

Estimating the Impact of COVID-19 in India from Life Insurance Claims

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In this article, we present an estimate of the impact of COVID-19 as: (i) for 2020, deaths likely missing from death registrations data released by the government in May 2022; and (ii) for 2021, the estimated additional deaths in comparison to pre-pandemic 2019.¹

Our estimate is based on three data sources: first, death claims settled by life insurers, as reported by the Insurance Regulatory and Development Authority of India (IRDAI), a regulatory body under the jurisdiction of the Ministry of Finance, Government of India. Second, death claims settled by the Life Insurance Corporation of India (LIC) in April–December 2021. Third, the Civil Registration System (CRS) data on death registrations in India during 2017–20.

Our method² is as follows:

- (i) We align fiscal year death claims settled as reported by the IRDAI to calendar years by assuming an even distribution of claims throughout the year.
- (ii) We estimate death claims settled for 2021 based on partial data from the IRDAI and LIC.
- (iii) We show that the ratio of death claims settled to deaths registered in a year is stable and can be used as a proxy to project missing death registrations in the pandemic period.
- (iv) We calculate an estimate of death registrations missing from 2020 CRS data and deaths in 2021 using the proxy.

Data on Life Insurance Claims Settled by Insurance Companies

Fiscal years 2017 through 2020: We constructed Table 1 based on the death claims settled by all life insurance companies in India, as reported in the annual reports of the IRDAI for the

fiscal years 2017 through 2021 (IRDAI 2017, 2018, 2019, 2020, 2021).

Table 1: IRDAI Data—Total Number of Death Claims Settled by All Life Insurance Companies in India

	Individual - Total (A)	Group - Total (B)	Total Death Claims (C)
FY 2016–17	8,60,000	7,15,303	15,75,303
FY 2017–18	8,28,000	7,61,379	15,89,379
FY 2018–19	8,43,000	8,62,452	17,05,452
FY 2019–20	8,46,000	9,98,000	18,44,000
FY 2020–21	10,84,000	10,92,000	21,76,000

Source: FY 2016–17: IRDAI 2017, I.3.20 and I.3.24, p 14 (claims settled); FY 2017–18: IRDAI 2018, I.3.20 and I.3.24, pp 16–17 (claims settled); FY 2018–19: IRDAI 2019, I.3.20 and I.3.23, p 15 (claims settled); FY 2019–20: IRDAI 2020, I.2.2.18 and I.2.2.30, pp 13–14 (claims settled); FY 2020–21: IRDAI 2021, I.2.2.18 and I.2.2.30, I.15, p 13 (claims settled).

In India, the fiscal year is from 1 April of each year to 31 March of the following year. For example, FY 2017 is the period from 1 April 2016 to 31 March 2017. Thus, each fiscal year includes nine months from the preceding calendar year and three months from the current calendar year.³

Calendar year 2020: To obtain death claims data for calendar years, we assume that death claims settled are distributed evenly throughout the year.

Table 2: Aligning IRDAI Data to Calendar Years

Calendar Year	Total Estimated Death Claims (by Calendar Year) (A)	Formula for FY to CY Conversion (B)
2017	15,85,860	$0.25 \times \text{FY17} + 0.75 \times \text{FY18 (IRDAI)}$
2018	16,76,434	$0.25 \times \text{FY18} + 0.75 \times \text{FY19 (IRDAI)}$
2019	18,09,363	$0.25 \times \text{FY19} + 0.75 \times \text{FY20 (IRDAI)}$
2020	20,93,000	$0.25 \times \text{FY20} + 0.75 \times \text{FY21 (IRDAI)}$

Source: Authors' calculations.

Table 3: LIC Data on Death Claims (Nine Months of FY 2021)

	Individual Policies (A)			Group Policies (B)			Total Claims Settled (C) (in million)
	# of Claims Made (in million) (A1)	# of Claims Settled (in million) (A2)	Ratio of Claims Settled to Claims Made (%)	# of Claims Made (in million) (B1)	# of Claims Settled (in million) (B2)	Ratio of Claims Settled to Claims Made (%)	
FY 2019	0.75	0.73	97.79	0.26	0.26	99.68	0.99
FY 2020	0.76	0.73	96.69	0.22	0.2	91.08	0.93
FY 2021	0.95	0.93	98.62	0.22	0.21	96.80	1.14
Nine months ending 31 December 2021	1.11	1.07	96.09	0.17	0.17	96.37	1.24

Source: LIC (2022).

For example, calendar year 2017 includes the last three months of FY 2017 + first nine months of FY 2018. Then, death claims settled in calendar year 2017 = $(0.25 \times 15,75,303) + (0.75 \times 15,89,379) = 15,85,860$.

Table 2 shows the calculated calendar year death claims settled for 2017–20.

Calendar year 2021: To obtain an estimate of death claims settled in 2021, we divide 2021 into two non-overlapping periods and then combine the data.

January–March 2021: We divide FY 2021 death claims settled as reported by the IRDAI (Table 1, column c) by four to obtain death claims settled in January–March 2021 as $20,93,000/4 = 5,23,250$. This is denoted as A.

April–December 2021: We accessed the red herring prospectus released during the recent initial public offering (IPO) of the LIC (2022). We note that a Twitter account has also suggested the use of life insurance data from the LIC (The Fact Finder 2022).

The LIC red herring prospectus included death claims made and settled for 1 April to 31 December 2021. This data is shown in Table 3.

In the period 1 April–31 December 2021, the LIC settled a total of 1.24 million death claims (1.07 from column A2 + 0.17 from column B2). For the entire 12 months of pre-pandemic FY 2019 and FY 2020, the LIC had settled 0.99 million and 0.93 million claims, respectively (Table 3, column c).

We observe that the LIC's share of death claims as a percentage of total settled claims for the whole life insurance industry was 58.05% in FY 2019, 50.43% in FY 2020, and 52.39% in FY 2021.⁴ This

is obtained by summing the individual and group LIC claims settled (Table 3, column c) and comparing with industry-wide data from the IRDAI (Table 1, column c).

Conservatively, we assume that the private sector insurance companies and LIC settled an equal number of claims (50% of total) during April–December 2021. We double the 1.24 million death claims settled by the LIC and obtain the total estimated claims settled by all life insurers for April–December 2021 as 2.48 million. This is denoted as B.

Total estimated death claims settled in calendar year 2021: We estimate the total death claims that are likely to be settled in calendar year 2021 as:

$A + B = 5,23,250 + 24,80,000 = 30,03,250$. This number is denoted as C.

Note that A is the actual IRDAI data, B is a conservative extrapolation based on the LIC data.

Death Claims Settled and Death Registrations

How is a death claim settled? Death claims settled corresponds to the number of policies for which the insurance companies received and settled a claim. A life insurance claim arises when a person with a life insurance policy dies. The claim is settled upon provision of appropriate proof of death by the beneficiary of the policy. Such proof includes official documentation such as a death certificate. This documentation is also part of how death registrations are determined.

We note that there is a process that connects “claims settled” and “deaths registered.” The chain of events leading to a death claim being settled is: (i) an insured person dies; (ii) the death is registered and documentation obtained; (iii) a death claim is filed with a life insurer and is settled by the insurer based on the evidence of death (for example, death certificate produced through the registration process).

Note that a single person may have multiple life insurance policies—for example, one through their employer and one purchased on their own. We did not find data to estimate the proportion

of death claims settled to the actual number of lives lost.

Death claims settled are a good proxy for death registrations: Table 4 shows death registrations as reported by the government (CRS data) in column A (ORGI 2022; Sinha 2022), which includes deaths of both (insured and uninsured) individuals and death claims settled for the same year in column B (based on the calculations above).

Empirically, we find that, in the three pre-pandemic years (2017–19), the ratio of claims settled to deaths registered remained in a narrow range—24.53% in 2017, 24.12% in 2018, and 23.68% in 2019 (Table 4). This suggests that, in the pre-pandemic period, the number of death claims settled in a year is a good proxy to the number of deaths registered.⁵

Table 4: Comparing Death Registrations to Death Claims Settled

Year	Deaths Registered (A)	Death Claims Settled (B)	Ratio B/A
2017	64,63,779	15,85,860	24.53%
2018	69,50,607	16,76,434	24.12%
2019	76,41,076	1,8,09,363	23.68%
2020	81,15,882	20,93,000	
2021		30,03,250	

Source: Column A: (Sinha 2022).

Column B: Table 2 and estimated death claims settled for calendar 2021 (denoted as C).

We also note that new (individual) policies sold in FY 2020 were only 0.69% more than the policies sold in FY 2019; in FY 2021, the number of policies sold was lower than those sold in FY 2020 by -2.49% (IRDAI 2021: 10). Some policies also mature each year and are no longer in effect. Thus, throughout 2020 and 2021, the number of policies in effect is likely not very different from the number of policies in effect in earlier periods.

Death registrations estimated to be missed in 2020: We calculate the simple average of the ratio of claims settled to deaths registered during 2017, 2018, and 2019. This value, denoted as R, is 24.11%.⁶

We utilise R to estimate the number of missing death registrations during 2020 as follows:

Total expected death registrations in 2020
 $= \text{claims settled for 2020} / R$
 $= 20,93,000 / 0.2411$
 $= 86,80,657$.

The actual deaths registered in 2020 were 81,15,882 (Table 4).

Thus, we estimate that 5,64,775 (0.56 million) deaths are likely missing from the death registration data for 2020 released by the government (ORGI 2022; Sinha 2022).

Death registrations estimated in 2021: For 2021, the government has not released the official data of death registrations.

Total expected death registrations in 2021

$= \text{estimated claims settled for 2021} / R$
 $= 30,03,250 / 0.2411$
 $= 1,24,55,893$.

The Government of India, through the sample registration scheme mechanism, provides estimates of the total deaths in India in each year (Sinha 2022). These include both registered and unregistered deaths. These numbers are:

2016: 81,53,510

2017: 81,17,689

2018: 80,77,955

2019: 83,01,769.

The total expected death registrations, 1,24,55,893, for 2021 estimated from insurance data, exceed the total estimated deaths in preceding pre-pandemic year 2019 by 41,54,124 (4.15 million). Essentially, we contend that there were 4.15 million additional deaths in 2021 over the preceding non-pandemic year of 2019. We make this comparison since the government has not provided deaths registered in 2021 or estimated total deaths for 2021.

Discussion

In its global excess deaths estimates released on 5 May 2022, the World Health Organization estimates 0.832 million excess deaths in 2020 and 3.908 million excess deaths for 2021 (WHO 2022).

Based on an entirely different data source (life insurance claims), we show that death registrations in 2020 were likely short by 0.56 million. We also contend that there were likely 4.15 million additional deaths in 2021 than the government's estimated total for pre-pandemic 2019. Taken together, these numbers significantly exceed the government's official number of 4,81,000 (0.481 million) COVID-19 deaths in 2020 and 2021 (Biswas 2022).

Our method is based on simple arithmetic and one important assumption—that the ratio of death claims settled to the number of deaths registered in 2020 and 2021 is similar to that during 2016–19.

The key numbers and assumptions that drive our estimates are also straightforward to evaluate.

First, for calendar year 2020, we used the actual death claims settled to estimate the missing death registrations. This is hard data, not an estimate.

Second, based on partially available data, we conservatively estimated the number of death claims that are likely to be settled in 2021 as 3.003 million. When the IRDAI annual report for FY 2022 is released, the reported number of death claims can be compared to our estimate of 3.003 million. Given the significant projected increase in claims, we suggest that the “number of claims outstanding” (which historically is very small) also be taken into account when doing this comparison.

Third, we rely on the empirical observation that, in the three years immediately preceding the pandemic (2017–19), the ratio of claims settled to deaths registered was stable, and averaged 0.2411. We use this ratio to estimate total expected death registrations for 2020 and 2021. This is a stable correlation for the three years preceding the pandemic. We do not presume any direct relationship between the two numbers, though there is a set of events that link “death-claims settled” to “deaths registered” as explained before.

In Conclusion

In this article, we make an empirical observation that the ratio of death claims settled by Indian life insurers to deaths registered in India is stable in pre-pandemic years. We use this ratio to estimate missing death registrations during the COVID-19 pandemic in India in 2020 and 2021 based on death claims settled by life insurers.

We report a conservative estimate of 0.56 million missing death registrations for 2020. We also report an estimate of 4.15 million additional deaths in 2021 compared to the government’s estimated total for pre-pandemic year 2019. We

make this comparison since the government has not provided registration or estimated total deaths for 2021. Our estimates are based on hard data of deaths, based on death claims reviewed by insurance professionals in order to settle insurance claims. Our estimate far exceeds the government’s official estimate of less than 4,81,000 (0.481 million) COVID-19 deaths during this period.

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NOTES

- 1 In February 2022, the Ministry of Health and Family Welfare issued a press release calling an unspecified media report “mentioning the details of policies and claims settled by LIC a speculative and biased interpretation” and stating “these reports are speculative and baseless” (PIB 2022). This press release fails to offer reasons for why estimation based on insurance data would be baseless.
- 2 Our method relies on extrapolating from death claims (filed only by those who purchased insurance) to death registrations for the entire population. It is possible that the uninsured differ in some demographic parameter (for example, may be younger). However, the stability of the ratio of death claims to registered deaths in the three years immediately preceding the pandemic suggests that “death claims settled” is a good proxy for “deaths registered” in a given year.
- 3 We have combined claims settlement data from individual and group policies. From Table 1, it can be seen that death claims against individual policies went up more (from 0.846 million in FY 2020 to 1.084 million in FY 2021) in the pandemic period than those against group policies (from 0.998 million in FY 2020 to 1.092 million in FY 2021). However, the age mix or other differences in the two different types of policies is unlikely to impact our estimate, since the total number of claims under each category in each year is not too dissimilar.
- 4 In calculating the estimates for 2021, we have assumed that LIC represents about 50% of all death claims; 50% is lower than LIC’s actual proportion of claims in the pre-pandemic period. Even if the actual share of LIC were to be higher, our method still estimates death numbers much larger than the government’s official COVID-19 death numbers. Conversely, a smaller share for LIC would increase the estimate for 2021.
- 5 It may be noted that a portion of the population may have multiple life insurance policies, for example, two or more policies on the same individual’s life. This is unlikely to affect our estimates, given the stability of the ratio of death claims to registered deaths.
- 6 In our calculations, we have relied on the numbers of death claims settled in the pre-pandemic

years. Life insurers have stringent criteria and processes for claim settlement, given that verified claims result in a policy benefit being paid. The process includes death verification via documented proof. Thus, death claims settled correspond to deaths verified by the insurer.

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