



# Vaccines

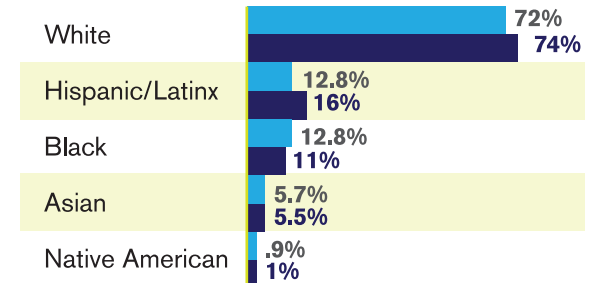
## Testing for Safety & Efficacy

Typically, vaccines take years to develop and test to make sure they safely and effectively treat viruses. Due to the urgency of the pandemic, the COVID-19 vaccines quickly went through the typical phases of development. High infection rates helped researchers tell if the vaccine was working among the large volunteer pool and vaccine manufacturing plants were built earlier in the process.

### Who participates in clinical trials? ▾

Some groups of people have been historically underrepresented in vaccine trials, so the COVID-19 vaccine clinical trials were designed to accurately reflect the US population's demographics in their testing groups. There is still work to be done to ensure that the vaccine is delivered to the groups of people who are most affected by COVID-19.

 US Population (2019)  
 COVID Vaccine Average



### Development Timeline ▾



#### Typical Vaccine

100  
volunteers

100 - 1,000  
volunteers

10,000+  
volunteers

FDA  
approval

#### Phase 4

Continued testing for long term side effects in general population



**Pre-clinical Phase**  
Thousands of potential vaccines are developed in laboratory and animal testing before a very few move on to clinical testing in humans.

**Phase 1**  
Tested for major side effects in healthy volunteers

**Phase 2**  
Tested for dosage, other side effects, & effectiveness in healthy volunteers

**Phase 3**  
Tested for side effects and effectiveness in wider population



#### COVID-19 Vaccine

50 - 1,000  
volunteers

30,000  
volunteers

