



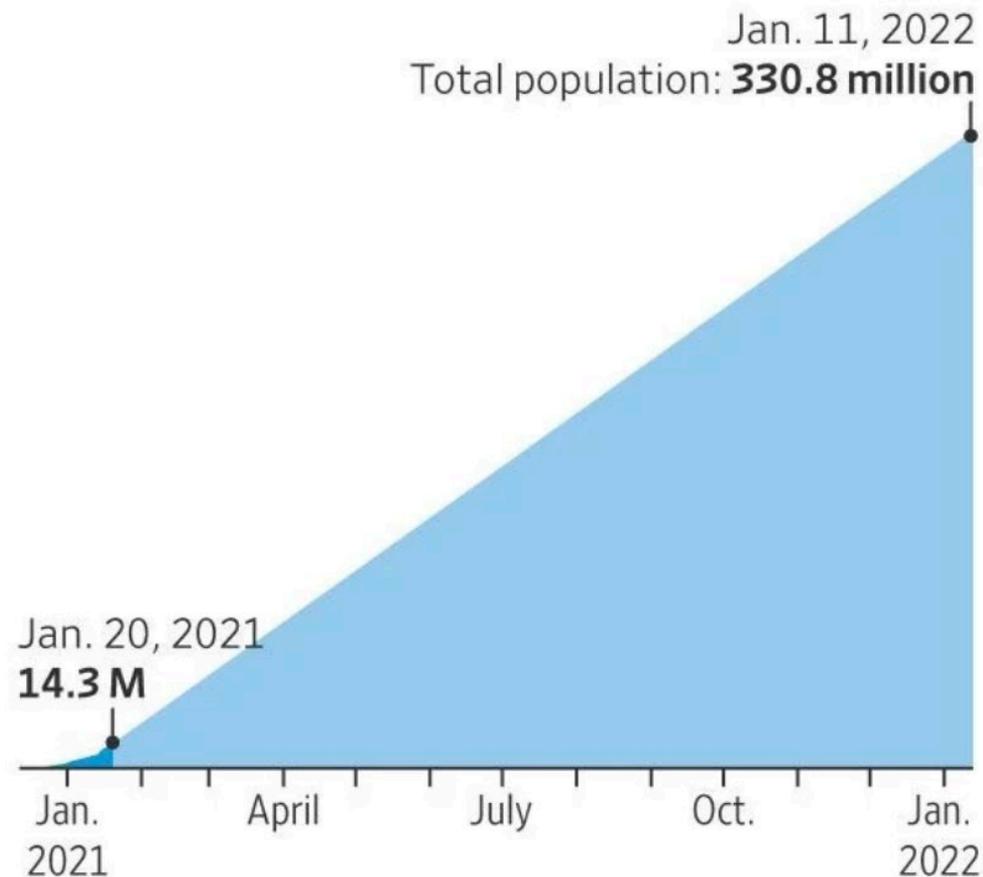
CURRENT COVID VACCINE and SARS CoV-2 RESEARCH

WHAT WE KNOW NOW



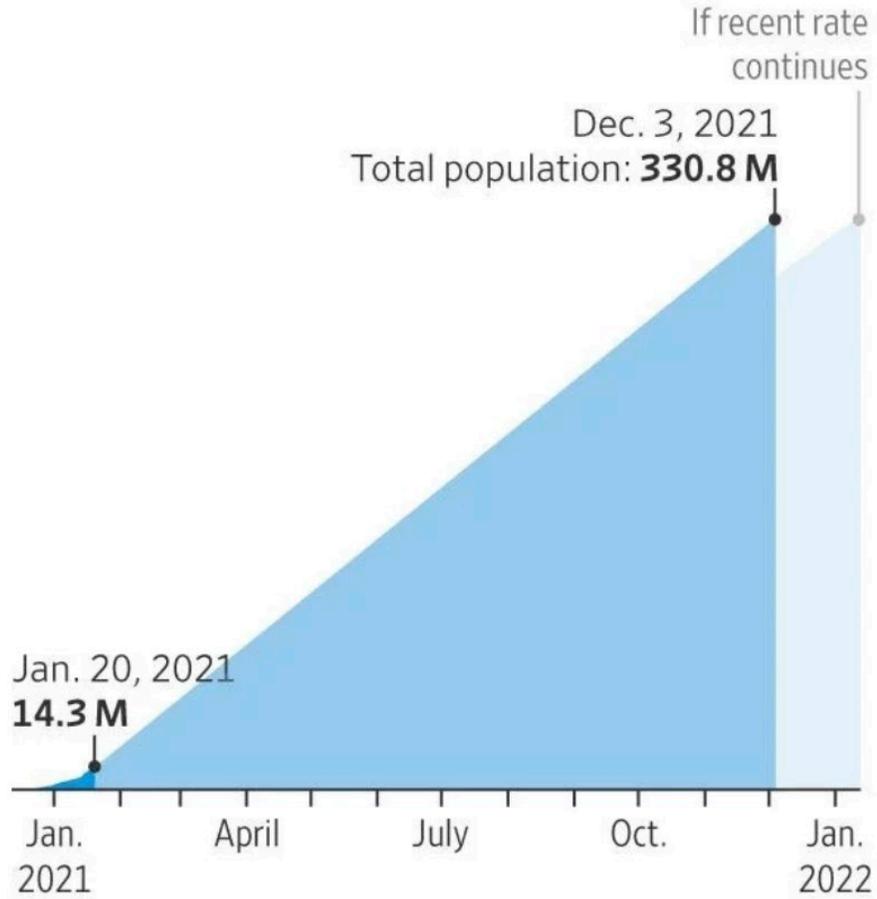
CURRENT VACCINATION TRENDS

At rate of 893,572 people a day, based on average of the seven days before Jan. 21

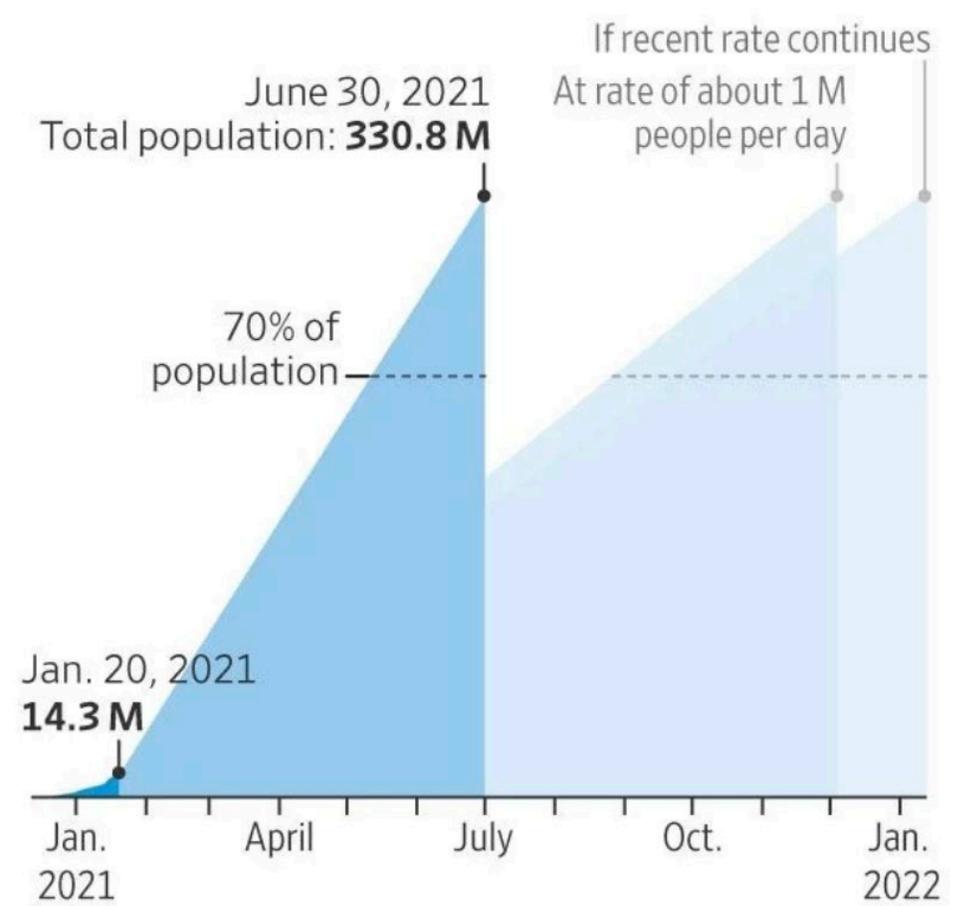


- 70 % of total population need to be vaccinated before we reach herd immunity.
- According to WHO, 'Herd immunity', also known as 'population immunity', is the indirect protection from an infectious disease that happens when a population is immune either through vaccination or immunity developed through previous infection.
- At the current vaccination rate, it will take ~ 260 days for 70% (popular concensus of level needed to reach herd immunity) of population to receive 1 shot in series of vaccines

At rate of about 1 million people a day



At rate of about 1.96 million people a day



CURRENT APPROVED VACCINES

- [Pfizer-BioNTech COVID-19 vaccine](#)

- 2 shots, 21 days apart
- Pfizer-BioNTech vaccine was 95% effective at preventing laboratory-confirmed COVID-19 illness in people who received two doses who had no evidence of being previously infected.

- [Moderna's COVID-19 vaccine](#)

- 2 shots, one month (28 days) apart
- Moderna vaccine was 94.1% effective at preventing laboratory-confirmed COVID-19 illness in people who received two doses who had no evidence of being previously infected.
 - Side effects (that happen within 7 days of getting vaccinated) were common but were mostly mild to moderate.
 - Side effects (such as fever, chills, tiredness, and headache) throughout the body were more common after the second dose of the vaccine.
 - Most side effects were mild to moderate. However, a small number of people had severe side effects—defined as side effects affecting a person's ability to do daily activities.

Johnson & Johnson (1 shot vaccine) should seek emergency FDA approval for their 1 dose vaccine by the end of January
AstraZeneca (2 shot vaccine currently used in UK) probably will not seek FDA approval until at least early Spring

WHEN WILL I HAVE IMMUNITY

Pfizer and BioNTech's vaccine offers immunity at least **seven days after the second dose** ([FDA briefing document: Pfizer-BioNTech COVID-19 vaccine](#))

Moderna's vaccine offers immunity **at least 14 days after the second dose** ([FDA briefing document: Moderna COVID-19 Vaccine](#))

Further research is needed to know how long immunity after vaccination will last but most researchers believe COVID vaccinations will be needed annually

COVID 19 VARIANTS

Multiple COVID-19 variants are circulating globally:

- United Kingdom (UK), a new variant called B.1.1.7 has emerged with an unusually large number of mutations.
- Spreads more easily and quickly than other variants.
- First detected in September 2020 and is now highly prevalent in London and southeast England and is now in the United States (New Jersey has recorded its 1st death caused by this variant).

- South Africa, another variant called 1.351.
- Originally detected in early October, shares some mutations with the variant detected in the UK.
- There have been cases caused by this variant outside of South Africa, but it has not been detected in the US.

- Brazil variant called P.1 emerged
- This variant contains a set of additional mutations that may affect its ability to be recognized by antibodies. This variant has not been detected in the US.

These variants seem to spread more easily and quickly than other variants, which may lead to more cases of COVID-19. Currently, there is no evidence that these variants cause more severe illness or increased risk of death



SARS-COV-2 - VIRUS THAT CAUSES COVID 19



Targets olfactory cells
at a higher rate



Initially thought to be
primarily present as
respiratory illness current
studies are revealing
neurological illness/disease



Neurological effects are
thought to last much
longer

LONG HAULERS SYNDROME

- Long-haul COVID-19 or long hauler's syndrome refers to the long-term symptoms people may experience after recovering from the disease during the initial viral infection.
- Symptoms have been shown to persist for weeks or months
- Symptoms include: fatigue, shortness of breath, cough, joint pain, chest pain, difficulty with thinking and concentration (aka "brain fog"), depression, muscle pain, headache, intermittent fever, fast beating or pounding heart
- More serious long-term complications, which appear to be less common, but have been reported. These include: inflammation of the heart muscle, lung function abnormalities, acute kidney injury, rash, hair loss, smell and taste problems, memory problems, anxiety, changes in mood
- In a recent *JAMA* [research letter](#), 125 of 143 Italian patients ranging in age from 19 to 84 years still experienced physician-confirmed COVID-19–related symptoms an average of 2 months after their first symptom emerged.
- New research suggest that almost 36% of people will experience long term illness associated with COVID-19 infection

MOVING FORWARD

- Research is continuing and will improve our understanding of the virus and our immune response
- Continue to practice social distancing
- Wear a mask
- Practice good hygiene