International Journal of Vaccine Theory, Practice, and Research

IJVTPR

Were the COVID-19 Shots Good, Bad, or Just Ugly? Dispensing with the Only Reasonable Objection to the Empirical Fact that Each Dose of the COVID-19 Shots, on the Average, Shortened the Lives of Recipients

John W. Oller, Jr., PhD[†], and Daniel Santiago, PharmD[‡]

[†] Professor Emeritus, University of New Mexico, joller@unm.edu (ORCID https://orcid.org/0000-0001-7666-651X)

[‡] Pharmacist in Orlando, Florida **at** sanshou1428@protonmail.com (ORCID https://orcid.org/0000-0001-5975-0592)

Abstract

The COVID-19 gene therapies substantially increased deaths from all-causes. The harmful impact of those therapies compounded the ordinary aging factor accounted for in the Gompertz Law of Mortality in the respective datasets we analyzed in 2022 and 2023. It did so with such strength and consistency that the harmful effects of 1 to 3 doses of the COVID-19 concoctions accounted for 18.6% of the total variance in 31,478 all-cause deaths reported to Public Health England in the 28-week period ending early in 2021 (yielding a huge F-ratio = 5127572, with $p \approx 0$), and also accounted for 13.9% of the total variance in 53,061 all-cause deaths recorded in the US Medicare dataset from the announced "pandemic" in 2020 to the last day of 2022. The ordinary aging-effect summed up in the Gompertz Law accounted for 81.6% of the total reliable variance in the dataset from 28-weeks of 2020-2021 and it accounted for 74.6% of the total reliable variance in the 2020-2022 Medicare dataset. The harmful impact of every dose of COVID-19 "vaccine(s)" in the Medicare dataset ruled out chance at a vanishing $p < 4.3454E{-}34$. While it was confirmed, as suggested by Pantazatos and Seligman, also Stephanie Seneff, that the intervals between the successive doses of COVID-19 injectables in the Medicare dataset cumulatively increased the age of the persons taking each successive dose accounting for 74.6% of the total reliable variance in all-cause deaths for the entire dataset, the harmful impact of the cumulative doses of COVID-19 "vaccine(s)" accounted for an additional 13.9% of the variance in days-left-to-live after the last shot.

Keywords: *abnormal clotting, autoimmune disease, bad and ugly, biowarfare, bioweapons, COVID-19 injectables, COVID-19 vaccines, days left-to-live, experimental gene therapies, intervals between doses, immunological damage, Medicare participants, modified mRNA, number of doses, spike protein, synthetic nucleic acids*

Introduction

Two of our studies (Oller & Santiago, 2022; and Santiago & Oller, 2023) were challenged in the recent publication by Pantazatos and Seligmann (2025) in this journal.[1] The challenges to both of our studies are, at their basis, grounded in the Gompertz Law of Mortality summed up in Figure 1. In a letter that Benjamin Gompertz mailed on June 9, 1825, a little more than 200 years ago, he summed up the fact that those of us who survive as we are growing older, inevitably get increasingly nearer to death and at the same time less able to fight off disease, to recover from injuries, to remove poisons from our bodies, and to go on living with each second, minute, hour, day, week, month, year, and decade of our lives.

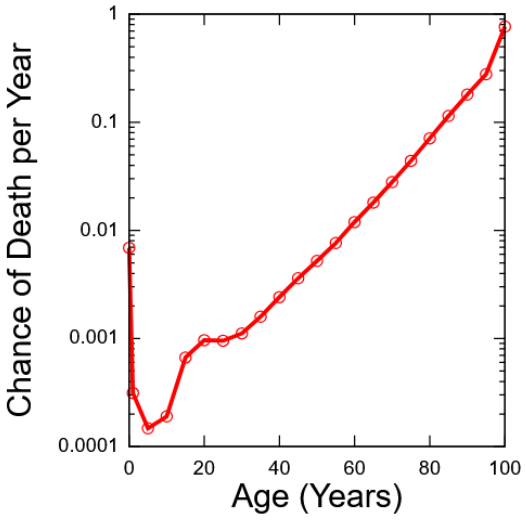

Figure 1. The Gompertz Mortality Law shows that mortality increases exponentially after about age 30 on a predictable logarithmic scale. Licensed under the Creative Commons Attribution-Share Alike 3.0 Unported license. Downloaded from this link on September 12, 2025.

According to the summary in Figure 1, the risks in early childhood decrease until about the age of puberty when they begin to rise across time on an ascending logarithmic scale moving inexorably toward a 100% certainty of death at some age that can only be discovered when it occurs. The Gompertz law suggests a problem for researchers aiming to single out one or more factors contributing to all-cause mortality. The difficulty, as asserted by Pantazatos and Seligmann, boils down to the possibility that increases in rates of death for people who accepted one or more doses of the COVID-19 injectables, mixed in with the Gompertz aging effect, might be explained in part or in whole by the COVID-19 disease, along with the shutdowns, the fear-inducing media campaigns frightening people worldwide into taking the "safe and effective" COVID-19 shots to escape the threat of dying from the supposedly "deadly COVID-19 disease", and if they refused the shots they were threatened with sanctions from governments, health providers, employers, and from all the "sensible and compliant" people who were willingly (or otherwise) taking repeated doses of the "life-saving" and "disease preventing" gene therapies that were being represented as "vaccines". One of the stress factors that invariably came into play was what Shaw (2021) referred to as "fear and loathing" — the kind of social pressure incidentally that might cause ordinary sane people to consider suicide. All such things could only increase deaths by all-causes and might create the illusion that the COVID-19 injections were wreaking havoc and increasing all-cause mortality on a large scale worldwide (e.g., see Beattie, 2021).

We are grateful to Pantazatos and Seligmann (2025) both for their published work in this journal and for the personal communications we exchanged when that work was in progress, and we also want

[1] Our colleague, Stephanie Seneff, recommended something along the lines of the recently generalized algorithmic approach of Steve Kirsch (2023b, 2025) using "normalization" to compute the impact of the shots on all-cause mortality with any dataset. The complexity of any such approach explains why we sought a simpler solution. We present such a solution here fully accounting for the effect of the Gompertz Law of Mortality in both of our key datasets relying on nothing more complex than the central limit theorem. We acknowledge Steve Kirsch with gratitude because it was he who made our 2023 study possible by providing access to the Medicare data we used.

to acknowledge explicitly that Stephanie Seneff, who serves with us on the Editorial Board for the ***IJVTPR***, urged us in personal communications from about April 4, 2023) to re-examine the data especially in our 2023 study with respect to the inevitable time intervals impacting the days-left-to-live for the successive cohorts of vaccine recipients. She was concerned that the ordinary aging was confounded with the harmful impact of the COVID-19 "vaccine(s)" in a way that we had left unaccounted for. Pantazatos, more recently, amplified Seneff's query in personal communications with us and has now, together with Seligmann (2025), published the implied suggestion that we should find a way to account for the aging of our cohorts during the intervals between the cumulative doses of COVID-19 "vaccine(s)".

Of course, as we argued back when, it was already apparent that the impact of aging though undoubtedly present in the crucial comparisons across the cohorts of Medicare participants who received from zero to six shots already showed that each successive dose was harmful enough to overwhelm any effect owed to the Gompertz Law by further diminishing the days-left-to-live-after the last dose. If the shots were good for recipients, the reverse should be happening. If the mainstream narrative were true, the days-left-to-live after the last dose should improve the life-expectancy of recipients on account of the "life-saving" properties of the "safe and effective" COVID-19 "vaccine(s)". If the successive doses of the COVID-19 concoctions were good for recipients, as their proponents were suggesting, the harmful impact of each additional dose that we documented should be reversed in spite of the aging of the recipient population.

It was widely claimed in the media that people at 65 and older were the most vulnerable to the COVID-19 disease and would be the most likely to benefit, not to be harmed, by the COVID-19 "vaccine(s)". We showed all that propaganda to be false in our 2023 paper, but in deference to our esteemed colleagues, we demonstrate without appealing to any statistical reasoning more complex than the central limit theorem (Zabell, 1995; Pólya, 1920; Le Cam, 1986) that the harmful impact of the COVID-19 "vaccine(s)" substantially compounded the ordinary aging factor accounted for in the Gompertz Law. It also did so with such strength and consistency that the differences measured in diminishing days-left-to-live cannot be accounted for fully by the Gompertz effect alone, nor by any impact of the COVID-19 disease, and much less can it be attributed to chance. The harmful impact of the COVID-19 concoctions is consistent, substantial, and statistically significant to a degree that chance can be ruled out altogether as a possible explanation.

Given that readers of this journal — according to statistics for particular articles on ResearchGate are predominantly among the world's elite researchers either pursuing a PhD, engaged in a post-doctoral appointment, or working as a university professor — we are confident that the challenges we address here will have already been thought of by many of them. We first consider the reasons Pantazatos and Seligmann gave for setting aside our 2022 study of the dataset from "trust" hospitals in the UK and then we turn to their recommendations for our analyses of Medicare data published in 2023.

Oller and Santiago (2022)

Pantazatos and Seligmann cited remarks from Alessandria et al. (2025) providing reasons to set aside the findings we reported in 2022 from a dataset concerning vaccinated and unvaccinated patients contributing to all-cause mortality in the hospitals tracked by Public Health England. Alessandria et al. argued that no valid comparisons can be drawn between vaccinated and unvaccinated patients in UK records. Upon closer examination, we will show here that the dataset in question concerning records of all deaths occurring in UK "trust" hospitals over 28 weeks beginning in week 34 of 2021

and ending three months into 2022 was, in fact, almost perfectly well-suited to enable an apples-to-apples comparison isolating almost perfectly the harmful contribution of 1 to 3 shots from Pfizer, Moderna, or AstraZeneca.

The design enabled the measurement and partialling out of relaible variance strictly attributable to the Gompertz Law of Mortality. The dataset summed up in Table 1 was collected well after the roll out of the COVID-19 "vaccine(s)" which began in the second week of December 2020. The dataset summed up in Table 1 included all deaths reported to Public Health England from their hospital "trusts" during the 28 weeks in question. We regard this dataset to be especially trustworthy because dead bodies are not easy to overlook in a hospital setting and are unlikely to be counted more than once.

Table 1
Deaths Reported for Weeks 34-52 (excluding 51) in 2021 and Weeks 1-12 of 2022 to Public Health England for Persons Who Died with COVID-19

Age-groups	Unlinked*	Deaths with No C-19 Doses	Deaths after 1 to 3 C-19 Doses	All- Cause Deaths**
<18	4	38†	8†	50
18-29	3	85†	67†	155
30-39	7	231†	176†	414
40-49	19	380	445	844
50-59	36	774	1237	2047
60-69	47	1013	2865	3925
70-79	39	1120	6160	7319
≥ 80	57	1612	15055	16724
Totals	212	5253	26013	31478

*Individuals whose NHS [national health service] numbers were unavailable to link to the NIMS [National Immunization Management System].
** Number of deaths of people who had had a positive test result for COVID-19 and either died within 60 days of the first positive test or have COVID-19 mentioned on their death certificate.
† Given that there were more deaths among the unvaccinated people in the younger age-groups marked with a dagger in columns 3 and 4, one reviewer suggested that some readers might suppose that younger people received some protection against dying with COVID-19. That explanation is ruled out, however, given that during the 28 weeks in question, younger cohorts were far less likely to take the shots (McIntyre & Kirk, 2021) so there were many more unvaccinated individuals in the younger age-groups dying from other causes. Keep in mind that all of them had COVID-19.

Although we did not note the fact in our published paper of 2022, it can now be explained with crystal clarity that the comparison afforded by the records published by Public Health England provide an almost perfect experimental design for isolating the impact of COVID-19 injections from all the other causes of the 31,478 deaths that occurred during the critical 28-week period. In the Public Health England dataset, the stream of 5,253 unvaccinated patients and the stream of 26,013 vaccinated patients were arranged in 8 age-groups with distinct age ranging from less than 18 years up to 80 years and older. This arrangement, as shown in Table 1, makes it possible to eliminate whatever stress might be brought on by the COVID-19 disease because both groups were diagnosed with that disease equally either 60 days before, or at the time of their death, according to

Table 2
Correlations and Coefficients of Determination for Deaths of Unvaccinated Patients, Deaths of Vaccinated Patients, and All-Cause Deaths Across 8 Age-Groups During 28 Weeks of Public Health England Records for COVID-19 Vaccinations, Hospitalizations, and Deaths†

Correlations (above the diagonal) and Coefficients of Determination (below	Unvaccinated Deaths	Vaccinated Deaths	All-Cause Deaths
Unvaccinated Deaths	1.000000	0.881330	0.903350
Vaccinated Deaths	0.776750	1.000000	0.998810
All-Cause Deaths	0.816041	0.997620	1.000000

† Given the fact that the "Unlinked" cases in Table 1 have no bearing on the outcomes of the important questions addressed in this paper, we omit them from this table.

the death certificate provided. That fact is that the distribution of unvaccinated and vaccinated patients across the same 8 age-groups — as seen in columns 3 and 4 of Table 1 — makes it possible to isolate the impact on all-cause mortality of the 1 to 3 shots received by the vaccinated patients. This can be done with the correlations and coefficients of determination reported in Table 2 for the three critical variables of Table 1. The pairs of matching correlations with their respective coefficients of determination are given in Table 2.

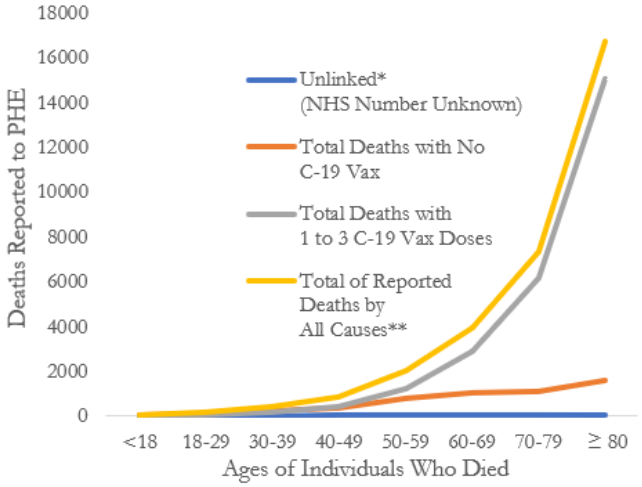

Figure 2. Deaths within 60 Days of a Positive COVID-19 Test: Correlation of Deaths with 1-3 C-19 Vaccine Doses with Deaths by All Causes, $r = 0.99881$, Variance Overlap, $r^2 = 0.99762$.

In our earlier publication, we graphed the almost perfect correlation of 0.998810 between the yellow and gray lines of Figure 2 — that is, between the distribution across the age-groups of all-cause deaths (the last column at the right of Table 1) and the corresponding distribution of deaths in the people who took 1 to 3 of the COVID-19 shots (the next to last column reading left to right in Table 1). Given that correlation it follows by simple algebra that 99.762% of the total variance in all-cause mortality is shared by the two distributions displayed in the yellow and gray lines of Figure 2. The reasoning for this necessary mathematical inference — relying on nothing more than proofs of the central limit theorem — is that random variability in either one of any pair of parametric distributions of any number of data points above about 25 cannot be expected to correlate at a level significantly above zero. The reason is that the agreement across pairs of variables with respect to their tendency to differ proportionately from their respective means cannot consistently occur by chance. This is true when just a few tens of data points are involved, not to mention thousands as in the 2022 Public Health England dataset relied on for Tables 1 and 2, and for drawing the lines of Figure 2.

Random variability in a pair of chaotic distributions, as shown in the central limit theorem, must tend to cancel out any agreement to be measured by the Pearson product-moment correlation. It follows by irrefragable mathematical logic, that the square of any correlation between pairs of variables representing more than a few data-points must be taken as a measure of reliable variance in both of the members of the pair. Therefore, at a minimum, of the 100% of variance in the Public Health England dataset at issue in our 2022 study, at least 99.762% (center column, bottom row, Table 2) of that variance must be judged reliable (not attributable to chance) leaving a maximum of 0.238% of the total variance in the dataset — that is, 100% minus that 99.762% — as an estimate of the upper bound on an error term of unreliable variance, or unexplained variance, in the entire dataset.

It might be objected that the fact that 82.639% of the 31,478 patients who died allegedly with COVID-19 disease consisted of the 26,013 patients who took 1 to 3 of the COVID-19 shots. Therefore, the nearly perfect correlation between the distributions shown as the yellow and gray lines in Figure 2 can be largely explained by the fact that the yellow line mainly consists of the cases reflected in the gray line distribution. But that objection is absurd because deaths of vaccinated

patients must be counted in the all-cause column along with those of the unvaccinated and the "unlinked" patients (the latter lacking any record of whether they were or were not vaccinated). It is logically impossible (because it would lead to a mathematical absurdity) to dismiss the near perfect correlation of 0.99881 (with an $r^2 = 0.99762$) as an artefact. The shots are supposed to make it less likely for people to be infected with, much less to die with, the COVID-19 disease, and yet all 26,013 of the patients who received 1 to 3 shots died right along with the 5,253 patients who did not receive any of the shots. The "Unlinked" distribution (column 2 of Table 1) represented in the almost flat blue line of Figure 2, should be disregarded entirely except for the fact that it also contributes somewhat to the all-cause mortality distribution shown in the yellow line. The other factor contributing to that yellow line is the orange one showing the distribution of unvaccinated patients who died in the same UK hospitals during the same 28-week time frame. All along the way, it must be borne in mind that all of the patients in the entire dataset were diagnosed with COVID-19 disease either before or at the time of their deaths. Therefore, the playing field was level with respect to that variable and whatever additional stresses it brought with it.

To account for the rest of the reliable variance in the entire Public Health England dataset, the three fully relevant Pearson product-moment correlations are given above the diagonal in Table 2 with their crucial coefficients of determination below the diagonal. The unitary values at 1.000, shown on the diagonal, represent both the perfect correlation of each of the respective variables with itself, and the fact that the coefficient of determination for such perfect correlations must also be 1.000. Every variable in the table must correlate perfectly and must share all of its variance with itself. More importantly, from an algebraic perspective, the diagonal entries show the peculiar fact that the absolute upper limit — regardless of the positive or negative sign showing the direction of any given correlation and any given amount of variance overlap — cannot logically exceed 100%. With that in mind, we have the necessary data in hand to explicitly address and actually produce an empirically-based estimate of the amount of variance in the several distributions attributable to the Gompertz Law of Mortality, as contrasted with the amount of variance that is left over to be accounted for independently by the contribution to the reliable variance in all-cause mortality of the 1 to 3 COVID-19 shots.

To get an approximate estimate for the extent to which the increasing age of the various samples from the total patient population is contributing to their deaths — that is to measure the effect of the Gompertz Law of Mortality — we can consider the variance shared between unvaccinated and vaccinated patients as represented in the first cell below the diagonal in Table 2. We can take the overlapping variance at 77.675% of those two distributions as a direct empirical measure of the lower limit on the tendency for deaths in both distributions to increase more or less in step with the succession of increasing age-groups. At least that much variance, can be attributed to aging across the 8 groups according to the Gompertz Law applied indifferently and equally to both distributions independently of any contribution, good or bad, from the 1 to 3 doses of COVID-19 "vaccine(s)". Given that all those patients in both unvaccinated and vaccinated distributions died with the COVID-19 disease, any contribution of that condition must be distributed equally across both the vaccinated and unvaccinated , can also be ruled out. Therefore, at least the 77.675% of variance that is shared across the two distributions in question by both the vaccinated and unvaccinated patients who died with COVID-disease [2] (the gray and orange lines) must be attributed to the Gompertz law.

[2] For the purposes of our 2022 study, we can acknowledge and yet must set aside, the fact that the tests used to determine any COVID-19 infections were practically useless (see Franchi, 2025). When a pimple or drowning can equally be designated as "COVID-19 infection", the diagnosis itself becomes problematic. Nevertheless, the fact remains that the 1 to 3 COVID-19 shots taken by the 26,013 people who received those shots and also died with a COVID-19

Alessandria et al. might object to the reasoning of the prior paragraph because of the fact that there were 26,031 patients in the vaccinated group who died with the COVID-19 diagnosis whereas only 5,253 patients who were unvaccinated also died with the COVID-19 diagnosis — making the former group 4.95 times larger than the latter. But that difference in total sample sizes has no impact whatsoever on the variance shared (the coefficient of determination) between the two distributions. It seems that some researchers have tried to explain away the harmful impact of the COVID-19 "vaccine(s)" by the fact that the vast majority of the UK population had received at least 1 of the shots, while only a much smaller minority remained completely unvaccinated. But that fact has no bearing on the distribution of deaths in the unvaccinated and vaccinated age-groups in the Public Health England dataset at issue (or any other comparison of samples with, say, more than about 3 people in the smallest age cohort). As in any similar matrix, the Pearson product-moment correlations in Table 2 and their corresponding coefficients of determination, are quite independent of the unequal sample sizes of the patients who took or refused the COVID-19 shots. The correlations depend exclusively on the algebraic tendency for the correlated pairs of age-groups across the unvaccinated and vaccinated distributions to differ proportionately from their respective means. If they vary from their means in the same direction, the tendency will yield a positive correlation; if they vary in opposite directions above and below their respective means, the correlation will be negative. The variability in question, however, is algebraically independent of the difference in the total sample-size of the pair of distributions in question.

It follows that the portion of the total reliable variance in the Public Health England dataset (measured at 99.672%) that must be attributed to the Gompertz effect cannot be less than the 77.675% of the total reliable variance that is shared by the distribution of deaths in the unvaccinated and vaccinated streams. Because the only factor that the pair of distributions represented in the orange and gray lines of Figure 2 have in common is the advancing age in the respective age-groups, the variance they share must be attributed to nothing but the Gompertz Law. The "pivot member" in that pair, it can be argued, is the one in which the 1 to 3 shots have no impact, namely the distribution of the unvaccinated stream. However, a slightly more focused measure of variance attributable to the Gompertz Law can be found in the shared variance of 81.604% between the gray all-cause mortality distribution and the orange unvaccinated distribution. From this measure we can set the upper bound on the contribution of the Gompertz Law to all-cause mortality and thus to the whole dataset. The reason this measure is an upper bound is that it reflects the impact of the Gompertz Law on the whole dataset, not just one pair of the three streams of aging and dying patients (unvaccinated, vaccinated, and "unlinked" — columns 4, 3, and 1, respectively, in Table 1) contributing to it. Moreover, if we subtract that Gompertz law variance (81.604%) from the total reliable variance in all-cause mortality (99.762%), what is left can only be attributed to the bad impact of the COVID-19 shots — that is 99.762% minus 81.604% is equal to 18.158%. The latter can be taken as the lower bound on the bad impact of the COVID-19 shots whereas 99.762% minus the shared variance at 77.675% between the gray and orange lines (excluding any contribution of the blue line) which comes to 22.087% can be taken as the upper limit on the bad impact of the COVID-19 shots. Therefore, the Public Health England dataset shows the COVID-19 shots to be extremely harmful.

---

disease diagnosis, makes it clear that the likelihood they would die during their stay in a UK hospital during the 28-week period in question was increased by the 1 to 3 shots. It may be that the COVID-19 diagnosis is irrelevant, but this cannot be directly measured or determined from the Public Health England dataset in question in our 2022 study.

Is the harmfulness of the COVID-19 shots statistically significant? Given the unexplained variance (the error term) for all-cause mortality in the total dataset at 100% minus the 99.762% of reliable variance shared by all-cause mortality (the yellow line) and the distribution of vaccinated patients (the gray line) which difference comes to 0.238%, it follows that the isolated part of the total variance attributable to the COVID-19 shots at 18.1587% yields an F-ratio of 77.841 before distributing the error term (the unexplained variance) over the 31,478/2 degrees of freedom in the large dataset such that the F-ratio goes to 5127572.3 yielding a *p*-value that is for all intents and purposes a practical zero. It is obviously vanishingly small. There is no way the effect-size of the negative impact of COVID-19 "vaccine(s)" that we have found in the Public Health England dataset could possibly occur by chance.

We might not have sorted all this out, nor zeroed in on the nearly perfect set-up of the Public Health England comparison between unvaccinated and vaccinated patients during the 28-week period at issue if it had not been for the recent prodding of Pantazatos and Seligmann (2025) in response to our urging them to include a summary of the plethora of studies looking at longer time segments than the weeks or months they examined in their more "granular" 2025 study. All the independent studies that we know of examining the crucial time segments as explained above in our Figure 2, including our own studies, have resoundingly found the COVID-19 shots to have been universally harmful. Nevertheless, we are grateful for the challenges to both of our studies of all-cause mortality leading to the improved analyses reported in this paper. Our editorial request for them to include studies of all-cause mortality over longer time frames, coming from our Senior Editor, Christopher A. Shaw, evidently led to Pantazatos and Seligmann (2025) to take issue with two of our own research studies which appeared in the list of studies we asked them to account for in their report. Having dealt with their comments on our 2022 study, we turn next to their remarks about our 2023 study.

US Medicare Data Starting with the "Pandemic" and Ending January 1, 2023

The main challenge to our 2023 study, concerned, at its basis, the Gompertz Law. Pantazatos and Seligmann (2025) pointed out the fact that we did not explicitly account for the necessary diminution of days-left-to-live after the last dose of COVID-19 "vaccine" guaranteed by the time intervals from the start of the "pandemic" up to the first dose, and from the first to the second dose, and so on up to the last dose.

Pantazatos and Seligmann suggested that the diminishing days-left-to-live after the last COVID-19 shot received by the US Medicare participants in our 2023 study might be explained in part, or altogether, by the accumulating intervals between the shots. Those intervals, as also pointed out to us in personal communications by Stephanie Seneff, guarantee that the subsamples later in the succession of shots must be older, on the average, by the sum of the cumulating intervals up to the last shot received. That is to say, by the Gompertz law, the older cohorts associated with the succession of zero to six COVID-19 shots would be apt to die sooner, all else being equal, on account of their advancing age. There might be, in an improved analysis taking account of the Pantazatos and Seligmann (2025) suggestion, no need to infer any harmful contribution from the COVID-19 shots received by the succession of cohorts. Perhaps the Gompertz Law would account for all the variance in days-left-to-live after the last dose of vaccine received. In what follows, we take to heart the suggestion from these colleagues (Pantazatos and Seligmann) which only seconded and re-inforced an earlier recommendation by Seneff in which she was joined by other members of the Editorial Board later on, including Chris Shaw our Senior Editor, and we re-examine in what

follows here the mortality statistics (see the Supplementary Files containing the Medicare dataset from Kirsch, 2023c) that we first analyzed in our 2023 publication.

MORTALITY IN US MEDICARE SYSTEM UP TO THE END OF 2022

Pantaztos and Seligmann (2025) zeroed in on the only reasonable basis for objecting to the use of all-cause mortality statistics in the manner applied by Santiago and Oller (2023). Burying their lead argument behind what appears to us to have been a simple oversight in their reading of our paper (the part of their quoted text that we italicize in what follows), they asserted that our analysis

> claiming the shots significantly shortened the lifespan of the vast majority of Medicare recipients over 65 [was] confounded by *selection bias (i.e., restricting analyses to recipients who died before January 1, 2023)* [our italics] and failure to adjust for the time that elapsed between [the] unvaccinated start date and [the] successive vaccination/booster dates (p. 1597).

The italicized part of their complaint involves an incomplete reading our paper. We did not in fact arbitrarily "restrict our analyses to Medicare participants who died before January 1, 2023",[3] but the Medicare death records that fell into the hands of Steve Kirsch (2023c) on March 22, 2023 were only verifiably complete and accurate up to the end of 2022 which we verified by comparing Our World in Data death records with those of the Centers for Disease Control and Prevention, better known by the first three initials, CDC.[4] The restriction complained about by Oantazatos and Seligmann was imposed by the records to which we had access.

We had to focus our analyses on the only reliable data to which we had access. We also published all of it, incidentally, in the Supplementary Files accessible in the ***IJVTPR***. The question we asked was fairly simple: did the COVID-19 injections improve the health and longevity of the Medicare participants receiving them or not? Putting the question another way, was it a good idea for the people in the system who were mostly 65 years and older, to accept one or all of the CDC recommended doses of COVID-19 "vaccine(s), or to reject them? In fact, we defined seven random samples (the randomness of which we will prove in this present writing) drawn from the US Medicare population for which we computed our comparisons of days-left-to-live after (1) only being exposed to the SARS-CoV-2 virus sometime near the middle of the so-called "pandemic" but refusing the first and all subsequent COVID-19 "vaccine(s)", or (2) accepting the additional

---

[3] We completed the first draft of our 2023 analysis of that data-set by March 27, 2023 and sent it for review to several members of our Editorial Board and other peer-reviewers including (Stephanie Seneff, PhD; Daniel Broudy, PhD; Alexandra Latypova; Christopher A. Shaw, PhD; Bruce Rapley, PhD; Gerry Brady, MBBS; Mary Holland, MA, JD; Klaus Steger, PhD; and Robyn Cosford, PhD). The last of the reviews came to us by April 4, 2022. We revised and published the paper on April 5.

[4] Many of the people in the larger population of Medicare participants who were sampled in the records that fell into the hands of Steve Kirsch in early February 2023 (2023c, 2023d) and which are fully available in the published Supplementary Files associated with our 2023 paper are still alive, and some number of those people who survived beyond the end of 2022, no doubt, have died since. However, the Medicare records were judged to be reliable only up to about January 1, 2023. We noted all this explicitly in our 2023 publication in footnote 19 that carries over from page 874 to page 875. We wrote: "The early termination of our reckoning to compare the three time periods of the two-phase experiment was on account of the lag between death and reporting to the CDC. We were able to check the weekly deaths recorded in two distinct databases on a week-by-week basis and the records we are using in this report from the CDC seem to be reliable. The two data sources, CDC and Our World in Data, correlated at 0.999999798. The total difference in reporting showed 331 more deaths in the 12,994,778 deaths recorded by the CDC than by Our World in Data." In other words, the difference in the two data sets was negligible.

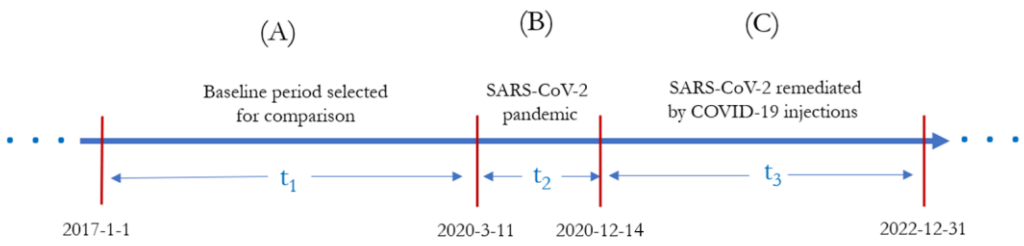

Figure 3. (A) t_1 begins January 1, 2017 and ends with the announced "pandemic" on March 11, 2020, and provides the baseline of all-cause mortality against which to compare the "pandemic" during t_2 with the rollout of COVID-19 "vaccines" during t_3 beginning in the USA. Reproduced from Figure 4 in Santiago & Oller (2023).

challenge (or benefit) of one dose, (3) two doses, (4) three doses, (5) four doses, (6) five doses, (7) or up to six doses of one or more of the COVID-19 "vaccine(s).

Irrespective of the lapses of time between shots, we had already proved statistically that all-cause mortality after the roll out of the COVID-19 concoctions, segment t_3, labeled C in Figure 3, did not even begin to move the index of all-cause mortality in the direction of the baseline at t_1, labeled A in that figure. In fact, all-cause mortality had markedly increased during the time of the "pandemic" — t_2 of Figure 3, labeled B. On the contrary, our results from Our World in Data and the CDC showed that all-cause mortality took a significant upward turn from t_2 showing conclusively that the COVID-19 shots made things worse rather than better. We summed up that result in Figure 4.

In those comparisons the Gompertz law could have no impact and the evident contribution of the COVID-19 "vaccine(s)" was not as predicted by the mainstream media. It did not return the US population to normalcy, i.e., to the pre-pandemic level of all-cause mortality. Rather the "vaccine(s)" moved the country's all-cause mortality index even higher after the roll out up to the end of 2022 as shown in Figures 3 and 4.

With all that as background, returning to the second part of the Pantazatos and Seligmann argument, they are, of course, correct in asserting that there is a necessary time interval that must elapse between whatever challenges (or benefits) the "pandemic" presented as they were followed by the impact of each of the successive doses of COVID-19 "vaccine(s)" in a necessary succession of time intervals. According to their understanding, we should have, statistically adjusted, in some unspecified manner — "for the time that elapsed between unvaccinated start date and successive vaccination/booster dates" in our summary of days-left-to-live for the respective cohorts shown in Figure 5.

The rock-solid logical basis underlying the second part of their objection quoted above — namely, that we failed to "adjust for the time that elapsed between [the] unvaccinated start date and successive vaccination/booster dates" (2025, p. 1597) — is expressed in the Gompertz Law of Mortality summed up above in Figure 1. They are correct, of course, in arguing that the Medicare participants who opted out of one of the successive cohorts of COVID-19 "vaccine" recipients by refusing the next dose of COVID-19 "vaccine" must be impacted to some degree by the increase in their own ages across the successive intervals of time. The Gompertz Law of Mortality guarantees that the intervals between the events defining our seven subsamples of the Connecticut Medicare population guarantee that the whole Medicare population from which each successive sample of participants is drawn must be younger, on the average, than the next sample in the succession from cohort 1 to 6 (in Figure 5).

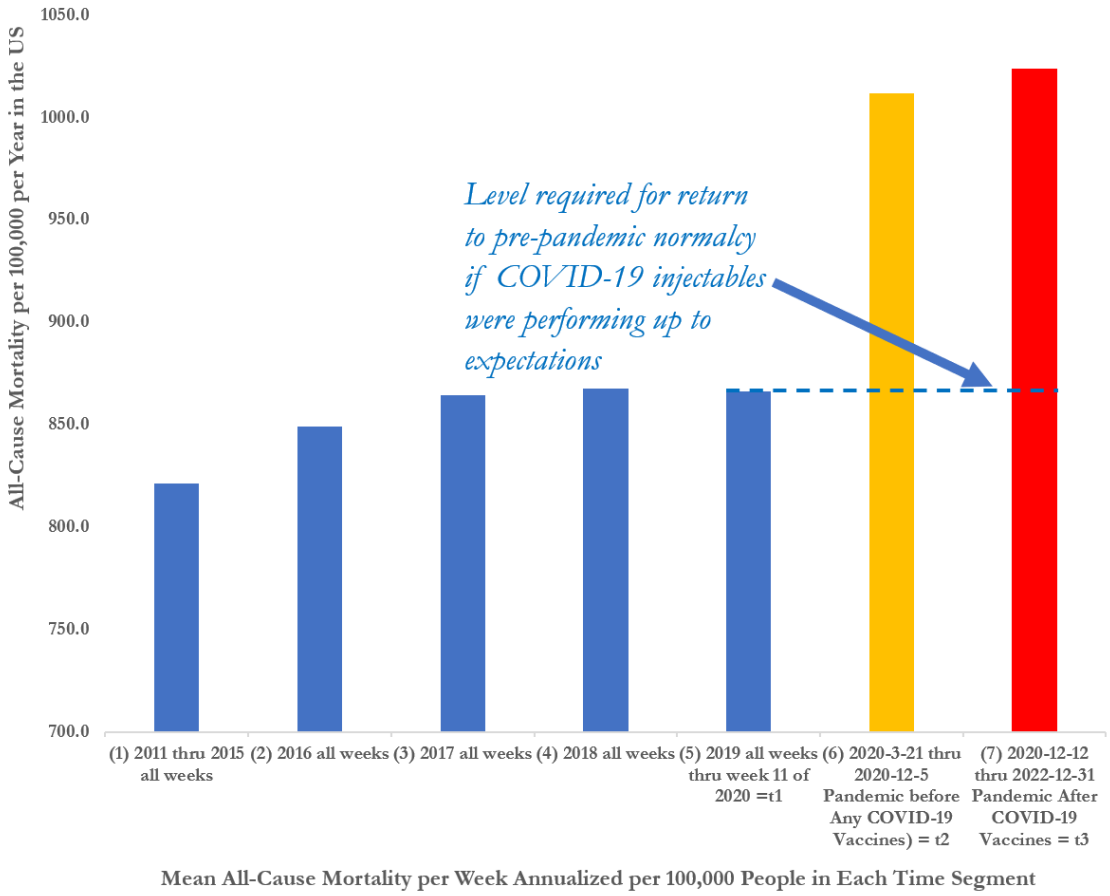

Figure 4. US all-cause mortality per 100,000 on the Y-axis with time segments leading up to and including the pandemic experiment on the X-axis. Blue bars show all-cause mortality for (1) 2011-2015, (2) 2016, (3) 2017, (4) 2018, (5) 2019 through the 11 weeks of 2020 up to the COVID-19 pandemic, (6) the official time of the pandemic up to the roll out of the vaccines, and (7) shows the period combining any circulating SARS-CoV-2 variants with the injectables.

To address that objection adequately requires a determination of the actual time intervals during which each sample was drawn from the population of Medicare participants at hand. Those cumulative intervals are given in Table 3. In column 1, the 7 cohorts are listed and defined by the number of doses of COVID-19-"vaccine" they received. In columns 2, and 3 are the start and end dates of the first dose of each interval when the dose in question was made available and in column 4 the number of days in the sum of cumulating intervals appears. In column 5 we give the sample size for each of the cohorts and then in columns 6 through 11 we list, respectively, the mean age-at-death of the cohort, the standard deviation of the age-at-death, the variance, range in years for the cohort in question followed by days-left-to-live after the last dose, and days-left-to-live after the first dose. In Figure 5 we focused attention on days-left-to-live after the last dose. Our reasoning was based on the often-repeated mantras of the mainstream narrative that the shots were "safe and effective", "life-saving", "disease preventing", would return the "nation to normalcy", would "strengthen immunity", were essential to our achieving "herd immunity", and so forth. The bottom-line is that if 1 dose is good, 2 ought to be better, and so forth for the whole series. If more doses are better than fewer, starting the clock after the final life-giving health-ensuring injection, makes sense. That is to say, if the shots were increasingly helpful rather than harmful as Medicare

Table 3
Descriptive Statistics to Test the Possibility that Ordinary Aging Owed to the Necessary Intervals Between COVID-19 Shots Could Account for the Diminishing Days-Left-to-Live with Each Additional Dose (Our Figure 4 in this Paper) Is definitively Ruled Out by the Connecticut Medicare Records

Dose Group	Start Interval	End Interval	Cumulative Interval in Days	Size of Subsample	Mean Age-at-death	SD of Age-at-death	Variance in Age-at-death	Range in Years	Days to Live After Last Vax	Days to Live After First Vax
1 = 0 Doses	2020-03-11	2020-12-18	283	23319	82.020 [5]	9.586	91.897	46.000	423.940	423.940
2 = 1 Dose	2020-12-18	2021-01-08	305	7455	83.253	9.302	86.535	45.000	204.690	204.690
3 = 2 Doses	2021-01-08	2021-01-12	310	13661†	83.966	8.993	80.880	49.000	247.308	299.920
4 = 3 Doses	2021-01-12	2021-09-30	572	7240	83.939	8.822	77.830	46.000	198.863	479.201
5 = 4 Doses	2021-09-30	2021-11-13	617	1182	84.785 [5]	8.797	77.387	40.000	112.233	589.910
6 = 5 Doses	2021-11-13	2022-01-06	672	197	84.970 [5]	8.980	80.649	38.000	57.697	654.071
7 = 6 Doses	2022-01-06	2022-11-07	978	7	84.750 [5]	9.677	93.643	26.000	34.125	631.625

† This number of recipients should not logically be smaller than the number of people in the very next cohort. If the records are reasonably accurate and complete the successive cohorts can diminish in size but they should not almost double in size as seems to have happened from cohort 2 to 3. The latter violation of algebraic reasoning can be explained in either or both of two ways: people listed as taking dose 2 may not have been counted among those who took the does 1 because they may have taken a shot at Walgreens, CVS, or some other pharmacy that was not entered into the Medicare records. Or, it is possible that some of the Medicare participants who are institutionalized may have been promoted to a higher dose group by officials seeking to qualify them as "fully vaccinated" in order to collect incentivizing compensation from the government, or manufacturers of the shots (see Schwalbe et al., 2022; Erdem et al., 2023; and Lyons-Weiler & Thomas, 2023). All that being taken into consideration, the figures in Table 3 appear to be more or less as we should expect.

[5] One reviewer pointed out that the mean age of the completely unvaccinated group is the youngest in column 6. Contrasting the value of 82.02 years with mean ages above 84.7 for all those Medicare participants who took 4, 5, or 6 doses of the "vaccine(s)" suggests the possibility that the "vaccine(s)" may have extended the lives of recipients. However, to make that argument is to disregard the cumulative intervals between the shots as shown in column 4. It requires downplaying the huge impact of the Gompertz Law which we have measured in this study at approximately 82% of the total reliable variance in the whole dataset. The succession of intervals (978 days divided by 365.25 amounts to 2.677 years which added to 82.02 comes to 84.69. However, when the greater variability of the data summarized in column 10 — days-to-live-after the last shot — is taken into consideration, any possible positive effect of the COVID-19 "vaccine(s)" utterly vanishes. The inevitable conclusion of our work, together with the recent findings reported by Kirsch (2023a) concerning the much larger dataset of 18 million Japanese citizens who obediently took multiple doses of the COVID-19 "vaccine(s)" vaporizes any remaining shred of hope that the COVID-19 "vaccine(s)" were anything but harmful.

participants accumulated more and more of the benefits by getting more and more of the COVID-19 "vaccine" fluids injected from the syringe into the needle and under their own skins, the line in Figure 5 should be sloping upward from left to right rather than downward. Also the days-left-to-live after the last shot defining the respective cohorts should be increasing with each dose rather than decreasing. But the reverse was happening.

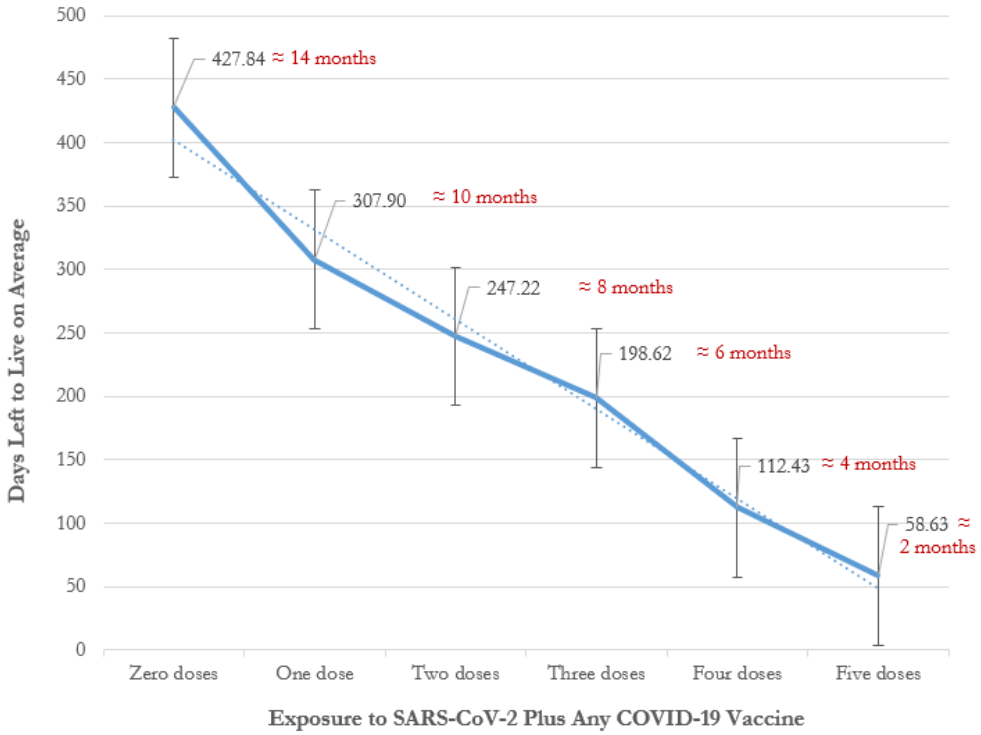

Figure 5. Average number of days left-to-live for persons who died before January 1, 2023 and who were exposed to both the SARS-CoV-2 virus and stresses of the pandemic (t_2) plus whatever number of doses of the COVID-19 vaccine they received during t_3.

Additionally, the fact that the Medicare population was becoming increasingly wary with each new dose is plain enough in column 5. There the successive subsamples of people willing to take yet another dose, in the seemingly unending series recommended by the CDC, keeps dwindling. On the one hand, it might be observed that if the shots are killing Medicare participants and if this is becoming known to the general population, those who persist in taking another dose right up to the last one offered before the end of 2022 must have been particularly strong to be able to withstand the challenges (some readers may think here of the so-called "healthy vaccinee bias"), and/or stubborn and unaware of their compatriots in the Medicare system who were dying off. On the other hand, if the shots are good for the recipients, making them stronger etc., it is noteworthy that the people do not seem to be increasingly in favor of taking the next dose in the sequence. If they were, the number of people lining up to take the next life-saving shot ought not to diminish across the successive cohorts as it does in column 5 of Table 3 — except for the algebraic anomaly that occurs between dose 1 and dose 2 that is discussed in the note at the bottom of that table.

Given that the determining factor placing any individual in one of the 7 ranked groups of Table 3 is accepting or rejecting the next dose of some one of the COVID-19 "vaccine(s)", it follows by strict logic that the appearance of any individual in a particular sample — that is, in any one of the 7 groups — is a random assignment at the time it occurs. For reasons already noted, the "election" to

be in a particular sample or subsample of the population at large has nothing to do with age, race, gender, socio-economic status, or any other demographic other than being alive and either getting a particular numbered dose of COVID-19 "vaccine", or not. The mean age-at-death (column 6 in Table 3) and the measures of variability in that value (in columns 7, 8, and 9) in any such random sample — barring any biasing factor that would falsely elevate some Medicare participants who got, say, only 1 dose, to a group supposedly receiving some higher numbered dose — should by virtue of the central limit theorem (Pólya, 1920; Le Cam, 1986) be an unbiased estimate approximating the mean and variability of the larger Medicare population.

The variance in the population at large should remain stable across the estimates based on the successive cohorts on account of the fact that 97.6% of the persons in the Medicare population are the very same people from one year to the next (this, according to the US Census Bureau's Population Clock as cited in our 2023 paper, page 867). Therefore, the sample drawn from the population at any one of the cumulative time intervals (column 4) should correlate with the increasing mean ages across the successive cohorts according to the Gompertz Law. Only the mean age-at-death should vary and it should do so approximately in step with the time intervals between the respective drawings of each successive sample. By contrast the other descriptive statistics, the standard deviations, variances, and ranges should be approximately the same across the rows as indeed they are in Table 3 columns 7, 8, and 9.

It is also germane to note that for the 0-dose sample, it would not be unreasonable to suppose that they had been exposed to the challenge of the SARS-CoV-2 virus nearer October 18–27, 2019 when 9,308 athletes from 109 countries were almost certainly exposed to that virus in Wuhan, Hubei, China during the World Military Games. Whereas Pantazatos has argued that starting the clock for the 0-dose Medicare participants in the middle of the "pandemic" gives them a substantial head start on days-left-to-live in our Figure 5, if their refusal of any and all COVID-19 injections was a bad choice, why is it that the 0-dose cohort not only survives through the "pandemic" at its peak, but those who died also outlasted, on the average, all the various subsamples of people drawn from the same Medicare population? If we started the clock on likely exposure nearer to the dates of the World Military Games the contrast between the 0-dose cohort and all those cohorts who took 1 to 6 doses would be even greater.

In Table 4, to measure the contribution of the Gompertz law across the 7 cohorts necessarily aging in step with the cumulative time intervals shown in Table 3 (column 4), the relevant correlations are given above the diagonal and their coefficients of determination below the diagonal. The values that we believe are of greatest relevance to the observations of Pantazatos and Seligmann (2025) are the colored pairs consisting of a correlation and a coefficient of determination that are highlighted in orange and in yellow in Table 4.

The correlation and coefficient of determination, the pair colored in yellow is only a measure of the Gompertz effect. One of its members consists of the cumulative time intervals (column 4 in Table 3). That one only measures the impact of the Gompertz effect because the intervals between doses are not at all affected in the least by the number of the next dose coming up, nor is it affected by the helpful or harmful impact of that next dose. As the aging of the respective cohorts has to be included in the mean age-at-death, whatever part of the latter variable that is attributable to the helpful or harmful impact of the "vaccine(s)" can only be randomly related to the Gompertz effect. Therefore, the shared variance in the yellow highlighted pair is a measure only of the advancing intervals between the shots and the impact of those intervals

Table 4
Correlations and Coefficients of Determination Ruling Out Any Significant Contribution of Aging on Account of Intervals Between the COVID-19 Shots (the Gompertz Mortality Law) to Account for the Reduction in Days-Left-to-Live After Each Dose

Pearson *r* (above the diagonal) and r^2 (below the diagonal)	Mean Age-at-death	Days-to-Live After Last	Days-to-Live After First	Cum Intervals	Size of Subsample
Mean Age-at-death	1.000	-0.941	0.639	0.798	-0.915
Days-to-Live After Last	0.885	1.000	-0.610	**-0.864**	0.982
Days-to-Live After First	0.409	0.373	1.000	0.856	-0.579
Cum Intervals	0.636	**0.746**	0.733	1.000	-0.808
Size of Subsample	0.837	0.964	0.335	0.653	1.000

of time on the mean age-at-death of each cohort. The cumulative intervals of time (column 4 of Table 1) constitute a kind of pivot point that cannot move on account of any impact of the "vaccine(s)". It is entirely independent of whether the 0 to 7 doses of the "vaccine(s)" are helpful or harmful. Therefore, the shared variance at 63.6% is only indicative of the impact of the Gompertz Law. It has a large effect as suspected by Seneff, Pantazatos, and the others mentioned above. But that effect is by no means the whole story.

The pair of measures colored in red pertain to the cumulative intervals between doses and the days-to-live-after-the-last dose of COVID-19 "vaccine(e)". They are corelated negatively showing that as the intervals accumulate the days-left-to-live after the last dose decrease. As such, the 74.6% of variance shared by the two variables in focus in the red highlighted cells shows that as the cumulative intervals between doses advance, the number of days-left-to-live after the last dose decline. Hence, the negative correlation of −0.864. We can infer that the variance accounted for in the pair of measures highlighted in red (74.6%) is greater than the variance shared by the pair highlighted in yellow (63.6%) because days-left-to-live after the last dose of the COVID-19 "vaccine(s)" is a more sensitive measure of the compounded impact of the Gompertz Law on the harmful effects of the COVID-19 "vaccine(s)".

Bearing in mind the results of the pair of measures highlighted in red, the pair colored in orange combines one member of the pair in red with one member of the pair in yellow. This orange pair is of special interest because it focuses attention on the impact of the "vaccine(s)" in both of its contributing members. The days-to-live-after-the-last dose of COVID-19 "vaccine(e)" can be regarded as the pivot variable in that pair because it is not directly impacted at all by the time intervals between doses whereas the mean age-at-death must be largely determined by those intervals. The only factor that differentiates the time left to the recipients who received a particular last dose is where that dose fell in the sequence which determines the average amount of COVID-19 "vaccine(s)" received by the cohort in question. On the one hand, if every dose is helpful, 2

doses should be better than 1, 3 better than 2, and so forth. If every dose is harmful, 0 doses should be less harmful than 1, 1 less harmful than 2, and so forth.

Given that the successive cohorts of people, after the 1-dose cohort logically consist of a subsample of the just prior cohort, if the 0-dose and the 1-dose samples of the Medicare population are randomly chosen by nothing but the election of their members to take or not take dose-1, and so on for each successive dose, it follows that the successive subsamples after the 1-dose cohort must continue to consist of a more or less random sample, albeit a smaller one in each successive cohort, of the larger Medicare population from which each sample is invariably taken.

Therefore, the variance shared at 88.5% by the pivot variable in the orange pair consisting of days-to-live-after-the-last dose of COVID-19 "vaccine(s)" (column 4 of Table 3) with the other member of that pair consisting of the mean age-at-death (column 6 of Table 3), must contain the variance owed to the Gompertz effect measured at 74.6% in the red pair of variables, leaving a remainder (88.5% minus 74.6%) of 13.9% that can only be explained by the harmful effect of the cumulative doses of the of COVID-19 "vaccine(e)". The bottom line is that the declining days-left-to-live of each of the cohorts in Figure 5 above cannot be explained away by the Gompertz effect. Thus, having addressed the only reasonable objection to the findings of our 2023 study, we conclude that even in a sample of 56,061 Medicare participants where the Gompertz Law should apply more forcefully than in our 2022 study where the dataset in focus contained age-groups ranging from less than 18 years to more than 80, the harmful impact of the COVID-19 "vaccine(s)" is nonetheless undeniably both significant and substantial.

Two other correlations that bear notice as they seem to be particularly relevant and indicative of the harmfulness of the shots are the pairs highlighted in light green and light blue in Table 4. In the light green pair, the pivot member consists of the number of persons in the successive cohorts willing to take the next shot in the proffered sequence (column 5 in Table 3). The determination of who sticks around from one cohort to the next seems to be a kind of practical on-the-scene, everyday-life IQ test. The higher scoring examinees taking the test are those people in each cohort who looked around themselves to see their friends and associates who took the prior dose of COVID-19 "vaccine(s)" getting sick and dying while those refusing the shots were better off. That pivot variable in the green pair is negatively correlated at −0.915 (r^2 = 0.837) with the increasing age-at-death (and, we may infer, the increasing understanding and wisdom) of the people refusing the shots.

The pair of measures highlighted in light blue links up the diminishing size of each successive subsample (column 5 in Table 3) — the member of that pair that must be regarded as the pivot because it is the only variable in the whole dataset that adds the element of human intelligence into the mix — with the critical measure of both the Gompertz effect at 63.6% of the variance, plus the nasty impact of the COVID-19 "vaccine(s)" at 24.1% of the total variance. The variable represented by column 5 in Table 3 reaches out and captures an independent intelligence factor that can be estimated at 7.9% (96.4% minus the total variance attributable to the combined Gompertz effect together with the bad impact of the "vaccine(s)" at 88.5 % equals 7.9%).

Discussion

In their recent publication in this journal, Pantazatos and Seligmann (2025) set aside our 2022 findings because Alessandria et al. (2024) expressed the opinion that

> systemic biases in the UK Office for National Statistics data prohibit direct, quantitative comparisons between vaccinated and unvaccinated mortality rates.

In their 2025 abstract to their updated paper, Alessandria et al. tried to justify their blanket assertion with the irrelevant opinion that

> it is implausible that COVID-19 vaccines protect against non-COVID-19 deaths.

Although all the unbiased empirical evidence shows that the COVID concoctions don't protect against the COVID disease at all, much less do they protect against anything else, the opinion of Alessandria et al. in the quotation set apart just above has no bearing on the measured and recorded all-cause mortality in the British hospitals which are indifferent to any particular "cause of death".

The statement of Alessandria et al. that the COVID-19 shots probably don't protect against non-COVID deaths may direct attention away from the unpleasant reality that the COVID-19 shots have caused a huge upsurge in all-cause deaths not only in UK "trust" hospitals but in every reliably reporting context throughout the whole world. The argument by Alessandria et al. aiming to set aside all-cause mortality is like the manufacturer of bullet-proof body-armor trying to explain away the death by bullets of, say, 26,013 people who were wearing it, to pick a number from the air, who were more apt to be killed by bullets than the 5,253 people who were not wearing any bullet-proof armor, to pick another number from the air. The argument in defense of the bullet-proof armor that the people wearing it are not protected from mustard gas, flamethrowers, etc., is a sorry excuse for the fact that the bullet-proof body-armor also does not protect against bullets. Why is it that the COVID-19 shots didn't protect recipients in the UK hospitals against COVID-19 disease? What Alessandria et al. cannot account for at all is why 26,013 patients in the UK hospitals would die with COVID-19 disease in spite of having taken 1 to 3 doses of the COVID-19 "vaccines" that are supposed to protect them from getting the COVID-19 disease in the first place, or at least to keep them from dying from that disease if they should get it. Likewise, why were the 5,253 unvaccinated patients in the same 8 age groups less likely to die with COVID-19 disease during their hospital stay than those supposedly protected by from 1 to 3 COVID-19 shots?

The more important issue raised by Pantazatos and Seligmann with respect to our 2022 study had to do with the Gompertz Law of Mortality. They were correct in observing that the aging of the respective cohorts would only enhance our analyses if taken into account explicitly. However, what makes all-cause mortality the best criterion for judging the impact of the more than 13 billion doses of the COVID-19 concoctions administered to more than 5 billion people worldwide (Pharmaceutical Technology, 2023) is effectively conceded by Alessandria et al. early in their paper titled, unsurprisingly: "All-cause mortality according to COVID-19 vaccination status". Here is a sample of their own writing showing why their argument against using all-cause mortality as an index of the impact of the COVID-19 shots makes no sense:

> According to EuroMoMo, the excess deaths in 2022 were 328,047 in 2022 and 305,301 in 2021 (Graphs and maps – EUROMOMO, accessed May 1, 2024). . . . A similar observation has also been made (Mostert et al., 2024) about excess mortality across 47 countries in the Western World since the COVID-19 Pandemic, based on "Our World in Data" estimates of January 2020 to December 2022. Indeed, excess mortality was registered in 87% of countries in 2020, in 89% in 2021 and in 91% in 2022. During 2021, when not only containment measures but also COVID-19 vaccines were used to tackle virus spread and infection, the highest number of excess deaths was recorded (Mostert et al., 2024).

In other words, the COVID-19 concoctions, only made things worse, not better. By incorporating the recommendation from Pantaztos and others to specifically measure and subtract out the impact of mere aging from the increasing all-cause mortality statistic in our 2022 study, and from the

diminishing days-left-to-live of successive cohorts in our 2023 study, we have — as suggested and privately requested by Pantazatos, Seneff, Shaw, and others —, demonstrated that there remains a substantial portion of variance in both the UK dataset for vaccinated and unvaccinated patients and in the US Medicare data for participants >64 years in age that can only be accounted for by the deleterious effects of the COVID-19 injections. In the UK dataset for 28 weeks in the latter half of 2021 and first 12 weeks of 2022, at least 18.157% of the total variance in all-cause mortality in that dataset must be attributed to the harmful impact of the 1 to 3 COVID-19 shots that the vaccinated patients received. Any impact of COVID-19 disease for the 31,478 patients who died in the all-cause mortality category can be summarily ruled out because every last one of the patients who died in the UK hospitals was either diagnosed with COVID-19 or was flagged as having it on their death certificate. The shots had a large harmful impact over and above the proportion of variance in the dataset attributable to the Gompertz Law.

By the same token, taking the Gompertz effect into consideration with respect to the US Medicare data that fell into the hands of Steve Kirsch on March 22, 2023 resulted in a similar outcome. After we subtract out variance attributable to the Gompertz Law, 24.1% of the variance shared by diminishing days-left-to-live and mean age-at-death remains. That remaining variance can only be attributed to the harmful effects of the shots. That is to say, the inevitable conclusion that the shots are harmful remains intact after taking the Gompertz Law into account as recommended to us by our esteemed colleagues and peer-reviewers.

The aspect of our work that remains unchallenged in both of the studies revisited here is the part that pertains in both of them to the proteinaceous clots wreaking havoc in recipients of the gene therapies misrepresented to the public as "vaccine(s)". We may hope that protocols will be developed to clear some or all of the accumulating proteinaceous garbage from the nanolevel of the synthetic mRNA right on up to the huge abnormal clots that are found by clinicians and embalmers in both living patients and corpses (Rapley, 2025), but so far all we have is a glimmer of hope for such healing protocols.

In the meantime, it is noteworthy that the colleagues who have helped us to improve our statistical measures in our 2022 and 2023 studies have not challenged an iota of the biosemiotic theory, expounded in those same publications. We continue to believe and hold with something close to algebraic certainty that the COVID-19 concoctions are bound to cause harm by disrupting biosignaling systems in ways than can only get worse over time. The harm being done seems to be associated with the formation of unnatural clots. They begin as abnormal nanoscopic proteinaceous constructions that clog capillaries but they can grow into enormous rubbery strings sometimes filling up and blocking the largest and longest tubes in the body's lymph and circulatory systems.

Conclusions

Every dose of the COVID-19 injectables has evidently tended to shorten the life-expectancy of the recipients. This fact is far more evident when we examine all-cause mortality in time intervals (see Figure 3) that correspond to worldwide changes. To avoid not being able to see the forest for the trees, it is essential to compare all-cause mortality index prior to the "pandemic", throughout the "pandemic" up to the roll out of the COVID-19 "vaccines", with the same index after the roll out (Figures 3 and 4 above). The result of such a sensible comparison taking the whole forest into account along all its trees, shows unequivocally that the shots have increased all-cause mortality over and above any contribution of the COVID-19 disease, and over and above any aging of the populations studied. By contrast, the difficulty created by aiming for increasing granularity as some

researchers insist on doing leads to getting lost in the tree, bushes, and weeds of the forest. Perhaps the most telling finding in our follow up research taking the Gompertz Law specifically into account has been the incidental discovery that people in the Medicare system had the wisdom to reject the COVID-19 concoctions in increasing numbers as the additional doses and so-called "boosters" were rolled out. The wisest group rejected all of the doses, and successive groups of fast-learners rejected all but dose-1, and so forth right down to those dedicated people who trusted the medical establishment and the pharmaceutical profiteers to tell the truth. However, the fact that the COVID-19 "vaccine(s)" shortened the lives of the people who took them, was not unnoticed evidently by people in the US Medicare system. The fact that the people were fooled in diminishing numbers by the lies from the CDC is verified by the 96.4% of the total variance in days-left-to-live-after-the-last-dose of the COVID-19 "vaccine" shared by the diminishing sample sizes of the successive cohorts of Medicare participants willing to take another dose of poison. People in the Medicare system injected some intelligence into the mix by recognizing that the shots were not only ugly, they were also bad.

Acknowledgments

We thank Stephanie Seneff and the members of the Editorial Board for the ***IJVTPR*** who agreed with her, along with Spiro Pantazatos and Hervé Seligmann for their comments on our earlier works. We believe they have contributed significantly to a more complete analysis of the datasets at issue and to the understanding of the harmful impact of the COVID-19 injectables. We also thank the reviewers, Stephanie Seneff, PhD, Christopher A. Shaw, PhD, and Daniel Broudy, PhD, who accepted this paper for publication. Any remaining errors are our own.

Conflicts of Interest

We declare no conflicts of interest.

Author Contributions

Oller was the statistician behind this work. However, it was reviewed and approved by Santiago who was the principal authority behind the previous work showing the basis for the abnormal clotting and whatever other injuries are measured in the statistics examined here and in our earlier papers. Both authors approved the final version of this paper prior to its publication.

References

Alessandria M, Malatesta G, Di Palmo G *et al.* All-cause mortality according to COVID-19 vaccination status: An analysis of the UK office for National statistics public data [original version. *F1000Research* 2024, **13**:886. https://doi.org/10.12688/f1000research.154058.1

Alessandria M, Malatesta G, Di Palmo G *et al.* All-cause mortality according to COVID-19 vaccination status: An analysis of the UK office for National statistics public data [version 2; peer review: 2 approved]. *F1000Research* 2025, **13**:886. https://doi.org/10.12688/f1000research.154058.2

Beattie, K. A. (2021). Worldwide Bayesian Causal Impact Analysis of Vaccine Administration on Deaths and Cases Associated with COVID-19: A BigData Analysis of 145 Countries. https://www.researchgate.net/publication/356248984_Worldwide_Bayesian_Causal_Impact_Analysis_of_Vaccine_Administration_on_Deaths_and_Cases_Associated_with_COVID-19_A_BigData_Analysis_of_145_Countries

Central Limit Theorem. (2021). In *Wikipedia*. https://en.wikipedia.org/w/index.php?title=Central_limit_theorem&oldid=1014457764

Erdem, O., Erdem, S., & Monson, K. (2023). Children, vaccines, and financial incentives. International Journal of Health Economics and Management. https://doi.org/10.1007/s10754-023-09343-2

Franchi, F. (2025). Why the official theory about COVID-19 is not tenable. *International Journal of Vaccine Theory, Practice, and Research*, *4*(1), 1541–1556. https://doi.org/10.56098/vdwyqd57

Kirsch, S. (2023a, January 17). *Japan COVID shot data: Every single time you take another shot, it gets worse. EVERY. SINGLE. TIME.* https://kirschsubstack.com/p/japan-covid-shot-data-every-single?utm_campaign=post&showWelcomeOnShare=false

Kirsch, S. (2023b, January 17). *Introducing the Kirsch Cumulative Outcomes Ratio (KCOR) analysis: A powerful yet simple new technique for accurately assessing the impact of any intervention on any outcome.* https://kirschsubstack.com/p/czech-data-clearly-shows-covid-vaccines?utm_medium=email

Kirsch, S. (2023c, February 9). EXCLUSIVE: Stunning new data pulled from the Medicare database shows how each shot increases your risk of death [Substack newsletter]. *Steve Kirsch's Newsletter.* https://stevekirsch.substack.com/p/exclusive-stunning-new-data-pulled?publication_id=548354&isFreemail=true

Kirsch, S. (2023d, February 25). GAME OVER: Medicare data shows the COVID vaccines increase your risk of dying [Substack newsletter]. *Steve Kirsch's Newsletter.* https://stevekirsch.substack.com/p/game-over-medicare-data-shows-the?isFreemail=true

Kirsch, S. (2025, September 8). *KCOR/README.md at main · skirsch/KCOR*. GitHub. https://github.com/skirsch/KCOR/blob/main/README.md

Le Cam, L. (1986). The Central Limit Theorem around 1935. *Statistical Science, 1*(1), 78–91.

Lyons-Weiler, J., & Thomas, P. (2021). Vaccine practice payment schedules create perverse incentives for unnecessary medical procedures – at what cost to patients? *International Journal of Vaccine Theory, Practice, and Research*, *2*(1), 25–37. https://doi.org/10.56098/ijvtpr.v2i1.21

McIntyre, N., & Kirk, A. (2021, October 12). Explainer: Why has the UK's vaccination rate slowed down? *The Guardian.* https://www.theguardian.com/world/2021/oct/12/explainer-why-has-the-uks-vaccination-rate-slowed-down

Mostert, S., Hoogland, M., Huibers, M., & Kaspers, G. (2024). Excess mortality across countries in the Western World since the COVID-19 pandemic: 'Our World in Data' estimates of January 2020 to December 2022. *BMJ Public Health*, *2*(1). https://doi.org/10.1136/bmjph-2023-000282

Oller, J., & Santiago, D. (2022). All-cause mortality and COVID-19 injections: Evidence from 28 weeks of Public Health England "COVID-19 Vaccine Surveillance Reports." *International Journal of Vaccine Theory, Practice, and Research*, *2*(2), 301–319. https://doi.org/10.56098/ijvtpr.v2i2.42

Oller, J. (2023). Supplementary Files for Santiago & Oller: Source Data for Statistical Analyses. *International Journal of Vaccine Theory, Practice, and Research*, *3*(1). https://doi.org/10.56098/ijvtpr.v3i1.75

Pantazatos, S. P. & Hervé Seligmannn. (2025). COVID vaccination and age-stratified all-cause mortality risk. *International Journal of Vaccine Theory, Practice, and Research*, *4*(1), 1583–1608. https://doi.org/10.56098/rbvsmw07

Pólya, G. (1920). Über den zentralen Grenzwertsatz der Wahrscheinlichkeitsrechnung und das Momentenproblem [About the central limit theorem of the probability calculation and the moment problem]. Mathematische Zeitschrift, 8(3–4), 171–181. https://doi.org/10.1007/BF01206525

Rapley, B. (2025). From innovation to inquiry—COVID-19 mRNA vaccination and its global consequences—With special reference to New Zealand. *International Journal of Vaccine Theory, Practice, and Research*, *4*(1), 1487–1516. https://doi.org/10.56098/hqjnk479

Santiago, D., & Oller, J. W. (2023). Abnormal clots and all-cause mortality during the pandemic experiment: Five doses of COVID-19 vaccine are evidently lethal to nearly all Medicare participants. *International Journal of Vaccine Theory, Practice, and Research*, *3*(1), 847–890. https://doi.org/10.56098/ijvtpr.v3i1.73

Schwalbe, N., Hanbali, L., Nunes, M. C., & Lehtimaki, S. (2022). Use of financial incentives to increase adult vaccination coverage: A narrative review of lessons learned from COVID-19 and other adult vaccination efforts. Vaccine: X, 12, 100225. https://doi.org/10.1016/j.jvacx.2022.100225

Shaw, C. A. (2021). The age of COVID-19: Fear, loathing, and the "new normal." *International Journal of Vaccine Theory, Practice, and Research*, *1*(2), 98–142. https://doi.org/10.56098/ijvtpr.v1i2.11

Welch's *t*-test. (2023). In *Wikipedia*. https://en.wikipedia.org/w/index.php?title=Welch%27s_t-test&oldid=1132254179

Zabell, S. L. (1995). Alan Turing and the Central Limit Theorem. *The American Mathematical Monthly*, *102*(6), 483–494. https://doi.org/10.1080/00029890.1995.12004608

Legal Disclaimer