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# Preparedness and Response within Individual G7 Countries for COVID-19: Was there a Failure, in Spite of U. S. Economic Strength, of Health Intelligence in the U.S. to Assess the Prior Situation?

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**Abstract:** A comparison of three measures of COVID-19 responses until April 11, 2020, and general health preparedness among G7 countries indicate that the U.S. has responded to the pandemic appropriately due to its strength in the economy and general well-preparedness in the health system. These strengths helped the country so far in maintaining lower death rates due to COVID-19. But it failed to foresee the threat of the pandemic in advance.

**Key words:** Economics and Health Preparedness, Coronavirus outbreak 2019-2020, G7 countries.

## Key Points:

**Question 1:** What is the status of the US in comparison with other G7 countries plus two more severely COVID-19 affected countries with respect to the virus positivity rate among the number tested until April 11, 2020? What are recovery rates and death rates of patients until April 11, 2020?

**Findings:** Lower death rates in the US are very encouraging, but the positivity rate in the US is the third-highest among the countries compared. The recovery rate is still low.

**Meaning:** Although the recovery rate is slow the lower the death rates indicate great success thus far in terms of the US response.

**Question 2:** How was the US in general prepared for any pandemics, in general, and where does the US stand in terms of economy?

**Findings:** The US has the highest number of ICU beds in the world at 34/100000 inhabitants and the second-highest was 29/100000 in Germany. For GDP per capita, GDP as per IMF as well, the US stood first.

**Meaning:** Due to its strength in the economy and general well-preparedness in the health system, our preparedness was strong.

**Question 3:** Was the US anticipating COVID-19 would affect the nation?

**Findings:** Difficult to answer, but having a high number of COVID-19 cases (became highest in the world by the end of March 2020) despite knowing severity in other countries prior to 1-2 months indicates that the US did not anticipate the severity of the pandemic.

**Meaning:** The health intelligence in the US seems to have failed to anticipate the severity of the situation.

From the time the novel coronavirus started spreading in G7 countries<sup>1</sup> in January 2020, every country in the group is facing the threat of COVID-19 with varying degrees of severity as of April 11, 2020. The preparations to protect against COVID-19 were enormous and every country in this group and outside of the group has responded swiftly by putting all available or borrowed resources into play. To understand the national responses among the G7, we have compared three COVID-19 response measures and two general health preparedness indicators before the WHO declared the COVID-19 pandemic. We described measures and indicators in the Appendix. Values of all these five indicators and two indicators of economy – GDP as per IMF and GDP per capita are for a quick reference summarized in Figure 1 (a).

Our focus in this commentary is on the U.S. as it has strongest economy among these countries in terms of GDP (Gross Domestic Product) as per the definitions of the IMF (International Monetary Fund) with 22 trillions and GDP per capita with around \$67,000 [1]. For the general health preparedness indicators like, the number of I.C.U. beds per 100,000 inhabitants as well the U.S. stands at the forefront with ~ 34 beds followed by Germany with ~ 29 beds [2]. For regular hospital beds the U.S. is low at 2.5 per 1000 inhabitants and other countries are closer to this value, except in Japan 13/1000 and Germany 8/1000 inhabitants [3].

One of the key conclusions of our analysis is that the U.S. is doing a good job of handling the coronavirus crises by maintaining lower death rates (around 4.1% in comparison with the France, Italy and the U.K.) given that there are over 605,390 cumulative COVID-19 cases. However, we did not do a good job of anticipating the occurrence of COVID-19 in the U.S. or of predicting the impact. Also, our recovery rate in the cases is so far poor, which needs to be improved over the weeks to manage lower death rates. Currently as of April 11<sup>th</sup>, the recovery rate of the U.S. is 6<sup>th</sup> among seven countries with only U.K. having lower recovery rate than the U.S. We have collected our data from worldometer for all the countries [4].

#### **A. Lower COVID-19 death rate in the U.S.:**

Among the three COVID-19 measures described, the U.S. has done extremely well in lowering the death rates at 4.1% given that there are more than half-million cases and fourth lowest among the G7 countries (with Canada at 2.9%, Germany at 2.3%, Japan 1.9%). The death rate in South Korea is at 2.03. Given that the U.S. has the largest COVID-19 cases confirmed at around 605,390 as of April 11, 2020 the above lower death rate is a great success. During the last two weeks, the maximum percentage of deaths were observed in France (5% increase) the UK (7% increase), and Japan observed lowest death percentage (with 1.7% decrease). See Figure 1 (b). If people aged 65+ in the U.S. who have prior chronic underlying are not protected against the virus then the U.S. might see several thousand more deaths [5].

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<sup>1</sup> G7 countries are Canada, France, Germany, Italy, Japan, U.K., and the U.S.A.

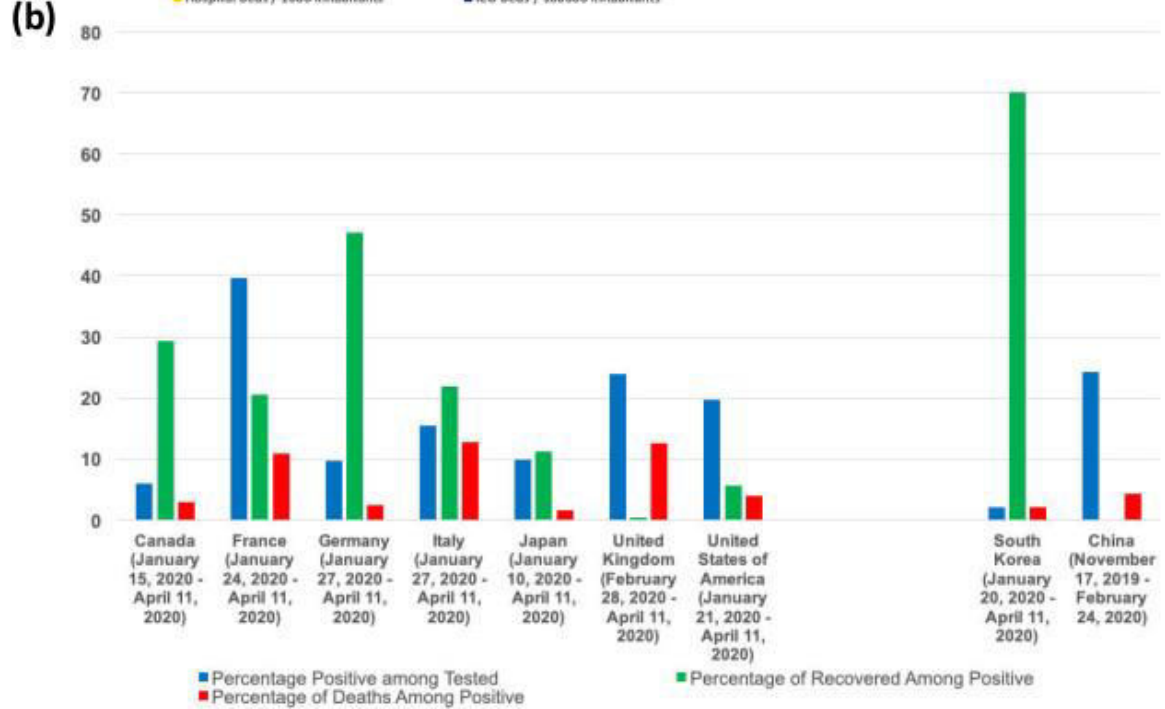
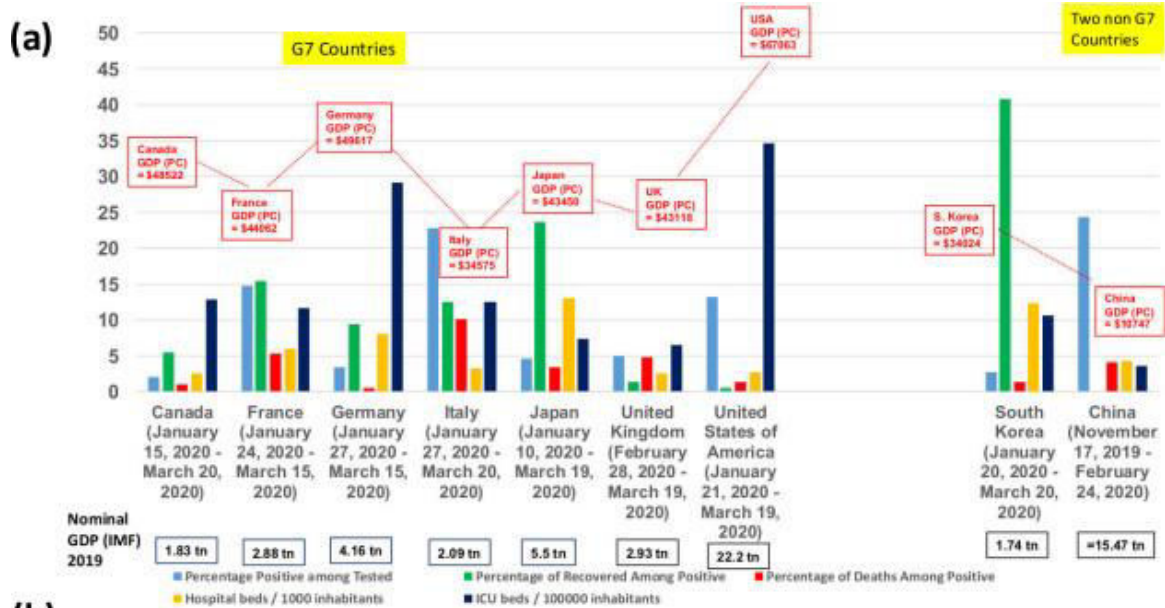


Figure 1. (a) Measures of COVID-19 Responses and General Health Preparedness in G7 Countries, South Korea and China. Number of COVID-19 tests conducted and positivity are within the dates mentioned for each country. Recovery rates and death rates are reported as of March 25, 2020. (b) Measures of COVID-19 in G7 and two more countries until April 11, 2020.

### **B. COVID-19 Recovered Percentage in the U.S.:**

As of April 11, 2020, the percentage of people recovered in the U.S. is the second to the lowest among G7 countries at 5.7%. The epidemic in the U.S. is six weeks old and the majority of the patients are still under various kinds of treatments. Hence, the U.S. still has the scope to eventually recover several thousand patients. Among the G7 countries, Germany with 47% recovered is the highest followed by Canada (29%), France (21%), Italy (22%). The U.K. has lower recovery rate at 1.41%. Outside G7, the other rich country South Korea reported to have recovered 70% of the patients and China claims to have recovered 90.7%.

### **C. COVID-19 positive percentage in the U.S.:**

The U.S. is the third-highest positive percentage recorded among G7 at 19.7% (after France 39.72%, the U.K. 23.88%) and overall fourth-highest. The positivity rate in Italy reduced during the last two weeks, but France and the U.K. the percentages of positivity increased by approximately, 25% and 19%, respectively, during the recent two weeks period.

The U.S. administration under President Trump has done extremely well in designing a quick response on January 15, 2020, by introducing travel restrictions from China [5,6]. Thereafter federal administration and the Centers for Disease Control and Prevention introduced several guidelines and preventive measures across the country. In parallel, there has been great support from several states within the U.S. [5,6].

The country as a whole responded to the pandemic because the general health system and preparedness indicators in the U.S. were one of the best [2]. Managing lower death rates in the U.S. so far is a great measure of preparedness and response. Lower recovery rate at around 5.7% as of April 11, 2020 is still worrisome. The number of deaths in recent days are increasing, and the U.S. do not wish to repeat what had happened in Italy with a 10 % death rate. According to the National Institute for Occupational Safety and Health (NIOSH), there are 18 million health care workers in the country. The chances of death rates reaching even 4-5% is slim due to higher levels of health care work force and more I.C.U. beds in the U.S. The global mortality rate as of April 15, 2020 is around 6.4%, which was around 4.5% by March 26, 2020 [3]. The U.S. COVID-19 new cases have not peaked yet and recovery rates are not stable, and hence building a model to predict the recovery rate might not provide a stable outcome. Novel methods to tackle the data on epidemic reporting [8] and to understand the under-reporting and infection dynamics due to COVID-19 in various countries is being studied [9-11].

The U.S. might eventually end-up as a great responder of COVID-19 with all their health care system in action as it has the strongest economy in the World. But in the first place how come the U.S. was not fully successful in getting health intelligence is something to

be understood further. Predicting the impact of this novel coronavirus could have prevented the level of economic and financial damage that occurred so far.

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## Appendix: COVID-19 Measures and General Preparedness Indicators

The three COVID-19 measures that we considered for G7 countries within a specific range of dates available as on March 25, 2020 are as follows:

- (i) Percentage of COVID-19 positive people among those who were tested for the virus,
- (ii) Percentage of recovered among those who were confirmed positive for COVID-19,
- (iii) Percentage of deaths due to COVID-19.

These were obtained from [3].

The general preparedness indicators that we considered are as follows:

- (iv) Number of hospital beds per 1000 inhabitants in a country (latest available data for the year 2018 [4]),
- (v) Number of I.C.U. beds per 100,000 inhabitants (available for the year 2012 [2]).

Apart from G7 countries, we have considered two more countries, namely, South Korea and China for comparative purpose. South Korea has thus far conducted the highest number of COVID-19 tests on their individuals with highest recovery percentage around 96 % yielding one of the lowest percentages of positive people at 2.73 %. The GDP per capita of South Korea in 2020 is around \$34,000 comparable to one of the G7 countries (Italy with \$34,500). China had the highest percentage of COVID-19 positive people tested in the world with 24.27% as of February 24, 2020, followed by Italy with 22.73% as of March 20, 2020. China also recorded the second-highest recovery rate after South Korea with 90.09% and China's GDP (IMF) is 15.47 trillion which is second only to the U.S. but GDP per capita of China is still very low at \$10,700 [1].

According to IMF [1] the ten largest economies in 2019 by using the definition of nominal GDP are: the U.S.A. (\$22.2 Tn), China (\$15.47 Tn), Japan (\$5.50 Tn), Germany (\$4.16 Tn), India (\$3.26 Tn), the U.K. (\$2.93 Tn), France (\$2.88 Tn), Italy (\$2.09 Tn), Brazil (\$2.06 Tn), Canada (\$1.83 Tn). In this paper, we have considered G7 countries and outside two G7 countries, namely, South Korea and China. The other two countries in the top ten nominal GDP economies India and Brazil have not shown the higher magnitude of COVID-19 reporting at the time of writing of this article.

**Authors contributions:** Both the authors contributed in writing and approved the manuscript. ASRS Rao designed the study, developed the methods, collected data, data interpretations, performed analysis, drawing Figure, wrote the first draft. SG Krantz designed the study, contributed in writing, data interpretations, editing the draft.

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