

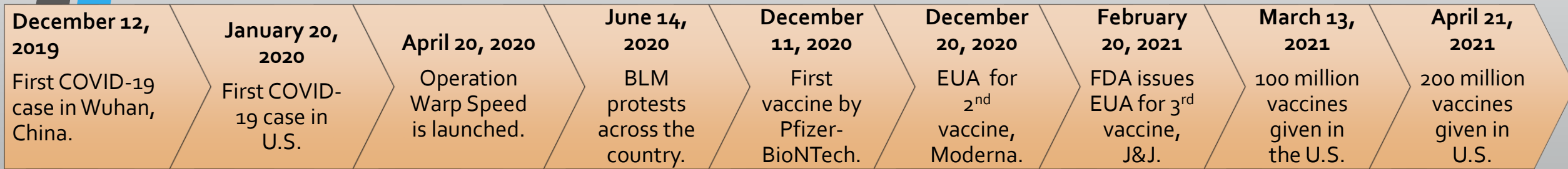
# The Covid-19 Vaccine Project and Lean


One More Thing Presentation

Jayke Sudana



# Covid-19 Vaccination Timeline



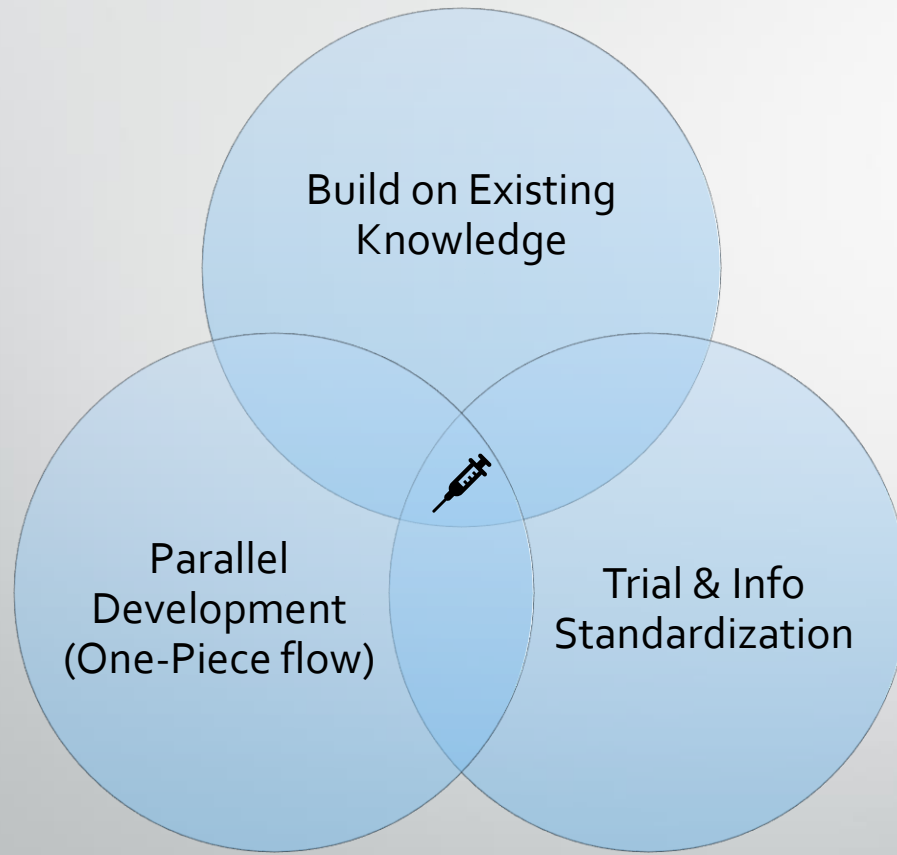


## Outlining Questions

How was lean used to  
create a vaccine in <1 year?

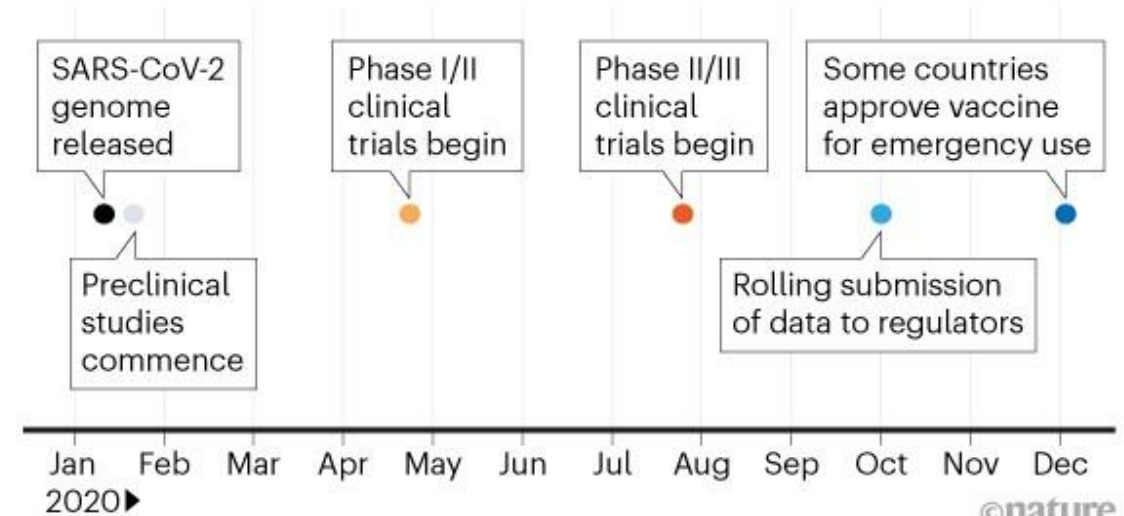
What lean principles helped  
streamline production of  
millions of vaccines?

# Vaccine Development



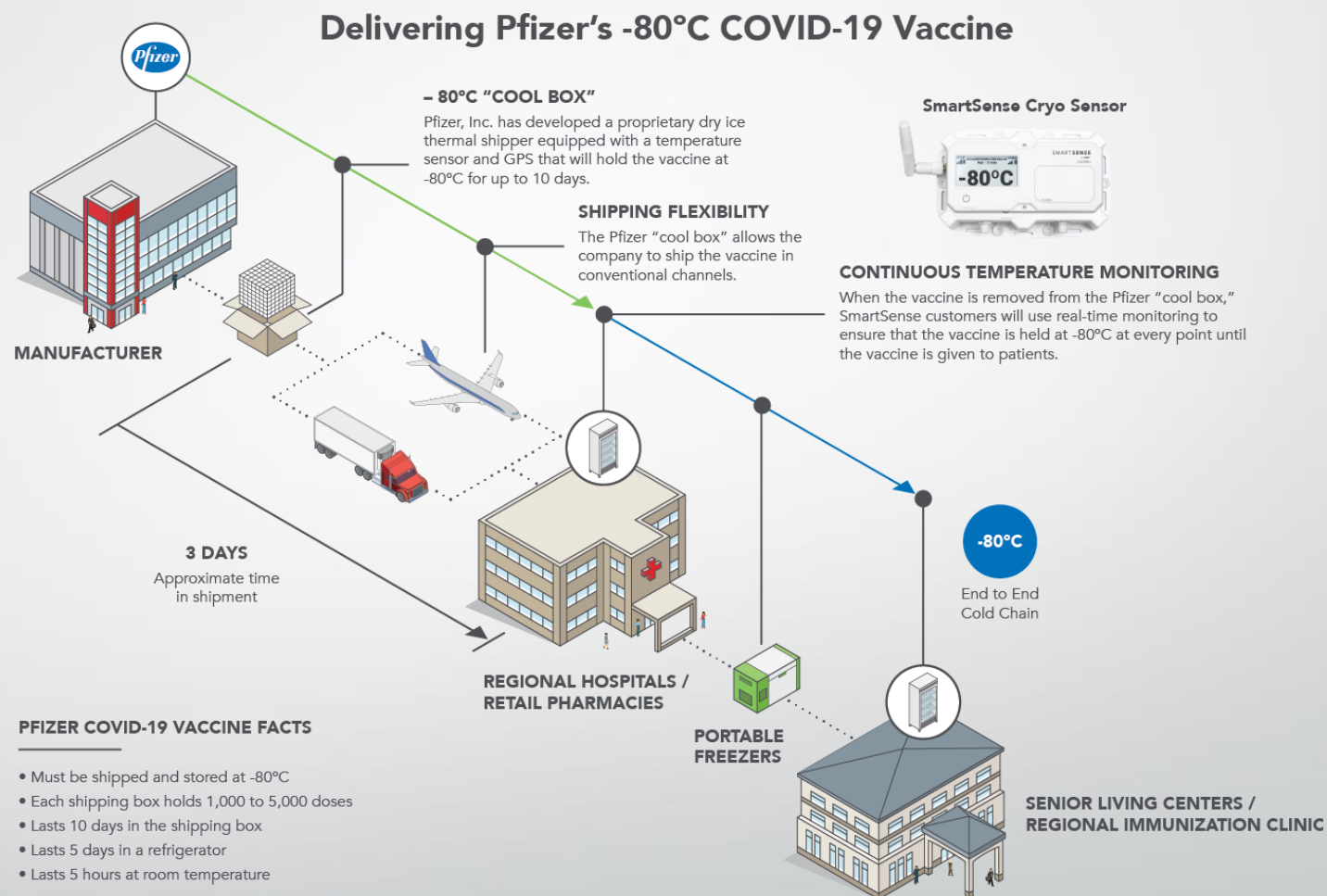
## A VACCINE IN A YEAR

The drug firms Pfizer and BioNTech got their joint SARS-CoV-2 vaccine approved less than eight months after trials started. The rapid turnaround was achieved by overlapping trials and because they did not encounter safety concerns.



# Pfizer's Cold Chain

- Flexible Just-In-Time system
- Built-In quality
- Poka-yoke
- Cold chain leader – quick scalability
- Self-reliance



Source: <https://blog.smartsense.co/ramping-up-for-nationwide-covid-19-vaccine-distribution-1>

# Addressing Problems

## Material & Equipment Shortages

- Take over existing production lines
- Funding for capacity expansion

## Manufacturing Process Complexity

- Retrofit facilities
- Improve yields
- Management from skilled personnel

## Capacity Constraints

- Stakeholder cooperation

# Collaborative Effort- ACTIV



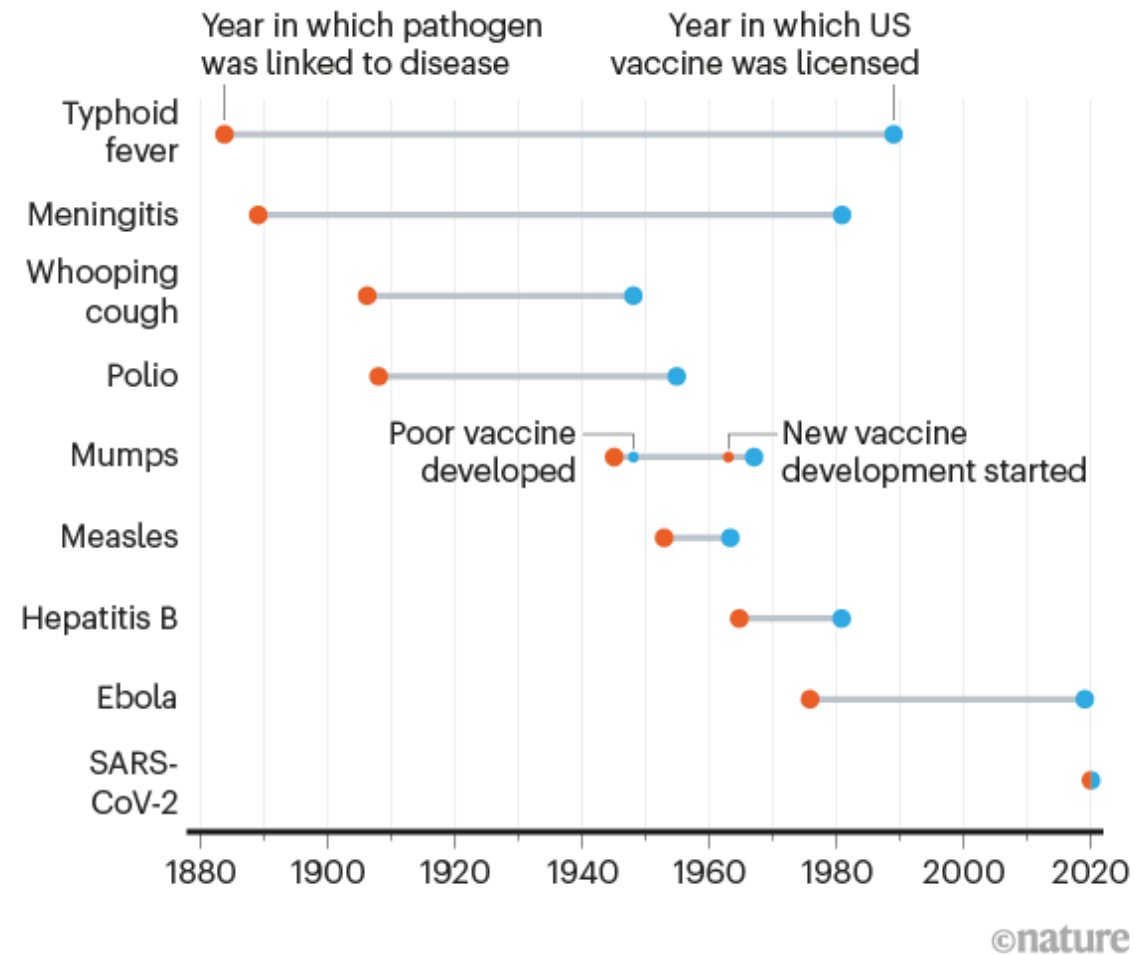


Results?



## VACCINE INNOVATION

Most vaccines take years to develop, but scientists created multiple vaccines for SARS-CoV-2 within a year.

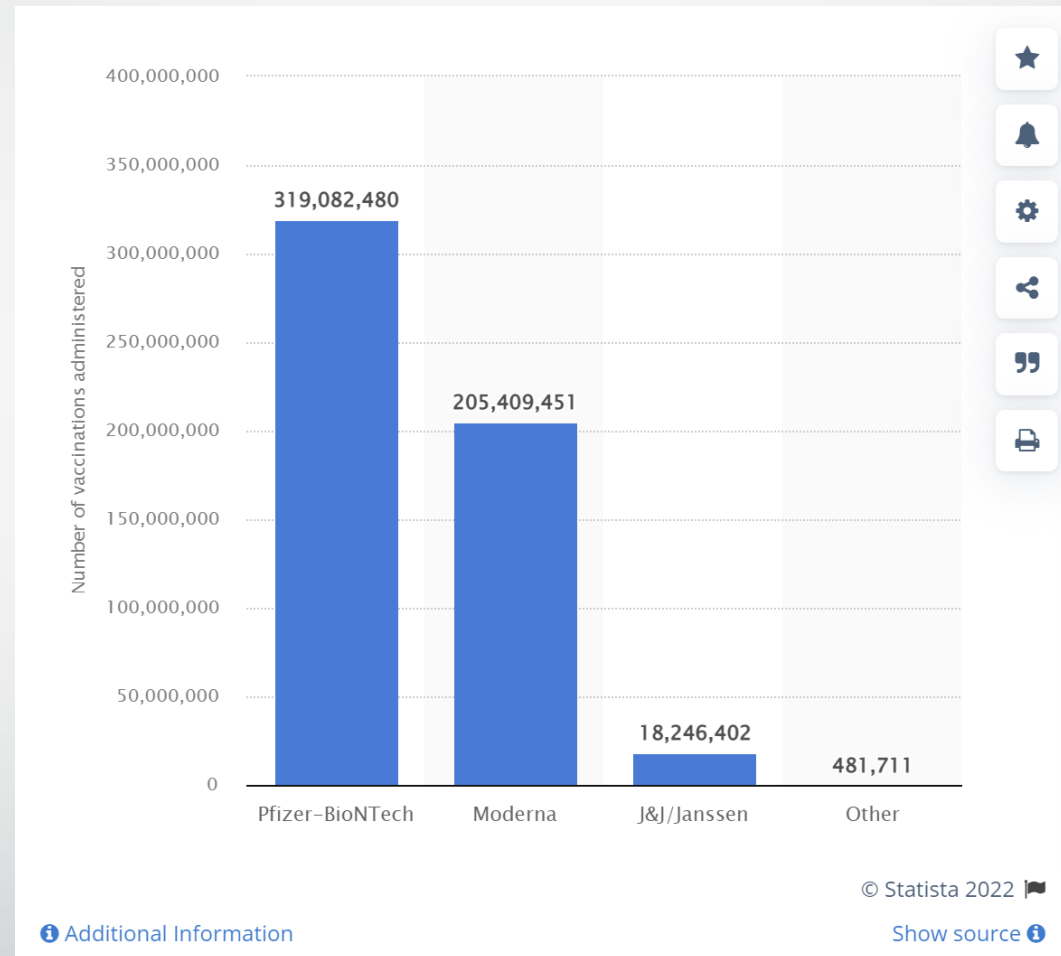


Source: <https://www.nature.com/articles/d41586-020-03626-1>

- ❖ A 5-year minimum to develop, produce, and distribute new vaccines (Sobek II, 2020).
- ❖ Multiple Covid-19 vaccines developed within a year.

# U.S. vaccination numbers by company

- Last updated February 6<sup>th</sup>, 2022.



Total: <https://www.statista.com/statistics/1198516/covid-19-vaccinations-administered-us-by-company/>

# Limitations

- Small time frame and large volumes causing production problems for Moderna and AstraZeneca.
- Limited to date range from Dec 2019 → April 2021
  - How will variants affect operational initiatives?
- Limited to U.S. manufacturers and companies – other countries may have different strategies and resources available.

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