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Testing 2 – Finding the Denominator, Finding the Location

Like many who have looked at US maps over the past several weeks, your blogger found that West Virginia reported no cases of COVID-19. Impermeable wall, no infection? Well, no. In an interview Senator Joe Manchin (D-West Virginia) explained to the reporter that there had been no cases, because they hadn't tested anyone. Once they started testing they found it.

Why, why, why is testing so important? There are two basic reasons. First, we must know the disease incidence, the percentage of the population that might be expected to get the disease, and the positivity rate. Some will not get the disease. Neither your blogger nor his mother could ever remember his getting measles. Yet he never got measles when classmates or friends did. Most likely, he had a very mild case as a very young boy, which gave immunity. Maybe he was naturally immune (his two brothers both got measles, but he was away at college at the time). That said, he is not going into a room with someone infected with measles.

This means that we need a numerator (the number of people with the disease) and denominator (either the number of people exposed OR the total population). The two different denominators obviously would yield different, but very useful, information. We must know the *case fatality rate* and the *attack rate* (the number of ill divided by the number exposed) in order to protect people. We do not always know the number of negative results, because many testing facilities do not log or release them. We cannot wait to vaccinate 330 million Americans (older Americans may remember Sabin Oral Sundays of the 1960s where we were given polio vaccines on sugar cubes at the local public schools – recipients were asked to donate 50 cents or a dollar to defray expenses).

Second, we must know where it is. Without upsetting the squeamish, we do *contact tracing* for persons with syphilis and HIV/AIDS. Once infected, a person is asked the names of all of his/her sex partners. If these partners can be contacted, treated, and warned of safe conduct, an epidemic can be avoided. The same goes with COVID-19. The Chinese, South Korean, and Singapore governments engaged in information-gathering processes whose intrusiveness would probably appall most Americans. To the extent that they were able to track the disease and its carriers, they appear to have limited the spread. Although some contact tracing has occurred in the US for COVID-19, it has been woefully limited.

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It is necessary to limit the testing to those who are at risk. As much as the “worried well” may get reassurance by testing negative on a COVID-19 test, the testing is a (very) scarce resource and it must be deployed to discover the numerator, denominator, and location. This is the science, and it is important.

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