The Lost Weeks of COVID-19 Testing in the United States: Part I

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The first case of COVID-19 in the United States was confirmed on January 21, 2020, in the state of Washington.¹ The first confirmed case in South Korea was on January 20. Although both countries experienced their first confirmed case around the same point in time, each country reacted differently. While South Korea started an early and aggressive testing campaign, the United States did not.

When the United States declared a national emergency on March 13, the U.S. ratio of cumulative confirmed cases to cumulative tests had reached 13 percent, while in South Korea the ratio was only 3.2 percent (Figure 1).

Why was the fraction of people that tested positive for COVID-19 remarkably higher in the United States than in South Korea? Our conjecture in this essay is that the lack

of testing in the United States contributed to its high ratio of cases to tests relative to South Korea.²

A rough timeline of events is as follows: Within roughly two weeks of the first confirmed case (February 7), South Korea was producing 100,000 test kits per day!³ At the time of its first COVID-19 death (February 20), the country had conducted more than 12,000 tests total—a cumulative testing rate of more than 238 tests per million South Koreans; its *daily* testing rate was 34 tests per 1 million people. There does not seem to have been any systematic testing in the United States by that point in time. By the end of February, South Koreans were urged to stay home and the South Korean government had created drive-through testing centers designed to screen as many people as possible, as quickly as possible. Soon after, South Korea implemented

Figure 1
Confirmed Cases to Tests

SOURCE: OurWorldInData.org and data repository for the 2019 Novel Coronavirus Visual Dashboard operated by the Johns Hopkins University Center for Systems Science and Engineering (JHU CSSE).

Figure 2
Total Tests

SOURCE: OurWorldInData.org.

regulations on entering places of business, tracing/monitoring contacts of infected people, and mandatory isolation procedures for diagnosed patients.

In contrast, by the U.S. national emergency date (March 13), its daily testing rate was only 19 tests per 1 million people, while South Korea's daily testing rate had reached 267 tests per 1 million people, higher by a factor of 14 (Figure 2).

The weeks lost due to inaction in the U.S. during the early stages of the COVID-19 pandemic resulted in rationing of tests and a large number of confirmed cases.

A consequence of this lack of testing in the United States relative to South Korea is the higher U.S. ratio of confirmed cases to tests. The United States rationed tests to people with severe symptoms of COVID-19, which naturally resulted in a higher fraction of tests being confirmed cases. The rationing in South Korea was less since it was systematically conducting more tests than the United States. As a result, the U.S. ratio in mid-March (almost two months after the first confirmed case) was nearly 4 times that of South Korea.

The premise that a lack of testing has led to a large number of confirmed cases in the United States is reinforced by evidence in Germany. As of March 15, Germany had tested a total of 3,000 persons per million in its population, and its ratio of cases to tests was less than 3 percent; the United States, however, had tested 84 persons per million, and its ratio of cases to tests was almost 13 percent, as noted earlier.

Testing early and often seems to have paid off for South Korea. The weeks lost due to inaction in the United States during the early stages of the COVID-19 pandemic resulted in rationing of tests to those with severe symptoms. Thus, the United States had a large number of confirmed cases relative to South Korea. ■

Notes

¹ See <https://fraser.stlouisfed.org/timeline/covid-19-pandemic#5>.

² Another possibility is that the COVID-19 virus has been affecting more people in the United States than in South Korea. However, all indications from epidemiology are that the virus does not discriminate between Americans and South Koreans.

³ See Fisher, M. and Sang-Hun, C. "How South Korea Flattened the Curve." New York Times, updated April 10, 2020; <http://www.nytimes.com/2020/03/23/world/asia/coronavirus-south-korea-flatten-curve.html>.