April 1, 2020

Numbers Matter – Death Estimates and False Negatives

We have been inundated recently by numbers. Your blogger would like to focus on two of them today.

- 100 – 200 thousand COVID-19 related deaths
- Potential 30% false negative rate for screening test

In the past couple of days, the Trump Administration has released potential COVID-19 predictions of between 100 and 200 thousand deaths, if, as according to Deborah Birx, "if we do things almost perfectly." At a news conference on Tuesday, the President noted that if we "did nothing" the number of deaths would be close to 2 million.

While it is hard to imagine any US policy-maker "doing nothing", 150,000 deaths would come with horrendous dollar costs. Valuing each life at $5,000,000 leads to a permanent loss of $750 billion dollars. Unlike stock values, these won't bounce back. To put this into perspective, it costs close to a billion dollars (in normal times) to build a hospital. Imagine a circumstance where 750 US hospitals vanished into thin air – not shuttered (like auto plants) but obliterated. While a more sophisticated analysis would net out the probabilities that some of the people would have died anyway, hence lowering the loss estimate, the economic loss is staggering and permanent.

The 30% false negative rate, reported in the April 1 *New York Times* (https://www.nytimes.com/2020/04/01/well/live/coronavirus-symptoms-tests-false-negative.html) while less jarring, is still troublesome. On March 18 your blogger talked about the problems of "false positive" tests, which lead to unnecessary treatment. The "perfect screen" gives positive results for those who are ill, and negative results for those who are not. Unlike false positives, false negatives do not lead to unnecessary treatment. A subject who tests negative for prostate cancer may have the false security of not realizing he has cancer, but his going out into society does not lead to contagious spread of cancer. The contrast with COVID-19 is obvious.

Does this mean that symptomatic people should not get tested because the test may be wrong? Obviously not. We need the tests and we need their results. We need to get baseline numbers and calculate the disease incidence. We obviously need better tests and faster tests. Still a 30% false negative rate should give pause, especially to those who are at high risk of becoming ill and/or

dying. They were tested because they were symptomatic. Even if told they don't have COVID-19, they must be aware (in the back of their minds) that they might.

Numbers matter.

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