

JULY 2020

# SFFD COVID-19 ANTIBODY STUDY: PRELIMINARY INFORMATION



# MEET THE STUDY TEAM

## UCSF Team

Study Director:  
Robert Harrison, MD, MPH

Co-Director:  
Dennis Shusterman, MD, MPH

Laboratory Director:  
Ted Kurtz, MD

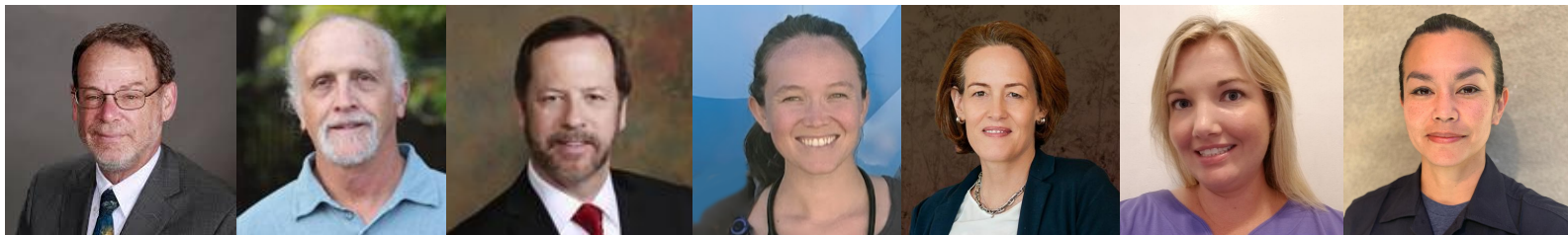
Study Coordinator:  
Megan Grant, RN, NP

## SFFD Team

SFFD Department Physician:  
Jennifer Brokaw, MD

SFFD Department Nurse  
Practitioner:  
Stephanie Phelps, NP

Firefighter Scientist:  
Arlene Nunez



## Study Sponsors

As a long standing community supporter of San Francisco's First Responders, San Francisco Fire Credit Union has supported this study in partnership with UCSF.



# WHY WAS THIS STUDY DONE?

## Background

The San Francisco Bay Area saw its first cases of COVID-19 in February 2020, marking the first possible exposures in the area. As first responders, firefighters & paramedics have come into contact with patients infected with COVID-19.

Most cases of COVID-19 infection involve symptoms, but there is also the possibility for infection without symptoms.

We know that many asymptomatic people were not tested for active infection, especially early in the pandemic. This study looked for markers of a past infection, called antibodies, which shows an immune response to the virus that causes COVID-19 infection.

## Purpose

The purpose of this study was to find out whether San Francisco Fire Department (SFFD) members have been exposed to COVID-19 as part of their job and became infected as a result. We are also interested in understanding how well the health and safety precautions taken to prevent COVID-19 infection have been working.

There is very limited information about COVID-19 infections and antibodies in firefighters, paramedics, and other front-line occupations.

We hope that this study will contribute to the body of knowledge about COVID-19 exposure and infection for essential workers and first responders.



# HOW WAS THE STUDY DONE?

All active members of the SFFD were invited to participate. “Active” was defined as those having worked at least 3 shifts since January 1, 2020. SFFD members were recruited to participate through promotional flyers posted at department buildings and firehouses, and emails from the SFFD Local 798, the department, and member groups.

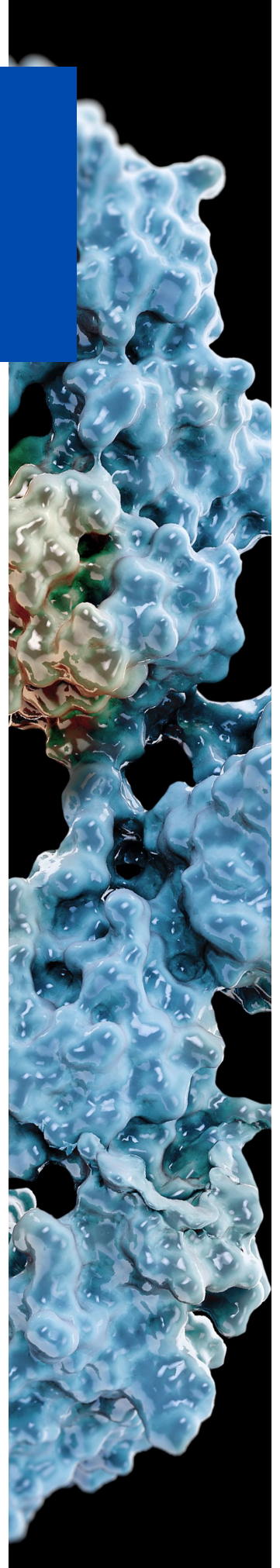
The study website ([sffd19.ucsf.edu](http://sffd19.ucsf.edu)) had information about the study as how members could register to participate. The informed consent process was conducted online or in person, with participants registering in advance of antibody testing as well as onsite.

We also asked that participants to complete a questionnaire to help us better understand:

- Demographic information of participants (age, gender, race, job title, work location)
- Possible exposures to COVID-19 at work, in the community, and at home
- Personal protective equipment (PPE) use before and after the Shelter in Place order took effect (March 18, 2020)
- How many had already been tested for active infection

All personal information and test results collected during the study are being kept in a confidential manner, and are only available to study team members who are not affiliated with the San Francisco Fire Department.

Laboratory testing was performed at the UCSF Clinical Lab (Ted Kurtz, MD - Director of Clinical Chemistry). All blood samples were analyzed using the Abbott Laboratory SARS-CoV-2 antibody test. Any positive result was confirmed with two additional antibody tests by different manufacturers (DiaSorin and Roche). This method of testing allowed us to ensure that any positive result was a true positive with the smallest margin of error possible. To our knowledge, this is the only study of COVID-19 antibodies in workers using multiple antibody test assays and confirming results.



# WHAT DID WE LEARN?

The blood test results showed that very few members have had previous COVID-19 infection. Antibodies were confirmed in only 3 of the 1,233 samples tested.

601 members (48% of those surveyed) reported likely or confirmed contact with patients with COVID-19. Some of these members reported just one or two exposures, and some reported many exposures.

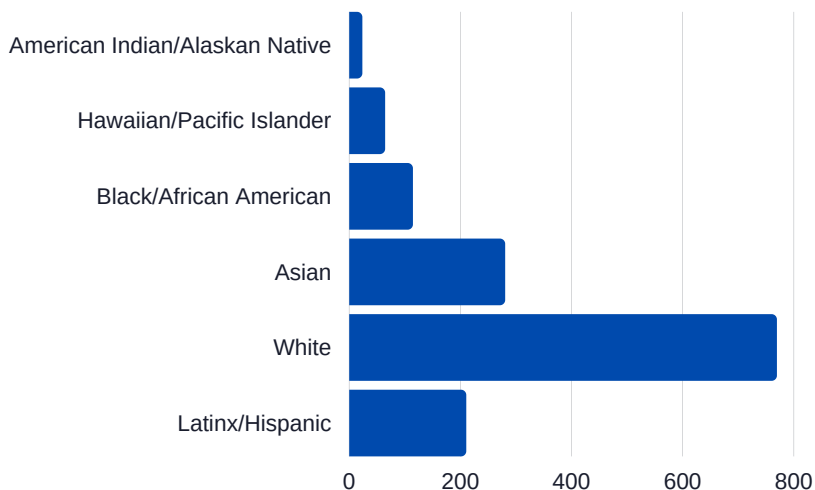
We also learned that PPE use changed after the Shelter in Place Order, with many more members routinely wearing respiratory protection after March 18, 2020.

# WHO PARTICIPATED IN THE STUDY?

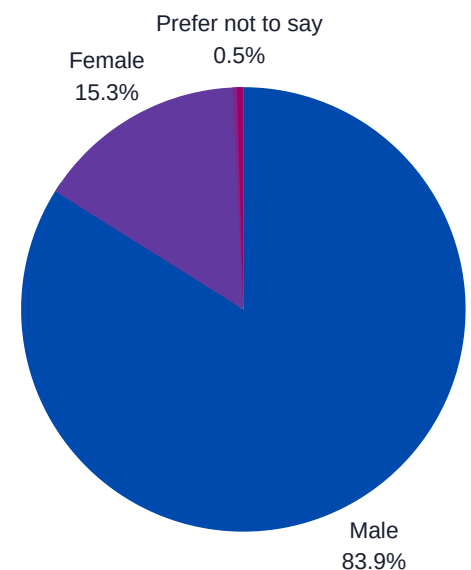
Total Participants  
(blood sample & survey):  
**1,233 SFFD members**  
(66% of total members)

SFFD members from every  
job title and 60 work  
locations participated!

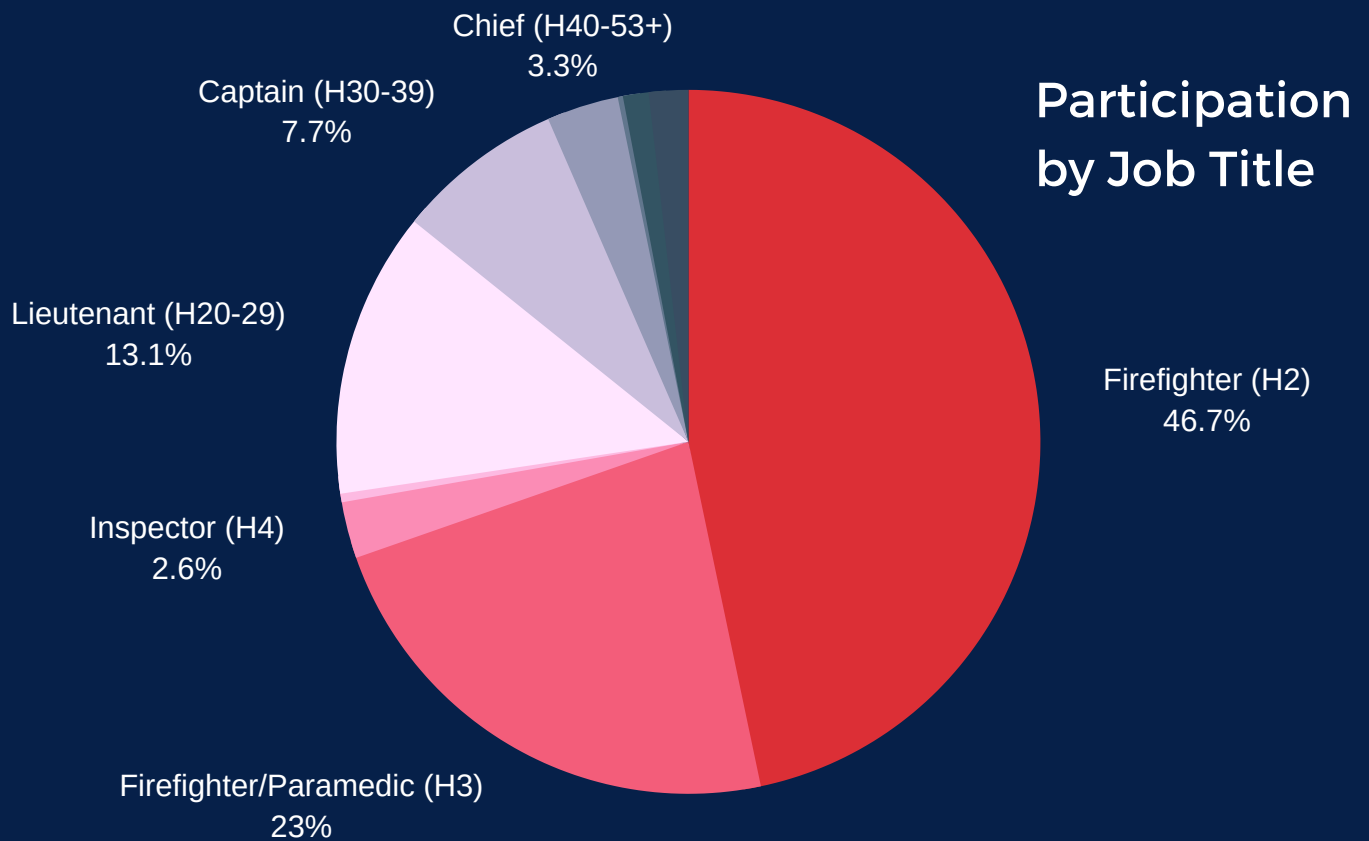
## Race & Ethnicity



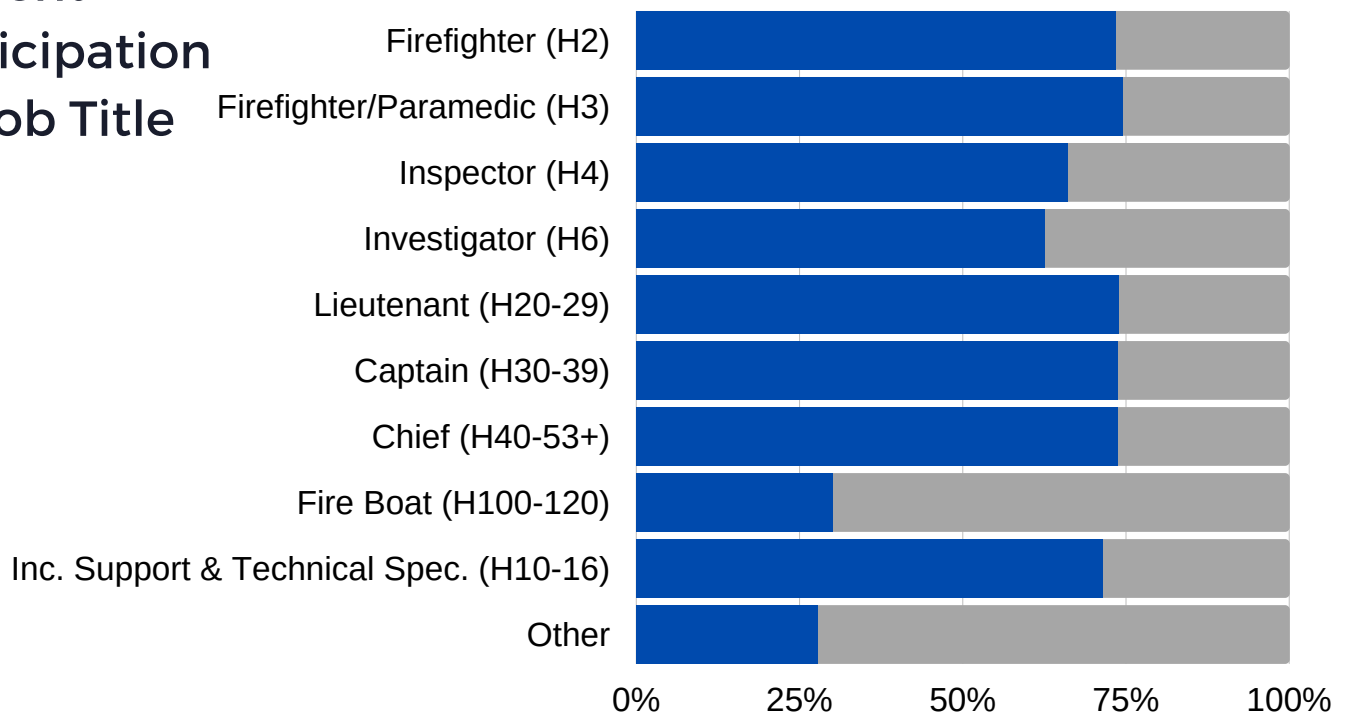
## Gender



# WHO PARTICIPATED IN THE STUDY?



## Percent Participation by Job Title







# WHAT DO THE RESULTS MEAN?

## Individuals:

### My result was Positive

For the few members who had a positive antibody test result, this means you were exposed to the virus causing COVID-19 and recovered from the infection. You should assume there is still risk of future COVID-19 infection. It is also not yet clear how long antibodies are present in the blood and how long any protection from future COVID-19 infection might last.

### My result was Negative

For those who had a negative antibody test result, this means you probably did not have a COVID-19 infection. There is still risk of future COVID-19 infection. It will be important to continue to follow workplace best practices and PPE guidelines from SFFD.

## For the SFFD:

It appears that the prevalence of previous COVID-19 infection is lower than in most available studies of COVID-19 antibodies in healthcare workers. In studies of healthcare workers, COVID-19 antibodies were present in about 1%-9% of workers sampled.

This may be due to lower prevalence of COVID-19 in San Francisco at the time of this study, due to the use of protective work practices and equipment, or both.





# WHAT ELSE WOULD WE LIKE TO KNOW?

This is one of the first studies evaluating the prevalence of COVID-19 antibodies within the first responder community.

Several COVID-19 antibody studies in other California fire departments are currently being conducted, including the San Jose Fire Department and Oxnard Fire Department. Nationally, COVID-19 antibody prevalence in first responders is being studied in New York City, Detroit, and Rhode Island.

As additional results become available, we would like to compare the prevalence of COVID-19 immune response (antibodies) seen in the SFFD to those other fire departments in California and across the US.

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We would also like to know whether this apparently evidence of low rate of COVID-19 infection within the SFFD will continue. As COVID-19 numbers are again increasing in San Francisco and surrounding cities and counties, there may be increased risk of exposure to COVID-19 at work and in the community.

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When and where are firefighters, paramedics, and other members of the SFFD most at risk of exposure to the virus that causes COVID-19? There is the possibility for infection when on a call, but also in the firehouse, in the community when off work, and at home.

# WHAT RECOMMENDATIONS DO WE HAVE FOR SFFD?

**Our results have shown very little evidence of  
COVID-19 infection among SFFD members.**

Keep up the good work  
by continuing to take the  
following precautions:

- Wearing a face covering, surgical mask or N95 respirator depending upon the circumstances
- Wash your hands frequently
- Disinfect commonly touched surfaces
- Stay at least 6 feet from other people
- Wear PPE when possible during interactions with the public

Stay vigilant

If you experience any of these symptoms, contact SFFD Physician's Office:

- Fever or chills
- Cough
- Shortness of breath or difficulty breathing
- Sore throat
- Feeling unusually fatigued
- Runny or congested nose
- Eye redness (Pink Eye)
- Diarrhea
- Nausea or vomiting
- Loss of smell or taste





# Frequently Asked Questions

## **Do members quarantine themselves for 14 days after a positive antibody test?**

No. Results from the UCSF antibody study do not affect a member's work status. Members should continue working regular duty.

Regardless of antibody status, if a member develops signs or symptoms of COVID-19, they should not come to work and should notify the SFFD Physician's Office.

## **Do members need another test (nasopharyngeal or antibody) after 14 days to return to work?**

No. Results from the UCSF antibody study do not affect a member's work status. Members should continue working regular duty. Regardless of antibody status, if a member develops signs or symptoms of COVID-19, they should not come to work and should notify the SFFD Physician's Office.

## **Are they required to tell the SFFD Physician's Office they tested positive?**

No, members are not required to notify the SFFD Physician's Office. The UCSF antibody study results are confidential.

## **What specific antibody test(s) were done?**

The primary serology assay in the UCSF Clinical Labs is the Abbott assay and it detects IgG antibodies that react with the nucleocapsid protein. UCSF is having the positive results checked in the DiaSorin assay that detects IgG antibodies reacting with the spike proteins and tested in the Roche assay that detects any antibodies (mainly IgG) that react with the nucleocapsid protein. These assays all have excellent sensitivity and specificity. Combining any two of these assays will provide very high positive predictive value and very high negative predictive value even in populations with very low prevalence of exposure to the virus.





# Frequently Asked Questions

## **What is an antibody?**

Antibodies are proteins in the blood that help your immune system fight infections and can provide protection against getting that disease again.

Antibodies are disease-specific, so antibodies to the measles will help protect you against being infected with the measles but not mumps.

## **Does a negative antibody test mean I don't have COVID-19?**

It can take your body 1-3 weeks to produce antibodies to an infection. It is possible that even with a negative COVID-19 antibody test result you could still have a current COVID-19 infection. A different test is used to determine whether someone has an active COVID-19 infection (typically a nasopharyngeal swab).

Sources: [CDC, 2020](#).

