



Our Current Misunderstanding of COVID-19 and the Valid Approach to Research: Should We Reopen the World Economy?

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Abstract *The study addresses issues related to the current epidemiological models being used to address the COVID-19 pandemic, and suggests the “curve” is a nebulous fairy tale. Furthermore, I argue that these models are based on invalid data and flawed assumptions. For example, epidemiologists are using a number of positive cases, identified in systematic data collection manners (e.g., primarily testing frontline workers and symptomatic people), as proxy measures for infection rate: I suggest that random sample testing, proportional to population density, would provide an exact measure of infection rate. Finally, I argue that we are not in a position to reopen the world economy until we have these data, we now need a two-pronged approach through which we conduct random sample testing for both COVID-19 and COVID-19 antibodies, and that we are about to live in a new world in which physical distancing will be the norm.*

Key Words: COVID-19, World Economy, Re-opening, Infection Rates, Random Sample Testing

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Should we Reopen the World Economy?

In recent days, there has been a push to reopen the internal economies of various countries, as well as the world economy. I believe that our current understanding might preclude such action. Politicians and the people who are rushing the reopening of the economy, in my opinion, are wrong: This could be deadly. I am not an economist and, most certainly, defer to economists with respect to economic issues. However, I am a research scientist, consultant, and former tenured professor at three universities in North America (experimental psychology). I am also a member of a group of internationally renowned scientists who are addressing COVID-19.

I have been tracking COVID-19 since the first case was revealed by China in December. I am not a conspiracy theorist and believe that the Government of China might have been unaware of the existence of COVID-19 until December. Some would argue that I am giving the Chinese government too much benefit of the doubt; that is somewhat irrelevant in the context of the world pandemic. I can easily imagine that in

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a country of approximately 1.5 billion people a few thousand infections could go unnoticed for several months. Based on the data that I have been tracking, this leads me to believe that the genesis of coronavirus/COVID-19 may have occurred as early as September 2019.

From the beginning of the pandemic, I was focusing on data addressing Canada versus the US. This was of particular interest to me because we share an almost 9,000 km unguarded border. Canada, in my opinion was much more prepared for the pandemic than the US (although, some might perceive this as damning with faint praise). I had been warning the Government of Canada about the appropriate measures that were necessary in order to quell the pandemic (including issues related to providing income for people who would lose their jobs due to the pandemic). It is unclear to me whether the government actually attended to my suggestions; however, each one was implemented but, in my opinion, a month too late.

At this point in time, there is no vaccine or treatment on the horizon, no herd immunity, no evidence that exposure leads to immunity, no valid measure of infection rates, and no valid measures of the percentage of various populations are asymptomatic or relatively asymptomatic and who would never be tested yet spread the virus ([Radcliffe, 2020](#)). Thus, for the time being, we must assume and behave in a manner that assumes that this virus is here to stay.

The Lack of Reliability and Validity in the Current COVID-19 Data: We know Nothing About the “Curve”

The “curve” is nebulous, ill-defined, unreliable, and invalid construct. It is a model constructed by epidemiologists based on invalid data and flawed assumptions that they dream about in the night: That is, these models are based on Voodoo. In order to put this in context, remember that epidemiologists initially predicted that between 300,000 and 2,200,000 million Americans would die from COVID-19. First, this is quite a broad range and one where it is almost impossible to be wrong. Second, they were wrong and revised their models, post hoc, based on a new set of assumptions that they, again, dreamed about in the night. Third, I believe that they are still wrong; I doubt that the number of COVID-19 deaths in the US will exceed 200,000 and that this is an overestimate. Fourth, 3rd rate epidemiologists in the US, for their personal financial gain, have sold their souls and adopted different assumptions to be used as political weapons that result in models that support reopening or not reopening the US economy along partisan lines: This is further evidence that epidemiological models are highly suspect.

The problem with the “curve” is that the epidemiological models are based on extremely invalid guesses about the true infection rates. This issue exists in every country on earth (except Finland; apparently, they listened to us or had someone insightful working in the area). Number of positive cases is, generally, based on the testing of people in the frontlines and people who are symptomatic. This is used as a proxy measure for number of infections in the population: This is ludicrous because these positive cases are based on systematic testing that is not representative of the population. Therefore, the “curve” “is a tale told by an idiot, full of sound and fury, signifying nothing” ([Shakespeare, 1623](#)). [Cook and Campbell \(1979\)](#) refer to this as a selection artifact that makes valid inferences impossible.

It is odd that every country in the world is relying on Voodoo (other than Finland). The epidemiologists, apparently, do not know how to think outside of the box and borrow methods from other areas of science (see, e.g., [Cook and Campbell \(1979\)](#)). There are three additional problems 1) the epidemiologists working for the government are, on average (not all), people who were not of high enough quality to obtain academic positions, 2) appear to have little idea how to conduct advanced statistical analyses that are unrelated to modeling, thus, 3) 2nd and 3rd rate scientists are advising the governments of the world regarding COVID-19. Finally, it is almost impossible to test an entire population.

Furthermore, many of the tests are invalid because, for example, in the US, the preferred tests produced by Abbott are producing systematically biased false negative results ([Neel & Hagemann, 2020](#)). This is extremely problematic because it leads to a systematic underestimate of the number of positive cases. In the case of a pandemic, I would argue that erring on the side of caution is preferable: I would prefer to see tests that led to false positives and overestimates or, better yet, valid tests ([Pratt, 2020](#)). Canada waited to develop and adopt valid tests for COVID-19 and adopted valid tests for COVID-19 antibodies that were developed in Italy. My reasons for raising these issues is to reinforce that the “curve” is based on unreliable and invalid data in every country in the world (except Finland).

I realized this error from the beginning of the crisis and began tracking deaths per million in both Canada and the US on a daily basis beginning on April 7, 2020. Deaths per million is a fairly objective measure. It is relatively easy to count dead bodies and we know the populations of countries. There are no models involved. Deaths per million is a cumulative measure so it cannot decrease: however, it increases linearly and could begin to curve so that the increase in deaths per million stabilizes with only slight increases over time. This curve would indicate that the spread of the virus might be under control.

In Canada and the US, no such curve has occurred and the death per million rate continues to increase over time. Indeed, the first infections were detected in both countries at approximately the same time (mid-March) and the death per million rates on April 7, 2020 were 8 in Canada and 38 in the US. By May 17, 2020, the deaths per million rates 155 and 273 for Canada and the US, respectively. These increases were absolutely linear with the difference between Canada and the US diverging over time. I added two additional data points to the Canadian and American data in order to include a complete 6 weeks and computed the M death per million rates as a function of country and week. A 2 (country) x 6 (week) analysis of variance (ANOVA) was conducted on deaths per million. There was a main effect for country with Canada having a significantly lower death per million rate than the US, $F(1, 78) = 53.18, p < .001$, partial $\eta^2 = 0.91$. There was a main effect for week with deaths per million increase over the six weeks, $F(5, 78) = 18.42, p < .004$, partial $\eta^2 = 0.95$. These main effects occurred in the context of a country x week interaction, $F(5, 78) = 25.68, p < .001$, partial $\eta^2 = 0.64$. These data are so obvious that it is unnecessary to do anything other than plot the respective beginning points and endpoints for the Canadian and American data, respectively, and draw lines for the beginning and endpoints for each country: There are no curves in either data set to suggest that the virus is abating in either country. This suggests that the virus is not under control in either country: Do not believe the models; believe the objective data. I believe that the differences between Canada and the US and

the increasing spread between the two countries are a function of degree of preparedness with Canada being more prepared and engaging in a nonpartisan approach to the pandemic. Regardless, the death per million rates for each country are extremely disconcerting.

On April 28, 2020, I decided to compute deaths per million for several countries and repeat it on May 4, 2020. Beginning on May 13, 2020, I continued to report these data on a daily basis. These data are presented in Table 1 below

Table 1. COVID-19 Deaths Per Million as a Function of Country and Date Updated at 11:00 Each Day (* = Rising Rates and No Stability).

DATE								
April	May	May	May	May	May	May	M	Sem
	28	4	13	14	15	16	17	(May 13 to 17)
COUNTRY								
Spain	510	544*	580*	585*	587	590	593	587.00 2.21*
Italy	452	481*	511*	514	523*	523	529*	520.00 3.29*
France	362	386*	414*	415*	422*	422	433*	321.20 3.40*
UK	319	443*	489*	495*	501*	508*	513*	498.25 4.07*
Netherlands	267	297*	325*	326	329	332	332	328.80 1.46*
Sweden	214	274*	343*	349*	361*	364	366	356.60 4.50*
USA	179	207*	251*	257*	265*	271*	273	263.40 4.17*
Canada	076	098*	137*	141*	147*	151*	155*	146.20 3.26*
Denmark	075	084	092	093	093	094	095	93.40 0.51
Germany	075	082	093	094	095	096	097	95.00 0.71
Norway	038	040	042	042	043	043	043	42.60 0.24
Finland	036	042	051	052	052	054	054	52.60 0.60
Romania	034	042	053	054	055	057	058	55.40 0.93
Israel	024	027	030	031	031	031	031	35.40 1.86
Mexico	012	017	030*	033	035	039*	040	15.50 0.24
Greece	013	014	015	015	015	016	016	15.40 0.24
Ukraine	006	007	010	010	011	012	012	11.00 0.45
Philippines	005	006	007	007	007	008	008	7.40 0.24
South Korea	005	005	005	005	005	005	005	5.02 0.02
Pakistan						004	004	4.05 0.05
Cuba	005	006	007	007	007	008	008	7.40 0.24
India						002	002	2.05 0.05
Thailand	00.8	00.8	00.8	00.8	00.8	00.8	00.8	0.82 0.02
Taiwan	00.3	00.3	00.3	00.3	00.3	00.3	00.3	0.32 0.02
Nigeria	00.3	00.4	00.8	00.8	00.8	00.8	00.9	0.82 0.04
Vietnam	00.0	00.0	00.0	00.0	0.00	00.0	00.0	0.02 0.02

As can be inferred from the table, there are several countries in which COVID-19 deaths per million have stabilized and several in which they have not (I chose an increase of 4 deaths per million or more as indicating a lack of stability. Spain through

Canada appear unstable over time; I will continue to monitor these data daily). The populations of each country were determined by using the *Worldometer* 2020 and the *Wikipedia* COVID-19 death rate data that was updated every 20 minutes until May 15, 2020 and is now updated daily. I arbitrarily chose 11:00 Eastern Daylight Time (EDT) to update these data. I attempted to choose countries that represented diverse population densities and cultures. This is important in terms of comparing the effectiveness of the policies put into place in order to prevent transmission of the virus and associated deaths per million rates. One might assume that countries with high population densities would be less successful. One might also expect that countries with high poverty rates and cultures in which extended family members live together in close quarters would be less successful. These expectations were not confirmed by the data. Unfortunately, I did not include Pakistan or India in the countries that I selected: However, it appears that both of these countries could introduce policies that result in death per million rates that are far less than those of Spain through Canada in the table. In fact, Pakistan and India have 4 and 2 deaths per million, respectively, as of May 16, 2020 at 11:00 EDT. It is interesting to note that the data in the table suggest lower death per million rates in several Western European countries and several less industrialized countries than Spain through Canada. Note the dramatic drop in deaths per million that remains stable over time for Denmark and each of the following countries. I computed the M death per million rates for all countries for the five days worth of data (except Pakistan and India where I used the 2 days) in the table and conducted an oneway ANOVA with country acting as the independent variable and deaths per million acting as the dependent variable. This effect was monstrously significant, $F(24, 97) = 8854.35$, $p < .00001$, partial $\eta^2 = 1.00$.²

Of particular concern to me is the fact that neither Canada nor the US has stabilized, in my opinion (The May 16, 2020 data appear to suggest some stabilization in Spain through Canada; however, such stabilization must be evident over, at minimum, a two-week period). This suggests that reopening the economy (and particularly the border with the US) could be catastrophic. Fortunately, the federal and provincial governments in Canada are advocating and adopting a measured, systematic approach to the reopening of our internal economy. Unfortunately, the US is reopening its economy in a haphazard and, potentially, dangerous manner. The point may be irrelevant, however, when one observes the slow and systematic approaches used by Germany which had stabilized at about 80 deaths per million and South Korea which had stabilized at 5 deaths per million: Their reported COVID-19 infection rates spiked shortly after attempting to reopen ([Scott, 2020](#)). Of course, their measures of infection rates fall prey to the problems described above.

The Valid Approach to Understanding COVID-19 Infection Rates

I was trained to use multiple methods ranging from randomized experiments to quasi-experimental methods for field/applied settings to public opinion polling and so on. I also borrowed (and still do) methods from other areas of science to suit my needs ([Cook and Campbell \(1979\)](#)). Apparently, the epidemiologists do not.

Dr. Theresa Tam (The Head of the Public Health Agency of Canada), essentially, admitted that Health Canada does not really have a handle on the COVID-19 data. Dr. Tam is a physician and well-respected. However, 98% of physicians are not scientists and rely on the practitioners of Voodoo as expert advisors. This is true of the CDC as

well. The Prime Minister of Canada, Justin Trudeau is talking caution with respect to reopening the economy, which makes sense. The President of the United States of America, Donald Trump is not talking caution, which makes no sense. When is the necessary valid research going to be conducted? Stop this Voodoo guesswork and do the valid research. It answers all of the questions and costs little to conduct: It's time to conduct a random sample testing study that repeats every two weeks ([Donsbach & Traugott, 2020](#)).

Random sample testing, proportional to population density, including demographic information as well as some attitudinal measures would shed light on the exact infection rate. It would afford us the ability to determine, for example, regions that are more (or less) infected so that we could conduct targeted testing, demographic differences (for example, differences among various ethnic groups), know the percentage of the population that is actually asymptomatic or relatively asymptomatic, who would never be tested, and are transmitting the virus. Remember, as I mentioned above, that the testing approach being used presently is systematic and, generally, targets frontline workers and people who display symptoms: This leads to a selection artifact. These proxy numbers for infection rates are meaningless: Nothing is known about the “curve.”

A random sample testing study would only involve about 1500 participants in Canada (the n depends on the size of the population of each country). It should be repeated every two weeks, with 1500 different participants, in order to assess whether true infection rates are increasing or decreasing. These kinds of data are relatively inexpensive to collect and analyze and they provide valid information about true infection rates. Why these studies are not being conducted is baffling to me. As things stand, we really know absolutely nothing about true infection rates. With a random sample testing of 1,500 Canadians, I could glean more information than from 1,000,000 tests administered in a systematic manner. Furthermore, I argue that it's to use a two-pronged approach: 1) random sample testing for COVID-19 and; 2) random sample testing for COVID-19 antibodies. It is time to bring in the real scientists: Only then will we have a clear understanding of COVID-19 infection rates. Until we have such data, I would argue that we are in no position to consider reopening any internal or world economy.

Conclusions: Where Do We Stand?

Let us return to the beginning: For the time being, we must assume that coronavirus/COVID-19 is here to stay. My data-based opinion is that we are not in a position to reopen several internal economies, let alone the world economy until we conduct the random sample tests in the repeated manner that I promote. However, as my friend and colleague Norbert Schwarz notes, even in light of the problematic approach to measurement, he'd rather visit somewhere that had few hospitalized cases than many ([Schwarz, 2020](#)). Indeed, smaller cities and villages have far fewer COVID-19 deaths than do densely populated cities.

I find it interesting that I presented arguments to support this approach to Justin Trudeau (Prime Minister of Canada), Douglas Ford (Premier of Ontario), Anthony Rota (Member of Parliament and Speaker of the House of Commons, Government of Canada), Christine Elliott (Deputy Premier of Ontario and Minister of Health), and Victor Fedeli (Member of Provincial Parliament and Minister of Trade and Development, Government of Ontario): Unfortunately, my arguments fell on deaf ears. I am convinced that had we

conducted the correct research from the genesis of the pandemic, the world would be in a completely different position at the present time. We would understand the behavior of the virus in terms of infection rates and transmission. Indeed, we might be in a position to reopen the economy based on valid data instead of fictitious “curves.”

Governments in Finland, Asia, and Southeast Asia have shown great interest in my approach to validly identifying and tracking true infection rates over time as well as identifying any impact that interventions have had on true infection rates. Due to their complete ignorance of the correct approach to scientific inquiry, The United States of America is in an economic position to begin the slow slide into third world status ([Haque, 2020](#)). I expect that Canada, and several other countries whose economies are dependent on the economy of the US, will quickly follow.

I believe that we are living in a new world in which physical distancing is the norm as is online education that emulates, exactly, the classroom experience (from elementary school through college and university; this does not imply that teachers or faculty would lose their jobs; however it does imply the need for enhanced technology that is available to people in all walks of life and in all countries in the world and, not, only in the first world). Interestingly, India has developed interactive online educational programs/virtual classrooms that are second to none ([Tanwar, 2020](#)). However, they have been unable to overcome issues related to collaboration and cheating in the context of these programs. The descriptions of the interactive online educational programs/virtual classrooms in India put those of Ontario, Canada to shame. Whereas, Ontario is experiencing the same problems with respect to cheating and collaboration, the delivery of the programs appears to be relatively abysmal; my son is a grade 11 high school student in Ontario and he and his peers report that their classes are a “joke” ([Sinclair, 2020](#)). Indeed, they argue that the presentation of classes is absolutely substandard, must be changed dramatically, and preferably have a return to a regular classroom situation with one-on-one access to teachers. We must put the comments of my son and his peers in context: These are brilliant and insightful students who have straight A GPAs; they have argued that if the Government of Ontario continues to foist this type of education on students, the government should be voted out of office.

Physical distancing has been the means through which we have dealt with pandemics in the past. Furthermore, the continued adherence to physical distancing (and mask use) will have the effect of reducing the spread of infections ranging from the common cold to the seasonal flu: Of course, this reduces stress on medical systems around the world and saves every country a great deal of money in terms of costs associated with healthcare. Until there is a vaccine, our new world should be one in which most purchases will be made online, restaurants should cut their seating capacities by 75% in order to maintain safe physical distancing when dining (maybe the pandemic has made many of us rediscover the art of cooking and the associated savings; this is certainly the case for me), fewer seats in public transportation and on planes, and so on. Consistent with this argument, the Government of the Philippines has reopened its tourism industry. However, they have put tremendous restrictions on the capacities of aircraft, hotels, resorts, and restaurants; indeed, all have been reduced to 30 percent of their original capacity and introduced robotic maids for cleaning rooms at hotels and resorts in order to contend with the new world economy ([Alcoriza, 2020](#)).

The entire global economy, models of business strategy, and supply-chain management must change dramatically in order to map onto the new world economy.

Businesses and organizations that fail to do so are bound to become obsolete ([Rokaya, 2020](#); [Sinclair, 2020a](#); [Sinclair, 2020c](#)). Production facilities and warehouses must become pristine. Physical distancing and mask use must become mandatory. Once shipments are packed and sent to shipping centers, similar procedures must be used at those facilities as well as loading them onto whichever mode of transportation used. No precautions are necessary during the actual transportation; however, once products arrive at a destination (e.g., another city, country), absolutely all procedures must be implemented in reverse order. Until there is a vaccine, this is the way of the new world: Welcome to the new world.

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