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New analysis breaks down age-group risk for coronavirus — and shows millennials are not invincible

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As the Covid-19 pandemic takes an ever-larger toll across the world, researchers are expanding their understanding of who is at greatest risk of infection, serious illness, and death, detailed information that earlier had been reported only by China, where the outbreak began late last year.

In general, the U.S. experience largely mimics China's, with the risk for serious disease and death from Covid-19 rising with age. But in an important

qualification, an analysis by the Centers for Disease Control and Prevention[4] reported on Wednesday underlines a message that infectious disease experts have been emphasizing: Millennials are not invincible[5]. The new data show that up to one-fifth of infected people ages 20-44 have been hospitalized, including 2%-4% who required treatment in an intensive care unit.

Still, the most severe cases, and the highest rates of death, are among the elderly. Although 17% of the U.S. population is 65 or older, 31% of cases were in that age group, CDC experts concluded in the Morbidity and Mortality Weekly Report. While it is possible that the elderly have more chances to be infected than younger people, such as by living in nursing homes, that is considered unlikely, since younger adults encounter many others at work and school.

Instead, the higher case rate among older Americans strongly suggests a true underlying, biological vulnerability, probably exacerbated by preexisting illnesses which, according to data from China, sharply raise the risk of both infection and serious illness.

That likely explains why although older Americans represented 31% of the cases, they accounted for 45% of hospitalizations, 53% of ICU admissions, and 80% of deaths, the CDC reported.

In contrast, no ICU admissions or deaths were reported among people younger than 20.

That, too, fits with data from other countries. In South Korea[6], for example, which had an early surge of cases, the death rate in Covid-19 patients ages 80 and over was 10.4%, compared to 5.35% in 70-somethings, 1.51% in patients 60 to 69, 0.37% in 50-somethings. Even lower rates were seen in younger people, dropping to zero in those 29 and younger.

In an alarming development, however, scientists in China are now reporting that the new coronavirus does not spare the very young. In the first retrospective study of Covid-19 among children in the country where the pandemic began, they count

2,143 cases in children. Of those, they report[7] in the journal Pediatrics, more than 90% were mild or moderate, confirming earlier observations that children are at lower risk of severe disease. (That may be because the molecule that allows the virus to enter human cells seems to be less developed in children.)

But 6% of pediatric cases were severe and even critical, compared to 19% of adult cases. And in an unexplained finding, nearly 11% of the Covid-19 cases in infants were severe or critical, though no babies died. An important caveat, however, is that some of what doctors believed to be Covid-19 might have been another respiratory disease, including respiratory syncytial virus, which is known to cause severe illness in children.

Related: [8]

Who is getting sick, and how sick? A breakdown of coronavirus risk by demographic factors [8]

The CDC analysis counts U.S. cases from Feb. 12 to March 16; 4,226 were reported to CDC. Starting on March 14, however, numbers were rising 500 or more per day, and many cases have not been counted or even identified because of a dearth of coronavirus tests. An analysis[9] by researchers at the University of Notre Dame estimates that, at the time President Trump declared a national emergency[10] last week, there were probably about 22,876 U.S. cases, with the true number almost certainly between 7,451 and 53,044.

The CDC does not have complete data (such as on use of an ICU) for all counted cases, and therefore gave a range for its estimates.

More than raw numbers, the percent of total cases gives a sense of the risk to different age groups. For instance, just 1.6% to 2.5% of 123 infected people 19 and under were admitted to hospitals; none needed intensive care and none has died.

But of the 144 cases in people 85 and older, 31% to 71% were hospitalized and 6.3% to 29% needed intensive care. The death rate in that age group was 10% to

27%.

In contrast, among people 20 to 44, 14% to 21% of 705 cases were admitted to hospitals and 2% to 4% to ICUs; 0.1% to 0.2% died.

The rates for middle-aged people fell between these extremes, while 29% to 44% of patients 65 to 74 were hospitalized and 8% to 19% needed intensive care; 2.7% to 4.9% in this age group died.

Approximately 49 million people in the U.S. are 65 or older.

Experts are emphasizing that the age structure of a country's population has huge implications for how it should focus containment and mitigation measures.

"Age structure, along with early detection and treatment, also likely explains the low numbers of fatalities in South Korea and Singapore compared to Italy," said demographer Jennifer Dowd of the University of Oxford, who led a new study[13] analyzing how a country's age structure can be used to guide its Covid-19 response.

In South Korea, the outbreak was concentrated in young church members; fewer than 4% of cases there have been in people over 80. Singapore has had no reported deaths, she pointed out, probably because it has had only 10 cases in people over 70 and one in someone over 80.

"It has become more evident that deaths and critical cases are highly concentrated at older ages," Dowd said, with infections likely equally common in younger people but often producing mild or no symptoms. Although some models have projected a breakdown of health care systems and millions of deaths in the U.S. alone, she said, "we think that incorporating age structure is important for predicting the threshold at which health care capacity is particularly overwhelmed."

That means that in a national population that skews older, as Italy's does, efforts to "flatten the curve"[14] don't "change the spread," Dowd said. But they do change

the threshold for when demand on hospitals and ICUs outstrips their capacity. Social distancing measures, including orders to shelter in place, would therefore need to be more aggressive or less depending on the age structure of a population.

In Italy, 22% of the population is 65 or older, compared to 17% in the U.S., raising hopes for a less disastrous health care breakdown.

Correction: The original version of this story misstated the number of Covid-19 deaths in Singapore; there have been none.

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