Accepted Article

COVID-19 deaths in long term care facilities - a critical piece of the pandemic puzzle.

Rossana Lau-Ng MD, MBA, CMD[1,2]

Lisa B. Caruso MD, MPH[1,2]

Thomas T. Perls MD, MPH, AGSF[1,2]

1. Geriatrics Section, Department of Medicine, Boston Medical Center, 1 Boston Medical Center Place, Boston, MA 02118 USA
2. Boston University School of Medicine, 72 East Concord St, Boston, MA 02118

Funding Sources: None

Disclosures: None of the authors have any potential conflicts to disclose.

Corresponding author contact information:

Thomas T. Perls MD, MPH, L-912, Boston University School of Medicine, 72 E. Concord Street, Boston, MA 02118 USA. Email: thperls@bu.edu. Phone: 617-733-7893. Twitter: @thperls, @RLauNgMD, @LisaCarusoMD

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the Version of Record. Please cite this article as doi: 10.1111/jgs.16669.

This article is protected by copyright. All rights reserved.

Accepted Article

For Many States and Countries, the Majority of COVID-19 Deaths Occur in Long Term Care Facilities

As of May 28, 26 states had 50% or more of their COVID-19 deaths occur in long-term care facilities (LTCFs) with Minnesota and Rhode Island at 81%, Connecticut at 71% and New Hampshire at 70%. Among the 40 states providing LTCF death data (including Washington DC), an average 43% of their total deaths occurred in LTCFs (n=39,039) (**see Figure 1**).[1] The definition of LTCF differs by state but generally include nursing home, group home and intermediate care facilities. Some states more recently have included assisted living facilities. Despite such alarming reports, the remaining 11 states (Alabama, Alaska, Arizona, Arkansas, Hawaii, Michigan, Missouri, Montana, New Mexico, North and South Dakota) still don't report their LTCF COVID-19 deaths.

The lowest reported frequency of total deaths of 21%, reported by New York, is most certainly a gross underestimate in light of other Northeastern state reports of LTCF death counts that are 3-4 times higher and where, during the surge, COVID-19 positive patients were transferred from New York[2] and New Jersey hospitals to LTCFs. Further contributing to the underestimation of LTCF deaths is that in March and part of April, SARS-CoV-2 testing was largely unavailable to LTCFs and COVID-19 deaths were only counted as such if backed by a positive test.[3]

At the national level, the CDC relies on state as well as death certificate data to report the number of COVID-19 deaths. With the gross undercounting of deaths in some states and the usual significant delay in the receipt of death certificates[4] (now made even worse by overwhelmed funeral homes and morgues), the current reported total number of deaths in the U.S. must be severely underestimated. On May 6th, the Centers for Medicare Services (CMS) directed LTCFs to report their confirmed or probable COVID-19 cases to the CDC.[5] Accurate accounting of all COVID-19 deaths (as well as cases) will allow states and the federal government to recognize that LTCFs are a major driver of total COVID-19 deaths.

Most other countries with large numbers of LTCFs are likely also experiencing a greater than 50% rate of their COVID-19 deaths within LTCFs. The World Health Organization estimates

This article is protected by copyright. All rights reserved.

that half of COVID-19 deaths in Europe and the Baltics are among their 4.1 million LTCF residents.[6] Once France began to include LTCF deaths in its count, the country's death rate nearly doubled.[7] Canada's National Institute on Aging indicated on May 6 that 82% of the country's COVID-19 deaths had been in long term care settings.[8]

Belgium has the highest per capita COVID-19 death rate in the world at 82 per 100,000 population (compared to 31 per 100,000 in the U.S.).[9] Aware of COVID-19 nursing home outbreaks, Belgium authorities included COVID-19 cases and deaths in hospitals, nursing homes and other congregate living settings early-on, and therefore, Belgium's rate is the highest likely because it does the best job of any in counting COVID-19 probable and test-proven cases and deaths including those in LTCFs.[7] Without accurate counts of where cases and deaths are occurring, we will be disadvantaged in creating our management strategy.

The Proportion of COVID-19 Deaths in LTCFs Continues to Increase on the Downside of the Surge

Massachusetts Department of Public Health's COVID-19 Dashboard data afford additional insights into the frequency of COVID-19 deaths over time inside and outside of LTCFs during the peak of the surge and currently when state-wide cases and deaths are quickly declining. Since April 21, the dashboard reports mandated daily case and death data provided by LTCFs (389 nursing homes and group homes).[10] **Figure 2** shows that over the past month, the proportion of deaths in Massachusetts that occur in LTCFs has steadily increased from 54% to 62%, which could indicate that the state is doing a better job of counting deaths in LTCFs or that the death rate in hospitals is decelerating relative to the rate in nursing homes or a combination of the two.

As states begin to open up their communities and economies, LTCFs will need to be treated very differently as COVID-19 appears to have a much stronger hold on these facilities than elsewhere. LTCFs have a high density of people with a combination of the strongest risk factors for COVID-19 associated severe illness and death: old age and multiple morbidities. The CDC indicates that 39% of the 1.3 million nursing home residents in the U.S. are 85 and older.[11] According to the Massachusetts dashboard, from April 21 to May 29, people age 80+ years consistently constitute 63% of COVID-19 deaths and 98% of the deaths were associated with multiple co-morbidities.

Accepted Article

This article is protected by copyright. All rights reserved.

Accepted Article

Why LTCFs Are So Vulnerable to COVID-19

There are also structural, care and social characteristics that make LTCFs vulnerable to the spread of COVID-19 and other viruses like influenza. CMS mandates that LTCFs have infection control programs in place including isolation measures, hygiene, laundry, food-handling requirements and many other specific measures. However, for most LTCFs in the US, these measures have proven ineffective in keeping COVID-19 out. As of May 29, 349 of the 389 Massachusetts LTCFs or 90%, had at least one case of COVID-19. The "Achilles' heel" of these and other defenses is the high prevalence of asymptomatic transmission of SARS-CoV-2.[12] Asymptomatic carriers include social visitors, as well as laboratory phlebotomists, intravenous line nurses and radiology technicians that travel from nursing home to nursing home and have direct contact with residents. Fomites, such as a technician's clothing or x-ray equipment can be potential vectors for SARS-CoV-2.[13]

A second LTCF-specific cause of spread includes dementia units, designed to allow for wandering but which facilitate viral transmission to others. Thirdly, due to their low pay, certified nursing assistants, who constitute 64% of LTCF staff[11] (median annual salary is $27,950[14]), often hold double- or triple-duty caregiving roles.[15] Working at more than one LTCF further enables spread of COVID-19. Such conditions place these and other staff at significant risk of infection and significant stress.

Some Exceptions

There are countries that are exceptions to the rule that LTCFs are the sites of so many COVID-19 outbreaks and deaths. Hong Kong[16] has had no COVID-19 LTCF deaths and Singapore[17] and South Korea[18] report less than 20 each. According to Terry Lum, the Director of the University of Hong Kong's Sau Po Centre on Aging, key reasons for COVID-19 not infiltrating Hong Kong's LTCF's include:[16]

- To prevent spread of COVID-19 from hospitals, all cases are quarantined until proven multiple times to no longer be viremic.
- Careful tracking of contacts is performed, and these are isolated at a separate quarantine center for 14 days during which time frequent nasopharyngeal swab tests are performed.

This article is protected by copyright. All rights reserved.

- All nursing homes have trained infection controllers and emergency drills simulating influenza or SARS outbreaks are performed four times a year.

In South Korea, an additional measure includes inspections of all LTCFs. A key point for all three countries is that they enacted their emergency measures in early to late February. There are of course some countries like New Zealand that report only 20 deaths because of very early and strict lockdown policies and the closing of its borders.[19]

The Psychosocial Toll

Beyond the untenable death toll, COVID-19 has caused LTCF staff, residents and their families to endure huge stress. The usual socializing among residents no longer exists. As physical distancing practices are instituted in LTCFs and communal dining and recreational activities are cancelled, LTCF residents are at greater risk of loneliness. Families and residents have become heart-broken with their inability to visit in-person with one another. Family members experience significant anxiety knowing their loved ones are living in settings where there is a high risk of infection. In LTCFs where gerontologists and geriatricians aim to make residents feel like they are living more in their home and where socializing is the norm[20], the pandemic has brought such aspirations to a halt.

As LTCFs continue their lockdowns while communities open up, we must devise thoughtful approaches to preserving quality of life and important relationships. In the absence of family and friends, already stretched-thin nursing staff and aides do what they can to visit with residents, provide emotional care and reassurance. This is not trivial as loneliness and anxiety have been associated with depression, frailty and progression of cognitive decline.[21] Just as virtual classrooms and meetings have become the norm for businesses, LTCFs could consider installing computer screens in residents' rooms, allowing for communication between residents and their loved ones and to participate in activities.

The Need to Match the Regulations with the Science

Looking forward, we must address the consequences of ongoing careful isolation and other protective measures for these vulnerable older adults. LTCFs and public health officials must determine what can be done to reduce the stress and enhance the quality of life for residents, staff

Accepted Article

This article is protected by copyright. All rights reserved.

and families while keeping everyone safe. As resources become available, public health policies and state and federal regulations must match the science. For example, ubiquitous testing should replace taking temperatures, since we know that carriers can be asymptomatic. When a vaccine becomes available, anyone working at or visiting a LTCF should be among the first to be vaccinated.

Media focus on problems that LTCFs face is warranted; the narrative of blame and public shaming, however, is not helpful for the residents, their families or those who work in these health care settings. Instead, we need to identify the pitfalls in our interacting systems, and ways the multiple stakeholders can find common ground to support older adults in LTCFs.

Acknowledgements

Conflict of Interest. None of the authors have relevant conflicts of interest to disclose.

Author Contributions. All of the authors contributed to the conceptualization, review and interpretation of the data and writing of the manuscript.

Sponsor's Role. There was no sponsor for the production of this work.

References

1. Kaiser Family Foundation. State data and policy actions to address coronavirus May 28 2020: State reports of Long-Term Care Facility cases and Deaths related to COVID-19 URL: https://www.kff.org/health-costs/issue-brief/state-data-and-policy-actions-to-address-coronavirus/ Accessed May 29 2020.
2. Mustian J, Peltz J, Condon D. NY's Cuomo criticized over highest nursing home death toll. AP News. May 10, 2020:URL: https://apnews.com/4042f05613ee04259b05617a05644d04466a05610a05602a.
3. Clukey K, Young E. Nursing homes' unclear death toll has states testing corpses. Bloomberg Law URL: https://newsbloomberglawcom/coronavirus/sleuthing-at-funeral-parlors-to-track-nursing-homes-true-toll Accessed May 25 2020. May 11, 2020.
4. National Center for Health Statistics. Provisional death counts for Coronavirus disease (Covid-19): technical notes. May 6, 2020:URL: https://www.cdc.gov/nchs/nvss/vsrr/covid19/tech_notes.htm.

Accepted Article

This article is protected by copyright. All rights reserved.

Accepted Article

5. National Healthcare Safety Network of the Centers for Dease Control and Prevention. LTCF COVID-19 Module. May 11, 2020:URL: https://www.cdc.gov/nhsn/ltc/covid19/index.html
6. Associated Press. WHO Europe: Up to half of deaths in care homes. April 23, 2019:URL: https://www.voanews.com/Covid-19-pandemic/who-europe-half-deaths-care-homes.
7. Ainger J. Why the world's highest virus death rate is in Europe's capital. Bloomberg News. April 25, 2020:URL: https://www.bloomberg.com/news/articles/2020-2004-2025/why-the-world-s-highest-virus-death-rate-is-in-europe-s-capital Accessed May 2020, 2020.
8. MacCharles T. 82% of Canada's COVID-19 deaths have been in long-term care, new data reveals. The Star May 7 2020 URL: https://wwwthestarcom/politics/federal/2020/05/07/82-of-canadas-covid-19-deaths-have-been-in-long-term-carehtml Accessed May 28 2020.
9. Johns Hopkins University of Medicine Coronavirus Resource Center. Mortality Analyses. May 29, 2020:URL: https://coronavirus.jhu.edu/data/mortality. Accessed May 29, 2020.
10. Massachusetts Department of Public Health. COVID-19 dashboard. May 29, 2020:URL: https://www.mass.gov/doc/covid-19-dashboard-may-29-2020/download
11. Harris-Kojetin L, Sengupta M, Lendon JP, Rome V, Valverde R, Caffrey C. Long-term care providers and services users in the United States, 2015–2016. Data from the National Study of Long-Term Care Providers.National Center for Health Statistics. Vital Health Stat 3(43). 2019. URL: https://www.cdc.gov/nchs/data/series/sr_2003/sr2003_2043-2508.pdf.
12. Gandhi M, Yokoe DS, Havlir DV. Asymptomatic transmission, the Achilles' heel of current strategies to control Covid-19. N Engl J Med April 24, 2020 https://doi.org/10.1056/NEJMe2009758.
13. Van Beusekom M. US studies offer clues to COVID-19 swift spread, severity. Center for Infectious Disease Research and Policy News. March 18, 2020:URL: https://www.cidrap.umn.edu/news-perspective/2020/2003/us-studies-offer-clues-covid-2019-swift-spread-severity
14. Salary.com. Certified Nursing Assistant - Nursing Home: Salary URL: https://www.salary.com/tools/salary-calculator/certified-nursing-assistant-nursing-home accessed May 10, 2020.
15. Van Houtven CH, DePasquale N, Coe NB. Essential long-term care workers commonly hold second jobs and double- or triple-duty caregiving roles. J Am Geriatr Soc 2020 URL: https://doi-orgezproxybuedu/101111/jgs16509.
16. Both R. MPs hear why Hong Kong had no Covid-19 care home deaths. The Guardian May 19 2020 URL: https://wwwtheguardiancom/world/2020/may/19/mps-hear-why-hong-kong-had-no-covid-19-care-home-deaths Accessed May 20 2020.
17. Geddie J. Eyeing lockdown exit, Singapore to test all nursing homes. Reuters May 8 2020 URL: https://wwwusnewscom/news/world/articles/2020-05-08/singapore-records-768-new-covid-19-cases-total-now-21-707 Accessed May 20, 2020.
18. Kim H. The impact of COVID-19 on long-term care in South Korea and measures to address it. LTCcovidorg, International Long Term Care Policy Network May 7 2020 URL: https://ltccovidorg/wp-content/uploads/2020/05/The-Long-Term-Care-COVID19-situation-in-South-Korea-7-May-2020pdf Accessed May 20 2020.

This article is protected by copyright. All rights reserved.

19. Cousins S. New Zealand elminates COVID-19. Lancet. May 9 2020;395(10235):1474 URL: DOI: https://doi.org/1410.1016/S0140-6736(1420)31097-31097
20. Koren MJ. Person-Centered Care For Nursing Home Residents: The Culture-Change Movement. Health Affairs. 2010;29(2):312-317.
21. Simard J, Volicer L. Loneliness and Isolation in long-term care and the Covid-19 pandemic J Am Med Dir Assoc 2020 doi: https://doiorg/101016/jjamda202005006.

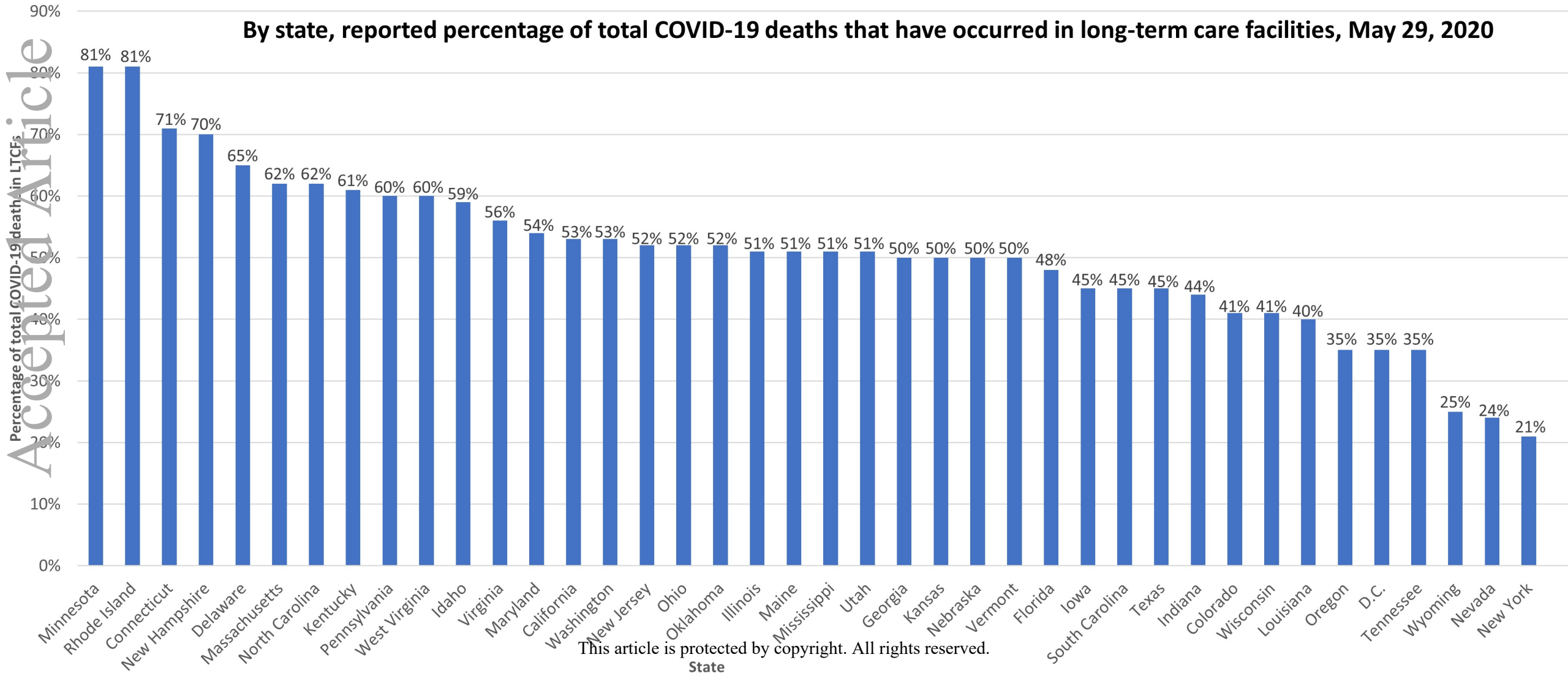
Accepted Article

Figure Legends

Figure 1. The proportions of states' total COVID-19 deaths occurring in long term care facilities (LTCFs) among the 40 states (including Washington DC) reporting LTCF Covid-19 fatalities in their tallies (11 states do not provide reports). The lower estimates may be artificially low due to numerous sources of undercounting. Original figure derived from data provided by the Kaiser Family Foundation, May 28, 2020.[1]

Figure 2. The number of Covid-19 deaths in long term care facilities versus elsewhere, including hospitals, from April 21 to May 29. Original figure derived from data provided by the Massachusetts Department of Public Health COVID-19 dashboards, April 21 through May 29, 2020.[10]

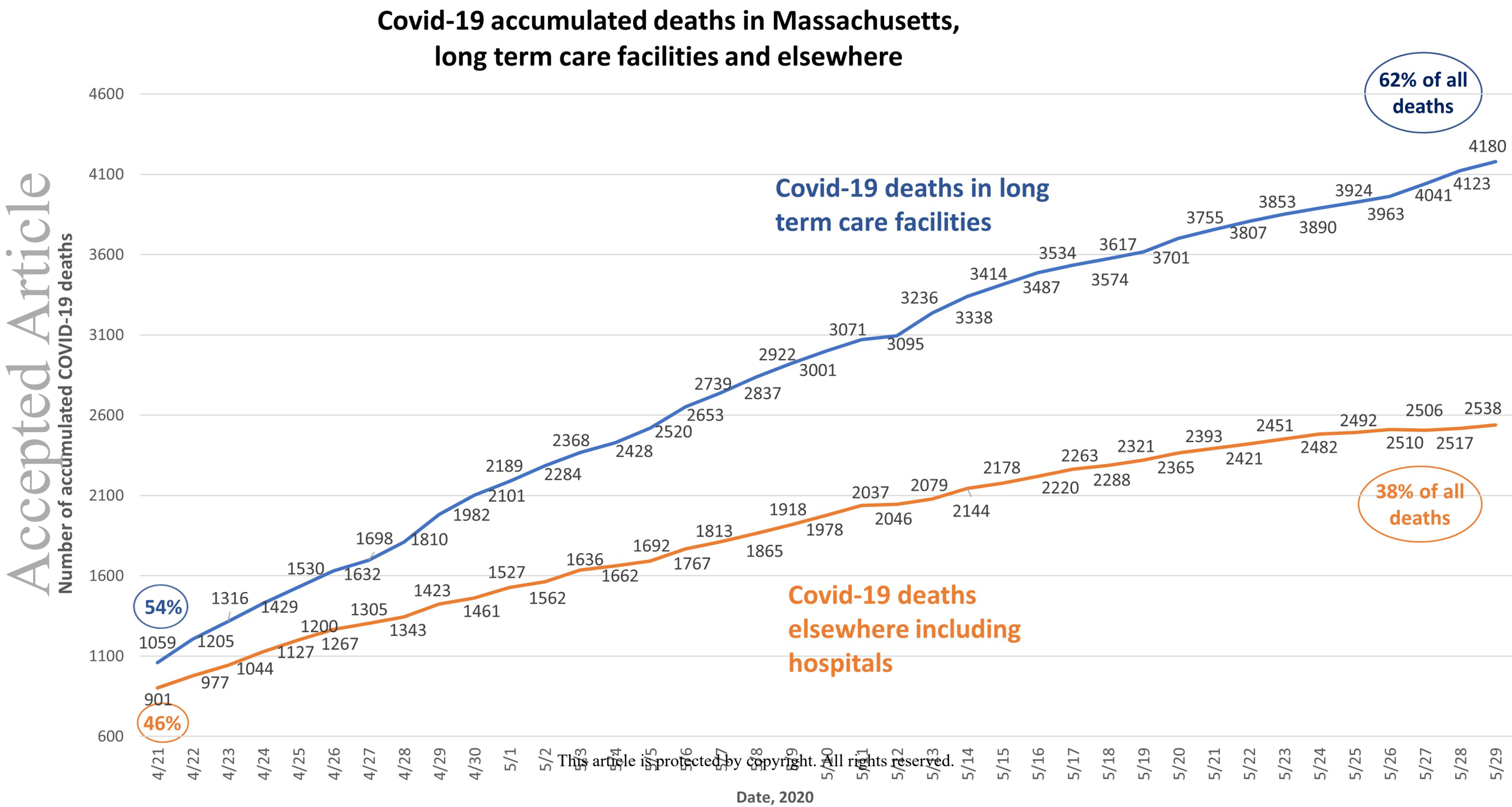
This article is protected by copyright. All rights reserved.



Accepted Article

This article is protected by copyright. All rights reserved.

Accepted Article



This article is protected by copyright. All rights reserved.