

Deaths and births during the pandemic: What does vaccination have to do with these?

A webinar organized by Concerned Doctors & Citizens of the Philippines (CDC Ph) and was attended by Senate President and Vice-Presidential aspirant Vicente Sotto III on 15 January 2022 highlighted the population data on registered births and deaths since the start of the pandemic. The resource person was an unnamed Australian medical doctor based in the Philippines who does data analysis in her “free time”.

While it is easier to dismiss the assumptions and findings of the resource person whose identity and credentials were withheld, her presentation has been shared and circulated on Facebook and has been eliciting favorable reactions and comments because the figures and graphs presented seem compelling. However, the assumptions are flawed, making the findings and recommendations erroneous.

We are correcting these assumptions and providing more context in analyzing births and deaths registration data.

1. Have we reached a point of depopulation just because there are more deaths registered than births?

No. Depopulation is defined as “a decrease in the population living in an area represented by a total negative population change due to causes such as natural loss (more deaths than births), a negative net migration rate (more people leaving the area to live elsewhere) or a combination of these factors¹.

Historically, the Philippines has been experiencing sustained population growth largely due to its high fertility and low mortality. The civil registration data on births and deaths shows that until August 2021, there were more babies born than people dying. This means that the population is growing due to natural increase (more births than deaths). By September 2021 however, there is a reversal in trend, suggesting a reduction in population growth due to natural decrease (more deaths than births). The presentation suggested that because of this reversal, depopulation takes place. This is not correct because births and deaths are not the only factors that lead to a negative total population change. Information on migration is also important to take into consideration to establish whether the population is increasing or decreasing.

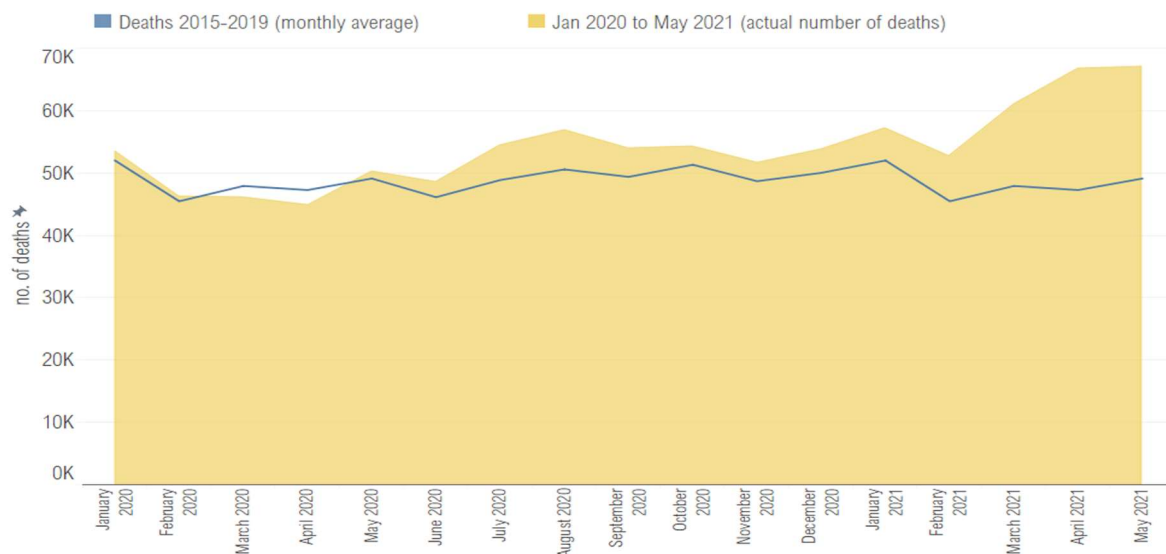
Using data for specific localities, the presentation pointed out that by the last quarter of 2021, the registered deaths exceeded births indicating a net population decline. While this is true for the areas she examined, estimates show that at the national level, there is still a net increase of 300,000 by the end of 2021, albeit very much lower than the previous year’s (2020) net increase of over 900,000. This decline in natural increase is expected given the unprecedented impact of the COVID-19 pandemic. As of the Case Bulletin #677 (20 January 2022) from the Department of Health (DOH), the country has over 53,000 COVID-19 deaths. In 2021, COVID-19 was the third main cause of death in the country, following heart disease and stroke.

¹ Majdzińska, A. (2021, November 29-December 1). *Depopulating areas in Europe in the second decade of the 21st C.* [Poster presentation]. Wittgenstein Centre Conference 2021, Vienna, Austria.
https://www.oeaw.ac.at/fileadmin/subsites/Institute/VID/PDF/Conferences/2021/Posters/A3_poster_Majdzinska.pdf

2. What is excess mortality/death?

Another concept used in the presentation is *excess deaths*. The Center for Disease Control and Prevention (CDC) of the US defines excess deaths as the difference between expected numbers of deaths based on a mortality schedule in a given period and the actual deaths in the same time period². In demography, one way to measure excess deaths is to use the average reported deaths in the past five years as an indicator of expected deaths which is used to determine whether the number of actual deaths per month is significantly higher than expected. This is the same measure employed by the publications of CDC to measure excess deaths due to COVID-19.

On the other hand, the presentation operationalized excess deaths as the difference in the number of deaths each year, i.e., comparing the daily average deaths per month. Specifically, the resource person compared the total number of deaths for 2019, 2020, and 2021 and concluded that “*there were no excess deaths in 2020, the first year of the lockdown. There was also minimal difference from the 2020 data to the data in January and February of 2021.*” This contradicts the findings of a study³ done by Asst. Prof. Michael Dominic del Mundo of UPPI showing excess deaths were already observed starting in 2020 with the onset of the COVID-19 pandemic. This is reflected in the graph below. The blue line represents the expected number of monthly deaths based on pre-pandemic assumptions and conditions. The shaded area is the actual number of deaths during the time of the pandemic, in this case starting even as early as January 2020. The gap between the expected deaths under pre-pandemic conditions (blue) and actual deaths registered (yellow) is the estimated excess deaths. From January 2020 to May 2021, this number reached 91,024, an 11% increase from the expected number of deaths under pre-pandemic conditions.



Source: Briones & del Mundo, 2021; data from Philippines Statistics Authority CRVS

We agree with the presentation that “*Barring some catastrophic event, population death rates are typically stable over time...*”. The period 2020 onwards can be considered an extraordinary condition that has brought about massive disruption in our country and the world. It is expected to result in significant fluctuations in the demographic processes, such as mortality but is expected to normalize post-pandemic, when the situation reverts to normal conditions.

² Centers for Disease Control and Prevention. (2022, January 19). *Excess deaths associated with COVID-19*. Centers for Disease Control and Prevention. https://www.cdc.gov/nchs/nvss/vsrr/covid19/excess_deaths.htm

³ Briones, K. J. S. & del Mundo, M. D. C. (2021). *Excess Deaths During the Pandemic in the Philippines* [Unpublished policy brief]. UNFPA.

The normalization of demographic trends after catastrophic events is not without precedent. The bubonic plague in 1331 to 1351 estimated that anywhere from 35 to 200M people died from contracting the plague, resulting in a significant population decline. It took more than 100 years following the bubonic plague for population growth to resume its earlier trajectory⁴. A similar example happened in the Republic of Ireland which experienced a population decline during the “Great Famine,” but later recovered and became a textbook example of developmental success.

3. An increase in registered deaths was observed when the vaccine rollout started. Do the COVID-19 vaccines cause deaths?

The resource person highlighted in her presentation that an increase in registered deaths was observed in March 2021 when the vaccination rollout started, subtly implying an association between vaccination and deaths. In her prediction on death registration, she pointed out that excess death in 2021 could reach 400,000 and that may escalate further with the addition of booster doses. This is alarming and could jeopardize the government’s vaccination program to end the pandemic. There is not enough evidence to substantiate this claim. In fact, the data on the causes of death published by the Philippine Statistics Authority (PSA)⁵ covering the period January to October 2020 and the same period for 2021 cites only two deaths due to “COVID-19 vaccines causing adverse effects in therapeutic use” (see Table 4 in the PSA press release). Associating mortality rates with vaccination and projecting mortality estimates on this basis without concrete evidence of data is misleading. There is no medical basis to link death registration with COVID-19 vaccination.

On the contrary, there are numerous studies that established the benefits of vaccination in preventing infection and death. What should be highlighted are the number of deaths that were avoided because of vaccination. Based on death registration up to May 2021 and using exponential smoothing, the projected number of excess deaths in 2021 is 228,789, but actual excess deaths for the period were lower than the projected (Briones & del Mundo, 2021).

In summary, the measures to stem the spread of the virus and end the pandemic should be the responsibility of everyone. Government strategies should be based on sound and reliable data. Accordingly, we reiterate our call for more timely and accurate data which should be made available to researchers to help address disinformation. We also suggest greater collaboration among data producers particularly the PSA and DOH to provide a unified source of complete and accurate data particularly on COVID-19. So far, the PSA data which are based on death certificates provide a higher level of estimated mortality than that provided by DOH. We also suggest that DOH provide additional information (e.g., via their COVID-19 Data Drop) such as the vaccination status of those who die due to COVID-19 to be able to clarify the issue of the link between vaccination and mortality.

As researchers, let us take data analysis seriously and if we are confident of our analysis, let us own it.

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⁴ Lutz, W., & Gailey, N. (2020, October 1). *Depopulation as a policy challenge in the context of global demographic trends* (Human Development Series). UNDP Serbia. <https://eeca.unfpa.org/sites/default/files/pub-pdf/depoulation20as20a20policy20challenge.pdf>

⁵ Philippine Statistics Authority. (2022, January 17). Causes of Deaths in the Philippines (Preliminary): January to October 2021 [Press release]. <https://psa.gov.ph/content/causes-deaths-philippines-preliminary-january-october-2021>