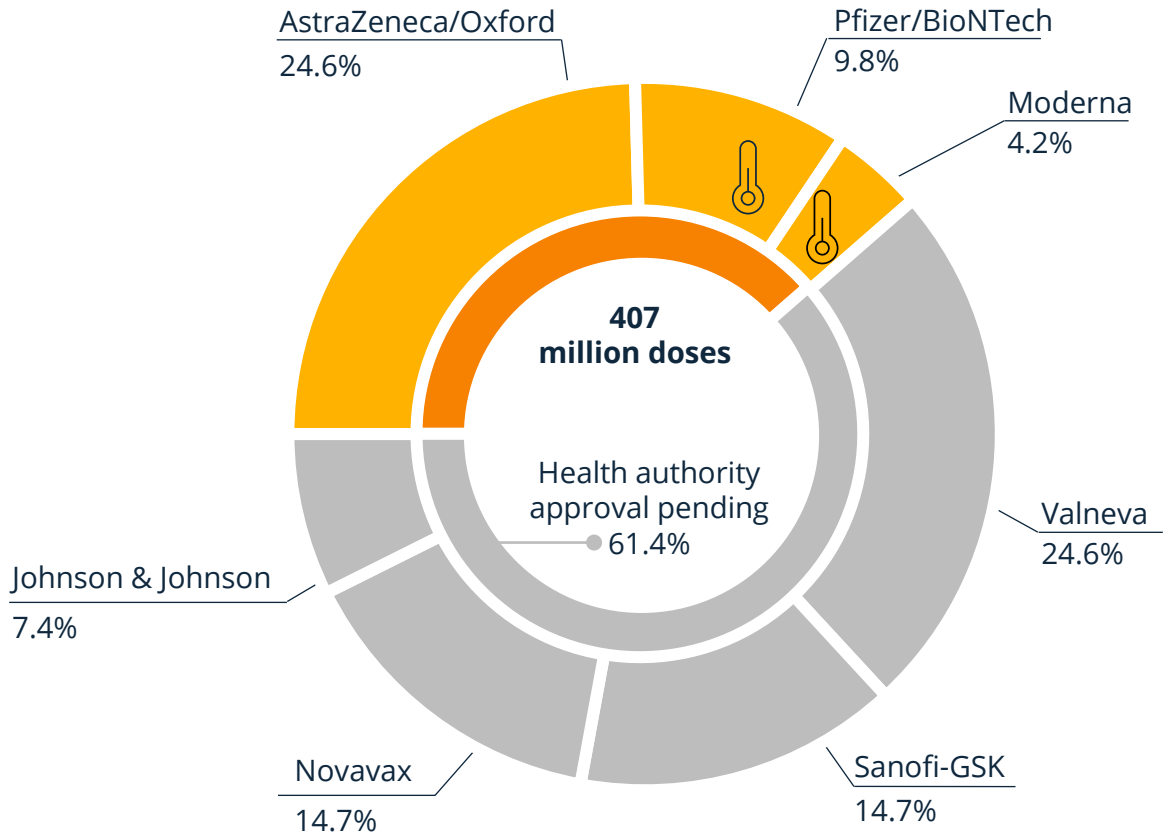


**Source(s):** European Commission, Unicef, Statista

# Like the United States, the United Kingdom has placed the largest share of its orders with AstraZeneca and the University of Oxford

Doses of COVID-19 vaccine ordered and pre-ordered by the United Kingdom, as of April 29, 2021

United Kingdom




Approved vaccines

Pending approval

More stringent cold chain required

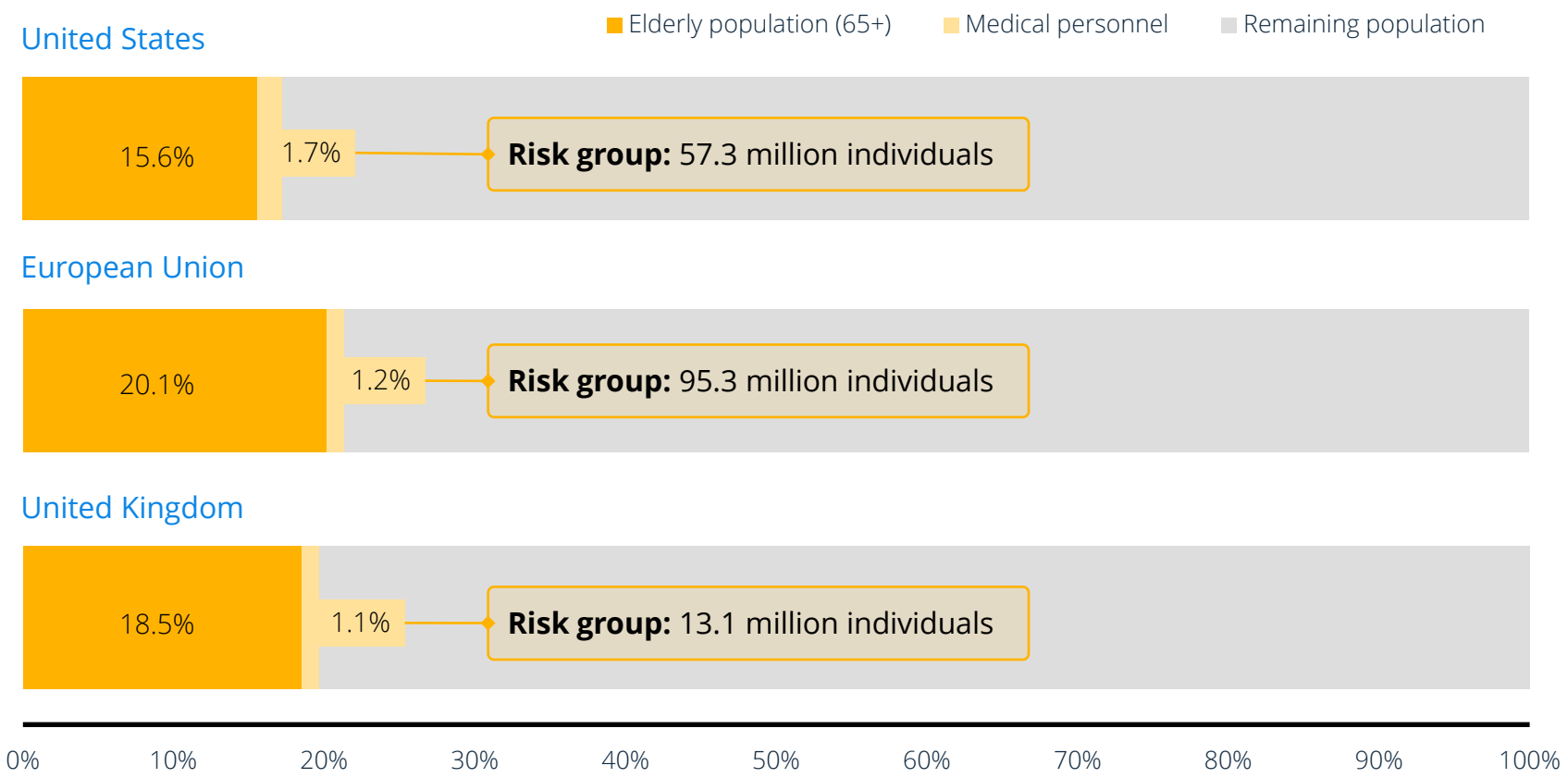
The United Kingdom, officially not a member of the European Union anymore after the so-called BREXIT, has signed agreements for over 400 million doses of COVID-19 vaccines. In per-capita terms, the United Kingdom has secured a high number of doses: in fact, broken down to the population, 6 single doses per citizen will be available in the United Kingdom, compared to the 4 single doses per capita in the United States.



**Source(s):** Unicef, Statista

# Since the pre-ordered COVID-19 vaccine will require over one year to be fully delivered, high-risk groups have been prioritized

United States, European Union, and United Kingdom high-risk groups as share of total population




The United States, the European Union, and the United Kingdom have ordered more than double the number of vaccine doses they need for their respective populations, but pending approvals and manufacturing/logistic constraints led to a shortage of doses at the beginning of 2021.

Thus, two categories have been prioritized in the vaccination campaigns: the elderly population and medical personnel. The former as the most at risk of severe COVID-19 infections, the latter as being exposed to the virus more frequently in general.

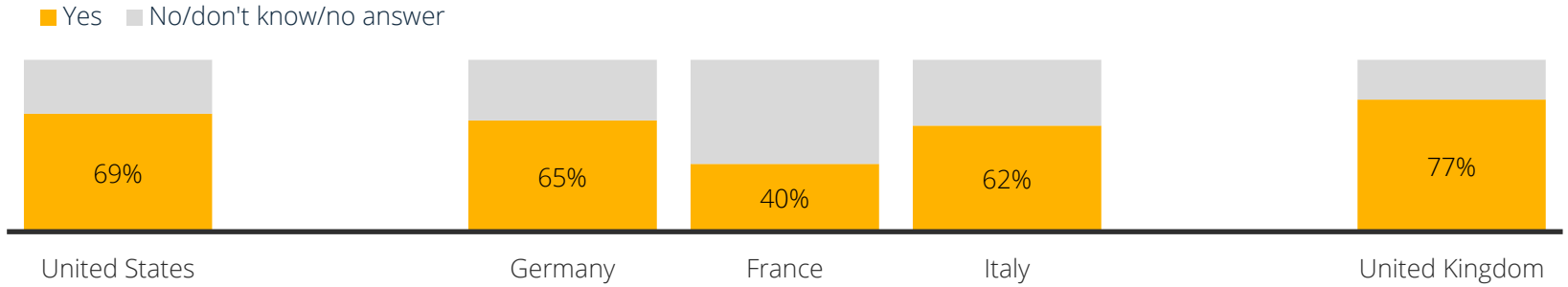


**Source(s):** World Bank

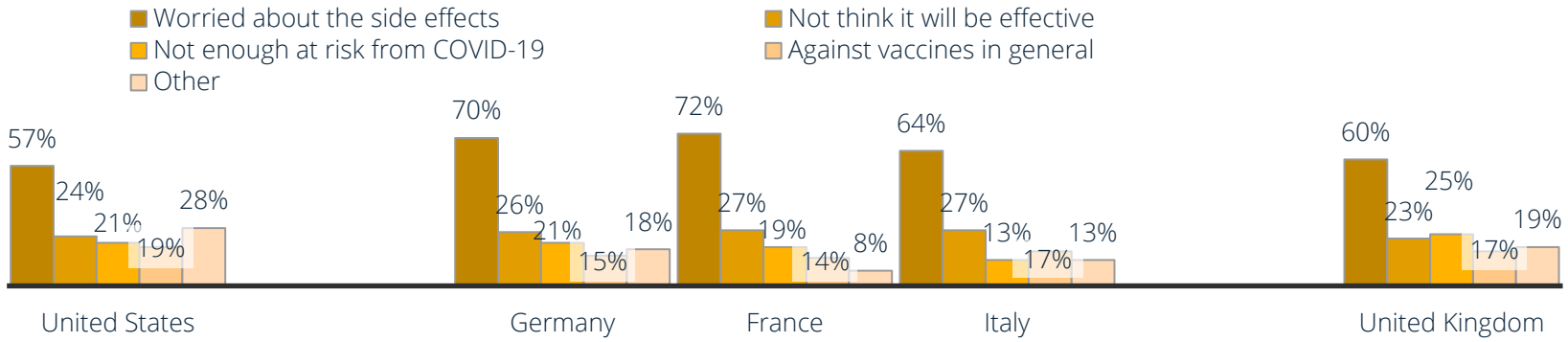
# Except in France, most of surveyed people in the analyzed countries are in favor of the COVID-19 vaccine

Survey data on COVID-19 vaccine acceptance or hesitancy, selected countries

## Share of respondes who would/would not take the COVID-19 vaccine




## Reasons for not taking the COVID-19 vaccine




People in the United States, European Union, and the United Kingdom will be offered the possibility of being vaccinated against COVID-19 – but the decision is up to them.

In the countries under analysis here, more than 60 percent of the respective population is in favor of being vaccinated against COVID-19. A remarkable exception is France, where only 40 percent of the population is pro-COVID-19 vaccine. Among those opposing the vaccination, the concern about side effects is the most frequent decision-driver.



**Source(s):** IPSOS MORI


## 03 The vaccination campaign: status quo

- United States
- Largest EU member states (Germany, France, Italy)
- United Kingdom

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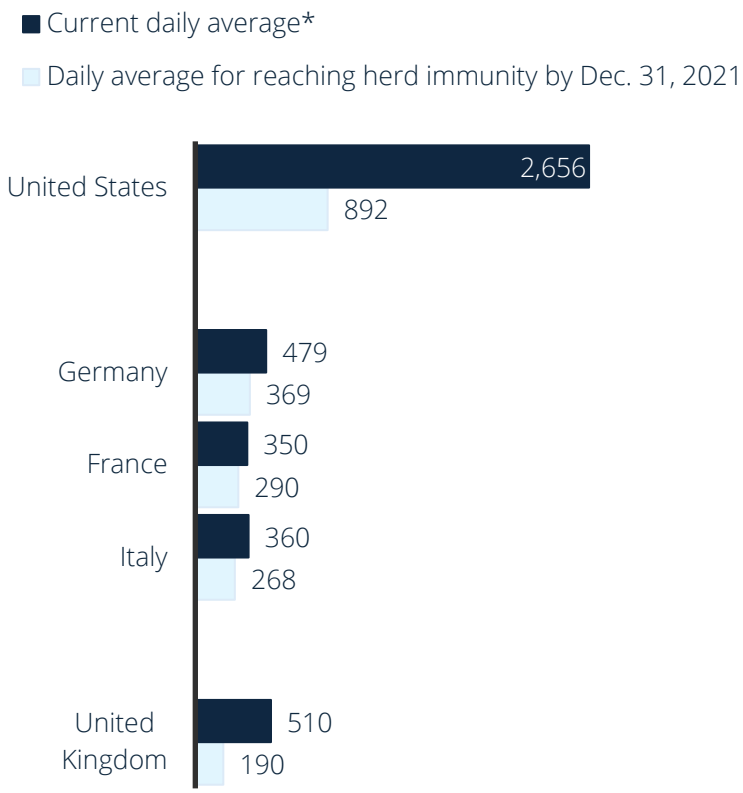
# The speed of the national COVID-19 vaccination campaigns is a pivotal factor in defeating the pandemic

## Overview

There are significant differences in the strategies and designs of immunization campaigns across different countries and regions. As a result, countries are moving at different paces towards herd immunity.

Whereas the United States and the United Kingdom, since the beginning of 2021, had a prompt start in their vaccination campaigns, the largest EU countries had a slower start, mostly dictated by bottlenecks in the delivery and distribution of the ordered doses of vaccines.

As of April 2021, however, it appears that all the countries hereby analyzed are administering enough doses of COVID-19 vaccine per day, on average, to target herd immunity by the end of the current year. In terms of vaccinated people, the immediate fast-start of the United States and United Kingdom determined that, as of April 2021, over 43 percent of the population received already at least the first dose of vaccine. In the EU countries the share of population that received the first dose is, on the other hand, only around 23 percent.



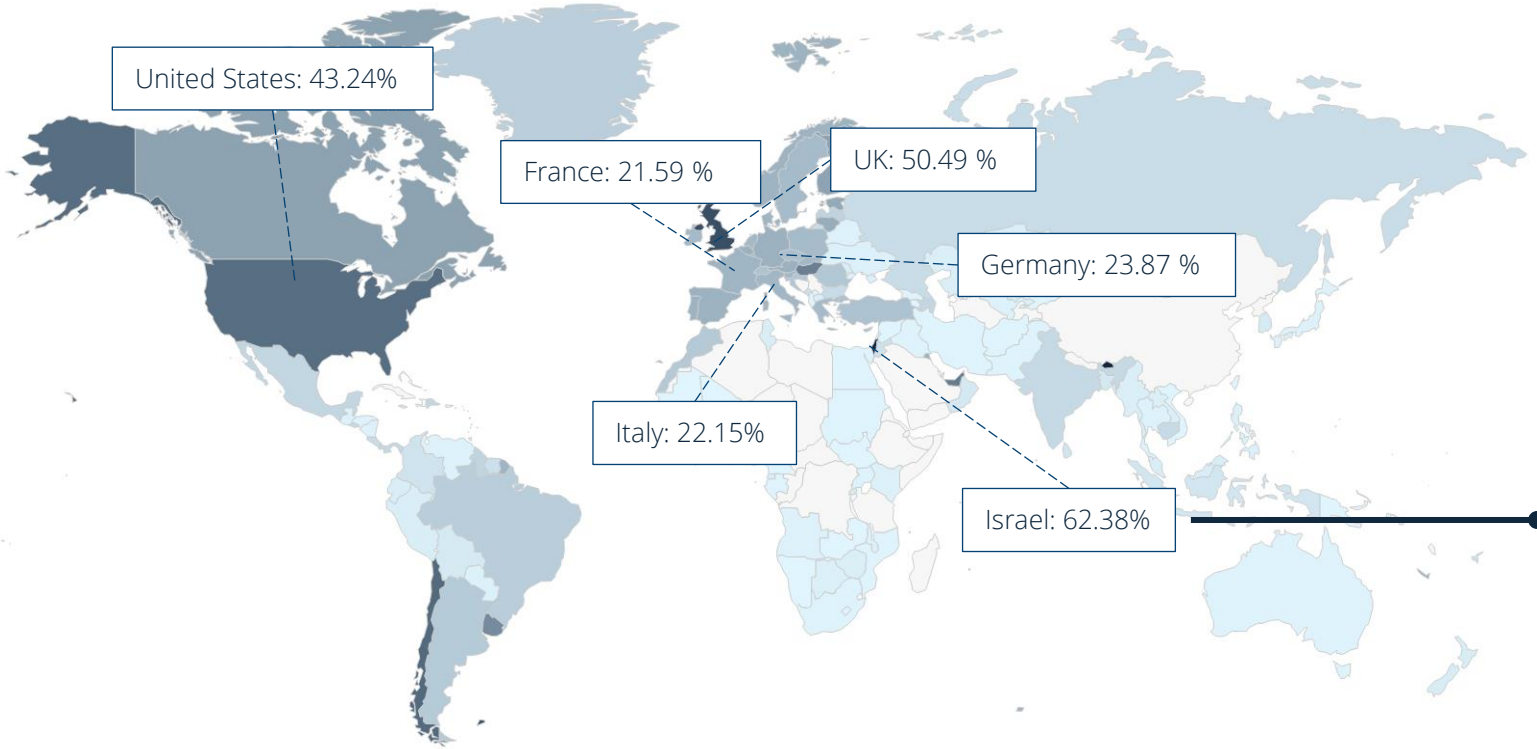

* thousands administered doses

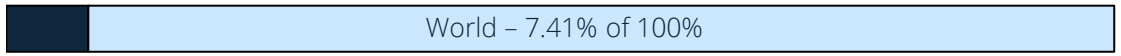


**Note(s):** As of April 29, 2021
**Source(s):** Our World in Data, Statista

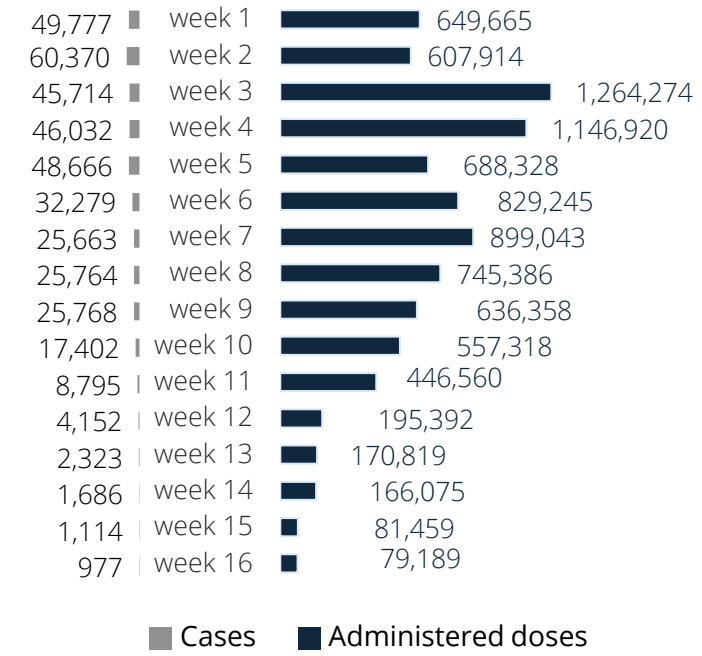
# Israel, where over 62 percent of the population received the vaccine*, is by far the world leader in the COVID-19 vaccinations

Vaccination progress (at least one dose), worldwide as of April 29, 2021




COVID-19 infections and vaccine administrations in Israel, 2021 weekly cumulative



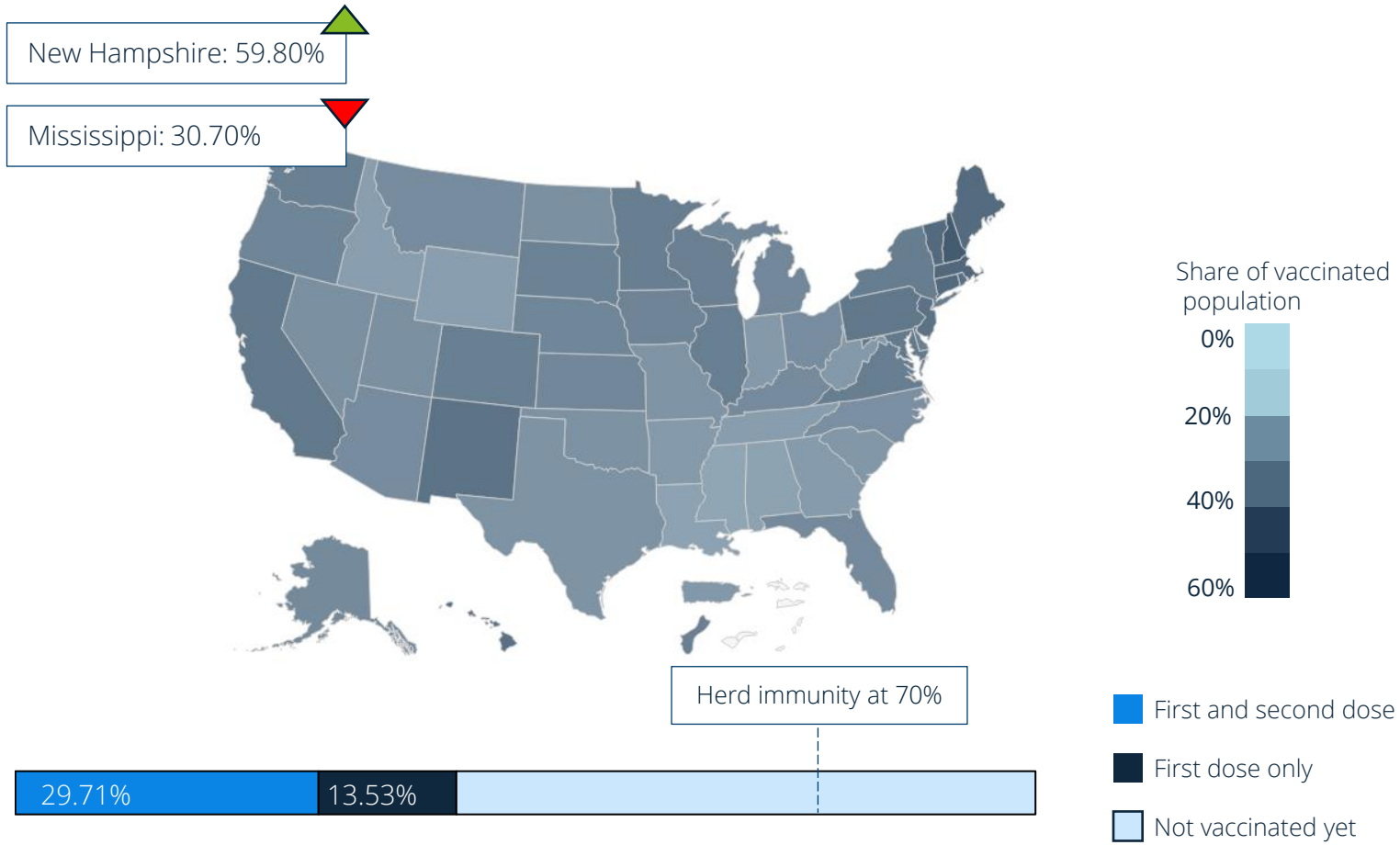



**Note(s)**: *at least one dose

**Source(s):** Our world in data, John Hopkins University, Statista

# The United States is leading worldwide in the total number of administered doses

Vaccination progress (at least one dose) by state, United States as of April 28, 2021




Despite logistical difficulties in the beginning and differences in the state regulations, the U.S. vaccination campaign is progressing. While some states initially only offered vaccines to medical workers and nursing home residents, by January most states had started to give injections to other elderly people as well.

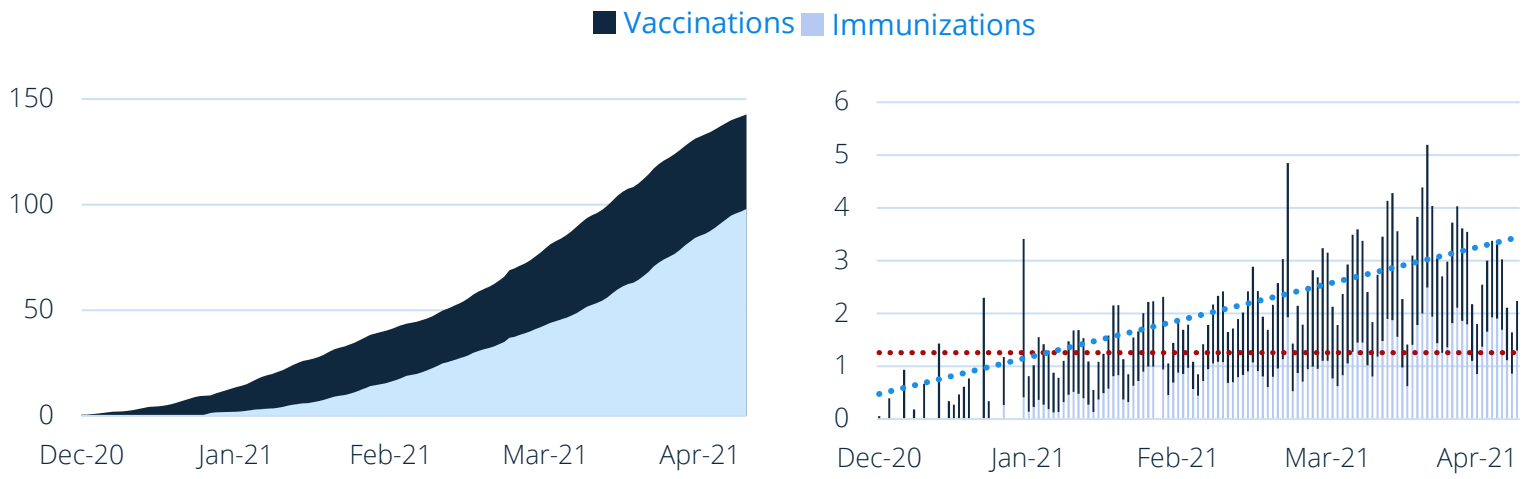
In general, the United States is showing promising progress: in comparison to the rest of the world, the United States already managed to vaccinate 43.24 percent of its population at least once, while worldwide only 7.41 percent received the vaccine.

**Note(s):** * First and second vaccine dose received
**Source(s):** CDC and Statista

# Nowadays in the United States three million doses are administered daily on average; at this pace immunity will be reached within 2021

Vaccination and what-if scenario, United States as of April 28, 2021

Cumulated and daily COVID 19 vaccinations and immunizations* in millions




As-is situation, daily administered doses (last 7 days average)


What-if: herd immunity by Dec 31, 2021


In addition, it becomes clear that the average daily vaccinations and immunizations are rapidly increasing over time.

The goal of President Biden to reach 200 million administered vaccines by his 100th day in office is likely to be exceeded.

By continuously increasing its current average of over 2,655 million administered vaccines per day, the country will be able to reach herd immunity already in 2021.

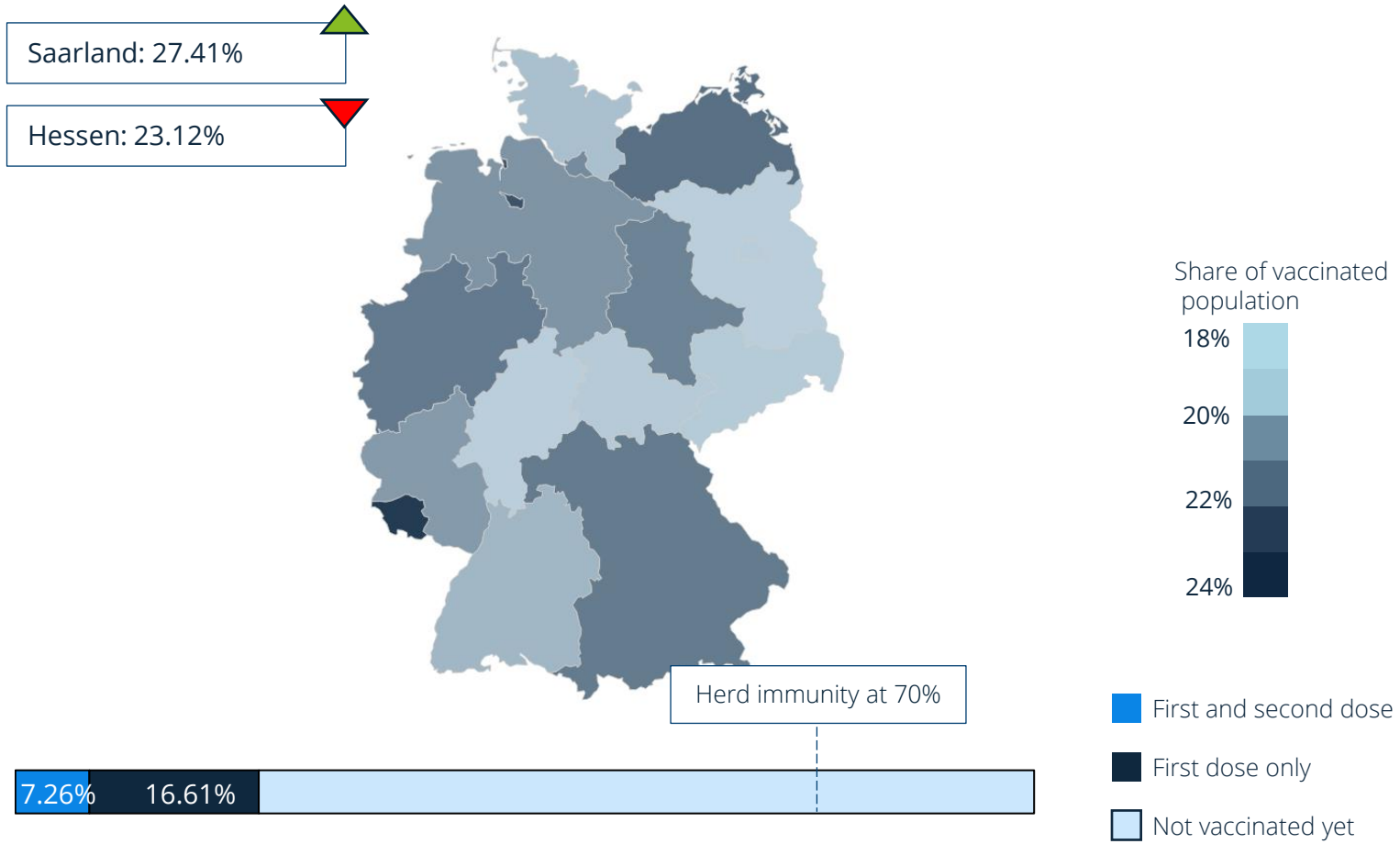
The United States is on a promising way to be the first country of the G20 countries to reach herd immunity in 2021.



**Note(s):** *Only Immunization by vaccines covered. Refers to number of doses required for a full vaccine coverage.
**Source(s):** CDC and Statista

# While still leading by administered doses in the EU, Germany is facing obstacles along the road

## Vaccination progress by federal state, Germany as of April 27, 2021




In comparison to the United States, the European Union is trailing behind when it comes to administered doses. Germany administered the largest number of doses in the EU so far, but stays below expectations with about 3.6 million injections in the first 2 months.

This delay is also caused by the number of doses that have been ordered by the European Union. The vaccines that have been approved in the Union as of April only account for about half of the doses in its total order.

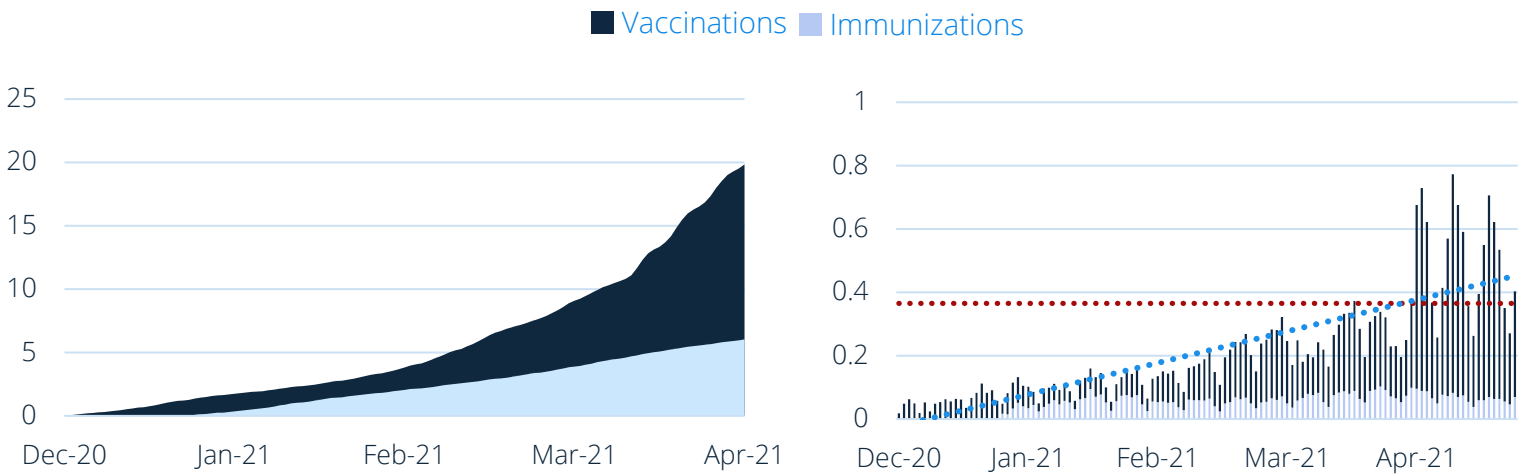
Starting from April 2021 in Germany also the general practictioners are allowed to administer COVID-19 vaccines. This feeds the hope for increasing the average daily vaccinations even further.

**Note(s):** * First and second vaccine dose received
**Source(s):** Robert Koch Institut, Spiegel, Statista

# Having increased its average daily vaccines' administrations, Germany is now on track for reaching herd immunity within 2021

## Vaccination and what-if scenario, Germany as of April 27, 2021

Cumulated and daily COVID 19 vaccinations and immunizations* in millions




As-is situation, daily administered doses (last 7 days average)

Daily doses 479,058

What-if: herd immunity by Dec 31, 2021

Daily doses 368,574

Germany managed to administer around 20.0 million doses of COVID-19 vaccines until April, with 6.1 million people having received a second injection and and now having the complete vaccine dosage needed for immunity.

While the daily average of administered doses in Germany increased from around 50,000 in the first week of 2021 to around 479,058 in April. If this vaccination pace will be kept throughout the year, herd immunity would be possible by the end of 2021.

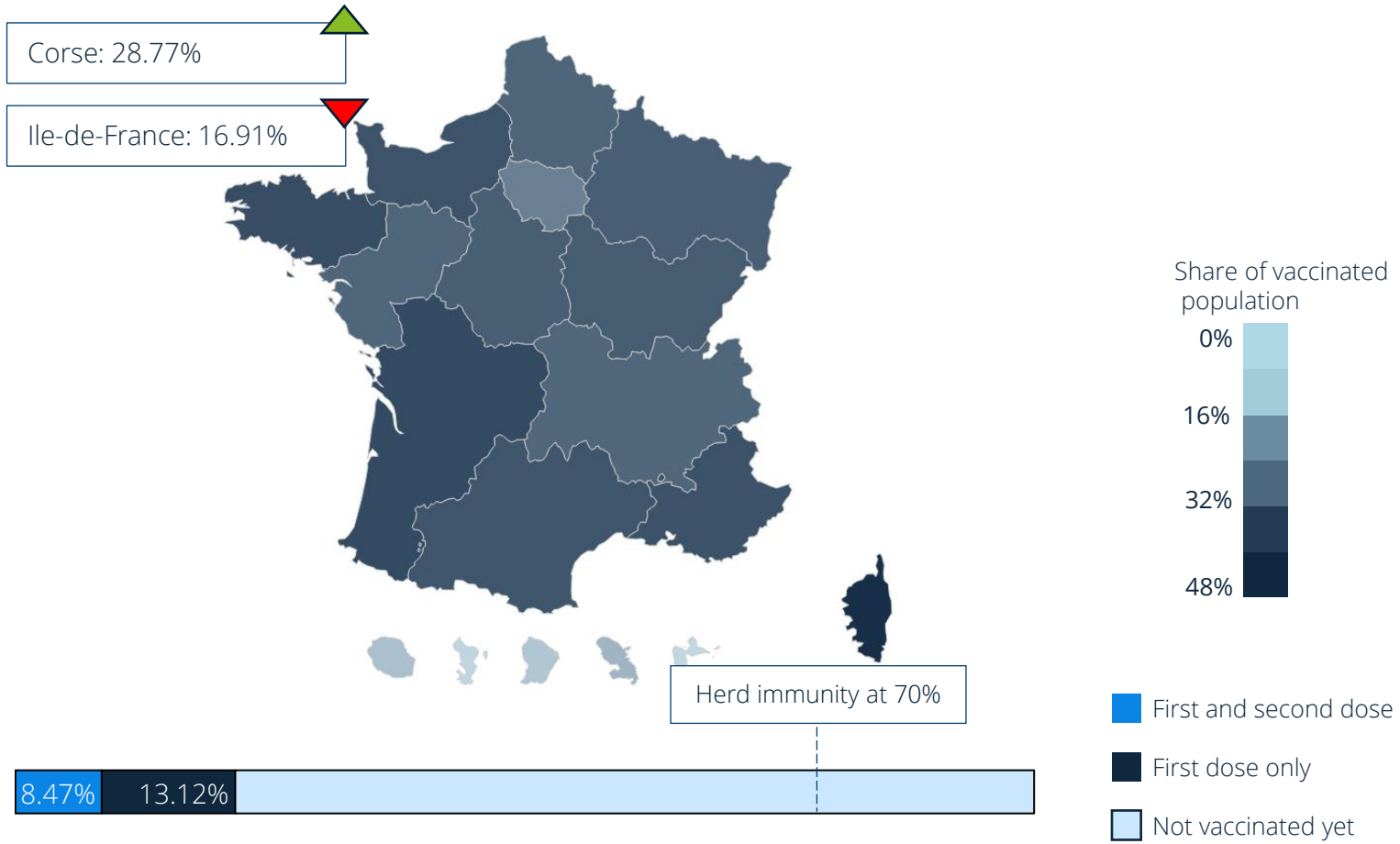
To achieve this, the focus is kept on the on the approval of additional vaccines in the EU to overcome current supply chain bottlenecks. Consequently, improvement of the distribution capabilities will be pivotal.



**Note(s):** *Only Immunization by vaccines covered. Refers to number of doses required for a full vaccine coverage.
**Source(s):** Robert Koch Institut and Statista

# After a slow start, France accelerated its vaccination campaign by easing the requirements for accessing the vaccine

Vaccination progress (at least one dose) by region, April 24, 2021




By the 1st of January 2021, only around 500 people were vaccinated in France, illustrating the slow start of the campaign due to logistical and administrative problems. Only after the government decided to bring phase two of the vaccination campaign forward, things started to move ahead: The change allowed access to the vaccine not only for the elderly population (75+), but also for caregivers, home helpers, and firefighters older than 50 years.

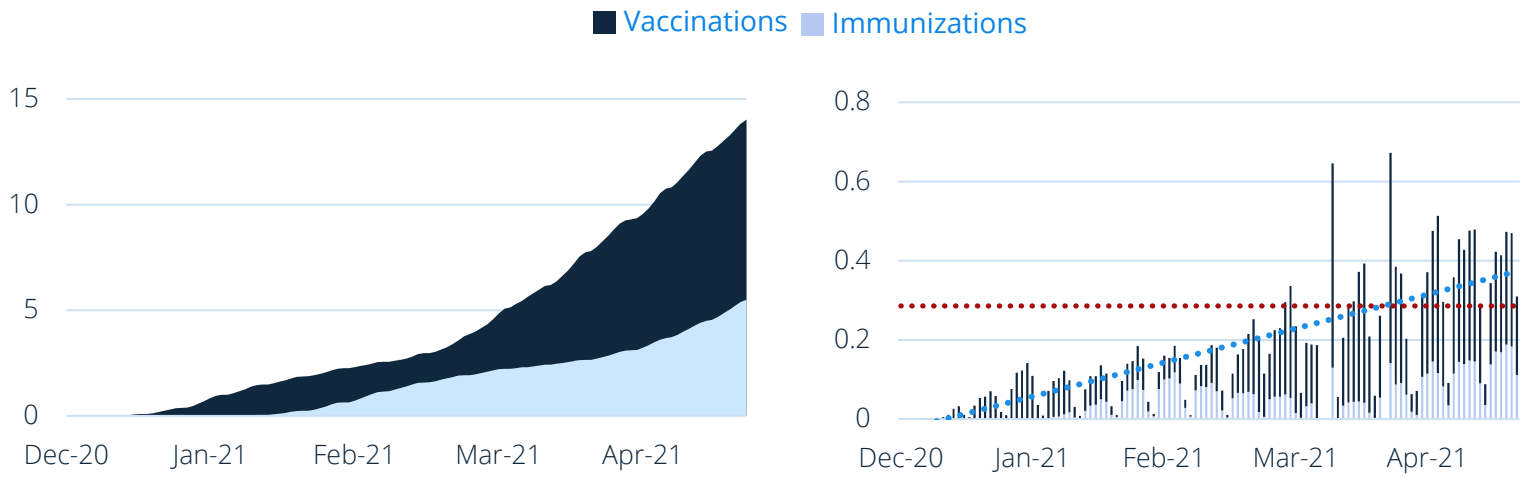
By April, 18.1 million people (21.6 percent) have been vaccinated. This is proportionally more than in the rest of the world and, in the latest weeks, one of the highest rates in the EU.

**Note(s):** * First and second vaccine dose received
**Source(s):** Data.gov.fr, Statista

# The French vaccination campaign has been accelerating in 2021 and it is very near to approach the required number of daily vaccinations

## Vaccination and what-if scenario, France as of April 24, 2021

Cumulated and daily COVID 19 vaccinations and immunizations* in millions




As-is situation, daily administered doses (last 7 days average)

| | |
|---|---|
| Daily doses | 350,426 |

What-if: herd immunity by Dec 31, 2021

| | |
|---|---|
| Daily doses | 289,780 |

If France keeps the current average of daily administered vaccines, herd immunity will be reached in around a year.

In this regard, France is similar to Germany and Italy, facing delays in the delivery of already-approved vaccines and waiting for other vaccines to be approved by the European Medicines Agency.

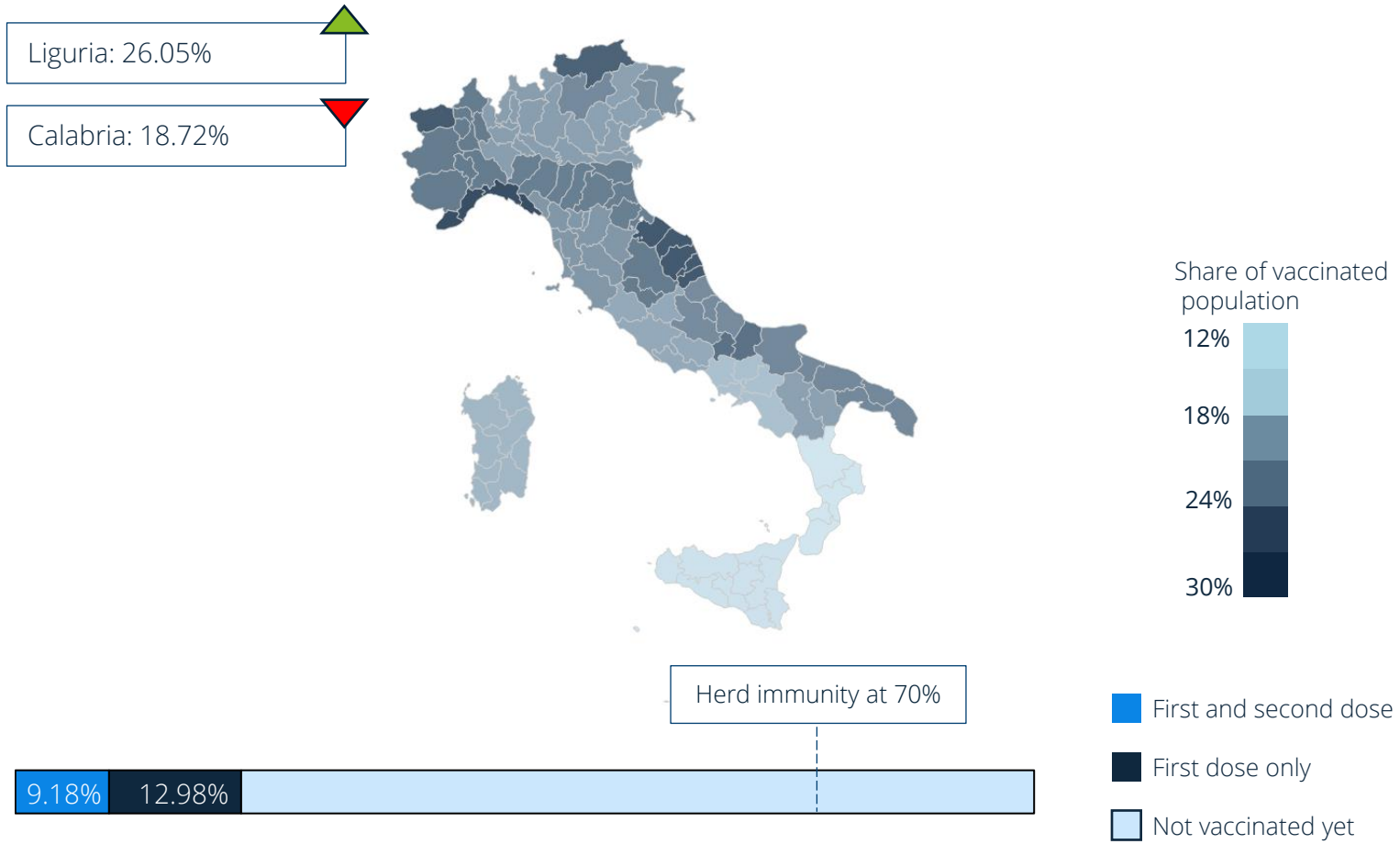
Nonetheless, the French vaccination campaign has started gaining momentum in the month of March and it is approaching the critical average daily administrations for reaching herd immunity against COVID-19 by the end of 2021.



**Note(s):** *Only Immunization by vaccines covered. Refers to number of doses required for a full vaccine coverage.
**Source(s):** covidtracker.fr, data.gov.fr, Our World in Data, Statista

# Northern Italy has, so far, proceeded faster than the Southern part of the country in the vaccination campaign

Vaccination progress (at least one dose) by region, Italy as of April 28, 2021




With 22.1 vaccinations per 100 inhabitants, Italy is in line with the other countries of the European Union.

However, since the beginning of February, the slow deliveries of vaccines from the pharma companies to the EU have been slowing down the progress in Italy, too. In response to the delays, the country has been anticipating the deployment of the AstraZeneca vaccine – approved at the end of January in the European Union – in order to continue its campaign.

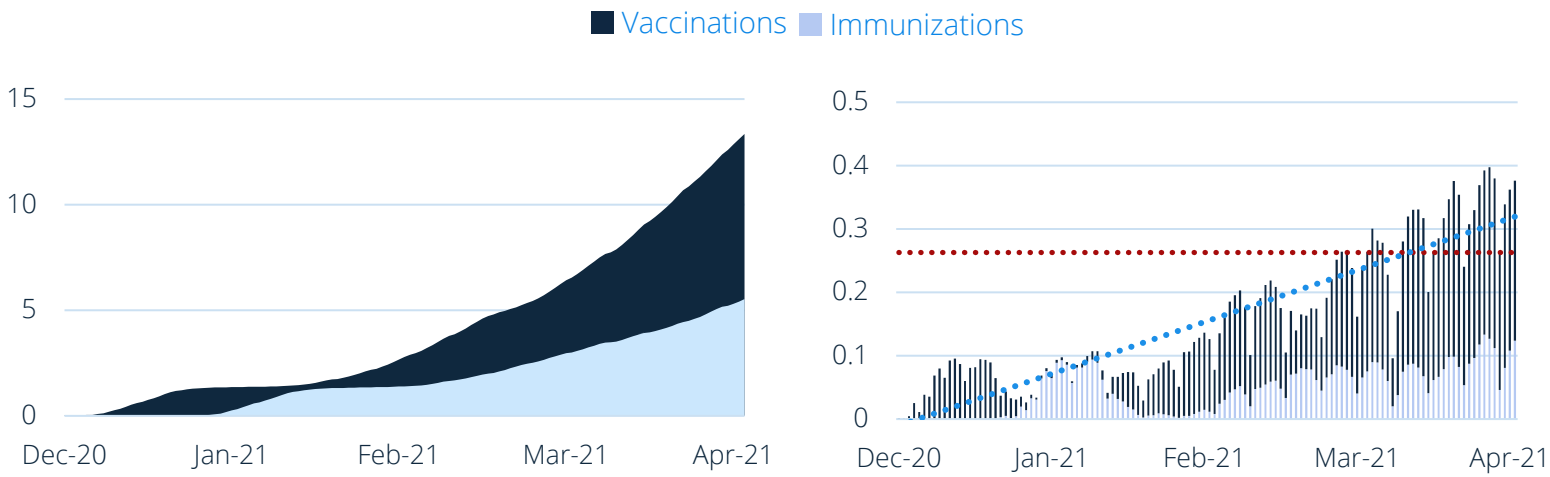
Particularly in April, Italy was able to highly increase the number of daily administered vaccines' doses. The Italian Government has even posed itself a more ambitious goal: reaching herd immunity by the end of the Summer 2021.

**Note(s):** * First and second vaccine dose received
**Source(s):** Ministero della Salute, Our World in Data, Statista

# Similar to Germany and France, after a slower first quarter the Italian vaccination campaign gained momentum in April

## Vaccination and what-if scenario, Italy as of April 28, 2021

Cumulated and daily COVID 19 vaccinations and immunizations* in millions




As-is situation, daily administered doses (last 7 days average)

| | |
|---|---|
| Daily doses | 360,230 |

What-if: herd immunity by Dec 31, 2021

| | |
|---|---|
| Daily doses | 267.775 |

In spite of the multiple difficulties in the supply chains of the ordered vaccines, Italy has been able to increase its daily vaccinations. To fully reach the target of at least 70 percent of the population immune to COVID-19, Italy should still slightly increase the average daily administrations.

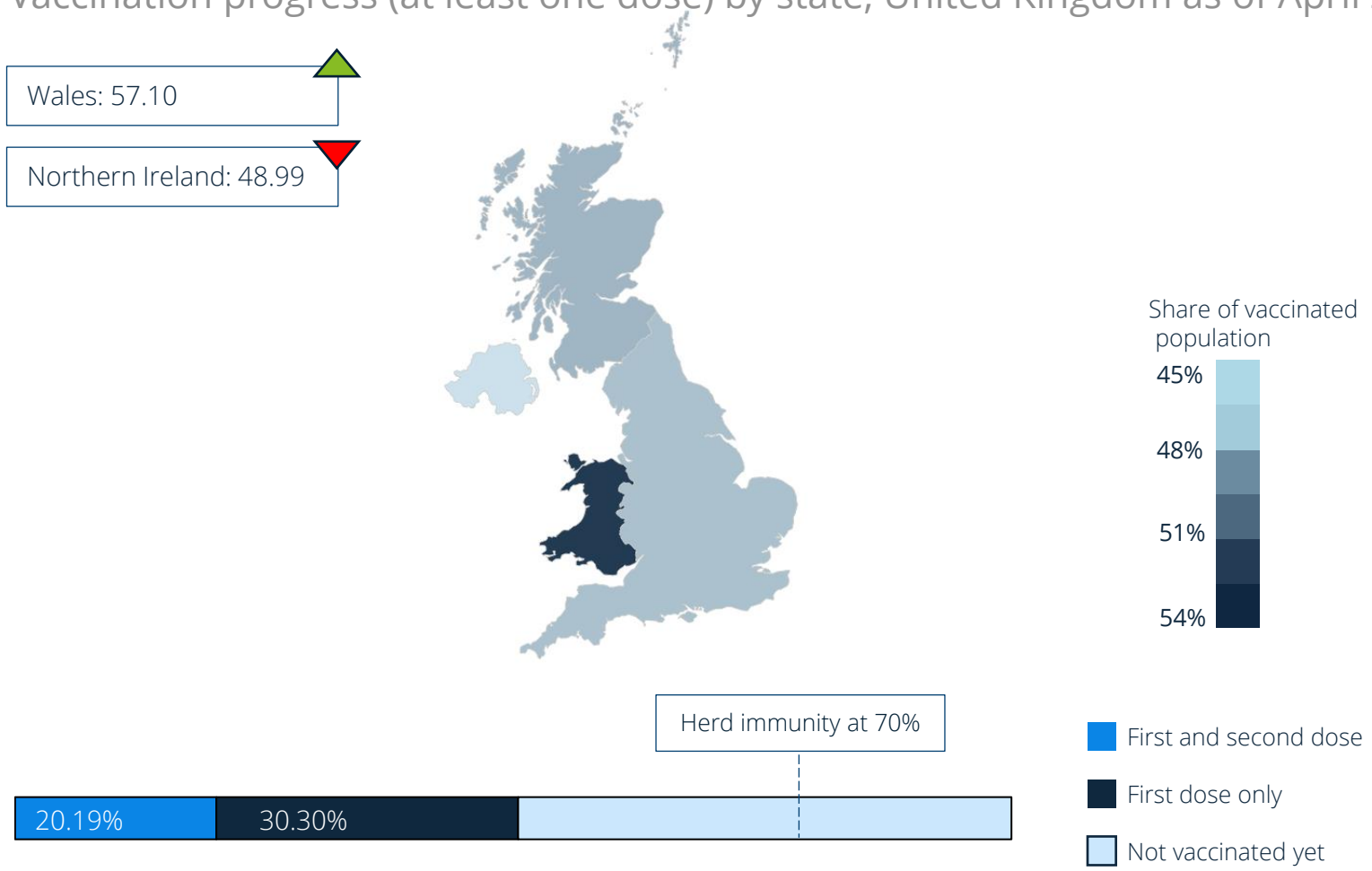
However, similarly as Germany, Italy is facing the new age limitation of the AstraZeneca vaccine that, since April, can be used only for people older than 60 years.



**Note(s):** *Only Immunization by vaccines covered. Refers to number of doses required for a full vaccine coverage.
**Source(s):** Ministero della Salute, Our World in Data, Statista

# The emergency approval of the Pfizer vaccine in early December 2020 gave the United Kingdom a head start

Vaccination progress (at least one dose) by state, United Kingdom as of April 27, 2021




As one of the first countries in the world, the United Kingdom approved the Pfizer-BioNTech vaccine in early December 2020. This gave the country a head start with its vaccination campaign, resulting in around 20 vaccinations per 100 inhabitants as of the beginning of February already.

The vaccination campaign has taken a very similar pace in all four countries of the United Kingdom, with the ratios of first administrations reaching 50.5 percent. In perspective, the United Kingdom is most likely to be the first large European country to reach herd immunity.

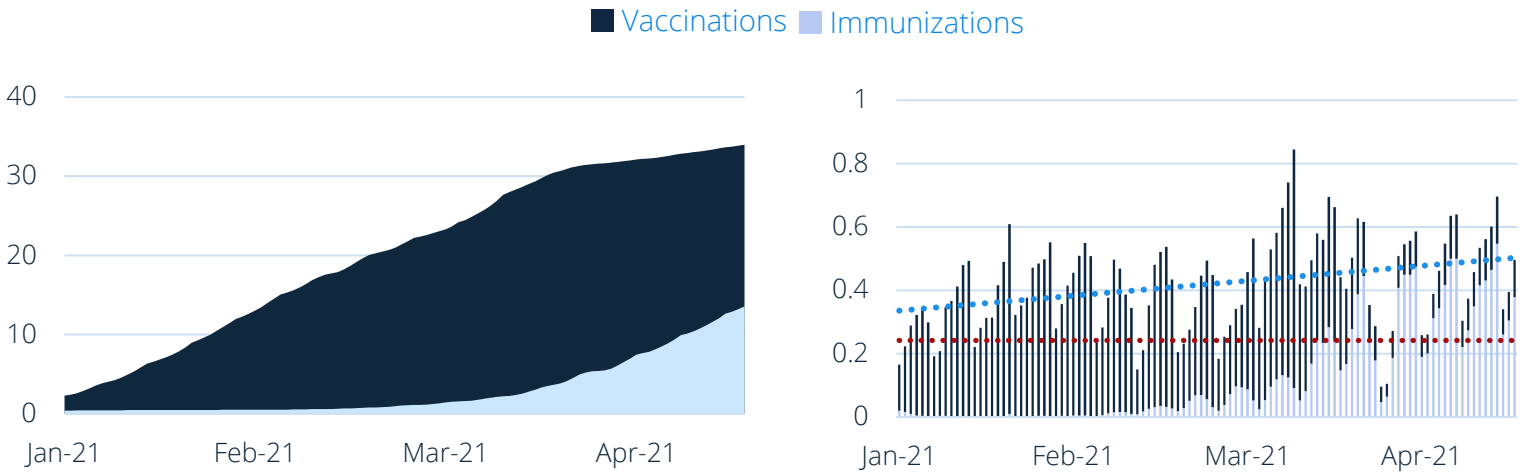
Prime Minister Boris Johnson announced, on the basis of the high number of vaccinated people in the United Kingdom, the end of the containment measures by the end of June 2021.

**Note(s):** * First and second vaccine dose received
**Source(s):** BBC, Gov.uk, Statista

# With almost half a million injections per day, the United Kingdom is on its way to achieve herd immunity within 2021

## Vaccination and what-if scenario, United Kingdom as of April 27, 2021

Cumulated and daily COVID 19 vaccinations and immunizations* in millions




As-is situation, daily administered doses (last 7 days average)

Daily doses 510,384

What-if: herd immunity by Dec 31, 2021

Daily doses 190,406

In December, the UK government decided to take a different route in its vaccination campaign and prioritized the administration of the first doses of the vaccines. Thus, the share of second doses in the total number of administered vaccines is rather small so far, whereas the share of the population that received the first dose is high when compared to the other countries analyzed in this DossierPlus.

In addition, the UK was reportedly less affected by the shortages in the delivery of COVID-19 vaccines than EU countries. Overall, as of April 2021, herd immunity against COVID-19 within 2021 appears achievable for the United Kingdom.



**Note(s):** *Only Immunization by vaccines covered. Refers to number of doses required for a full vaccine coverage.
**Source(s):** GOV.uk, Politico, Statista


# 04 Conclusion and Outlook

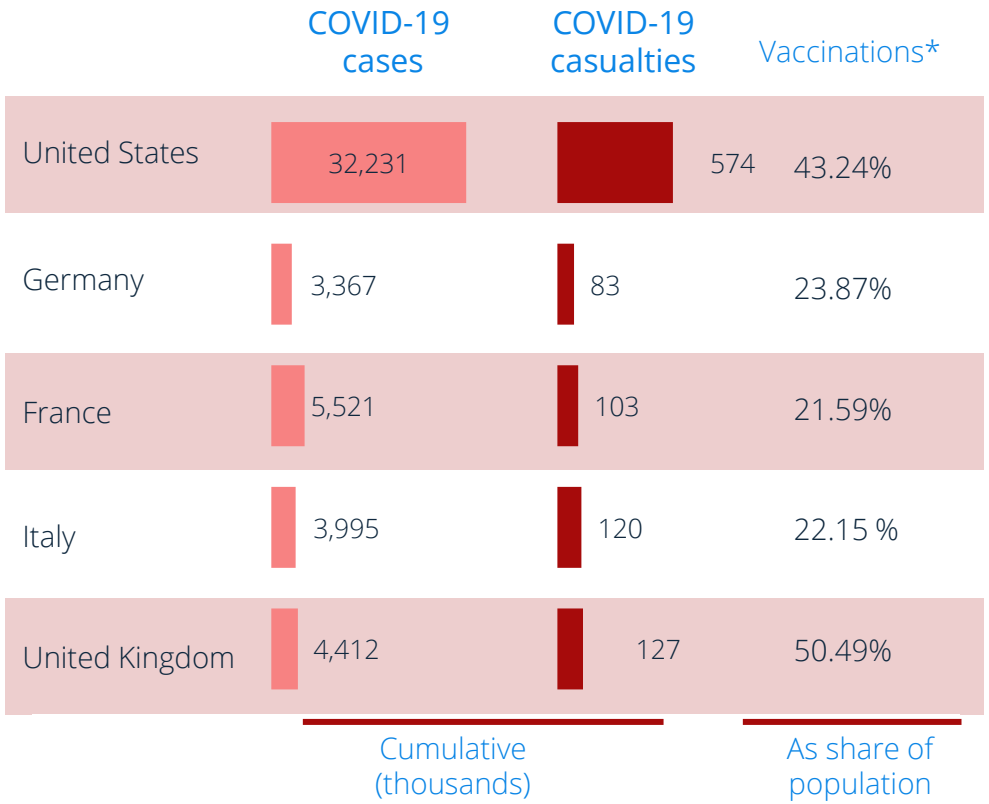
statista

# One year after the beginning of the pandemic, infections are in the millions in the United States and in Europe

Overview, numbers as reported on April 29, 2021

The COVID-19 pandemic, caused by the spread of the SARS-CoV-2 virus, has established itself as a global challenge, both in finding effective short-term strategies to contain the infections (lockdowns, social distancing, increased hygiene standards) and in setting up a long-term immunization strategy. In this regard, the first months of 2021 can be considered a transition period: on the one hand, the daily numbers of COVID-19 infections and related casualties keep increasing the cumulative records; on the other hand, the momentum of the vaccination campaigns raises hope for the metaphorical "light at the end of the tunnel".

The United States and the United Kingdom appear to be impacted severely by the pandemic and, at the same time, at the forefront of the mass vaccination campaign. The United States, as of April 2021, recorded 32.2 million COVID-19 infections and 574,340 casualties. Regarding the vaccination rates, in all the analyzed countries more than one on eight persons received at least the first dose of vaccines. In the United Kingdom already 50.5 percent of the population received at least the first dose of vaccine.






**Note(s):** *First doses administered
**Source(s):** John Hopkins University, Our World in Data, Statista

# The COVID-19 vaccination campaigns are set to achieve herd immunity as soon as possible, possibly within 2021

Overview, numbers as reported on April 29, 2021

The declared target of the ongoing mass vaccination campaigns is to reach herd immunity – a sufficient share of the population being immune against the virus – to stop the spread of SARS-CoV-2. In general, the higher the contagiousness of a disease, the larger the share of the population that needs to be vaccinated to attain herd immunity. For SARS-CoV-2, the threshold is estimated at 70 to 80 percent of the population. As analyzed in chapter 2, the production, delivery, and administration of enough COVID-19 vaccine doses in order to reach (and even exceed) this target has been calculated and initiated. The question remains: How fast can herd immunity be reached? Focusing on the United States and large European countries, Statista analyzed the daily administrations of COVID-19 vaccines as registered by the local health authorities and compared it with the average daily number of administrations necessary for reaching herd immunity by the 31st of December 2021**. As of April 2021, all the analyzed countries are administering sufficient doses of COVID-19 vaccines per day to realistically target herd immunity by the end of 2021. Despite the slower pace in the first quarter of 2021, the vaccination campaigns of the largest EU countries have recently gained enough momentum and caught up with the campaigns in the United States and the United Kingdom. The two Anglosaxon countries are holding a faster pace in their vaccination campaign since February 2021, resulting in higher vaccination rates overall.

| | Estimated increase to reach herd immunity by end of 2021* | |
|---|---|---|
| United States | On target | = |
| Germany | On target | = |
| France | On target | = |
| Italy | On target | = |
| United Kingdom | On target | = |

**Note(s):** * Calculation based on daily vaccine administrations as of last 7 days average

**An immunized individual is hereby defined as an individual who received two doses, as most of the approved COVID-19 vaccines as of April 2021 require two doses to guarantee the maximum protection against SARS-CoV-2.

**Source(s):** Our World in Data, National health authorities, Statista

# Glossary

**Basic reproduction number ($R_0$)**
This number describes the contagiousness of an infection, by showing the expected infections caused by one infected person. A basic reproduction number of 1 means one infected person infects one other person. A basic reproduction number below 1 means infections are decreasing.

**Candidate vaccine**
A vaccine undergoing the approval process of one (or more) health authorities. Once the approval is granted, the vaccine can be administered within the country/countries.

**COVID-19**
The human disease caused by an infection with the SARS-CoV-2 virus.

**Herd immunity**
Herd immunity occurs when a sufficient share of a population is immune to a disease, thus not infecting others and subsequently leading to the disease's eradication. The share of population required to attain herd immunity is higher when the basic reproduction number is higher.

**Recorded casualties**
Officially recorded deaths.

**SARS-CoV-2**
A virus of the coronavirus family. The acronym stands for “severe acute respiratory syndrome coronavirus 2”.

**Virus mutations**
Genetic mutations occurring within the virus’ replication, some of which might change the virus’ surface.

# Sources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Our World in Data
Robert Koch Institut
Spiegel
Statista
Unicef
World Bank
World Health Organization (WHO)

# Recommendations

## DossierPlus

COVID-19: Economic downturn and recovery

COVID-19 measures and their effects on mobility behavior

Environmental effects of COVID-19

Hospitals

Luxury travel and tourism in Europe amid the pandemic

Coronavirus: impact on media consumption worldwide

Social Movement: Black Lives Matter

## Dossiers

The coronavirus disease (COVID-19) pandemic 2019-20

Vaccine hesitancy in the U.S.

Vaccinations in Europe

Coronavirus (COVID-19) in the U.S.

Coronavirus (COVID-19) in New York

COVID-19 and mental health

Coronavirus: impact on the sport industry worldwide

How eCommerce is impacted by COVID-19

Environmental effects of COVID-19

## Further Reading

How e-Commerce is impacted by COVID-19 2020

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