

COVID-19 Vaccine Briefing

Science based forecasts for the short- and long-term

29th June 2021

Prepared on behalf of The WTO

Airfinity is a life science analytics company. Working for some of the world's largest pharma companies, government agencies, corporates and investors, Airfinity has established itself as an authoritative provider of predictive insights and accurate, independent information.

We have built the world's leading COVID-19 science and market intelligence platform.

"Airfinity has been instrumental in our country's COVID response"
- *Head of Vaccine Task Force*

AIRFINITY DATA IS USED BY MORE THAN 200 NEWSPAPERS, JOURNALS AND TV NETWORKS GLOBALLY

Bloomberg

CNN


THE TIMES

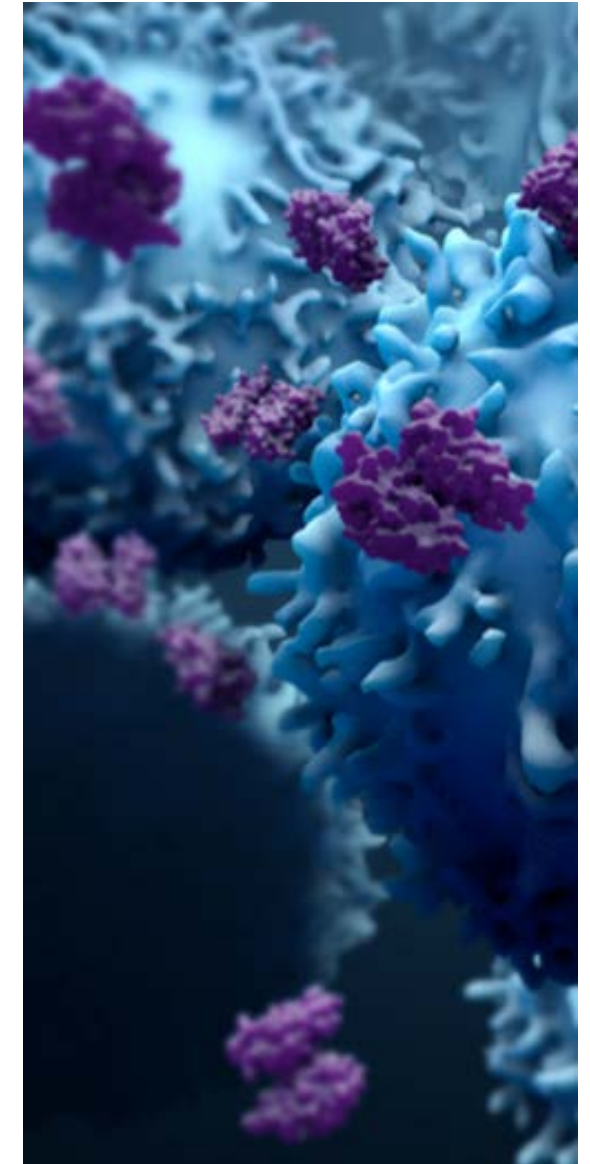
FINANCIAL TIMES

The New York Times

BBC

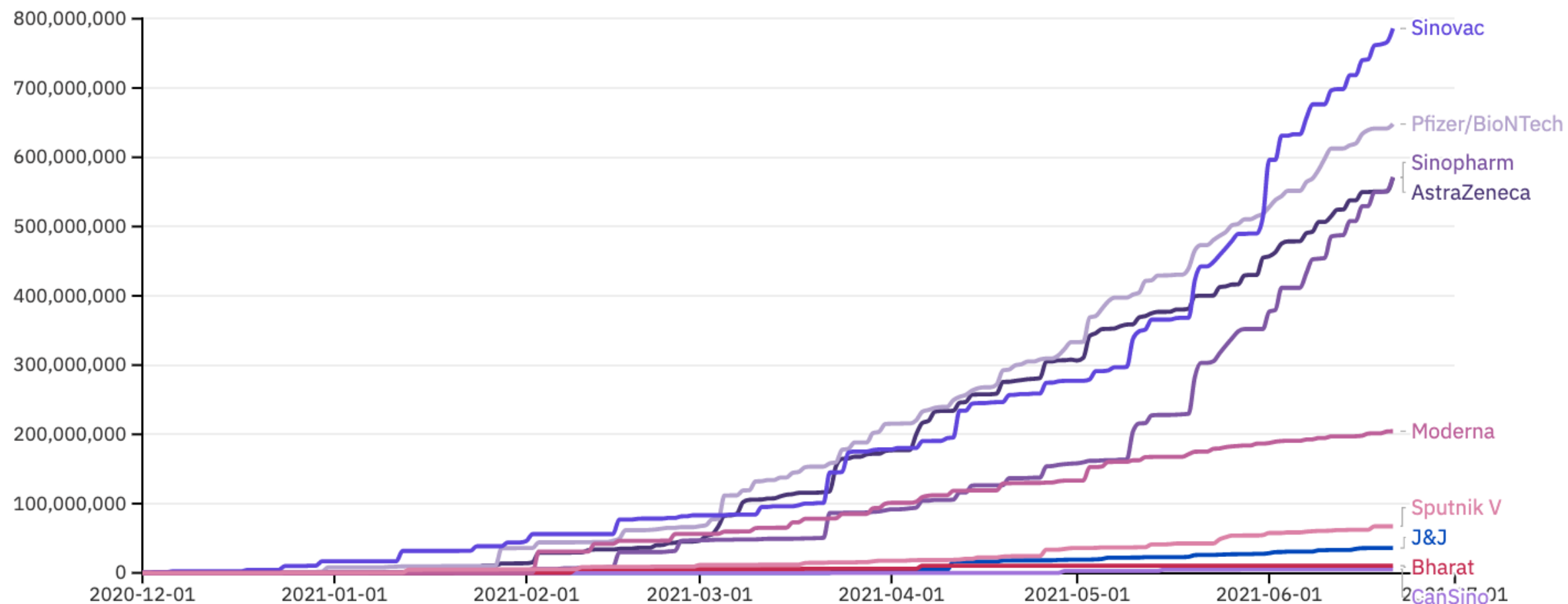
 **NBC**

The Washington Post



Vaccine production has scaled up quickly

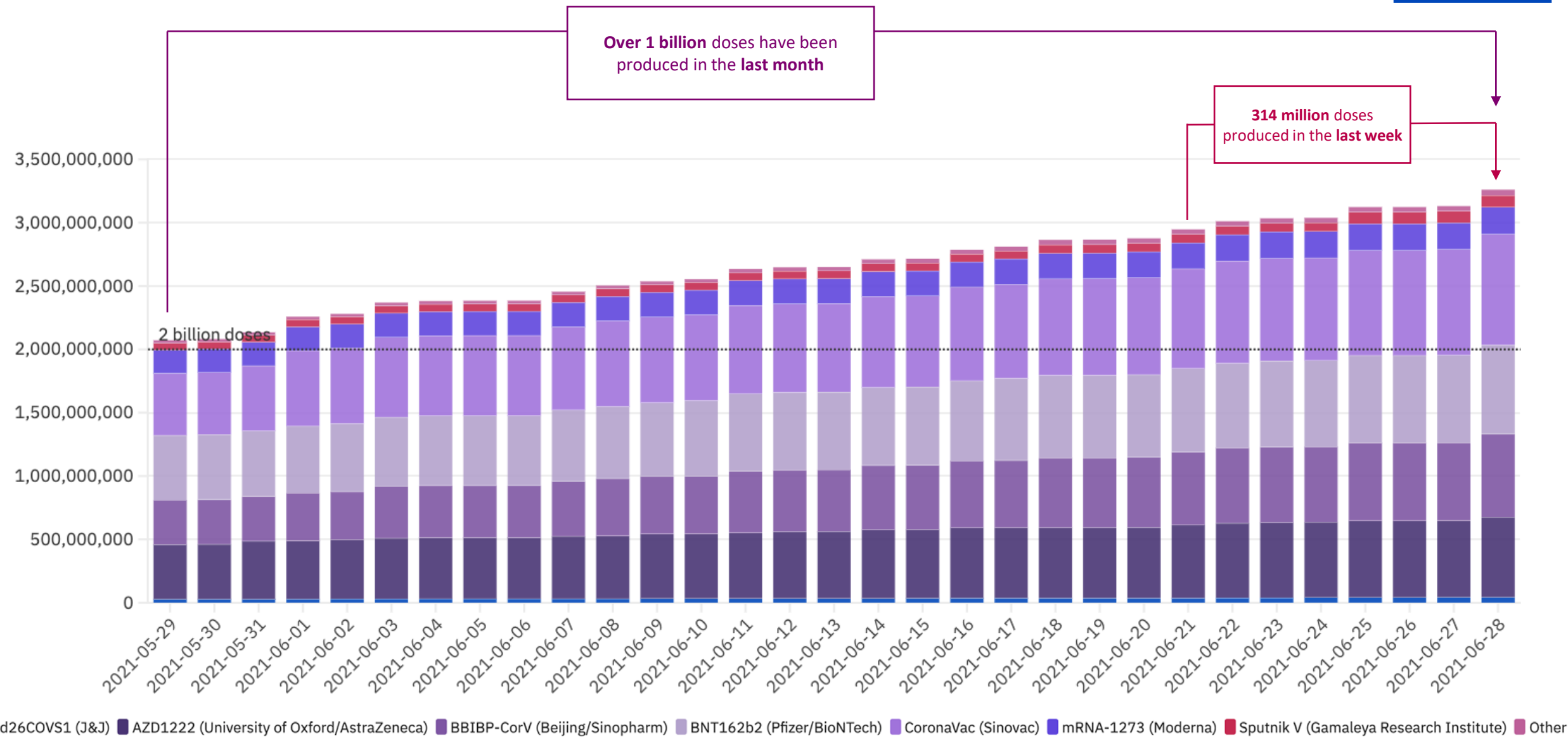
Observed vaccine deliveries to date



Data is based on delivered vaccines, and excludes any stockpiled doses or doses still undergoing quality control
This is an illustrative analysis published at a specific point in time. Not for reproduction or redistribution.

Vaccine production now greater than 3.3 billion, showing current growth rate of more than a billion doses per month

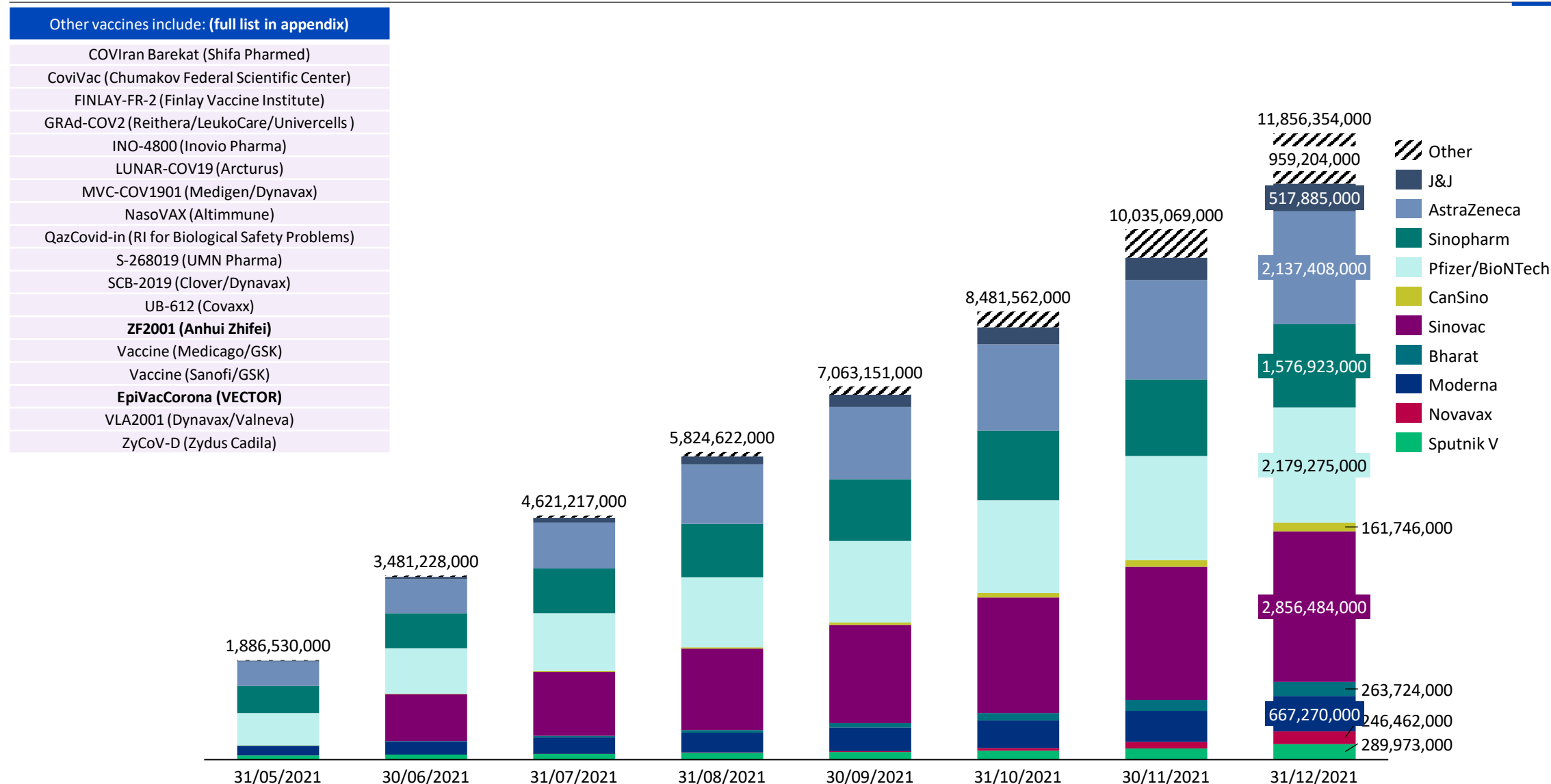
Global cumulative vaccine production over the last month



Based on produced and delivered doses, as of 28/06/2021

Vaccine production could exceed 11 billion in 2021, as more vaccines come through the pipeline

Vaccine production forecast split by candidate



Forecasted on 28/06/2021

Global drug substance production sites for vaccines

Map of agreed production sites for COVID vaccines. Bubble sizes indicate volume

- BNT162b2 (Pfizer/BioNTech)
- AZD1222 (AstraZeneca)
- mRNA-1273 (Moderna)
- NVX-CoV2373 (Novavax)
- Vaccine (Medicago/GSK)
- SCB-2019 (Clover/Dynavax)
- Vaccine (Sanofi/GSK)
- Ad26COVS1 (J&J)
- CoronaVac (Sinovac)
- INO-4800 (Inovio Pharma)
- IBIO-200 (iBio)
- LUNAR-COV19 (Arcturus)
- hAd5-Covid-19 (ImmunityBio/NantKwest)
- NasoVAX (Altimmune)
- AG0301-COVID19 (AnGes)
- GRAd-COV2 (Reithera/LeukoCare/Univercells)
- VLA2001 (Dynavax/Valneva)
- Sputnik V (Gamaleya Research Institute)
- CVnCoV (Curevac)
- Vaccine (Wuhan/Sinopharm), BBIBP-CorV (Beijing/Sinopharm)
- Inactivated virus (Chumakov Federal Scientific Center)
- EpiVacCorona (VECTOR)
- MVC-COV1901 (Medigen/Dynavax)
- UB-612 (Covaxx)
- Ad5-nCoV (CanSino)
- QazCovid-in (RI for Biological Safety Problems)
- COVAXIN (Bharat/ICMR/NIV)
- ZyCoV-D (Zydus Cadila)
- Vaccine (Anhui Zhifei)
- mRNA vaccine (Tel Aviv University/Israel Institute for Biological Research)
- FINLAY-FR-2 (Finlay Vaccine Institute)
- S-268019 (UMN Pharma)
- COVIran Barekat (Shifa Pharmed)

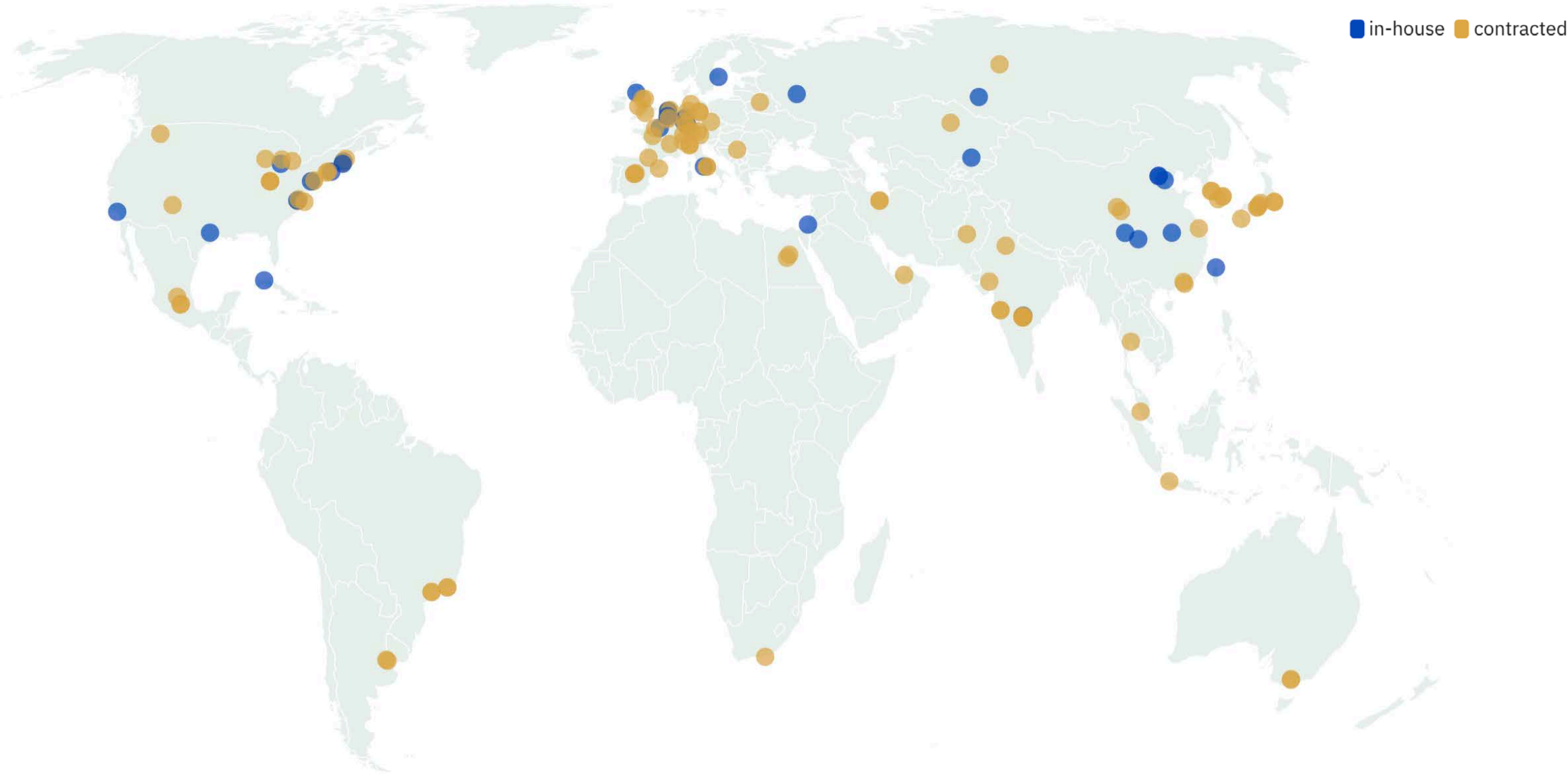


83 sites producing vaccine drug substance

The map shows production sites where there is known quantities of drug substance. If fill/finish is at the same site as drug substance production, they are included here

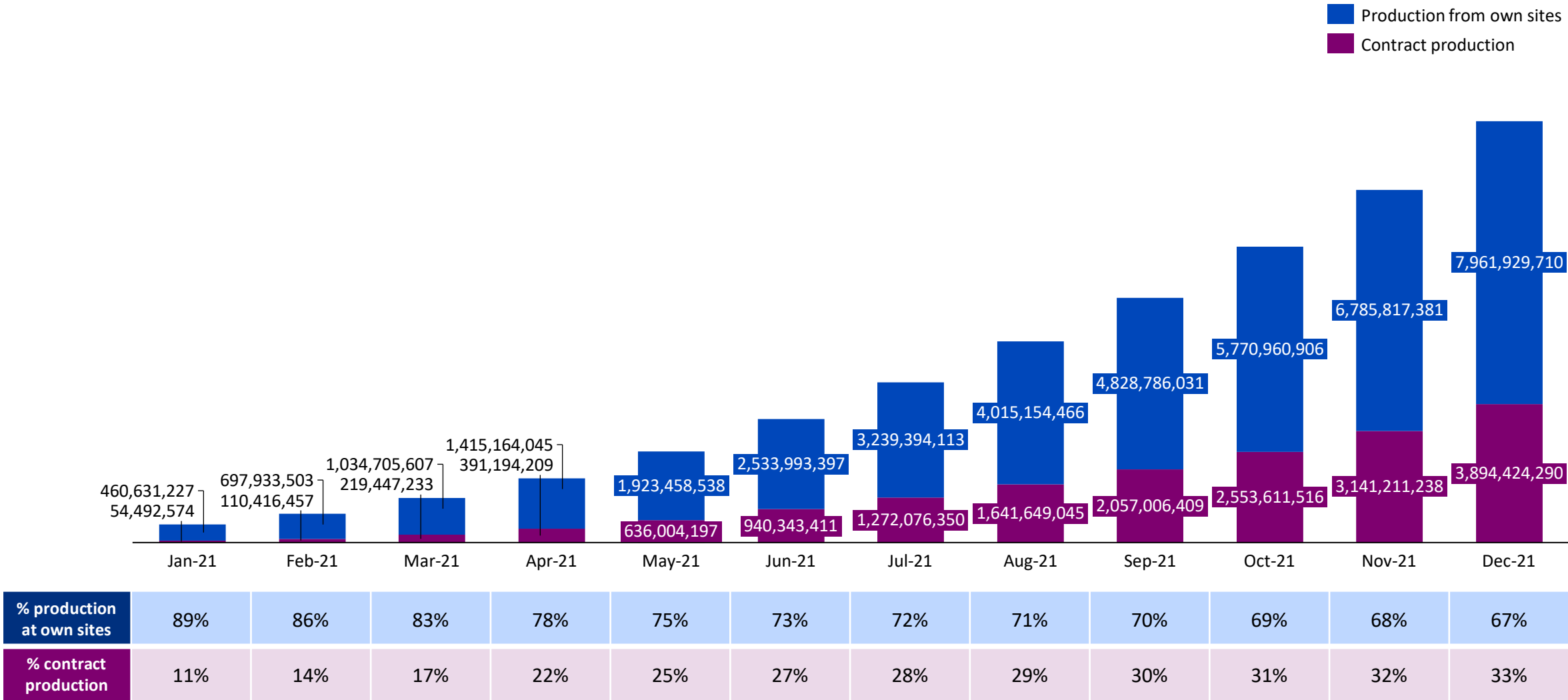
Globally, there are many more CDMOs than in-house production facilities for COVID vaccines

Map of agreed production sites (including fill & finish) for COVID vaccines colour coded by in-house or contracted facilities



More production forecasted to come from own sites compared to contract production

Forecasted supply of vaccines split by contract or own sites



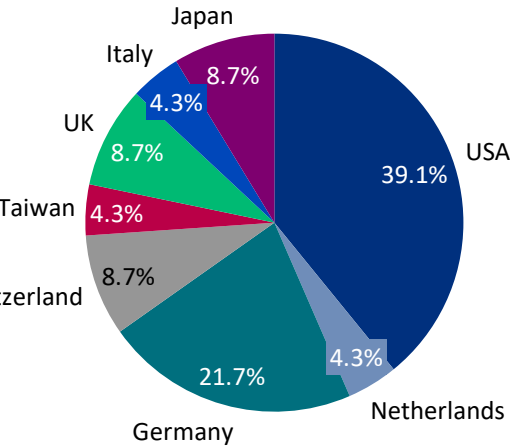
Forecasted on 28/06/2021

For facilities where known

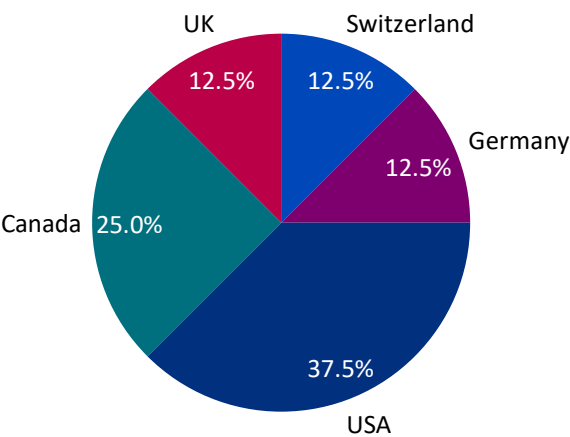
The USA headquarters many companies that produce subcomponents

Some key subcomponents and materials for vaccine supply chains:

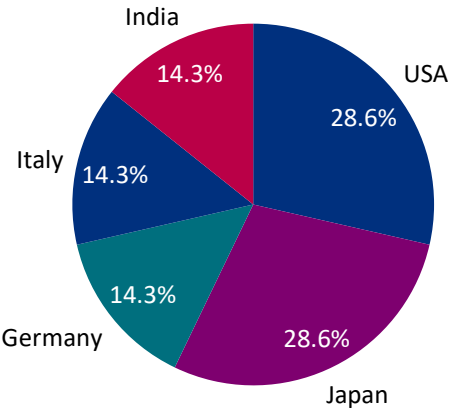
Bioreactor suppliers (HQ)



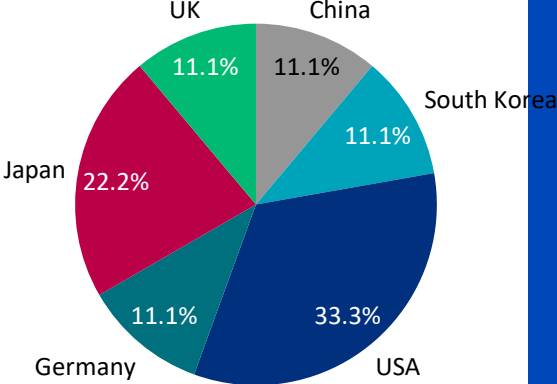
Lipid suppliers (HQ)



Glass Vials Suppliers (HQ)



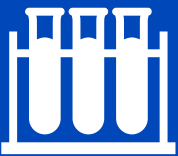
Syringes and needles suppliers (HQ)



Equipment:
Different equipment are required for vaccine production, including those required in manufacturing and storage: E.g. bioreactors and fridges/freezers.



Chemicals:
To produce vaccines, various chemicals are required. These include various buffers throughout the process, and other chemicals such as lipids which are important for the delivery of mRNA vaccines.



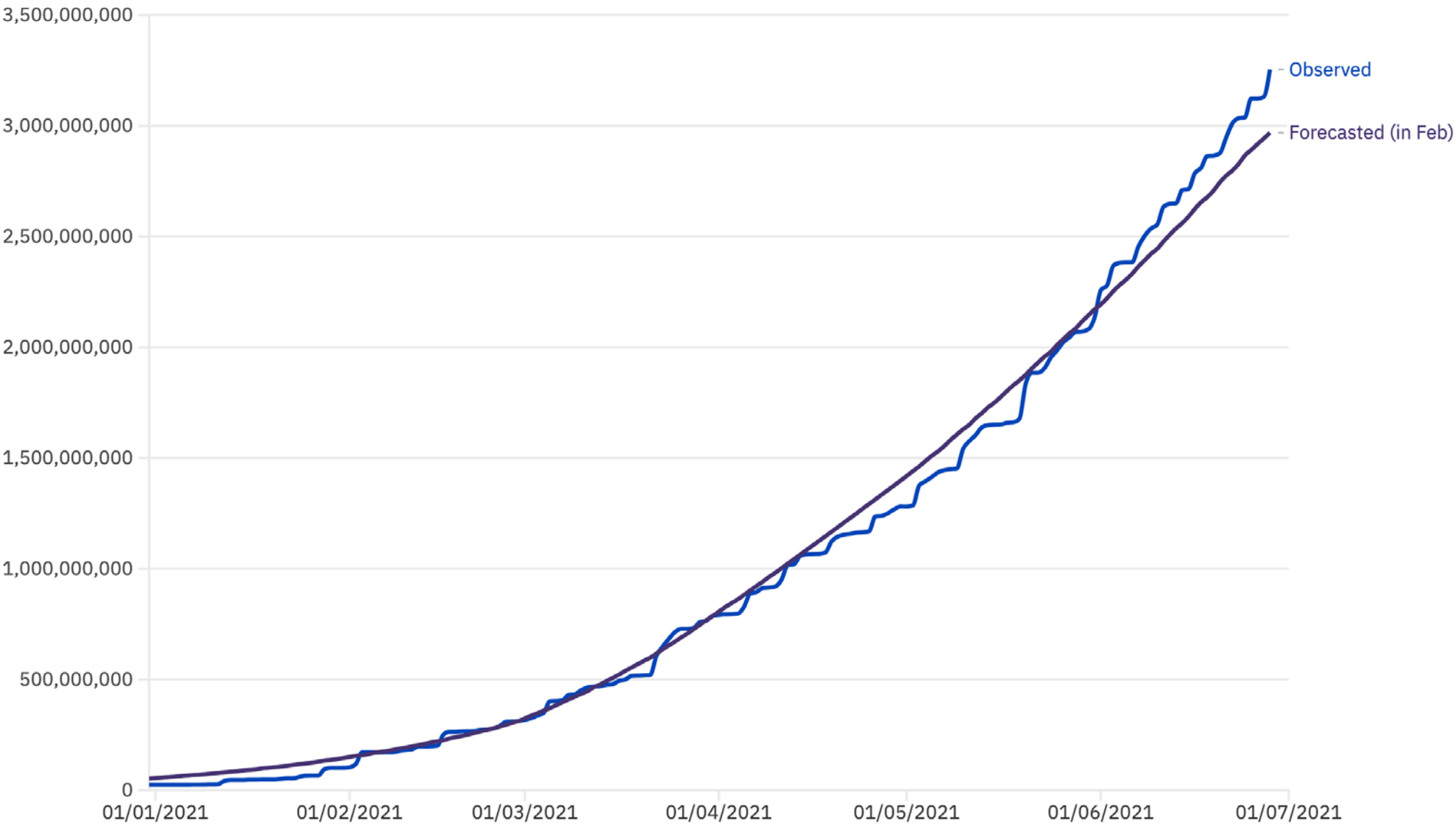
Consumables:
In addition to large laboratory equipment required to produce vaccines, various items are required for the manufacturing, storage and administering of vaccines.
E.g. glass vials, syringes, needles.



Process:
Vaccines need to be packaged correctly for distribution. For mRNA vaccines, assembly of the mRNA into lipid nanoparticles is essential. Finally, all vaccines need to be filled into glass vials for distribution.

Airfinity forecasts have been realistic to observed production

Comparison of Airfinity forecasts (made in early February) vs observed production up until the end of June



Macro Overview: Key changes this week

1

Production forecast overview

Appendix

Full list of vaccines included in supply and production models

Supply		Production	
CVnCoV (Curevac)	VLA2001 (Valneva/Dynavax)	CVnCoV (Curevac)	AG0301-COVID19 (AnGes)
Ad26COVS1 (J&J)	Sputnik V (Gamaleya Research Institute)	Ad26COVS1 (J&J)	GRAd-COV2 (Reithera/LeukoCare/Univercells)
mRNA-1273 (Moderna)	EpiVacCorona (VECTOR)	mRNA-1273 (Moderna)	ZF2001 (Anhui Zhifei)
AZD1222 (University of Oxford/AstraZeneca)	BBIBP-CorV (Beijing/Sinopharm)	AZD1222 (University of Oxford/AstraZeneca)	VLA2001 (Valneva/Dynavax)
BNT162b2 (Pfizer/BioNTech)	CoviVac (Chumakov Federal Scientific Center)	BNT162b2 (Pfizer/BioNTech)	Sputnik V (Gamaleya Research Institute)
NVX-CoV2373 (Novavax)	INO-4800 (Inovio Pharma)	NVX-CoV2373 (Novavax)	EpiVacCorona (VECTOR)
Vaccine (Medicago/GSK)	MVC-COV1901 (Medigen/Dynavax)	Vaccine (Medicago/GSK)	BBIBP-CorV (Beijing/Sinopharm)
SCB-2019 (Clover/Dynavax)	UB-612 (Covaxx)	SCB-2019 (Clover/Dynavax)	CoviVac (Chumakov Federal Scientific Center)
Vaccine (Sanofi/GSK)	Ad5-nCoV (CanSino)	Vaccine (Sanofi/GSK)	INO-4800 (Inovio Pharma)
CoronaVac (Sinovac)	QazCovid-in (RI for Biological Safety Problems)	CoronaVac (Sinovac)	MVC-COV1901 (Medigen/Dynavax)
IBIO-200 (iBio)	COVAXIN (Bharat/ICMR/NIV)	IBIO-200 (iBio)	UB-612 (Covaxx)
LUNAR-COV19 (Arcturus)	ZyCoV-D (Zydus Cadila)	LUNAR-COV19 (Arcturus)	Ad5-nCoV (CanSino)
hAd5-Covid-19 (ImmunityBio/NantKwest)	mRNA vaccine (Tel Aviv University/Israel Institute for Biological Research)	hAd5-Covid-19 (ImmunityBio/NantKwest)	QazCovid-in (RI for Biological Safety Problems)
NasoVAX (Altimune)	FINLAY-FR-2 (Finlay Vaccine Institute)	NasoVAX (Altimune)	COVAXIN (Bharat/ICMR/NIV)
AG0301-COVID19 (AnGes)	S-268019 (UMN Pharma)	FINLAY-FR-2 (Finlay Vaccine Institute)	ZyCoV-D (Zydus Cadila)
GRAd-COV2 (Reithera/LeukoCare/Univercells)	COVIran Barekat (Shifa Pharmed)	S-268019 (UMN Pharma)	mRNA vaccine (Tel Aviv University/Israel Institute for Biological Research)
ZF2001 (Anhui Zhifei)		COVIran Barekat (Shifa Pharmed)	

MORE INFORMATION

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THE WORLD'S TRUSTED COVID-19 PLATFORM

Airfinity is a life science analytics company. Working with some of the world's largest pharma companies, government agencies, corporates and investors, it has established itself as an authoritative provider of new predictive insights and accurate independent information.

Airfinity has built the world's leading COVID-19 science and market intelligence platform.

The company is headquartered in London and partners with organisations worldwide.

Airfinity's COVID-19 data was seen by more than 2 billion people in 2020.

"Airfinity has been instrumental in our country's COVID response"

Head of Government Vaccine Task Force

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