# Without Mandatory Testing Combined with Quarantines, the US COVID-19 Pandemic Death Toll Will Be Gigantic

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The COVID-19 pandemic continues to rage unchecked in the US and worldwide. In order to vanquish this pandemic, it is absolutely essential that we determine the complete set of people within the entire population who test positive for COVID-19.  Those who have tested positive for COVID-19 must be quarantined for the incubation period of 14 days.

We shall rigorously analyze the consequences of doing nothing about mandatory testing/quarantines for the indefinite future.

For every large population, P, it may be of interest to determine the subset, S, of P whose members have a certain property.  One can then calculate the number of elements in S, divided by the number of elements in P.  This is simply the percentage, p, of elements in S within P.  (In the current context, P is the set, NT, of those who have not been tested, and S is the subset, $T^+$, of NT who have tested positive).

It may be impractical or impossible to count directly the number of elements in S, followed by dividing by the number of elements in P in order get the value of p.

Because of the long-established ***Mathematical Theory of Random Sampling***, it turns out that by an appropriate choice of a random sample (meaning, every element in P has an equal probability of being selected for the sample) of sufficient size, one can estimate p as accurately as one pleases and with as high a confidence probability as one pleases.

Currently, there is no US government plan to do this, so we must explore the full range of possible values of p that could occur under the use of the Mathematical Theory of Random Sampling. This, as well as other estimates and calculation are contained in the **APPENDIX**.

***The key result  is that between 700 thousand to 1.23 million deaths will occur if the US government does NOT test everyone combined with quarantines.***

***During the 243 YEARS OF its EXISTENCE, the US has been continuously engaged in 79 wars; the combat death total for each of the wars is less than 625 thousand!***

In the light of this evidence, the inexcusable failure of many of our political leaders at every level of government to implement immediate COVID-19 testing of EVERYONE is an egregious affront to the public trust.  They have abdicated power to the dictates of the neoliberal capitalistic hierarchy and not to the general welfare of all the people*.*

***The cost to the US government to carry out the complete COVID-19 testing of everyone is miniscule.***

In fiscal year 2020 (Oct 1, 2019 – Sep 30, 2020), the total US military spending budget is $ 1,668 billion. From the  onset (Feb 2020) of the US covid-19 pandemic until now, there is a zero US budget for vanquishing the pandemic. To do this, it is absolutely essential that the subset of the population that are infected with the virus be identified and quarantined for 14 days.

There are many biotech laboratories in the world which are producing test kits that perform this function with a short response time. Medicare reports a cost range between $42 and $52. This means the  cost of implementing mandatory testing of 331 million people in the U.S. could be as little as 13.9 billion dollars to as much as  17.2 billion dollars. ***If these two amounts were paid by transferring them from the US military spending budget, it would amount to a reduction of between 0.82% to 1.03%!***

## APPENDIX

Given any day, t (month, day, year), official records for the period, 2 Jan through t, are reported for the following data:
1. numbers of: COVID-19 cases, C, and deaths, D; the ***death rat***e is $D_t = D/C$;
2. numbers of: those tested, T, and those with positive tests, $T^+$; the ***test-positive rate*** is $(T^+)_t = T^+/T$.
(All of this data is kept and reported by CDC and the website, ncov2019.live.)

Here is a current example for the period 1/2/2020 to  t =  8/10/2020:
1.  C = 5,246 million; D = 166 thousand; ***death rate*** $D_t = 3.2\%$;
2. T = 65.8 million; $T^+$ = 5.9 million; ***test-positive rate***  $(T^+)_t = 9.0\%$.

The mid year US population is 331 million, so the number NOT TESTED, NT, as of 8/10/2020 is 331 million minus 65.6 million = 265.2 million.

Hypothetically, if the death rate and positive-test rate for the NT population were identical to their values for the period 1/2/2020 to 8/10/2020, then the following outcome would occur:
1. the number of COVID-19 cases that would arise would be 0.090 x 265.2 million = 26.6 million;
2. within the latter, the death toll would be 0.033 x 26.6 = 843.6 thousand.
3.Total death toll would be 843.6 thousand + 166 thousand = 1.01 million.

However, the most probable range of values for:
1.the ***test-positive rate*** that would occur if random sampling were used on the NT population is between 8.0% and 10.0%;
2.the ***death rat***e for the set of people having a positive-test rate is between 2.5% and 4.0%.

***Based on these two sets of ranges, straightforward calculations show that between 696.6 thousand to  1.23 million will occur if the US government does NOT test everyone combined with quarantines.***