How Many Unconfirmed Cases of COVID-19 are in Whatcom County?

By **David A. Swanson** • On Apr 14, 2020
• In **Bellingham**,

[Co-author of this article is Ronald E. Cossman, Ph.D., a Research Professor and Research Fellow at the Social Science Research Center at Mississippi State University. He also directs the Mississippi Center for Healthcare Workforce. His work focuses on the intersection of socioeconomic factors, geography and health in Mississippi, the South and the nation. His work has been funded by NIH, HHS, EPA, the Annie E. Casey Foundation and the Mississippi Department of Health. His PhD is in geography from the University of Colorado, Boulder, and his Masters is in Demography and Population Studies from Florida State University.]

Given that the peak of the initial surge in Whatcom County is approximately two weeks away, we believe any discussion of scenarios designed to ease containment measures should consider the number of unconfirmed, positive cases present in the county.

In Iceland, a country with widespread virus testing, some 50% of those who tested positive for COVID-19 were asymptomatic, in other words, feeling no symptoms of the virus. (In the United States, without widespread testing, the director of the CDC estimates the number of asymptomatic individuals may be closer to 25%.

One difficulty in assessing the prevalence of the virus is that incubation—the time between initial infection and showing symptoms—appears to average 1 to 14 days, but can take up to 24 days.)An early study in China, published in *Science*, found that four out of five people with confirmed COVID-19 had likely been infected by people who didn't know they had the virus.

Due to this lag time, the number of people who are unaware they have the virus, but are still able to infect others, suggests that containment measures need to be carefully evaluated before being relaxed, much less removed entirely. To put a number on this, **we estimate that there are currently 1,973 people in Whatcom County who are unconfirmed, but COVID-19 positive.**

Using the current estimates (found here) that each infected person can infect between 1.5 and 3.5 others, these unconfirmed positive people have the potential to infect between 2,960 and 6,906 others, who in turn could infect between 14,799 and 34,531 others, and so on. Obviously, if the containment measures are relaxed too soon, a second surge of cases could develop. If the containment measures remain in place longer than necessary, our economic and social well-being will be diminished needlessly.

To achieve this number of unconfirmed COVID-19 cases, we combined information from three sources. The first source is from information for the U.S. as a whole, including the number of confirmed COVID-19 cases and the number of deaths due to COVID-19 among those same confirmed cases. Our second source is an estimate of the "case fatality rates" from a study in Germany, and the third source is an estimate of this same fatality rate from South Korea.

The methodology used stems from a long-established method employed by demographers to estimate a population in the absence of a census count, known as the "censal-ratio method.".

By dividing the case fatality rate found in the German study (0.004), into the number of COVID-19 deaths in the U.S. (18,559), we obtained an estimate of **4,639,790 unconfirmed positive cases in the U.S.** We then divided this number by the number of confirmed COVID-19 cases in the U.S. (492,416) to find the ratio of unconfirmed to confirmed cases according to the numbers Germany found (9.4). We repeated these steps using the case fatality rate reported from S. Korea (0.00670), which led to a ratio of 5.6 unconfirmed positive cases in the U.S. By simply averaging these two ratios we get an estimate of 7.5 unconfirmed, positive COVID-19 cases for each confirmed case in the U.S. Multiplying 7.5 by the number of confirmed cases in Whatcom County (263), yields our estimate of 1,973 unconfirmed, positive cases.