The Medical Journal of Australia – **Pre-print – 5 October 2020**

COVID-19: how many Australians might have died if we'd had an outbreak like that in England and Wales?

Fiona Stanaway
Senior Lecturer and Course Coordinator
University of Sydney
School of Public Health
Sydney, New South Wales, Australia

Les M Irwig
Professor of Epidemiology
University of Sydney
School of Public Health
Sydney, New South Wales, Australia

Armando Teixeira-Pinto
Professor
University of Sydney
School of Public Health
Sydney Medical School
Sydney, New South Wales, Australia

Professor
Westmead Millennium Institute for Medical Research
Centre for Kidney Research
Westmead, New South Wales, Australia

Katy JL Bell
Senior Lecturer
University of Sydney
School of Public Health
Sydney, New South Wales, Australia

Competing interests: No relevant disclosures

Abstract (50 words)

Using data on all-cause mortality from England and Wales during the peak of the COVID-19 outbreak in March and April, we estimated that the likely number of deaths that would have occurred in Australia if we had experienced an outbreak of similar nature and scale would have been over 16,000.

Australia has had a remarkably successful response to COVID-19, even considering the second wave experienced in Victoria. The Australian rate of COVID-deaths of 33 per million population, is 15 to 20 times lower that that observed in countries across Europe and the Americas[1]. However, as the second wave in Melbourne has shown, it is important not to become complacent. Using all-cause mortality data in England and Wales over the peak of the COVID-19 outbreak in March and April, we directly estimated the number of excess deaths that may have occurred if the outbreak in Australia had been of a similar extent to that in England and Wales.

We estimated the relative risk (RR) of all-cause mortality in England and Wales from the COVID-19 outbreak by dividing the total deaths from all causes for week 11 to 21 of 2020 (March 9-May 24) by the mean number of deaths for the same weeks averaged over 2014-2018 (limited to years when comparable Australian data was available). We calculated age and sex stratified RRs due to well documented differences in COVID-19 fatality by age and sex[2]. To estimate the baseline risk of all-cause mortality in the Australian population, we estimated the mean number of deaths by age and sex for weeks 11 to 21 over 2014-2018. Finally, to estimate the total deaths that could have been experienced if Australia had experienced a similar outbreak to England and Wales, we multiplied the baseline expected number of deaths by the age specific relative risks for men and women (Box 1). This resulted in an estimated additional 16313 deaths in Australia: 9295 men and 7018 women. In contrast, by May 24 there had been 103 COVID-19 attributed deaths in Australia (and 1340 excess total deaths according to provisional mortality statistics[3]). This enormous difference underlies the importance of Australia's response using a combination of extensive testing and contact tracing, mandatory quarantine of people returning from overseas, and

shutdowns to control community transmission. While acknowledging that these measures carry with them substantial social and economic harms, we wish to highlight the scale of the loss of life avoided. Further details of our methods and results are available in InSight+[4].

References

1. Worldometer Coronavirus. [Accessed 21 September, 2020]; Available from: https://www.worldometers.info/coronavirus/
2. Guilmoto C. COVID-19 death rates by age and sex and the resulting mortality vulnerability of countries and regions in the world. medRxiv preprint doi: https://doiorg/101101/2020051720097410. 2020
3. Australian Bureau of Statistics. Provisional Mortality Statistics. [Accessed 14 August, 2020]; Available from: https://www.abs.gov.au/statistics/health/causes-death/provisional-mortality-statistics/latest-release
4. InSight+ ref TBA

Box 1 Estimating the relative risk for death in England and Wales during weeks 11 to 21 2020 [1] and applying it to the Australian[2] population

Age group (years)	Relative Risk for death in England and Wales (Deaths in 2020 / Average deaths 2014-2018)	Average total deaths Weeks 11-21, 2014-2018 in Australia	Total expected deaths in similar outbreak (Average deaths x RR)	Absolute increase in number of deaths (Expected deaths – average deaths)
Males				
0-14	0.86	167.2	144.3	-22.9
15-44	1.06	864.0	916.7	52.7
45-64	1.46	2629.4	3844.7	1215.3
65-74	1.47	3111.6	4573.3	1461.7
75-84	1.62	4589.4	7461.7	2872.3
85+	1.73	5118.2	8834.2	3716.0
Total	1.57	16429.8	25774.8	9295.0
Females				
0-14	0.92	127.2	116.8	-10.3
15-44	1.10	440.2	482.4	42.2
45-64	1.36	1670.0	2265.8	595.8
65-74	1.35	1960.6	2640.8	680.2
75-84	1.48	3714.8	5493.0	1778.2
85+	1.52	7591.6	11523.9	3932.3
Total	1.46	15504.4	22522.7	7018.3

1. Data source: Office of National Statistics website. Deaths registered weekly in England and Wales, provisional. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredinenglandandwales. (Accessed July, 2020)
2. Data source: Number of deaths for weeks 11 to 21, 2014-2018 by age and sex were provided on request from the Australian Bureau of Statistics.

.