CORONA 19 VIRUS-DAY 321
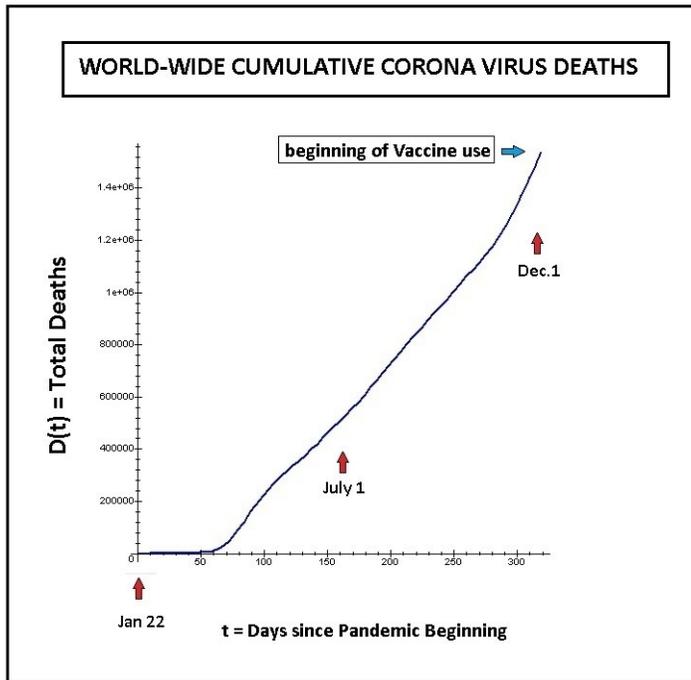
We have been following the Corona Virus cumulative world deaths D(t) starting on January 22, 2020, the date on which the WHO declared Covid 19 to be a world-wide pandemic. Today we are in the t= 321th day of this pandemic with 1.56 million estimated to have died world-wide. A graph based on daily available data from worldometer produces the following curve of D(t) versus t-

Today's world Corona Virus deaths for the day are 1556476-1546957=9519 compared to the US number of 291230-289159= 2071deaths. Thus the US is producing about 22% of the worlds cumulative deaths with only 5% of the world population . This is a terrible number leading the world in Corona Virus deaths. A country such as Germany has reported only 20145 deaths which accounts for just 20145/1559838= 1.29% of the world's total. Even more successful has been the Covid Virus fight in South Korea with 552 deaths equal to just 0.0354 % of the world's total.

Why the large differences? It must be that the US has done something that other countries in the world have largely avoided. In my view the major reason for the high death rate difference is that the virus fight in the US has become politicized with nearly half of the country not believing in mask wearing and social distancing. This fact probably accounts for some 100 thousands US deaths which could have been avoided between Jan 22 and now. Also there is a tendency in this country for a very strong belief in personal freedom and not having the government tell individuals what they can and not do. Until we change these behaviors there will be little the US can do until vaccines are introduced to lower our death rate. Fortunately such vaccines will become available in the next few days. If

the vaccines are effective it will be shown on the above D(t) graph by the slope D(t)/dt bending over to the right. Hopefully this will occur before the new year.

Finally let us say a few words about masks and social distancing. No presently available facial masks can prevent individual Corona 19 Viruses from passing directly through because of the viruses very small 100 nanometer size. The masks, however, are very effective in preventing water aerosols loaded with Corona viruses from passing through them. Thus a typical mask will be effective at both (1) preventing incoming virus infected aerosols from entering the lungs of an unaffected person wearing a mask and (2) from preventing the spreading of virus infected aerosols from an infected persons into the environment. The worst thing one can do is to wear no masks in large group gatherings such as at sport events, church attendance, political rallies, etc. The fact that countries such as South Korea have such a low number of Corona Virus deaths is their strict adherence to mask wearing at all times. It is the spreading aerosols containing Corona Viruses which represent the major culprit in the spreading of the pandemic throughout the world. The few viruses which pass through masks directly are most likely to be killed by a person's immune system. It is mainly when the viruses enter the lung in large numbers such as on virus infected water droplets of about 1 micron size that cause the damage. Another problem with the Corona Virus is that the production of antibodies can often lead to the side effect where the lung surfaces build up a layer of water making breathing impossible with death coming by suffocation.

The purpose of social distancing is to leave sufficient time for aerosol infected droplets containing Corona Virus coming from an infected individual to evaporate. The effective distance is set at about six feet. To me this seems a bit too low, perhaps a 20 ft distance would be better.

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