

# Physicians for Informed Consent Publishes Comprehensive Analysis of U.S. COVID-19 Infection-Fatality Rate by Age Group

New data indicate about 180 million Americans already infected and have 99.9% protection from repeat infection

By [Physicians for Informed Consent](#)

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*Physicians for Informed Consent (PIC), an educational nonprofit organization focused on science and statistics, has published its updated [COVID-19 Disease Information Statement \(DIS\)](#), which elucidates the infection-fatality rate (IFR) of COVID-19 in different age groups and different locations of residence.*

Overall, the risk of a fatal outcome from COVID-19 is 0.35%. However, the risk varies from 0.001% or one fatal outcome in 100,000 infections in children younger than 18 years to people 65 years or older living in a nursing home having about 30 times more risk of a fatal outcome than people 65 years or older not living in a nursing home. Additionally, overall, the risk of hospitalization is 3.6%, of having symptoms is 67% and of never developing symptoms of SARS-CoV-2 infection is 33%.

The calculation for determining how many Americans have already been infected with SARS-CoV-2 is explained and indicates that more than half of the U.S. population has already been infected and is 99.9% protected from reinfection. As vaccine breakthrough infections are now on the rise, important lesser-known treatment and prevention options are also discussed.

“Now one can better compare a person’s risk of COVID-19 versus the risk of a severe side effect from a COVID-19 vaccine,” said Dr. Shira Miller, PIC’s founder and president. “It’s clear there’s a rational and scientific basis for those who choose to decline COVID-19 vaccination, especially in certain age groups.”

Physicians for Informed Consent’s body of physicians, scientists, statisticians, and healthcare workers is trusted by both patients and practitioners for providing scientific data

on infectious diseases and vaccines. To learn more, read PIC's two-page handout here: [physiciansforinformedconsent.org/COVID-19](https://physiciansforinformedconsent.org/COVID-19).

COVID-19 – DISEASE INFORMATION STATEMENT (DIS)

**SARS-CoV-2  
COVID-19:  
What You Need To Know**

**PIC** PHYSICIANS FOR INFORMED CONSENT  
*Advancing Open and Informed Choice in Health Care*  
Available in other languages at [physiciansforinformedconsent.org/COVID-19](https://physiciansforinformedconsent.org/COVID-19)

**1. WHAT IS COVID-19?**  
COVID-19 (coronavirus disease 2019) is an acute respiratory illness caused by SARS-CoV-2, a coronavirus strain among seven coronaviruses known to infect humans.<sup>1</sup> Other coronavirus infections include those due to seasonal (common cold) coronaviruses (229E, NL63, OC43 and HKU1), which cause up to a third of community-acquired upper respiratory tract infections,<sup>2</sup> as well as MERS-CoV and SARS-CoV-1. Approximately 33%<sup>3</sup> of SARS-CoV-2 infections are asymptomatic (never develop symptoms). However, when symptoms do occur, they happen 2–14 days after infection and range from mild to severe fever or chills, difficulty breathing, fatigue, muscle or body aches, headache, new loss of taste or smell, sore throat, nasal congestion or runny nose, nausea or vomiting, or diarrhea.<sup>4</sup> Most people's symptoms are short-lived, but some do have prolonged symptoms.<sup>5</sup> Overall, more than 99.8% of people infected with SARS-CoV-2 recover.<sup>6</sup> The strongest risk factors for fatal COVID-19 are obesity, anxiety disorders, and diabetes.<sup>7</sup>

**2. WHAT IS THE INFECTION-FATALITY RATE OF COVID-19?**  
The infection-fatality rate (IFR) of COVID-19 is calculated by dividing the number of people who die from COVID-19 by the total number of people infected, including both symptomatic and asymptomatic cases.  
A Stanford University systematic review that included 69 antibody studies estimated that the COVID-19 IFR in the United States ranges from 0.3% to 0.4%.<sup>8</sup> Data analysis herein uses the midpoint of that range, 0.35%. See Figure 1.

**3. WHAT IS THE IFR OF COVID-19 IN DIFFERENT AGE GROUPS?**  
More than 80% of COVID-19 deaths occur in individuals aged 65 years or older, whereas less than 0.1% of COVID-19 deaths occur in individuals aged 17 years or younger (Table 1).<sup>9</sup> In addition, severe COVID-19 is particularly lethal in nursing homes.<sup>10</sup> For example, in 2020, 68% of all COVID-19 deaths in the state of Massachusetts occurred in long-term care (LTC) facilities.<sup>11</sup> The national COVID-19 IFR is 0.2% among individuals who do not live in long-term care institutions.<sup>12</sup>

**4. WHAT IS THE DIFFERENCE BETWEEN BEING EXPOSED AND BEING INFECTED WITH SARS-COV-2?**  
Although the IFR measures the chance of dying assuming infection with SARS-CoV-2, the IFR does not include the chance of being exposed or the chance of being infected. Research shows that not everyone who is exposed to SARS-CoV-2 is necessarily infected with it, as T cells may protect against, or modify, infection.<sup>13</sup> A BMJ article investigating whether people have pre-existing immunity to SARS-CoV-2 states that "at least six studies have reported T cell reactivity against SARS-CoV-2 in 25% to 55% of people with no known exposure to the virus."<sup>14</sup> In addition, a study published in Nature Immunology states: "T cells control viral infections and provide immunological memory that enables long-lasting protection... Cross-reactivity of T cells for different virus species or even among different pathogens is a well-known phenomenon postulated to enable heterologous immunity to a pathogen after exposure to a nonidentical pathogen."<sup>15</sup> The study found, "Cross-reactive SARS-CoV-2 peptides revealed pre-existing T cell responses in 81% of unexposed individuals and validated similarity with common cold coronaviruses."<sup>16</sup>

**5. HOW MANY PEOPLE HAVE BEEN INFECTED WITH SARS-COV-2?**  
As of July 1, 2021, about 63.8% of the 330 million people living in the U.S. have been infected with SARS-CoV-2. Because the COVID-19 IFR is 0.35%, and at that time there were 621,000 COVID-19 deaths,<sup>17</sup> that equates to 177.4 million SARS-CoV-2 infections (621,000/0.35%). The Johnson & Johnson vaccine clinical trial observed that an unvaccinated person previously infected with SARS-CoV-2 has a 99.5% chance of being protected from a repeat infection.<sup>18</sup>

**6. WHAT TREATMENT OR PREVENTION OPTIONS ARE AVAILABLE FOR COVID-19?**  
Treatments for COVID-19 have improved significantly since the pandemic began in early 2020, resulting in improved survival rates in hospitalized cases.<sup>19</sup> Decades of studies have observed the effectiveness of various treatments, the most studied being remdesivir, vitamin D, hydroxychloroquine (HCQ), remdesivir, and monoclonal antibodies.<sup>20</sup> Studies have also observed that loxetsin, vitamin C, and hydroxychloroquine may be beneficial for prophylaxis (i.e., pre-exposure or post-exposure prevention of symptomatic COVID-19 infections).<sup>21</sup>

As of December 2020, three vaccines have obtained Food and Drug Administration (FDA) approval or emergency use authorization. The vaccines have been shown to significantly prevent symptomatic COVID-19 cases that are not hospitalized or fatal. However, vaccine effectiveness has only been observed for two to six months in clinical trials, and it is not known how effective those vaccines may be at preventing asymptomatic, hospitalized or fatal cases. In addition, overall, people who receive the vaccine have a two-fold to six-fold increased risk of a severe adverse event compared to those who do not receive the vaccine.<sup>22,23</sup>

COVID-19 cases in people 65 years or older who reside in long-term care facilities (nursing homes) are about 30 times more likely to be fatal than COVID-19 cases in people 65 years or older who do not reside in long-term care facilities.

All references are available at [physiciansforinformedconsent.org/COVID-19](https://physiciansforinformedconsent.org/COVID-19).

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COVID-19 – DISEASE INFORMATION STATEMENT (DIS)

Table 1 shows that a COVID-19 infection in an individual 65 years or older dwelling in an LTC facility is almost 30 times more likely to be fatal (37.2%/1.3%) than in an individual 65 years or older dwelling in an LTC facility. Furthermore, most people who die in nursing homes die within six months of placement, therefore, many COVID-19 nursing home deaths may have occurred in people with a life expectancy of only a few months.<sup>17</sup>

Age Group	% of Infections	% of Deaths	Infection-Fatality Rate (%)
0-17 years	13.2*	0.89*	0.067
18-49 years	56.4*	4.36*	0.80
50-64 years	20.1*	11.1*	5.5
65 years	10.3*	65.9*	6.7
65+ years not in LTC	6.4**	10.0**	1.5
65+ years in LTC	6.4**	42.9**	37.2
75+ years not in LTC	4.0**	18.3**	4.6
75+ years in LTC	6.3**	40.2**	46.5
All ages	100	100	0.35
All ages not in LTC	89.5**	58.9**	0.7
All ages in LTC	6.5**	43.1**	36.2

Table 1: Age-specific COVID-19 infection-fatality rates in the United States. LTC = long-term care facility.

Figure 1: Among individuals infected with SARS-CoV-2, 33% of cases are asymptomatic (never develop symptoms) and 67% are symptomatic (one or more symptoms). Of those infections, 15% of cases are hospitalized and 0.35% are fatal.

Figure 2: The infection-fatality rate (IFR) of the 1918 flu (0.25%) was about six times greater than the IFR of COVID-19 (0.035%). The IFR is the chance of dying if infected.

Figure 3: Physicians for Informed Consent, an independent 501(c)(3) nonprofit educational corporation. All rights reserved. For more information, visit [physiciansforinformedconsent.org](https://physiciansforinformedconsent.org).

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