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FACTS ON BENEFITS AND HARMS OF COVID POLICIES

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A Quantitative Human and Ethical Benefit-Harm Analysis of Our COVID Response

This document is an analysis of how much our COVID response has reduced COVID deaths and how that compares to the societal harms the response has caused including loss of employment, increased depression, isolation and unhappiness, and increased deaths from non-COVID causes including suicides, other deaths of despair (drug and alcohol abuse deaths), and cancer and heart disease that has gone undiagnosed or untreated.

I believe that our societal response to COVID has done far, far more harm than good, and is therefore immoral. I do not believe that anyone who looks fairly at the data could conclude otherwise.

So you know where I am coming from, I am a Democrat and a scientist. I have a Ph.D. in biochemistry and my latest papers have been in immunology. So I am a very rational person, and not someone who believes COVID is not serious or that the pandemic or its coverage by the media is a conspiracy to harm President Trump politically. It is a serious disease, significantly deadlier than ordinary influenza.

First, we need to know how much our response has reduced deaths. We ordered everyone to stay at home for 51 days in Minnesota and a comparable time in most states. We shut down restaurants, bars, health clubs, and numerous other non-essential businesses for about 3 months. The governor of Minnesota ordered all churches closed for about 3 months. We closed the schools and universities for most of a semester, and most schools and universities are still partially or fully closed to in-person instruction and apparently will remain so for all of this school year. We have eliminated handshakes and hugs. We are told to keep 6 feet from one another and wear masks in public even when more than 6 feet from others. That's a lot of sacrifice. How much did it help?

How much did these state-imposed and privately-imposed restrictions reduce deaths? There is really no evidence they reduced deaths at all, although logically they must have reduced transmission some and prevented some deaths. The best comparison is Sweden, which adopted the policy I would have advocated and do advocate, of not closing anything – restaurants, schools, universities, businesses of any sort, or churches – recommending but not mandating mask wearing, and even recommending mask wearing only when indoors and not able to

maintain 3 feet of distance from other people. Despite that, Sweden's COVID death rate of 671 per million population is less than the U.S.'s of 833 (as of November 25). It is also less than some other countries in Europe, including Britain, Spain, and Italy, all of which took the U.S. approach of lockdowns and closing schools and businesses. Also, the few other countries that did not adopt lockdowns and school and business closings – Iceland, Japan, South Korea, and Taiwan – all have much, much lower death rates. So it is hard to see any evidence in the data that the strategy of lockdowns and closing schools, restaurants and business and mandating masks has accomplished anything positive at all.

Nonetheless, let's assume the U.S. strategy has reduced cases and therefore deaths. How much could it have helped? First, we need to know what percentage of the population has been infected. The answer from an excellent study surveying plasma samples from dialysis centers nationwide collected in early July and adjusting for the age, demographics, and zip codes of the samples to the age, demographics, and zip codes of the U.S. as a whole is 9.3% as of early July. (Reference 1.) On July 15 we had 140,775 COVID deaths in the U.S. and today we have 267,472 on November 25. If the fatality rate per infected person has remained constant in that time, we now have 17.7% of the population having been infected (Note A). The percentage of the population infected is probably higher than that, because the fatality rate per infected person is clearly going down due to learning more how to treat patients and the virus mutating to a less lethal form. (The fatality rate for hospitalized persons in New York was 27% in April and is now 3%.) So the seroprevalence in the U.S. has to be at least 17.7% and is probably about 20% as of November 25 (Note A). The most our strategy could possibly have achieved is prevent the other 80 or 82.3% of the population from being infected. Obviously that is not the case, and if it were it would mean we will have no cases or deaths going forward. A fairly generous estimate would be that it has prevented and will prevent about 15% of the population from being infected, about three-quarters of percentage that has already been infected, and thus prevent 200,000 deaths (Note A). That does not fit the data, because if our strategy had prevented nearly as that many cases and deaths, then our death rate should be about half that of Sweden's instead of being more than Sweden's. But let's say it did. How many person-years of life did that save?

To calculate that, we need to know how much longer the people dying of COVID would have lived if they had not contracted COVID. The COVID deaths pretty closely match overall death risk, except they skew even more toward the elderly and sick than overall deaths do. For Minnesota, 99% of COVID dead had a serious preexisting condition. 70% lived in long-term care facilities. 60% were over age 80. 92% were over age 60. All of those figures are higher than overall deaths. Only 80% of overall deaths are over age 60. (That seems low, but it is because our population skews young and there are a lot more people under than over age 60.) It is relevant to ask how long the COVID dead would have lived if they had not caught COVID. We are all going to die eventually, and eventually is coming sooner than we like to think. Most great spiritual thinkers have thought that an awareness of our mortality and the fact we will die is at or near the top of the lessons that must be learned for wisdom. So what is the average life expectancy of people dying of COVID and if we prevent a COVID death how many years or months of life are we adding?

In Note B below I estimate the average life expectancy of the COVID dead had they not contracted COVID as 4 years. The median person dying of COVID is male, age 84, lives in a

long-term care facility, and is sicker than the average 84-year-old man living in a long-term care facility. One reference calculates the median life expectancy of long-term care facility COVID dead as 5 to 9 months. (Reference 2.) So the median life expectancy of COVID dead is less than a year. The median is the level at which 50% of persons are below and 50% above. The average is larger than the median because it is skewed by high values, but even accounting for the few young and healthy people who have died and may have had a 20 year life expectancy if they had not caught COVID, I estimate the *average* life expectancy lost as about 4 years, considering their health condition (Note B).

We have had 267,000 die of COVID in the U.S. with at least 17.7% of the population infected, as calculated above. If our strategy has saved 200,000 lives from COVID death, then with an average life expectancy lost of 4 years, saving 200,000 lives would mean saving 800,000 person-years of life. That sounds like a lot. But with a population of 328 million, that works out to 0.0024 years of life extended on average, or 0.9 days. And that is not 0.9 days in your 20s. That is 0.9 days at the end of your life in poor health.

Do you want to claim our strategy has prevented the infection of everyone in society who is not yet infected, and it will forever prevent those infections and we will have no more deaths from COVID? OK, that is not true but if it were then it has saved 5.5 days of life on average. Do you want to claim that the average life expectancy lost is 12 years rather than 4 years? OK, that is not true when you consider the pre-existing health status of persons who die of COVID, but if it were true, then our strategy has saved 2.7 days of life expectancy on average. Do you want to claim both that our strategy has prevented infection of everyone not yet infected, and that the COVID dead were not in worse health than average for their age? Then our strategy has still only saved 22 days on average.

But the reality is that on average, all the sacrifices we have made have added less than 1 day per person of life expectancy. I calculate 0.9 days even with a generous estimate of how many lives have been saved that is close to a worst case scenario of what might have happened if we had ignored COVID. Does anyone think it has been worth living the way we have lived for these 9 months, and probably living this way for close to a year, to add 1 day to our lives? I certainly don't. I wouldn't even be willing to give up handshakes and hugs for a year to add one day to my life, let alone all the other sacrifices we have made.

So that is the benefit: less than 1 day of life extension on average. What are the costs?

- Denied schooling for 3 months last year for all students and potentially a full school year this year for many or most students. Of course we did do on-line education, but studies have shown that is of very limited value. It is completely worthless if you are in a poor family that does not have good internet connectivity. And the social aspect of schools, which is probably more important than the scholastic aspect, was completely lost.
- Unemployment for 16% of the workforce. (The U.S. number of employed persons decreased by 16.0% from January to the trough of COVID and is still down 7.1%. In Sweden in contrast, the number of employed persons went down only 1.4% after COVID

and is now 1.4% higher than it was pre-COVID.) (Reference 6.) Unemployment is devastating for many people.

- Moderate to severe depression for 19.3% of the population. Reference 4 found these increases in percentage of the U.S. population with depression symptoms:

Depression category	% of U.S. pre-COVID	% of U.S. during COVID	increase during COVID
Severe	0.7	5.1	4.4%
Moderately Severe	2.1	7.9	5.8%
Moderate	5.7	14.8	9.1%
Mild	16.2	24.6	8.4%

Summing the severe, moderately severe, and moderate increases, we threw 19.3% of the population into moderate to severe depression because of our response to COVID (not because of COVID, but because of our response to COVID). This alone can be viewed as a far greater loss of person-years of life than COVID is causing. Major depression can be viewed as lost life in the sense that for the period you are depressed you probably view your life as almost worthless. I said that to a friend and she said, no, it is *worse* than death because death is oblivion and depression is pain. You would rather be dead if you could come back to life when the depression is over. The median duration of an episode of major depressive disorder is 20 weeks or 0.38 years. (Ref. 7). If we view that time as lost life, since 19.3% of the U.S. population of 328 million was thrown into depression by our COVID response, that is 63.3 million people x 0.38 years duration on average = 24.0 million person-years of life or 30 times greater than the 0.80 million person-years of life I calculate we may be saving by our COVID response. And that ignores the increase in mild depression. If you accept that a period of depression is basically a lost time of life or can even be viewed as a partially lost time of life, then we have lost many times more person-years of life due to the loneliness, unemployment, and despair induced by our COVID response than the person-years of life due to averted COVID deaths our response may have produced.

- An increase of 68,000 deaths of despair – suicides and drug and alcohol abuse deaths – with a median life expectancy lost of 26 years or 1.63 million person-years of life expectancy (reference 3). This alone greatly outweighs the person-years of life saved by our COVID strategy, which I calculate above as 0.80 million person-years. This study estimated 68,000 increased deaths of despair from the unemployment alone. It did not even consider the social isolation people have suffered, so the number is probably low.
- Increased deaths from heart disease and cancer due to (1) the suspension of elective procedures, and (2) missed diagnoses from delayed medical visits, some of which were ordered by health care facilities and governors, and most of which were voluntary for people due to their, in my view, exaggerated fear of COVID, stoked by the news media and our elected officials. A study in Great Britain (Reference 8) concluded that in that nation excess missed diagnoses of the four most common cancers would result in about 3,400 excess deaths, which projects to 17,000 in the U.S. population, just from those four

cancers, not including other cancers, heart disease, and other serious conditions that are going untreated or undiagnosed.

- Social isolation and attendant unhappiness from the lockdowns, closing churches, restaurants, health clubs, and workplaces – in short, everywhere people gather and socialize. Also the lack of human touch from handshakes and hugs. And the mask wearing prevents us from seeing whether we are smiling at each other.

None of these outcomes were caused by COVID. They were caused by our response to COVID. We did not have to take the approach we took. We could have educated people about their actual risk of death if they become infected with SARS-Cov-2, and then let them make their own decisions about whether they want to isolate themselves to reduce their risk of being infected, wear a mask, etc. That is the approach Sweden took, and they had fewer deaths per capita than us and had almost none of the other collateral damage we suffered of increased unemployment, depression, suicides, and general unhappiness.

My moral code says it cannot be justified to cause 19.3% of the population to become clinically depressed in order to extend life by 1 day on average. It should also be noted that the people we have imposed the sacrifices on are not the people at risk of dying from COVID. So we ordered some people to sacrifice to benefit others.

In fact, we decided to kill some people, almost all of them young or middle aged, by driving them to suicide or drug or alcohol deaths, in order to extend the lives of other people, almost all of them old and in poor health and with little life expectancy left. All of the costs listed were entirely predictable and were in fact predicted, so we decided as a society to inflict those harms in order to save the lives of other persons from COVID.

Philosophers have the train switch dilemma:

Imagine a train is coming down the tracks and will run over one person tied to the track. There is a switch ahead of the person where you could switch the train to another track to save their life. But on the second track a different person is tied to the track who would be killed if you pull the switch. Do you pull the switch? What if there are 2 people on the first track and one on the second? What if the person on the first track is age 20 and the person on the second is 80? What if the person on the first track is a very nice person and the person on the second track is a nasty person?

We have pulled the train track switch as a society with COVID. We decided to try to save some people and to do that we killed others and inflicted unhappiness and loneliness on almost everyone and inflicted major clinical depression on 19% of the population and unemployment on 16% of all employed persons. Specifically, if we look at the ratio of the benefits and harms as calculated above:

on track 1 we had:

- 1,000 mostly elderly sick people with an average life expectancy of 4 years that we may have saved

on track 2 we had:

- 340 mostly young or middle aged people with 26 years of life expectancy on average that we killed by causing them to kill themselves or die of drug or alcohol overdoses (Note c)
- 316,500 people we threw into moderate to severe depression for on average of probably 5 months (Note d)
- Perhaps 100 people we killed by delaying diagnosing and treating their cancer or heart disease or other serious condition (Note e)
- 127,000 people that we threw out of work (Note f)
- 350,000 young people whose education we denied or greatly impaired for 1 to 1.5 years and whose social development and enjoyment of life we also impaired (Note g)
- 1,640,000 people (everyone in the society) that we made at least a little lonelier and less happy (Note h).

I would not have pulled that train switch. I think it was immoral to do so. Knowing what we know now, I would not continue to keep that switch pulled. I think even more clearly it is immoral to continue to keep that switch pulled.

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Notes:

A.

I assume here that the case fatality rate (deaths per person infected) has stayed constant. Deaths due to COVID increased from 140,775 on July 15 to 267,472 on Nov. 25, a 1.9-fold increase; if infected persons increased by the same proportion, it is $9.3\% \times 1.9 = 17.7\%$ as of November 25.

If the case fatality rate or deaths per infected person has gone down since July 15, which everyone believes is true, then the percentage of the population infected has increased more than the number of deaths and is even more than 17.7% as of Nov. 25, 2020. I would estimate it is actually about 20% as of November 25.

New York state was at 33.6% of the population infected as of early July, according to the same study, and New York state has had only 5.7% as many deaths between July 15 and Nov. 25 as had happened by July 15. If the number of infected persons has stayed proportional to deaths, then New York state is now at 35.5% infected. So their infections are dramatically slowing once they hit 30% of the population infected, suggesting that is the range where herd immunity begins, and that the nation is unlikely to ever exceed 40% of the population infected, even without a vaccine.

200,000 additional deaths corresponds to an additional 13.2% of the population infected (assuming the same case fatality rate as prior to July 15), which added to the 17.3% infected as of Nov. 25 would be 31% infected in an alternate world where we took Sweden's approach of no mandatory closings and restrictions. It seems unlikely the whole U.S. could have gone above 31% infected when New York is plateauing at less than 40% infected.

Another way of looking at it is that the University of Washington COVID model as of now (Dec. 1, 2020) projects a best case scenario of 406,000 COVID deaths in the U.S. total on March 1, 2021 (in the absence of a vaccine). Their realistic projection is 471,000 deaths on March 1, 2021. Hopefully by about March 1 we will have vaccinated a significant fraction of the population and have few deaths after that point. My estimate of 200,000 additional COVID deaths in the U.S. if we had done nothing or followed Sweden's model, added to the 406,000 best case projection for March 1, 2021, with our current policies, means instead we would have had 606,000 COVID dead on March 1, 2021. At the case fatality rate of 0.46% that we had in the first wave, that would mean at least 40% of the total U.S. population infected. When New York state is still not at 40% infected and looks like it may never get to that point, it seems very unlikely the U.S. as a whole would have gotten to 40% infected in the absence of the restrictions we have imposed.

So I think the estimate of 200,000 additional COVID dead if we had done nothing is probably an overestimate. It is pretty close to a worst case possibility.

B.

Others calculate the average life expectancy at death of COVID-19 dead as 11.7 years. (Reference 5). But this was based solely on their age and did not consider their health. In Minnesota, 70% of the COVID dead lived in long term care facilities. Nursing home residents live on average 13.7 months from their admittance. It is calculated for the long term care facility COVID dead that their remaining life expectancy had they not gotten COVID was 5-9 months. (Reference 2). So for 70% of the COVID dead, considering the fact they lived in a long term care facility, their life expectancy was less than a year. Considering only their age it would be 6.6 years if they are 84 years old on average. So for the long term care residents who die of COVID, their actual individual life expectancy considering their health condition is about 1/10 of their life expectancy based just on age. Likewise for younger people who die of COVID. 99% of them have a pre-existing condition. A 50-year-old with a diagnosed cardiovascular condition does not have the life expectancy of the average 50-year-old.

The median person dying of COVID in Minnesota is an 84-year-old man, living in a long-term care facility, with a serious pre-existing heart or lung ailment, who is sicker than the average 84-year man living in a nursing home (because some 84-year old men living in nursing homes survive COVID, so it stands to reason that they were healthier on average than the ones who die of COVID). That person had a life expectancy of less than a year.

If the median life expectancy of a person dying of COVID is less than a year (“median” means that half the persons dying had greater life expectancy and half had less), and only 8% of the dead were under age 60, it seems to me that considering their health condition the average person dying of COVID had a life expectancy if they had not contracted COVID of about 4 years, considering their health condition and age.

C.

68,000 excess deaths of despair in the U.S. were estimated by the Wellbeing Trust (Reference 3), as noted above, divided by 200,000 COVID lives saved estimated = 340 deaths of despair per 1,000 COVID deaths averted.

I should note that the Wellbeing Trust blamed these excess deaths of despair on COVID. That is not correct; they were and will be caused by our *response* to COVID. If we had ignored COVID, we would have had more COVID deaths (I estimate here 200,000 more) but no increase in depression, unemployment, or social isolation, which are the things that cause suicides and deaths of despair. Also, the Wellbeing Trust made its estimate based just on the increase in unemployment, because we have prior data linking a 1% increase in unemployment to a certain increase in deaths of despair. The social isolation and increase in depression caused by our response is unprecedented, but that must also cause more deaths of despair, so I would judge that the estimate of 68,000 more deaths of despair is most likely an underestimate.

D.

As noted above, the evidence shows that a total of 8.5% of the population had moderate to severe depression pre-COVID and now 27.8% do, meaning 19.3% of the population was thrown into moderate to severe depression by our COVID response. 19.3% of the U.S. population is 63.3

million, divided by 200,000 COVID deaths averted by our response = 316.5 or 316,500 per 1,000 COVID deaths averted. The same study found an increased 12.4% of the population thrown into mild depression, and those are not included here.

E.

A study estimated for Great Britain about 3400 additional deaths for the 4 most common cancers over a 5 year period due to excess missed diagnoses during COVID (reference 8). Projected to the U.S. population size, that would be 17,000 additional deaths in the U.S. 17,000 divided by 200,000 COVID deaths averted by our response would be 85 deaths per 1,000 COVID deaths averted. Since there are other cancers than those four in the study, as well as heart disease, kidney disease and other serious conditions, one would guess the number of total excess deaths caused by missed diagnosis and forestalled treatment due to COVID is well in excess of that, so more than 100 additional deaths per 1,000 COVID deaths averted.

F.

Employed persons in the U.S. decreased from 158.76 million in February 2020 to 133.40 million in April 2020 at the trough of the COVID recession, loss of work for 25.36 million persons. Divided by 200,000 averted COVID deaths that is 127 persons thrown out of work for each COVID death averted by our strategy, or 127,000 per 1,000 COVID deaths averted.

G.

There are 62 million Americans age 5 to 19. For age 6 to 18 it is about 53 million. There are about 19 million college students in the U.S. So altogether about 70 million students in K-12 and colleges and universities. 70 million divided by 200,000 COVID deaths averted is 350 students per COVID death averted, or 350,000 per 1,000 COVID deaths averted.

H.

The U.S. population is 328 million. 328 million divided by 200,000 COVID deaths averted is 1,640 persons per COVID death averted or 1.64 million persons per 1,000 COVID deaths averted.