Covid-19 Case Study Leveraging High Level Data

Cracking the Code

Which countries in the display below require a prescription for anti-parasitics and which do not – a factor strongly influencing how long it takes to commence Covid-19 treatment, prophylactic or otherwise – as well as whether their disease monitoring systems are to be believed is not yet fully known. However, per the parallel coordinate plot of Fig.1 below any country with noteworthy malaria or scabies presence looks (on the basis of available data... and almost as if those two were "magic" diseases) like it had a fairly easy time dealing with Covid-19 as far as case count and deaths per million on the two rightmost axes are concerned. These typically, and exclusively when the treatment timing factor on the third from leftmost axis is brought into play, cluster at the bottom of case as well as death count per million axes and encompass more than a fifth of the world's population... directly implying that whatever is going on in terms of scabies and/or malaria treatment for those populations has coincidentally eliminated the worst effects of Covid-19, even among some of the globe's poorest nations. Hence, given this de facto prophylaxis, the minimum subset of pharmaceuticals used to treat both malaria and scabies becomes of immediate interest in suppressing further outbreaks within any country. Ideally that would not be necessary, as this phase of the epidemic will clearly burn itself out in heavily affected populations such as those of the US and Europe while vaccines, even if only authorized for emergency use, are widely available in wealthy countries and - amid insistence from those governments on booster injections for their populations – very slowly becoming so elsewhere. Covid-19 numbers for this analysis were taken from "Our World in Data" (https://ourworldindata.org/coronavirus-data-explorer) on December 22nd as well as February 9th of 2021, with all C-Visual Explorer (CVE) images below courtesy of Process Plant Computing Limited (PPCL) in Gerrards Cross, UK. Feel free to pass this on to any medical contacts who might have insight into which countries require a prescription for anti-parasitics or whether their disease monitoring systems are to be believed. Countries included on the far left axis have been numerically coded (to keep people from getting too emotional about this) but a numbered list can be produced if such would be useful. We have effectively discovered what drives differences in Covid-19 propagation at a population level when endemic disease load as well as treatment timing are considered. One rarely finds such a concise solution with high level data, while the relationship between parallel coordinates used to uncover it and regular orthogonal coordinates - i.e., the three dimensional space that we live in and naturally understand - is illustrated by Fig. 2.

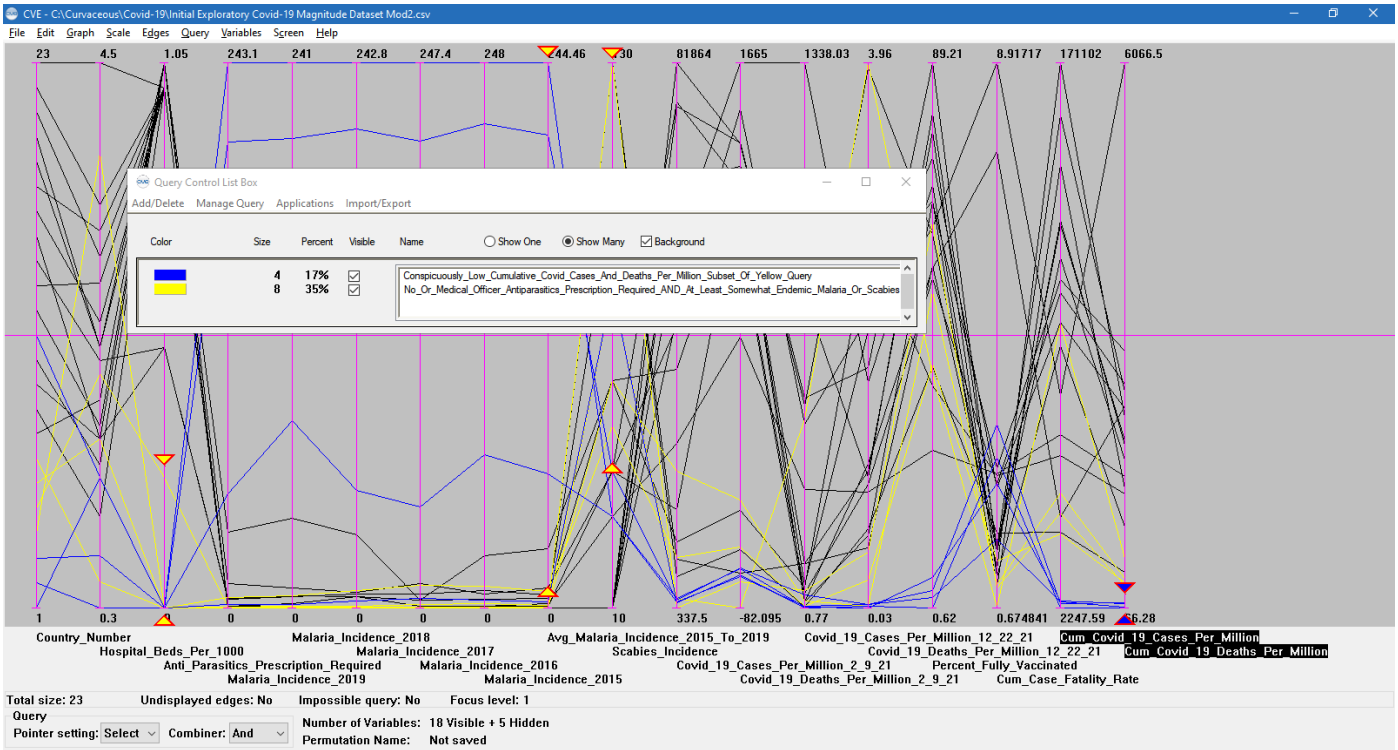

Figure 1: Parallel coordinate plot of open source Covid-19 data… Note that countries are numerically enumerated on the far left axis, while those with significant malaria or scabies AND a low barrier – ranging from low-cost (and quality) street availability to nothing more than a pharmaceutical Medical Officer's prescription – for access to

antiparasitic medications are decorated in yellow. A subset of countries selected by the yellow query is colored in blue to highlight instances of conspicuously low cumulative case and death rates per million (strangely, these have negligibly low vaccination rates as well) and cluster on the lowest reaches of those axes. h

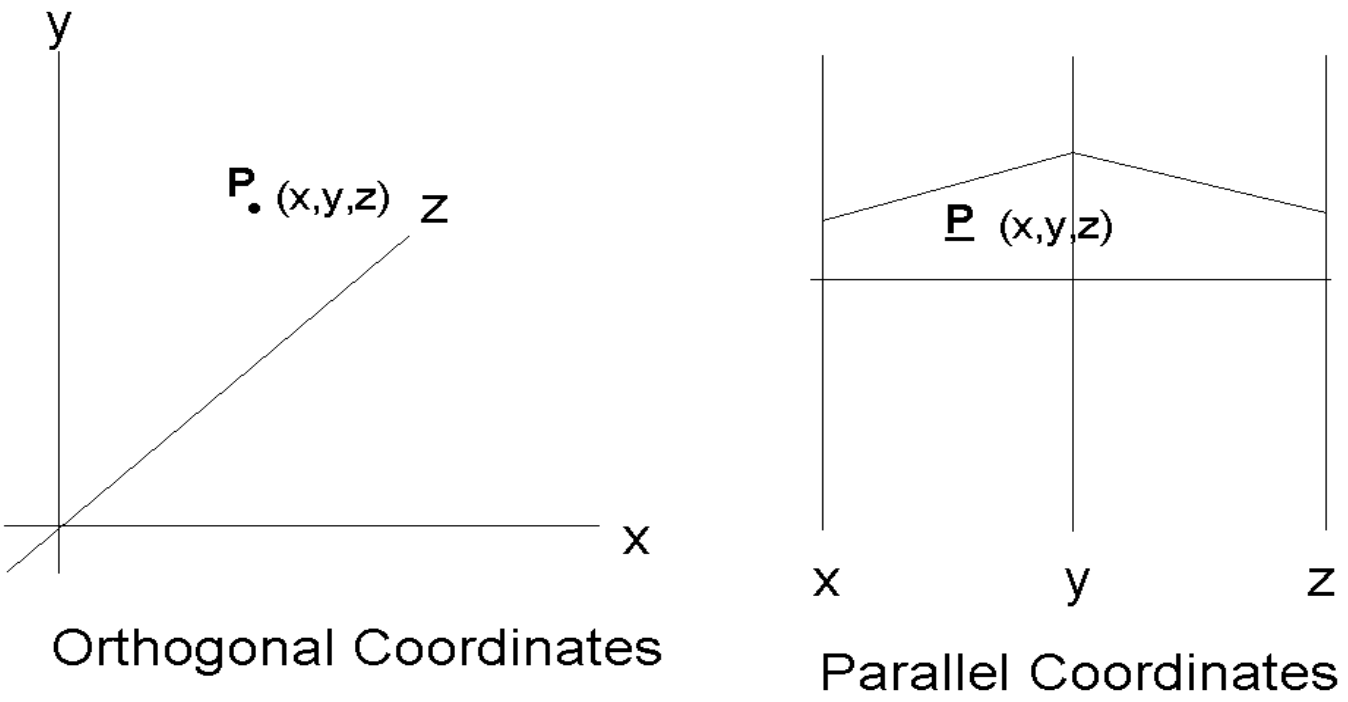

Figure 2: Transform from regular orthogonal to parallel coordinates used in the creation of Fig. 1. Note that any number of dimensions (variables) can be represented in parallel coordinates while the conventional limit, for orthogonal coordinates, is only three.

Commentary

From the above it is clear that two routes – beyond lockdowns, which postpone but do not prevent infections – have been taken to deal with Covid-19. Wealthier countries, or at least those with some means, have pursued vaccines, booster shots extending (if necessary) to a subscription model, and newly developed albeit limited therapeutics as well as supportive care. Poorer nations, well aware that they will be last in line for either vaccines or new therapeutic developments, have unintentionally relied on the happy accident of weak control for off-patent pharmaceuticals already established in-country and to some degree in the hands of their populations. Hence malaria and scabies, along with river blindness (the subject of long-duration WHO elimination programs) in sub-Saharan Africa, have made long shelf-life molecules at least informally available to wide swaths of affected populations. If the family medicine box was empty, moreover, street vendors – who will sell one pill at a time, even if their wares might be entirely counterfeit – are typically cheaper for those who cannot afford the pharmacy route. By sheer luck, or perhaps poetic justice unless one believes Covid-19 was designed this way, some of those readily available (in certain quarters) therapeutics already being taken for parasitic conditions (scabies, malaria, river blindness, etc.) were evidently also effective against Covid-19. Hence the unintentional – and, no doubt, poorly chronicled – therapeutic innovation, which well-funded and medically as well as pharmaceutically controlled countries clearly could not conduct at the pace of a raging pandemic, has effectively blunted Covid-19 in some portions of the globe while minimizing disease burden on corresponding populations. Apparently, and even in the 21st Century, as far as epidemics from novel pathogens are concerned it is still better to be born lucky than either smart or rich. The wise, however, will learn from the lucky (and their data) as it is now clear that pandemic waves can be greatly calmed by the prophylactic use of rather old medications that are well-known in much of the world.

Epilog: Adding Insult to Injury

Taking this one step further using a box query reveals that the lowest seven death rates per million in our data can be perfectly explained by ready availability of anti-parasitics combined with limited hospital capacity, per the green bars of a Pareto plot superimposed on the parallel coordinate plot of Fig.3. Hence, with a sample size encompassing more than a fifth of the world's populating and including some of the globe's poorest nations - who apparently got off light throughout Covid - our answer to "who really killed grandma" (among many others) is apparently rigid and well-controlled medical as well as pharmaceutical systems which precluded the innovation necessary to deal with a raging pandemic. Bringing that hypothesis forward in time by including Covid-19 data (again from "Our World in Data") through September 2nd of 2022 in the line plot of Fig. 4 for seven of the 23 countries within our initial data regrettably confirms that conculusion… as nothing has changed in terms of relative magnitude for Covid death rates per million. Not a happy ending.

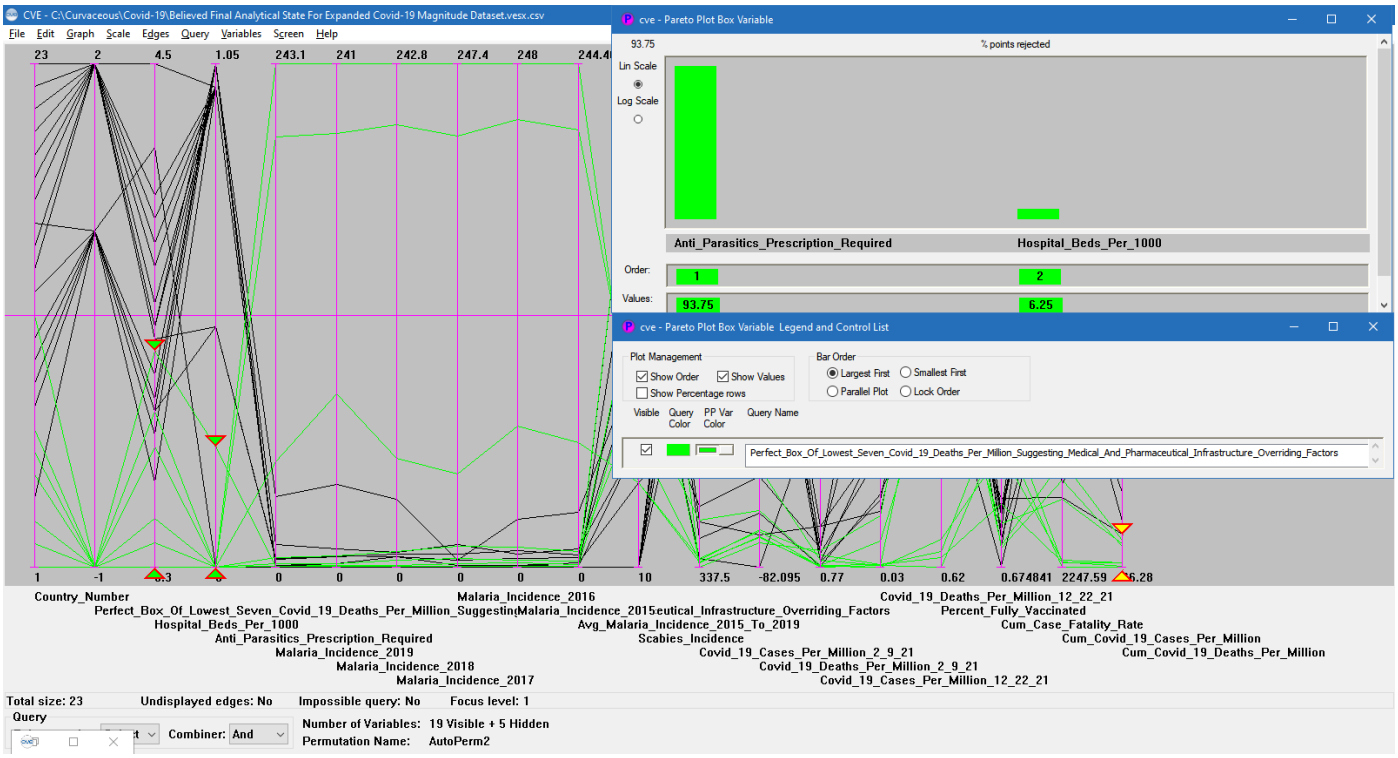

Figure 3: Box query for the lowest seven death rates per million in our initial dataset revealing, per the Pareto plot superimposed, that low death rates – and hence greatly limited pandemic effects on a society – can be predicted as a simple function of ready availability for anti-parasitic medications at a common man's level level combined with limited hospital capacity.

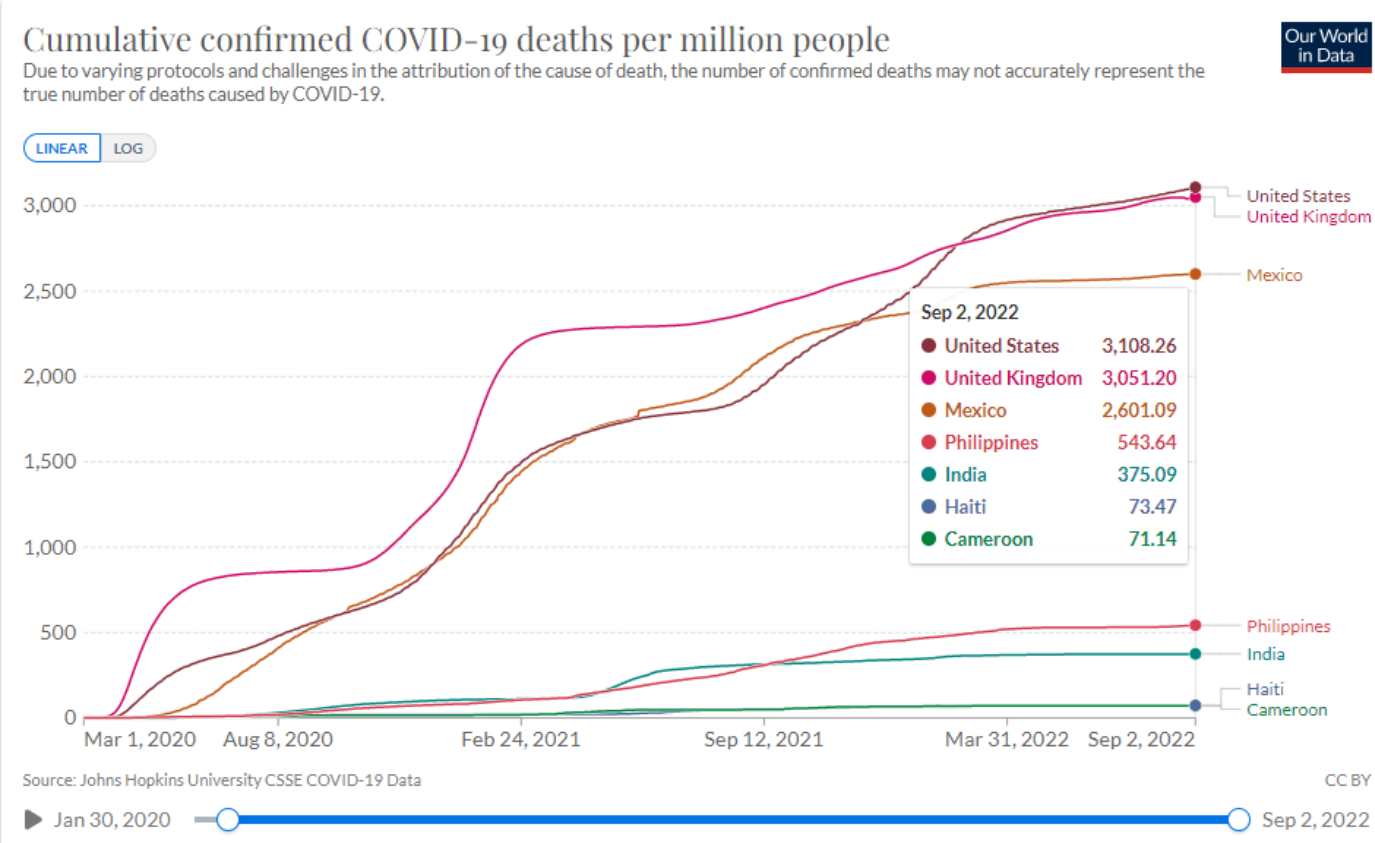

Figure 4: Data update to early September of 2022 for seven of the 23 countries in our initial dataset confirming previous conculsions, as relative magnitude of death rate per million remains unchanged.