International Journal of Data Science and Analysis
2022; 8(4): 94-118
http://www.sciencepublishinggroup.com/j/ijdsa
doi: 10.11648/j.ijdsa.20220804.11
ISSN: 2575-1883 (Print); ISSN: 2575-1891 (Online)

Google Cloud Services for Collecting, Processing, Analyzing, and Visualizing the Types of COVID-19 Vaccines

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To cite this article:

Ramamurthy Valavandan, Subhendu Ghosh, Kumaraswamy Reddy, Prasanth Parayatham, Ubaiyadulla Sherif, Vikram Sharma, Pragathi Sri, Vijayachandran Ramachandran, Surasa Mukherjee, Nitin Ambekar, Dinesh Sai Teja Neeli, Vijender Singh, Santosh Baran, Praveen Brian, Hanumantha Raj, Musheer Ahmed, Saurabh Uniyal. Google Cloud Services for Collecting, Processing, Analyzing, and Visualizing the Types of COVID-19 Vaccines. *International Journal of Data Science and Analysis*. Vol. 8, No. 4, 2022, pp. 94-118.
doi: 10.11648/j.ijdsa.20220804.11

Received: June 16, 2022; **Accepted**: July 11, 2022; **Published**: July 28, 2022

Abstract: This study analyzes the types of COVID-19 vaccines used in different countries in Google Cloud native services. Big Query, a Google Cloud data analytics product, is used for data analytics. The python application is developed for data visualization of types of COVID-19 vaccines, and the application deployed in Google Cloud handles the data collection methodology. Google Cloud composer establishes the connection to the World Health Organization portal. Apache Airflow directed acyclic graph (DAG) runs in a Cloud Composer environment and Google Data Studio for data visualization. Google Guild members fully support the Google cloud Nature Labs projects. The motivation behind this project is our recent work on creating the ecosystem in Google Cloud for customers. The discovery, identification of Google service, the workload migration is designed for Google Cloud. The python application parses the types of vaccines of COVID-19 data in JSON format. The big query, a serverless data analytics of Google cloud, performs the classes of vaccines used in different countries. The python application parses the JSON file format and generates the report of the types the COVID-19 vaccines. Python application performs the data visualization in Google cloud, and Google data studio completes the functional requirement of reporting layer. The approach to studying the types of vaccines used in different countries is unique. As always, the data clenching task is a tedious task. Thanks to the research sponsor, SerpAPI provides the Google search results of variance of COVID-19 vaccines and chemical composition of vaccines of companies. The developed solution and the work products are highly reusable, and customers benefit from the outcome of this research assignment in the Google cloud innovation project of Nature Labs. The Google cloud native offers the dynamics for the scientific community on the study of types of vaccines for vaccine manufacturing companies. We conclude that out of thirty vaccine manufacturing companies, the World Health Organization (WHO) disapproves of Wuhan CNBG.

Keywords: COVID-19 Vaccine Types, Python Data Analytics, Google Compute Engine, Google SerpAPI, Google Cloud SQL, COVID-19 Vaccines Dataset, Analytics COVID-19 Vaccines, Google Cloud Big Query

1. Introduction

The motivation behind this research article is recent work on the Life-Saving Mission for COVID-19 Vaccination on Google Cloud (GC) Ecosystem [1], which was published in the International Journal of Science and Research. In this project, we gathered the types of COVID-19 [2] vaccine, and with the Google Cloud native services and the python application, the data visualization is achieved. This study aims to deal with COVID-19; various countries have made many efforts, including the research and development of vaccines. The purpose of this manuscript was to summarize the product, application, and problems of COVID-19 vaccines [3].

The methods adopted to review the existing literature to see the development of the COVID-19 vaccine [4].

The project scope is the analysis of COVID-19 vaccine types by provisioning the analytical [5] engine in Google Cloud for research and development in the healthcare sector.

The stakeholder of this research work is the research operation of Nature Labs (United Nations CSO) [6]. The project is open source for the healthcare domain [7]. The project is a tax exception and a noncommercial research program.

The project is managed by Google Cloud Guild members of Kyndryl Solutions Private Limited. The research requirement is the data visualization of COVID-19 [8-10] vaccination types in the Big Query of Google Cloud [11-18]. All the efforts, Google Cloud resources, services, and billing help the healthcare research, medical practitioners, government, and private body to access the Google data for the scope for decision making in the healthcare domain.

We address the correlation between the vaccine types and the country-specific development of manufacturing companies during the most challenging time while the world is battling COVID-19.

Google Cloud-native service of Big Query brings the usefulness of analysis of vaccine types and further research on vaccines.

2. Google Cloud for Data Analytics

Big Query is developed in Google Cloud for selecting the country and vaccine types for the data analytics. The service is available 24X7X365 in the Google cloud.

```
SELECT country,
regexp_replace (VACCINES_USED, r',', "\n") as VACCINES_USED,
FROM
`tracing-matrix.COVID-19.WHO_Vaccination data`
WHERE
DATE(_PARTITIONTIME) = "2022-07-12"
GROUP BY 1,2
ORDER BY 1
```

3. Python for Parsing JSON of Vaccine

3.1. Use Case

We are creating the vaccination list of COVID-19 and visualization of JSON.

Program: parseserpapijsonvaccination.py

Created for Lab purposes with regulations of Nature Labs.

3.2. JSON Parser in Python

This program is an extension of generating the JSON file based on the WHO – Vaccination.

Google Search Engine API – SerpAPI.

Google Search Key: COVID-19 Vaccination types

JSON file input: vaccination.json

This program is used to parse JSON file, which is generated by Google Search API (SerpAPI).

JSON file has the information of the Google Search Engine.

Create the necessary folders, download, and save JSON for parsing vaccine types in search keys.

Two CSV files will be generated from Google Search Engine JSON [19].

1) vaccincation.json

2) C:\google\serpapi\indias\data\Medicine

3.3. Serp API for Google Search

The functionality of the python application is to establish the Google Search Engine and Serp API, to generate the search results of Google in JSON file format. And create the necessary folders, load, and save JSON for parsing the search key results based on types of COVID-19 vaccine.

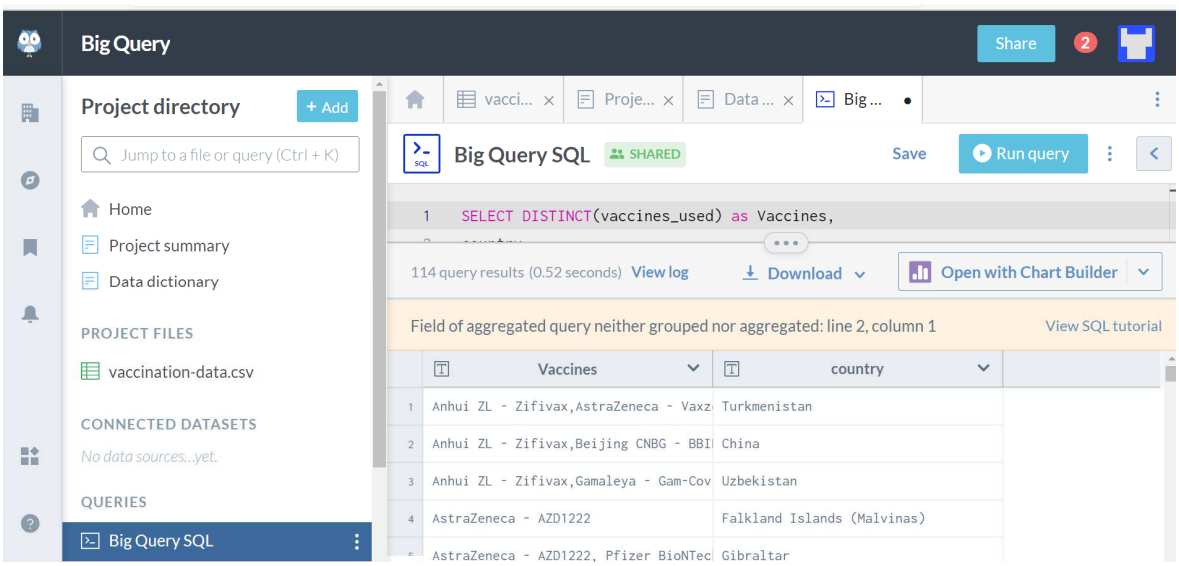

Figure 1. *Big Query Vaccination dataset.*

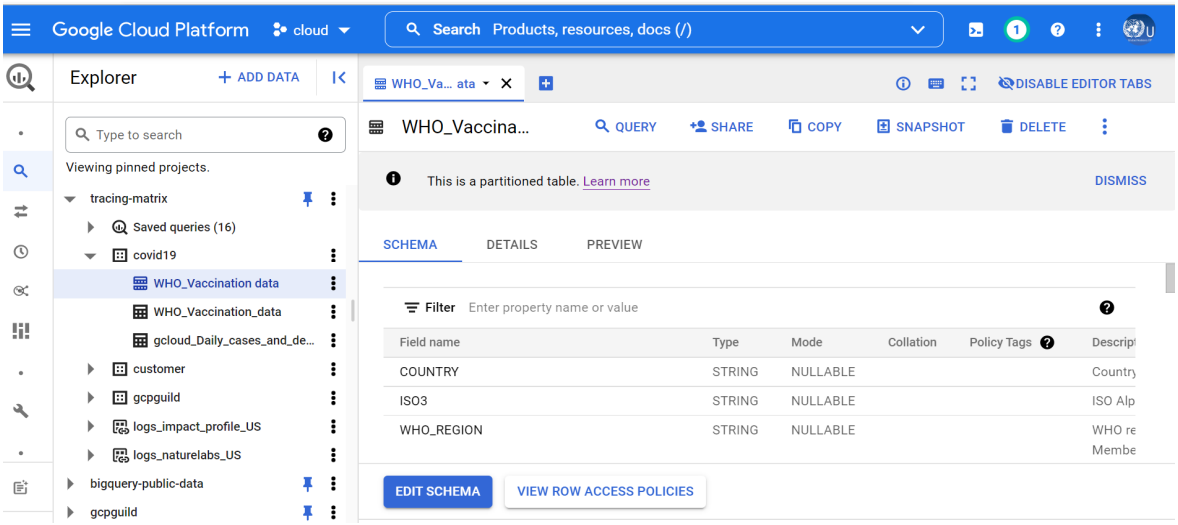

Figure 2. *The caption of the GCP Console.*

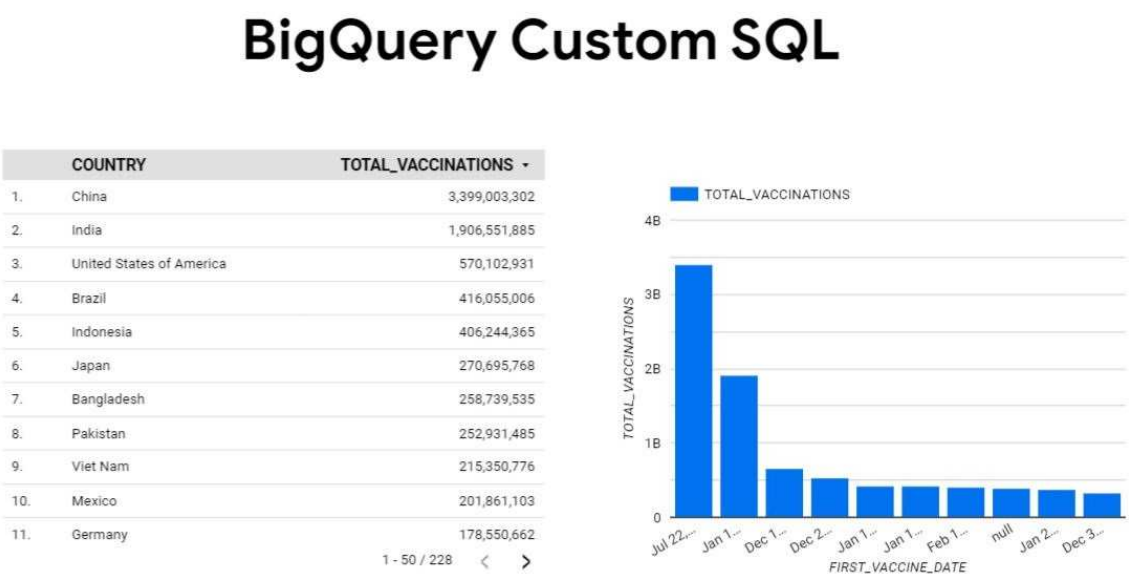

Figure 3. *Big Query of Country-wise vaccination.*

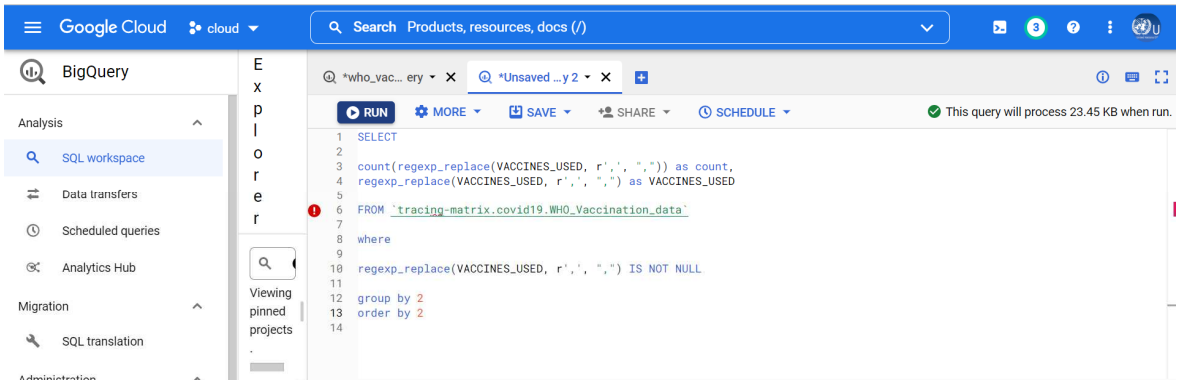

Figure 4. *Big Query of Types of vaccination.*

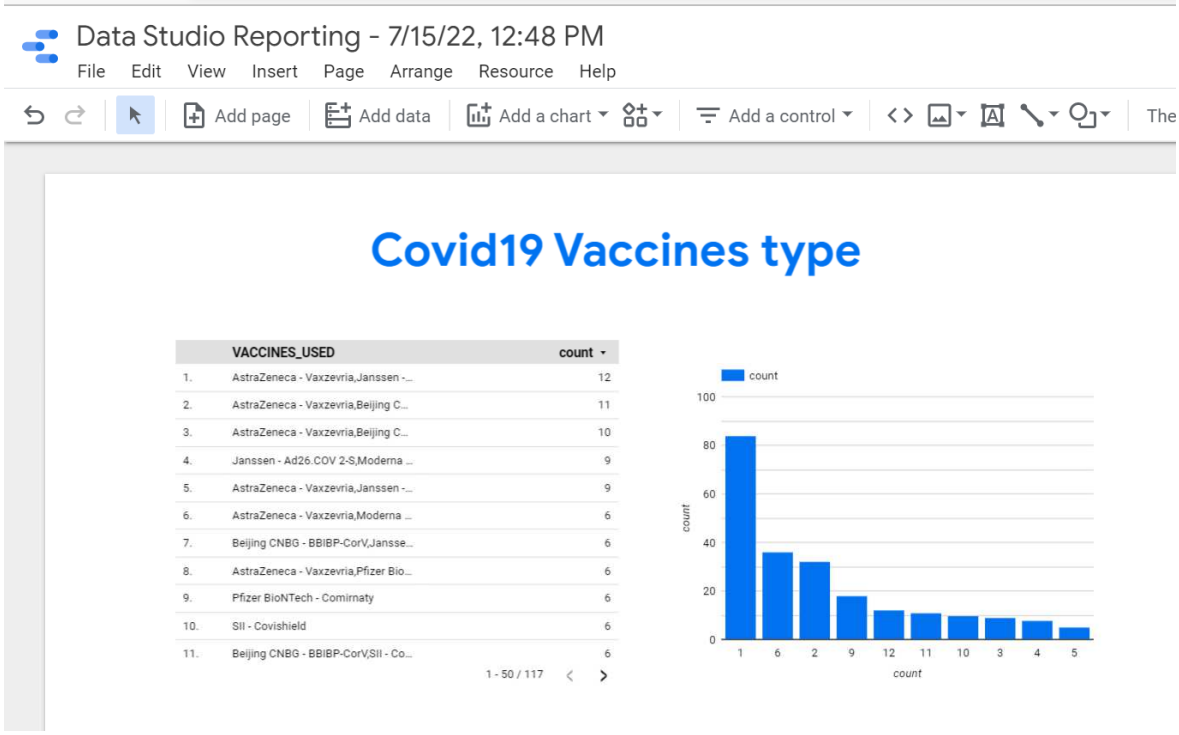

Figure 5. *Big Query of Types of vaccination.*

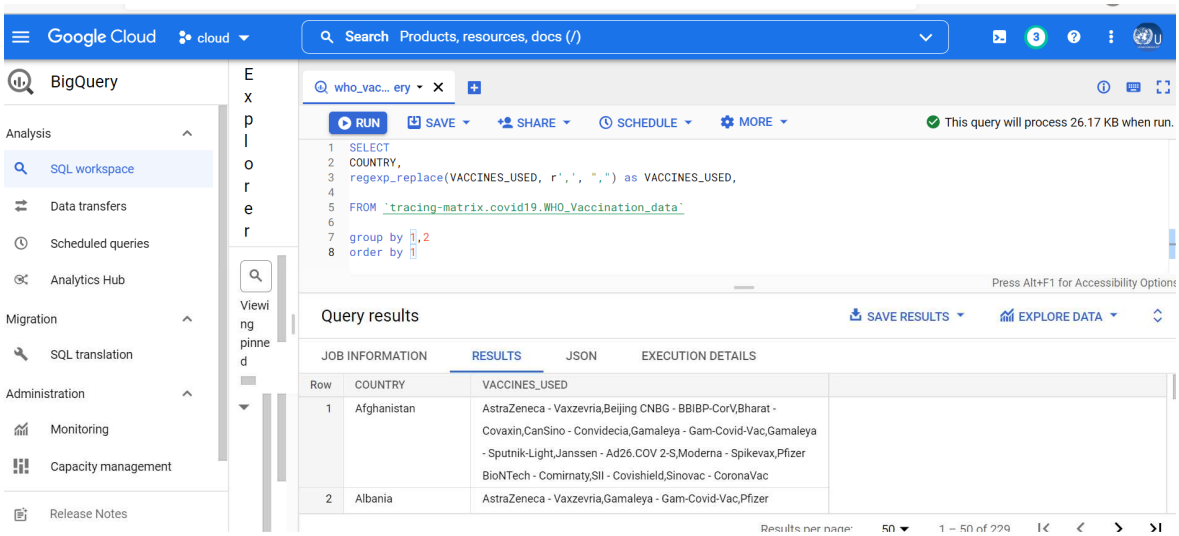

Figure 6. *Big Query of Types of vaccination.*

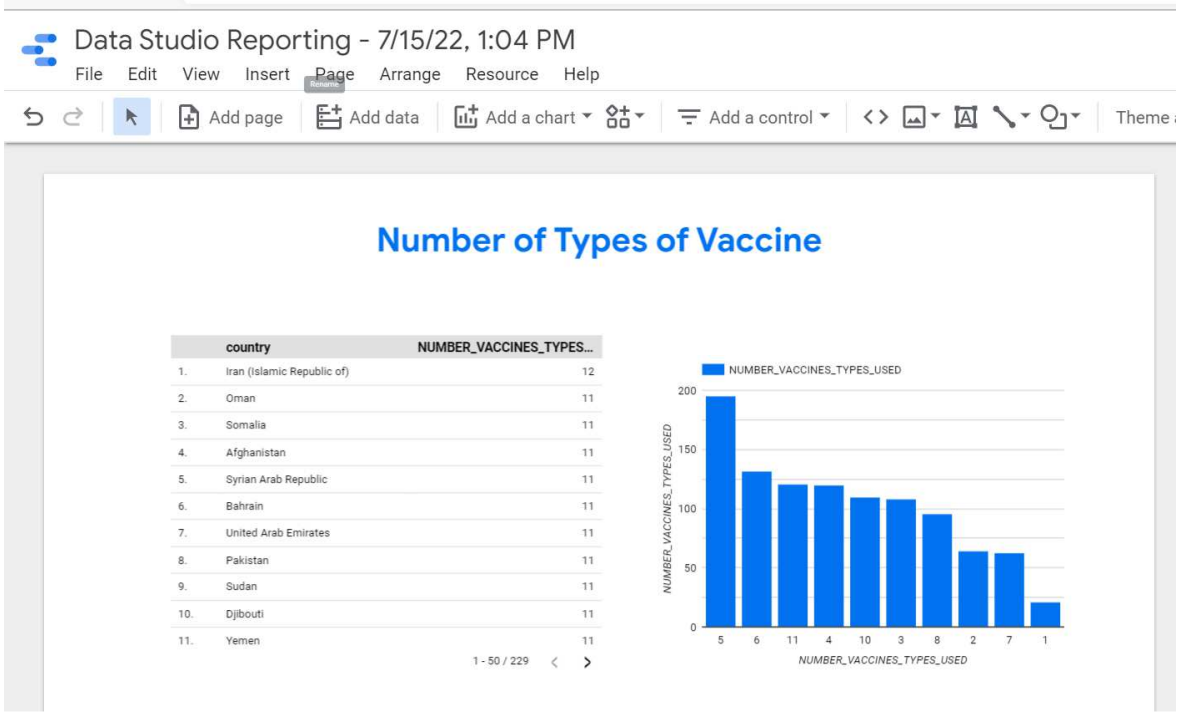

Figure 7. *Google Data studio – number of types of vaccine.*

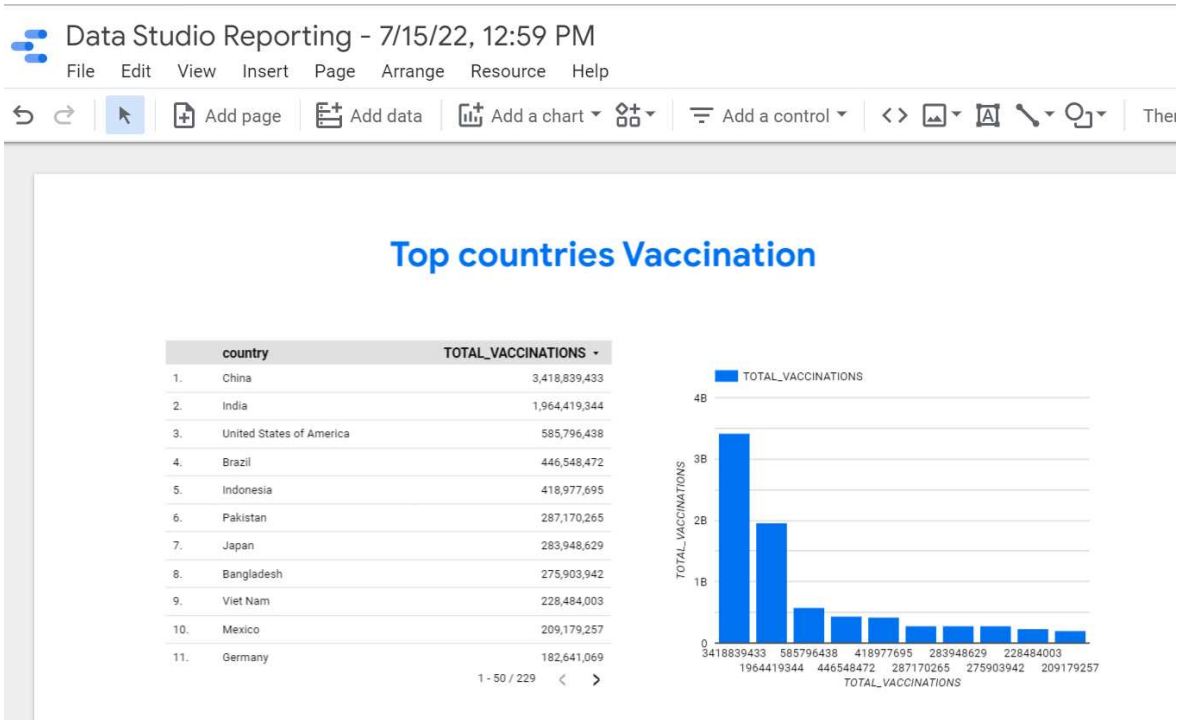

Figure 8. *Google Data Studio.*

3.4. Table (Schema and Data Integration)

```
CREATE EXTERNAL TABLE `tracing-matrix.COVID-19.WHO_Vaccination_data`making
(
COUNTRY STRING,
ISO3 STRING,
WHO_REGION STRING,
DATA_SOURCE STRING,
```

```
DATE_UPDATED DATE,
TOTAL_VACCINATIONS FLOAT64,
PERSONS_VACCINATED_1PLUS_DOSE FLOAT64,
TOTAL_VACCINATIONS_PER100 FLOAT64,
PERSONS_VACCINATED_1PLUS_DOSE_PER100 FLOAT64,
PERSONS_FULLY_VACCINATED FLOAT64,
PERSONS_FULLY_VACCINATED_PER100 FLOAT64,
VACCINES_USED STRING,
FIRST_VACCINE_DATE DATE,
NUMBER_VACCINES_TYPES_USED FLOAT64,
PERSONS_BOOSTER_ADD_DOSE FLOAT64, PERSONS_BOOSTER_ADD_DOSE_PER100 FLOAT64
)
OPTIONS(
skip_leading_rows=0,
format="CSV",
uris= ["https://drive.google.com/file/d/132PDmI2o9gParYa4F23o_IqdR8Ncxo0J/view?usp=sharing"]
);
```

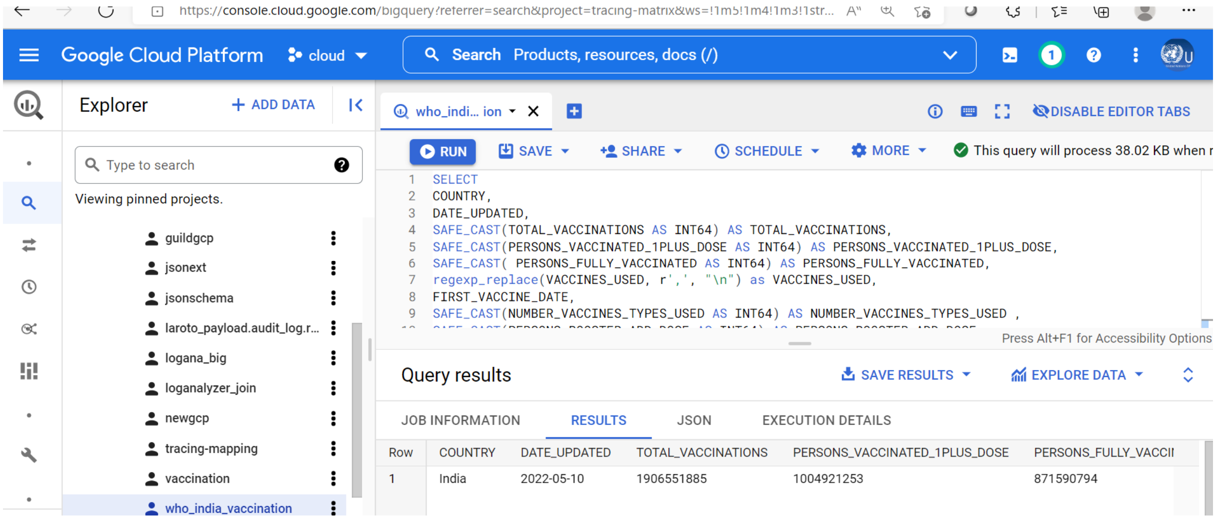

Figure 9. *Big Query Vaccination Project ID.*

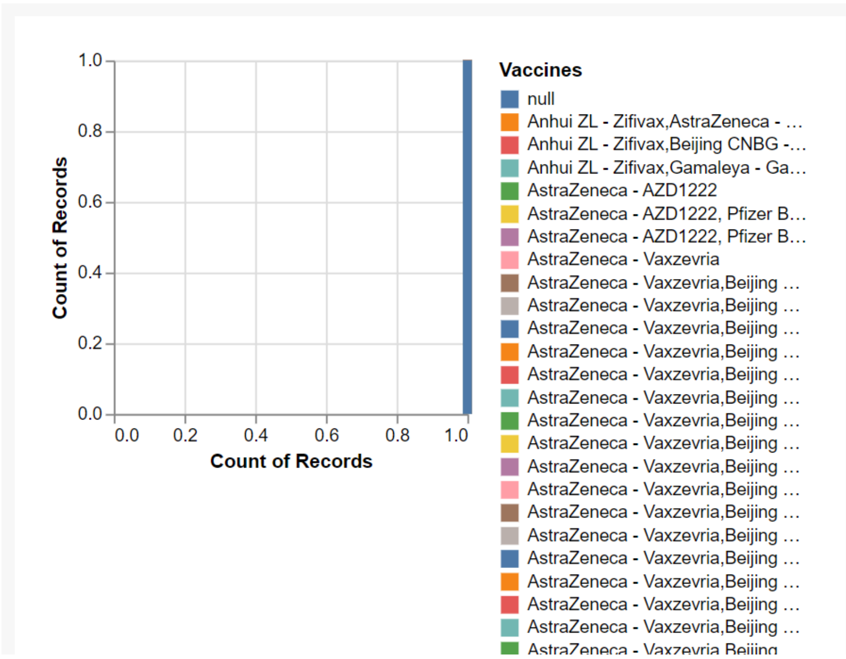

Figure 10. *Vaccination list.*

We have filtered the companies and types of vaccination available. Out of thirty vaccine manufacturing companies, the World Health Organization disapproves of Wuhan CNBG [20].

Table 1. *Vaccination Companies and types of COVID-19 vaccine.*

	Companies	Vaccinations
0	Anhui ZL	Zifivax
1	AstraZeneca	AZD1222
2	AstraZeneca	Vaxzevria
3	Beijing CNBG	BBIBP
4	Bharat	Covaxin
5	Biological E	Corbevax
6	CIGB	CIGB
7	CanSino	Convidecia
8	Chumakov	Covi
9	Finlay	Soberana Plus
10	Finlay	Soberana
11	Gamaleya	Gam
12	Gamaleya	Sputnik V
13	Gamaleya	Sputnik
14	IMB	COVIDful
15	Janssen	Ad26.COV 2
16	Julphar	Hayat
17	Moderna	Spikevax
18	Moderna	mRNA
19	Novavax	NUVAXOVID
20	Pfizer BioNTech	Comirnaty
21	RIBSP	QazVac
22	SII	Covishield
23	SII	Covovax
24	SRCVB	EpiVacCorona
25	Shenzhen	LV
26	Shifa	COVIran Barakat
27	Sinovac	CoronaVac
28	Turkovac	ERUCOV-VAC
29	Wuhan CNBG	Inactivated
30	Zydus	ZyCov

4. Google Cloud Analysis of Types of COVID-19 Vaccine

Our study on COVID-19 types of vaccines has provided an analytical view of every country and location. Google Analytics includes information on a complete picture of the vaccination dataset [21]. COVID-19 types of the vaccine are tabulated for India.

Bharat - Covaxin,
Biological E - Corbevax,
Gamaleya - Gam-COVID-Vac,
Janssen - Ad26.COV 2-S,
Moderna - Spikevax,
SII - Covishield, SII - Covovax,
Zydus - ZyCov-D

Table 2. *Vaccination records.*

COUNTRY	TOTAL_VACCINATIONS	PERSONS_VACCINATED_1PLUS_DOSE
India	1906551885	1004921253

Nature Labs (Body of United Nations) research wing in COVID-19 and Google Cloud Guild members of Kyndryl Solutions Private Limited are contributors to application development in python, solutions and architecting for Cloud adaptation, Google Cloud services of Big Query, and Compute Engine [22].

GCP Services and Resources

From a regulation perspective, the project has adhered to

healthcare standards [23] for meeting Blockchain and Privacy Computing compliance.

Google Cloud native-service, Big query, is handled by Kyndryl Solutions Private Limited to analyze types of COVID-19 vaccines [24]. All the authors are pleased to support the publishers and any further communication from the readers and stakeholders [25].

Table 3. *Google Cloud Services.*

GCP Service	GCP References
Compute Engine	a. https://cloud.google.com/compute b. particular Managed Instance Groups for scaling https://cloud.google.com/compute/docs/instance-groups#managed_instance_groups
Infrastructure as Code: use tools like Terraform to create multiple environments:	https://cloud.google.com/docs/terraform
Cloud CDN can provide Content Delivery Network services	https://cloud.google.com/cdn
Google Workspace can provide email services and plenty more when it comes to employee collaboration	https://workspace.google.com/
MariaDB SkySQL runs on Google Cloud	a. https://mariadb.com/products/skysql/google-cloud-platform/ b. Or you can have Microsoft SQL Server, MySQL, and PostgreSQL as a service through the Cloud SQL service: https://cloud.google.com/sql
For high volume, high-performance storage for assets, nothing better than Google Cloud Storage	https://cloud.google.com/storage
And for shared NFS storage for web servers, check out Filestore	https://cloud.google.com/filestore
One can reserve public static IP addresses for web applications - be it a VM or a load balancer	https://cloud.google.com/compute/docs/ip-addresses/reserve-static-external-ip-address
Backup and Disaster Recovery tooling available	https://cloud.google.com/solutions/backup-dr
A broad range of SLAs are available and depending on solution architecture	a. https://cloud.google.com/terms/sla there is also comprehensive support offering depending on need b. https://cloud.google.com/support

```
SELECT
COUNTRY,
DATE_UPDATED,
SAFE_CAST (TOTAL_VACCINATIONS AS INT64) AS TOTAL_VACCINATIONS,
SAFE_CAST (PERSONS_VACCINATED_1PLUS_DOSE AS INT64) AS PERSONS_VACCINATED_1PLUS_DOSE,
SAFE_CAST (PERSONS_FULLY_VACCINATED AS INT64) AS PERSONS_FULLY_VACCINATED,
regexp_replace (VACCINES_USED, r',', "\n") as VACCINES_USED,
FIRST_VACCINE_DATE,
SAFE_CAST (NUMBER_VACCINES_TYPES_USED AS INT64) AS NUMBER_VACCINES_TYPES_USED,
SAFE_CAST (PERSONS_BOOSTER_ADD_DOSE AS INT64) AS PERSONS_BOOSTER_ADD_DOSE
FROM
`tracing-matrix.COVID-19.WHO_Vaccination data`
WHERE
DATE(_PARTITIONTIME) = "2022-07-12"
GROUP BY 1,2,3,4,5,6,7,8,9
ORDER BY 1 DESC
```

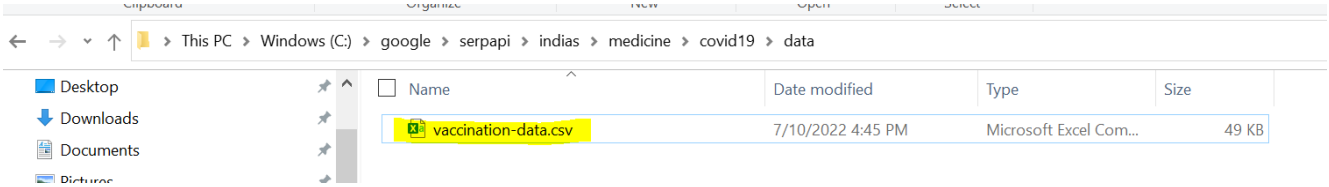

Figure 11. *WHO Vaccination data.*

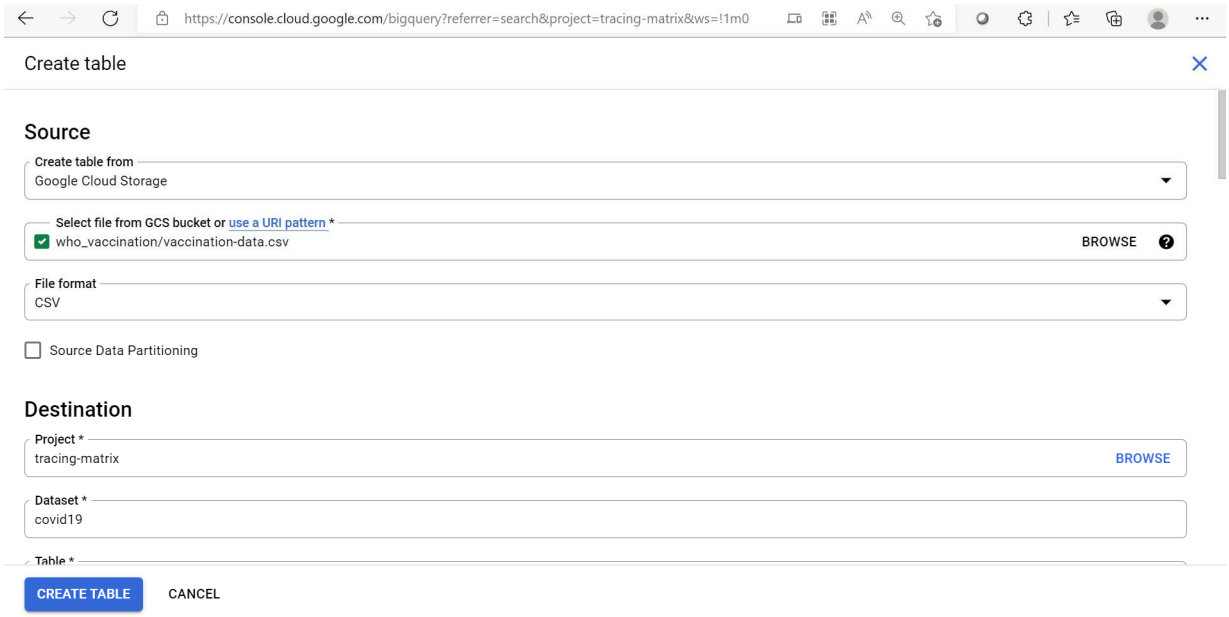

Figure 12. *Creating the Big Query Table.*

COUNTRY
ISO3
WHO_REGION
DATA_SOURCE
DATE_UPDATED
TOTAL_VACCINATIONS
PERSONS_VACCINATED_1PLUS_DOSE
TOTAL_VACCINATIONS_PER100
PERSONS_VACCINATED_1PLUS_DOSE_PER100
PERSONS_FULLY_VACCINATED
PERSONS_FULLY_VACCINATED_PER100
VACCINES_USED
FIRST_VACCINE_DATE
NUMBER_VACCINES_TYPES_USED
PERSONS_BOOSTER_ADD_DOSE
PERSONS_BOOSTER_ADD_DOSE_PER100

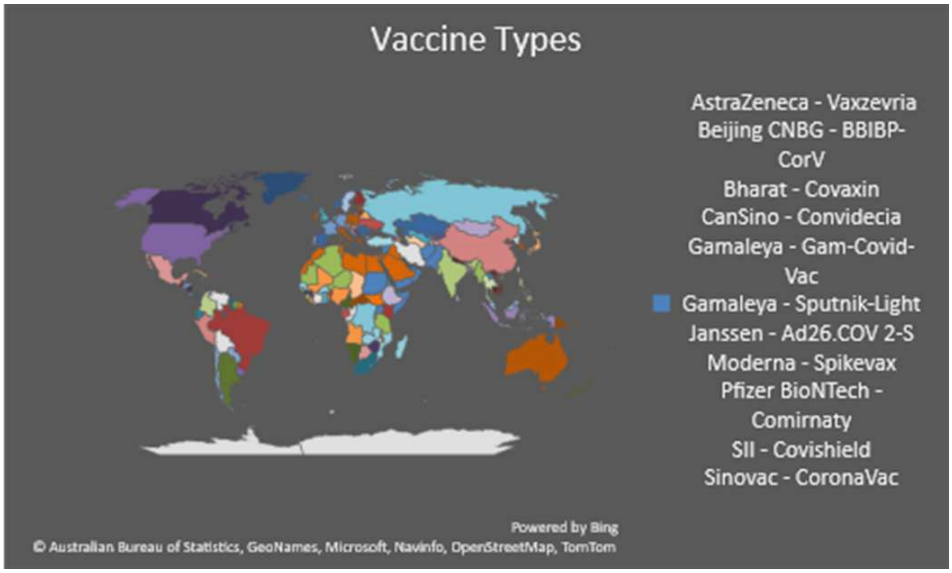

Figure 13. *Countries & Vaccine Types.*

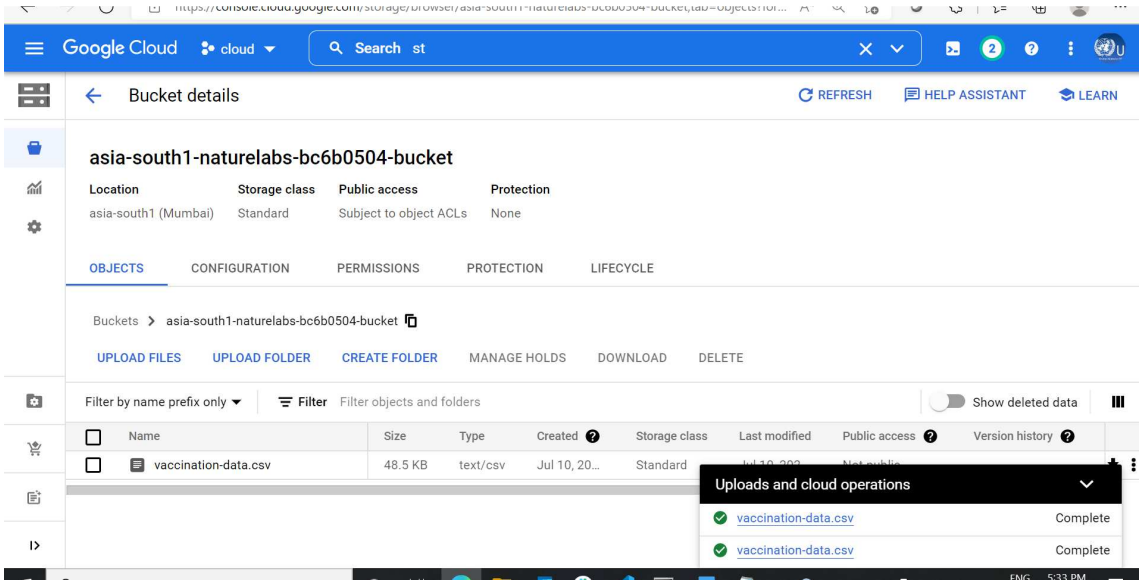

Figure 14. *Google Bucket Creation.*

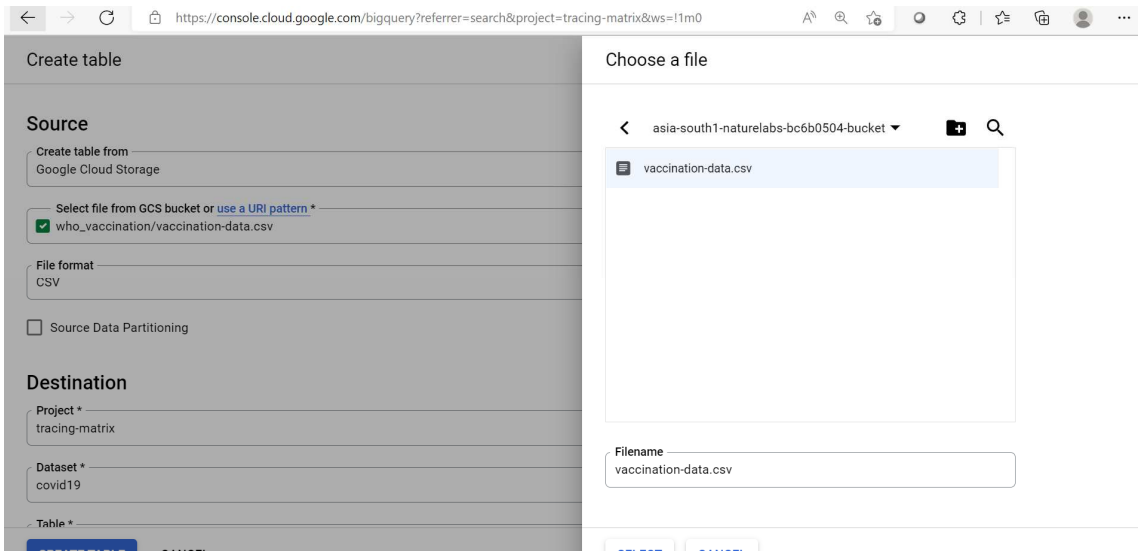

Figure 15. *Google Vaccination data uploading.*

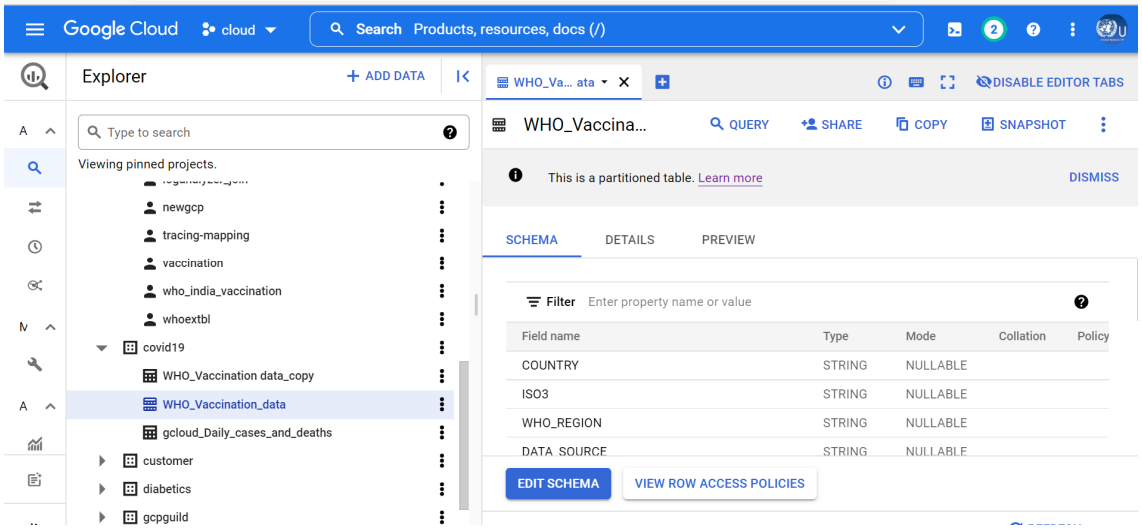

Figure 16. *Google Big Query Schema.*

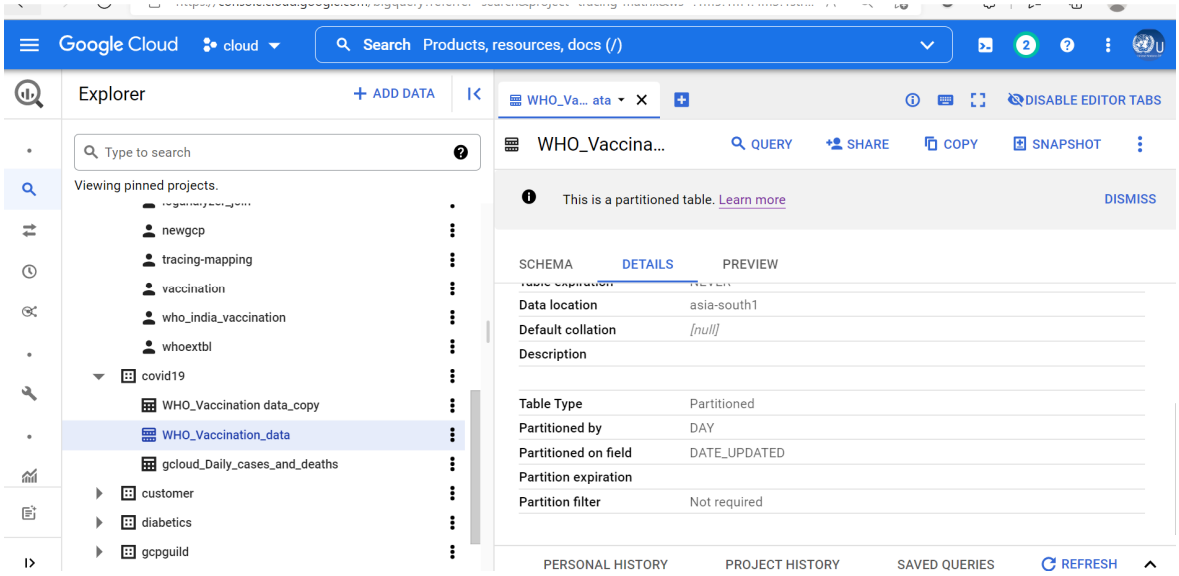

Figure 17. *Google Table partition.*

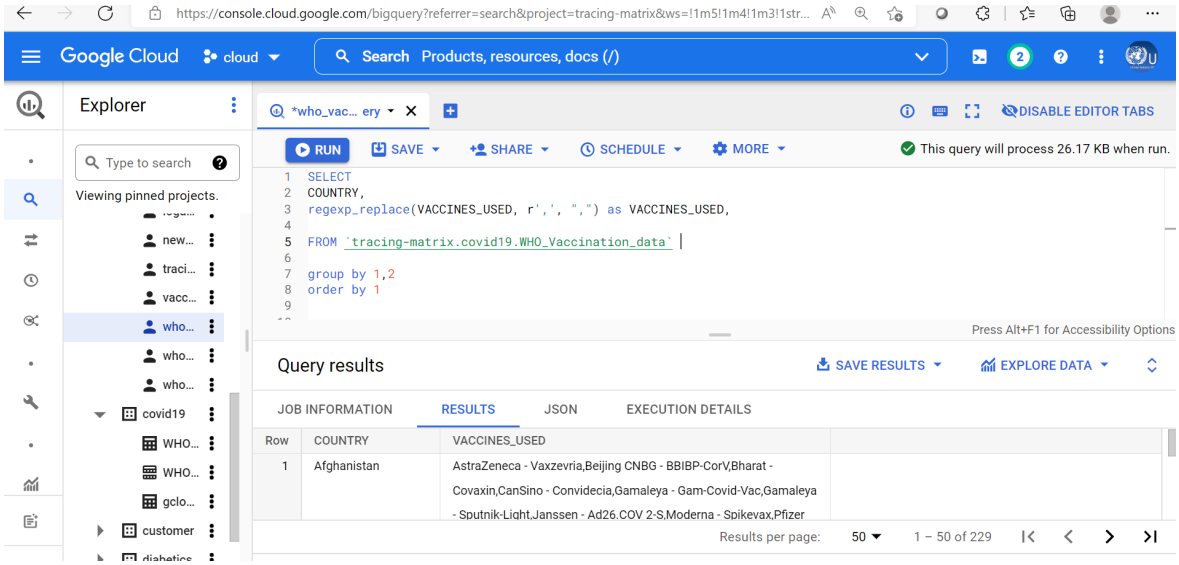

Figure 18. *Big Query Result.*

5. Discussion

COVID-19 [26] Vaccine types used in different countries are processed in the Google Cloud. The Python program is developed for JSON parser [27], and 30 unique vaccine types are collected in Big Query [28]. Also, this project gives researchers an insight into vaccine types and the correlation between country and region [29].

6. Results

We found that different types [30] of vaccines had advantages and disadvantages. At the same time, the vaccine's side effects, the dose of vaccination, the efficacy evaluation, and its application [31] were worth studying.

7. Conclusion

The types of vaccines for COVID-19 [32-38] are used in different countries, and the chemical composition is brought into Google Cloud for further progress in the research on vaccines. The contribution of vaccine companies is essential for further developing the immunogenicity and reactivity of the vaccines. We hope this review can help colleagues across the world.

Google Cloud Guild Team [38] has contributed data analytics and provisioning of Google Cloud to study COVID-19 vaccine types.

Google Cloud Engine [39] is also worked for research for Nature Labs in measuring the chemical components [40] of the COVID-19 vaccine. The project brings a message to the vaccine manufacturing companies on the need for Google Cloud for data analysis, chemical, and research-related work in Google cloud-native services of Big Query, and

application modernization, Google Kubernetes Engine (GKE) for Virtual Machine (VMs), the discovery, analysis of machine data of source information of datacenter for creating the working template for process of migration in Google, Application as a service in python and big query in segregation. The available information is handy for data analytics in the Python application interface in SerpAPI application modernization in Google Cloud. In this data analytics, the vaccine manufacturing companies can bring their workload to Google Cloud, and the Nature Labs research analytics engine solves the necessary healthcare-related projects for the vaccine manufacturing companies. The certification in Google Cloud helps the manufacturing companies gain consumer confidence.

Breakdown of the three COVID vaccines and their ingredients:

(1) Pfizer Vaccine:
mRNA, lipids ((4-hydroxybutyl) azanediyl)bis (hexane-6,1-diyl)bis(2-hexyldecanoate), 2 [(polyethylene glycol)-2000]-N,N-ditetradecylacetamide, 1,2-Distearoyl-sn-glycero-3-phosphocholine, and cholesterol), potassium chloride, monobasic potassium phosphate, sodium chloride, dibasic sodium phosphate dihydrate, and sucrose.

(2) Moderna Vaccine:
Messenger ribonucleic acid (mRNA), lipids (SM-102, polyethylene glycol [PEG] 2000 dimyristoyl glycerol [DMG], cholesterol, and 1,2-distearoyl-sn-glycero-3-phosphocholine [DSPC]), tromethamine, tromethamine hydrochloride, acetic acid, sodium acetate trihydrate, and sucrose.

(3) Johnson & Johnson Vaccine:
Recombinant, replication-incompetent adenovirus type 26 expressing the SARS-CoV-2 spike protein, citric acid monohydrate, trisodium citrate dihydrate, ethanol, 2 hydroxypropyl-β-cyclodextrin (HBCD), polysorbate-80, sodium chloride.

Authors' Contributions

Kyndryl Solutions Private Limited, GCP Guild members, have contributed their time and efforts for the WHO successfully in provisioning the dataset and automated Python programing, Big Query Tables.

Google Search Engine @ Google Cloud by SerpAPI

Date: July 09, 2022

Google Connect is a utility to connect to the Google Search Engine.

Motivation: To Google Cloud Search Application Program Interface (API) to connect to Google Search Engine and select the exact URL in Google Cloud Engine, which is connected via SerpAPI in Python.

Cloud Service used: Google Compute Engine, Google Storage, Cloud Composer, Google Kubernetes Engine.

SerpAPI Sponsorship

SerpAPI sponsors Google Engine @ Nature Labs. SerpAPI is the Key factor for our success in scraping the Google search engine.

On behalf of Nature Labs researchers, we express our gratitude to SerpAPI LLC for provisioning their sponsorship SerpAPI's sponsorship has helped us make our research and social work contribution to speaking out greater audience.

With the advent of SerpAPI, Nature Labs has addressed our research work on Temples in India with the experience of a blazingly fast, super easy to use, and data-rich API in Google Cloud Platform Search Engine on Big Query for Research in Google Cloud Engine. With SerpAPI, Nature Labs will be helping the community projects.

About SerpApi

SERP API is a real-time API to access Google search results. It solves the issues of having to rent proxies, solving captchas, and JSON parsing.

SerpApi

Purpose: Google Connect is a utility to connect to the Google Search Engine.

Generate the CSV data based on the search query given in the argument.

The demonstrated program generates the datasheet in a format CSV.

Design and developed by:

Project Team: Google Cloud Platform - Guild.

Lab: Nature Labs @ GCP

https://github.com/gcpguild/googlengine/blob/main/parserpapijsonvaccination.py

Types of COVID-19 vaccine study reveal the bulk of the vaccine manufacturing formula is needed to be qualified in Google Cloud data analysis and Chemical analysis of Nature Labs. Chemical analysis is recommended for the confidence factors of the consumers. Also, the data for countries like Bonaire, Eritrea, Saba, and Sint Eustatius is unavailable. Vaccination against COVID-19 in St. Eustatius started in February 2021. In 2021, the Moderna Vaccine was used. Since January 2022, the Pfizer Vaccine booster vaccinations and booster vaccinations.

Table 4. *Big Query for Vaccination Data.*

S. No	Companies	Vaccinations	
0	Anhui ZL	Zifivax	ZF2001, trade-named Zifivax or ZF-UZ-VAC-2001, is an adjuvanted protein subunit COVID-19 vaccine developed by Anhui Zhifei Longcom
1	AstraZeneca	AZD1222	The Oxford–AstraZeneca COVID-19 vaccine, codenamed AZD1222, sold under the brand names Covishield and Vaxzevria, among others, is a viral vector vaccine for the prevention of COVID-19.
2	AstraZeneca	Vaxzevria	Vaxzevria is a vaccine for preventing coronavirus disease 2019 (COVID-19) in people aged 18 years and older. The SARS-CoV-2 virus causes COVID-19s. Vaxzevria is made up of another virus (of the adenovirus family) modified to contain the gene for making a protein from SARS-CoV-2.

S. No	Companies	Vaccinations	
3	Beijing CNBG	BBIBP	The Sinopharm BIBP COVID-19 vaccine, also known as BBIBP-CorV, the Sinopharm COVID-19 vaccine, or BIBP vaccine, is one of two whole inactivated virus COVID-19 vaccines developed by Sinopharm's Beijing Institute of Biological Products.
4	Bharat	Covaxin	the Technical Advisory Group for Emergency Use Listing listed the Bharat Biotech BBV152 COVAXIN vaccine against COVID-19 for emergency use. The WHO Strategic Advisory Group of Experts on Immunization (SAGE) has issued interim policy recommendations for using the Bharat Biotech BBV152 COVAXIN vaccine. This article provides a summary of those interim recommendations.
5	Biological E	Corbevax	Biological E. Limited CorbeVax® COVID-19 Vaccine (BioE COVID-19, BECOV2D) is based on classical a protein subunit vaccine technology of a protein antigen, SARS-CoV-2 Spike receptor-binding domain (RBD), adsorbed to the adjuvant Alhydrogel (Alum), in combination with another approved adjuvant,
6	CIGB	CIGB	
7	CanSino	Convidecia	CanSinoBio Biologics Inc. Convidecia™ (Ad5-nCoV) is a novel recombinant viral vector vaccine for COVID-19 produced in China. The single-dose vaccine was developed on CanSinoBIO's adenovirus-based viral vector vaccine technology platform and the Beijing Institute of Biotechnology.
8	Chumakov	Covi	Russia's Chumakov research center officially launched the production of the nation's third coronavirus vaccine, CoviVac, in late March. CoviVac is a so-called whole-virion vaccine based on a modified SARS-CoV-2 virus that can not cause the disease but boosts immunity against coronavirus.
9	Finlay	Soberana Plus	Soberana Plus Soberana Plus, technical name FINLAY-FR-1A, is a COVID-19 candidate vaccine produced by the Finlay Institute, a Cuban epidemiological research institute.
10	Finlay	Soberana	Soberana 02 or Soberana 2, technical name FINLAY-FR-2, is a COVID-19 vaccine produced by the Finlay Institute, a Cuban epidemiological research institute. The vaccine is known as PastoC.ovac.
11	Gamaleya	Gam	Gamaleya: Gam-COVID-Vac. Vaccine Type: Non-Replicating Viral Vector This vaccine may also be referred to as Sputnik, rAd5. Vaccine Trial & Approval Tracker. Phase 1; Phase 2; Phase 3
12	Gamaleya	Sputnik V	sputnik v demonstrates 97% efficacy against hospitalization caused by omicron variant following revaccination with sputnik light or sputnik v, according to a study published in the vaccines peer-reviewed leading medical journal.
13	Gamaleya	Sputnik	Sputnik V (Russian: Спутник V, the brand name from RDIF) or Gam-COVID-Vac (Russian: Гам-КОВИД-Вак, the name under which it is legally registered and produced [3]) is an adenovirus viral vector vaccine for COVID-19 developed by the Gamaleya Research Institute of Epidemiology and Microbiology in Russia. It is the world's first registered combination vector vaccine for the prevention of COVID-19, registered on 11 August 2020 by the Russian Ministry of Health.
14	IMB	COVIDful	
15	Janssen	Ad26.COV 2	The Janssen COVID-19 vaccine is sold under the brand name Jcovden.
16	Julphar	Hayat	
17	Moderna	Spikevax	The vaccine has been known as the Moderna COVID-19 Vaccine and will now be marketed as Spikevax, for the prevention of COVID-19 in individuals 18 years of age and older. Moderna COVID-19 Vaccine
18	Moderna	mRNA	The WHO Strategic Advisory Group of Experts on Immunization (SAGE) has issued updated interim recommendations for the Moderna COVID-19 (mRNA-1273) vaccine against COVID-19.
19	Novavax	NUVAXOVID	NVX-CoV2373 (Novavax COVID-19 vaccine) In January 2020, Novavax announced the development of a vaccine candidate, NVX-CoV2373, to establish immunity to SARS-CoV-2. NVX-CoV2373 is a protein subunit vaccine that contains the spike protein of the SARS-CoV-2 molecule
20	Pfizer BioNTech	Comirnaty	The Pfizer–BioNTech COVID-19 vaccine, sold under the brand name Comirnaty, is an mRNA-based COVID-19 vaccine developed by the German biotechnology company BioNTech. For its development, BioNTech collaborated with American company Pfizer to carry out clinical trials, logistics, and manufacturing. It is authorized for use in people aged five years and older in some jurisdictions, twelve years and older in some jurisdictions, and for people sixteen years and older in other jurisdictions to protect against COVID-19, caused by infection with the SARS-CoV-2 virus.
21	RIBSP	QazVac	Research Institute for Biological Safety Problems (RIBSP): QazVac. Vaccine Type: Inactivated. This vaccine may also be referred to as QazCOVID-in. Vaccine Trial & Approval Tracker. Phase 1; Phase 2; Phase 3; Approved; This vaccine is approved.
22	SII	Covishield	CoviShield is the Serum Institute of India version of the AstraZeneca COVID-19 vaccine. On February 15, 2021, the World Health Organization (WHO) recommended the Serum Institute of India (SII) COVID-19 Vaccine (ChAdOx1-S [recombinant]), known as COVISHIELD.
23	SII	Covovax	This is SII's version of NVX-CoV2373, the protein-based COVID-19 vaccine developed by Novavax, headquartered in the USA. In August 2020, the two companies announced an agreement under which Novavax had given SII the license to manufacture and supply the vaccine in low- and middle-income countries and India.
24	SRCVB	EpiVacCorona	EpiVacCorona (Russian: ЭпиВакКорона, tr. EpiVakKorona) is a peptide-based vaccine against COVID-19 developed by the VECTOR center of Virology. It consists of three chemically synthesized peptides (short fragments of a viral spike protein) conjugated to a large carrier protein.
25	Shenzhen	LV	
26	Shifa	COVIran Barakat	COVIran Barekat (Persian) is a COVID-19 vaccine developed in Iran by Shifa Pharmed Industrial Group, a subsidiary of the Barkat Pharmaceutical Group. It is an inactivated virus-based vaccine.
27	Sinovac	CoronaVac	CoronaVac, also known as the Sinovac COVID-19 vaccine, [3] is a whole inactivated virus COVID-19 vaccine developed by the Chinese company Sinovac Biotech. It was Phase III clinical trailed in Brazil, [6] Chile, Indonesia, the Philippines, and Turkey and relied on traditional technology similar to other inactivated-virus COVID-19 vaccines,

S. No	Companies	Vaccinations	
28	Turkovac	ERUCOV-VAC	Turkovac (temporarily named ERUCOV-VAC) is a COVID-19 vaccine developed by the Heathe lth Institutes of türkiye and Erciyes University. Clinical trials
29	Wuhan CNBG	Inactivated	
30	Zydus	ZyCov	ZyCov-D is a "plasmid DNA" vaccine — or a vaccine that uses a genetically engineered, non-replicating version of a type of DNA molecule known as a 'plasmid.' The plasmids, in this case, are coded with the instructions to make the spike protein of SARS-CoV-2, the coronavirus that causes COVID-19.

Software download References:
https://github.com/gcpguild/googlengine/blob/main/parseserpapijsonvaccination.py
https://github.com/gcpguild/googlengine/blob/main/vaccination.json
https://github.com/gcpguild/COVID-19

Appendix

COVID-19 Vaccine Types
Afghanistan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Albania
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Algeria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
SII - Covishield
Sinovac - CoronaVac
American Samoa
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Andorra
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Angola
SII - Covishield
Anguilla
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Antigua and Barbuda
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Argentina
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield

COVID-19 Vaccine Types
Armenia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Wuhan CNBG - Inactivated
Aruba
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
Australia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Austria
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Azerbaijan
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Bahamas
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Bahrain
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Bangladesh
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax

COVID-19 Vaccine Types
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Barbados
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Belarus
Beijing CNBG - BBIBP-CorV
Chumakov - Covi-Vac
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Belgium
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Belize
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Benin
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Bermuda
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Bhutan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Bolivia (Plurinational State of)
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Bonaire
None
Bonaire, Sint Eustatius and Saba
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Bosnia and Herzegovina
AstraZeneca - AZD1222
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Gamaleya - Sputnik V
Botswana
Bharat - Covaxin
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Brazil
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S

COVID-19 Vaccine Types
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
British Virgin Islands
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Brunei Darussalam
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Bulgaria
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Burkina Faso
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Burundi
Beijing CNBG - BBIBP-CorV
Cabo Verde
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Ivory Coast
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Cambodia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Cameroon
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Canada
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Cayman Islands
Pfizer BioNTech - Comirnaty
The central African Republic
Bharat - Covaxin
SII - Covishield
Chad
Beijing CNBG - BBIBP-CorV
Chile
AstraZeneca - Vaxzevria
CanSino - Convidecia
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
China

COVID-19 Vaccine Types
Anhui ZL - Zifivax
Beijing CNBG - BBIBP-CorV
CanSino - Convidecia
IMB - COVIDful
Pfizer BioNTech - Comirnaty
Shenzhen - LV-SMENP-DC
Sinovac - CoronaVac
Wuhan CNBG - Inactivated
Colombia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Comoros
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
SII - Covishield
Congo
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
SII - Covishield
Cook Islands
Pfizer BioNTech - Comirnaty
Costa Rica
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Croatia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Cuba
CIGB - CIGB-66
Finlay - Soberana Plus
Finlay - Soberana-02
Curaçao
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Cyprus
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Czechia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
The Democratic Republic of the Congo
SII - Covishield
Denmark
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Djibouti
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Dominica
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Pfizer BioNTech - Comirnaty
SII - Covishield
Dominican Republic
AstraZeneca - Vaxzevria
SII - Covishield
Sinovac - CoronaVac
Ecuador
AstraZeneca - Vaxzevria
CanSino - Convidecia
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Egypt
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
El Salvador
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Equatorial Guinea
Beijing CNBG - BBIBP-CorV
Sinovac - CoronaVac
Eritrea
None
Estonia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Eswatini
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Ethiopia
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Janssen - Ad26.COV 2-S
SII - Covishield
Falkland Islands (Malvinas)
AstraZeneca - AZD1222
Faroe Islands
Moderna - mRNA-1273
Pfizer BioNTech - Comirnaty
Fiji

COVID-19 Vaccine Types
AstraZeneca - Vaxzevria
Moderna - Spikevax
SII - Covishield
Finland
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Unknown Vaccine
France
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
French Guiana
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
French Polynesia
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
Gabon
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
The Gambia
Beijing CNBG - BBIBP-CorV
SII - Covishield
Georgia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Germany
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Ghana
Gamaleya - Gam-COVID-Vac
SII - Covishield
Gibraltar
AstraZeneca - AZD1222
Pfizer BioNTech - Comirnaty
Greece
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Greenland
Moderna - mRNA-1273
Grenada
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Guadeloupe
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Guam
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Guatemala
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Guernsey
Moderna - mRNA-1273
AstraZeneca - AZD1222
Pfizer BioNTech - Comirnaty
Guinea
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Guinea-Bissau
Beijing CNBG - BBIBP-CorV
SII - Covishield
Guyana
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Haiti
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Honduras
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Hungary
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Iceland
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
India
Bharat - Covaxin
Biological E - Corbevax
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
SII - Covishield
SII - Covovax
Zydus - ZyCov-D
Indonesia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Moderna - Spikevax

COVID-19 Vaccine Types
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Iran (the Islamic Republic of)
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Finlay - Soberana-02
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Shifa - COVIran Barakat
Sinovac - CoronaVac
Iraq
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Ireland
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Isle of Man
Moderna - mRNA-1273
AstraZeneca - AZD1222
Pfizer BioNTech - Comirnaty
Israel
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Italy
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Jamaica
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Japan
AstraZeneca - Vaxzevria
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Jersey
Moderna - mRNA-1273
AstraZeneca - AZD1222
Pfizer BioNTech - Comirnaty
Jordan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia

COVID-19 Vaccine Types
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Kazakhstan
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
RIBSP - QazVac
Sinovac - CoronaVac
Kenya
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Kiribati
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Kosovo
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Kuwait
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Kyrgyzstan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
RIBSP - QazVac
Lao People's Democratic Republic
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Latvia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Lebanon
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty

COVID-19 Vaccine Types
Sinovac - CoronaVac
Lesotho
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Liberia
SII - Covishield
Libya
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Liechtenstein
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Lithuania
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Luxembourg
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Madagascar
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Malawi
Janssen - Ad26.COV 2-S
SII - Covishield
Malaysia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Maldives
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Mali
SII - Covishield
Malta
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Marshall Islands

COVID-19 Vaccine Types
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Martinique
Pfizer BioNTech - Comirnaty
Mauritania
Beijing CNBG - BBIBP-CorV
SII - Covishield
Mauritius
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
SII - Covishield
Mexico
AstraZeneca - Vaxzevria
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Micronesia (the Federated States of)
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Monaco
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax - Covavax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Mongolia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Montenegro
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Montserrat
AstraZeneca - Vaxzevria
Morocco
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Mozambique
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Myanmar
Beijing CNBG - BBIBP-CorV
SII - Covishield
Namibia
Beijing CNBG - BBIBP-CorV

COVID-19 Vaccine Types
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Nauru
AstraZeneca - Vaxzevria
SII - Covishield
Nepal
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Netherlands
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
New Caledonia
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
New Zealand
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Nicaragua
AstraZeneca - Vaxzevria
CIGB - CIGB-66
Finlay - Soberana Plus
Finlay - Soberana-02
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Niger
Beijing CNBG - BBIBP-CorV
SII - Covishield
Nigeria
SII - Covishield
Niue
Pfizer BioNTech - Comirnaty
North Macedonia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Wuhan CNBG - Inactivated
Northern Mariana Islands (Commonwealth of the)
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Norway
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
occupied Palestinian territory
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin

COVID-19 Vaccine Types
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Oman
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Pakistan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Palau
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Panama
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Papua New Guinea
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Paraguay
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Gamaleya - Gam-COVID-Vac
Julphar - Hayat-Vax
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Peru
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Philippines
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Julphar - Hayat-Vax
Moderna - Spikevax
Novavax-NUVAXOVID

COVID-19 Vaccine Types
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Pitcairn Islands
AstraZeneca - Vaxzevria
Poland
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Portugal
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Puerto Rico
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Qatar
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Republic of Korea
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Republic of Moldova
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Romania
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Russian Federation
SRCVB - EpiVacCorona
Gamaleya - Sputnik V
Rwanda
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Saba
None
Saint Helena

COVID-19 Vaccine Types
AstraZeneca - AZD1222
Saint Kitts and Nevis
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
SII - Covishield
Saint Lucia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Saint Vincent and the Grenadines
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Pfizer BioNTech - Comirnaty
SII - Covishield
Samoa
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
San Marino
Gamaleya - Gam-COVID-Vac
Pfizer BioNTech - Comirnaty
Sao Tome and Principe
AstraZeneca - Vaxzevria
SII - Covishield
Saudi Arabia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Senegal
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Serbia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Seychelles
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Julphar - Hayat-Vax
SII - Covishield
Sierra Leone
Beijing CNBG - BBIBP-CorV
SII - Covishield
Singapore
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sint Eustatius
None
Sint Maarten
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Slovakia

COVID-19 Vaccine Types
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Slovenia
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Solomon Islands
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Pfizer BioNTech - Comirnaty
SII - Covishield
Somalia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
South Africa
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
South Sudan
Janssen - Ad26.COV 2-S
SII - Covishield
Spain
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Sri Lanka
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sudan
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Suriname
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sweden
AstraZeneca - Vaxzevria
Moderna - Spikevax
Novavax-NUVAXOVID
Pfizer BioNTech - Comirnaty
Unknown Vaccine
Switzerland
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
The Syrian Arab Republic
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Tajikistan
AstraZeneca - Vaxzevria
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Thailand
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
SII - Covovax
Sinovac - CoronaVac
The United Kingdom
AstraZeneca - Vaxzevria
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Timor-Leste
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Togo
SII - Covishield
Tokelau
Pfizer BioNTech - Comirnaty
Tonga
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Trinidad and Tobago
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
SII - Covishield
Tunisia
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax

COVID-19 Vaccine Types
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Turkey
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Turkovac
Turkmenistan
Anhui ZL - Zifivax
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Gamaleya - Gam-COVID-Vac
RIBSP - QazVac
SRCVB - EpiVacCorona
Unknown Vaccine
Turks and Caicos Islands
Pfizer BioNTech - Comirnaty
Tuvalu
AstraZeneca - AZD1222
Uganda
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Ukraine
AstraZeneca - Vaxzevria
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
United Arab Emirates
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevaxs
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
United Republic of Tanzania
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
Pfizer BioNTech - Comirnaty
United States of America
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Uruguay
AstraZeneca - Vaxzevria
Pfizer BioNTech - Comirnaty
Sinovac - CoronaVac
Uzbekistan
Anhui ZL - Zifivax
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Unknown Vaccine
Vanuatu
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV

COVID-19 Vaccine Types
Janssen - Ad26.COV 2-S
Venezuela (the Bolivarian Republic)
Beijing CNBG - BBIBP-CorV
CIGB - CIGB-66
Finlay - Soberana-02
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Sinovac - CoronaVac
Viet Nam
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
CIGB - CIGB-66
Gamaleya - Gam-COVID-Vac
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
Wallis and Futuna
Moderna - Spikevax
Yemen
AstraZeneca - Vaxzevria
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
CanSino - Convidecia
Gamaleya - Gam-COVID-Vac
Gamaleya - Sputnik-Light
Janssen - Ad26.COV 2-S
Moderna - Spikevax
Pfizer BioNTech - Comirnaty
SII - Covishield
Sinovac - CoronaVac
Zambia
Beijing CNBG - BBIBP-CorV
Janssen - Ad26.COV 2-S
SII - Covishield
Zimbabwe
Beijing CNBG - BBIBP-CorV
Bharat - Covaxin
Gamaleya - Gam-COVID-Vac
Sinovac - CoronaVac
Grand Total

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