May 31, 2025

This is a set of exchanges I had with BMC Public Health concerning an article "**COVID-19 deaths on weekends**" it published in August 2023. The content had already been reported in the news media in April 2022, when it was presented at a conference.

Below you can read

- some lay-press coverage in April 2022, and in 2023 when the article was published
- the published BMC Public Health article
- Our cover letter, and our piece, entitled "**Daily 'numbers' of deaths from COVID-19: A tale of 2 dashboards**" which we submitted to BMC Public Health a few months later.
- The editorial decision, and the (technical) reason the Editorial Board member gave for rejecting our 'Matters Arising' format.
- Our email reply saying we had already raised the very same concerns with the journal before being asked to submit it as Matters Arising, and the journal's reply to that.

By then, we had already raised our concerns twice. In the last reply the editorial staff seemed to be deflecting our criticisms, which were aimed primarily at the editorial process.

We don't know if BMC Public Health passed our concerns on to the authors.

Readers who take an interest in the utility of graphics may wish to contrast the graphs in our piece with the one in the article.

Sincerely,

James Hanley

webpage: https://jhanley.biostat.mcgill.ca

email: `james.hanley@mcgill.ca`

State pensioners could be in for big 2024 rise due to Triple Lock

Study finds link between vaping and lung conditions in young people

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Symptoms of Covid Eris variant as virus surges across UK

13 million households not switching heating on when cold

Covid deaths higher at weekends than weekdays, global study finds

Shortfalls in clinical staffing, capacity and experience 'likely to play a role'

Overall, the average number of global deaths from coronavirus was 6% higher on weekends compared to weekdays (Image: PA Wire/PA Images)

Global Covid deaths on weekends have been higher compared to weekdays during the pandemic, according to a study. Researchers accepted that reporting delays could be a contributing factor, but said shortfalls in clinical staffing, capacity and experience at weekends are also likely to play a role.

Overall, the average number of global deaths from coronavirus was 6% higher on weekends compared to weekdays - 8,532 compared to 8,083 - throughout the pandemic, researchers said. Experts from the University of Toronto in Canada analysed all deaths reported to the World Health Organisation Covid-19 database between March 7, 2020, and March 7, 2022.

The findings, which are due to be presented at this year's European Congress of Clinical Microbiology and Infectious Diseases (ECCMID) in Portugal later this month, suggest the US had on average 1,483 weekend deaths compared to 1,220 on weekdays - a 22% increase. Brazil had an average of 1,061 weekend deaths compared to 823 on weekdays, which is a 29% increase, and the UK had on average 239 weekend deaths compared to 215 on weekdays – an 11% increase.

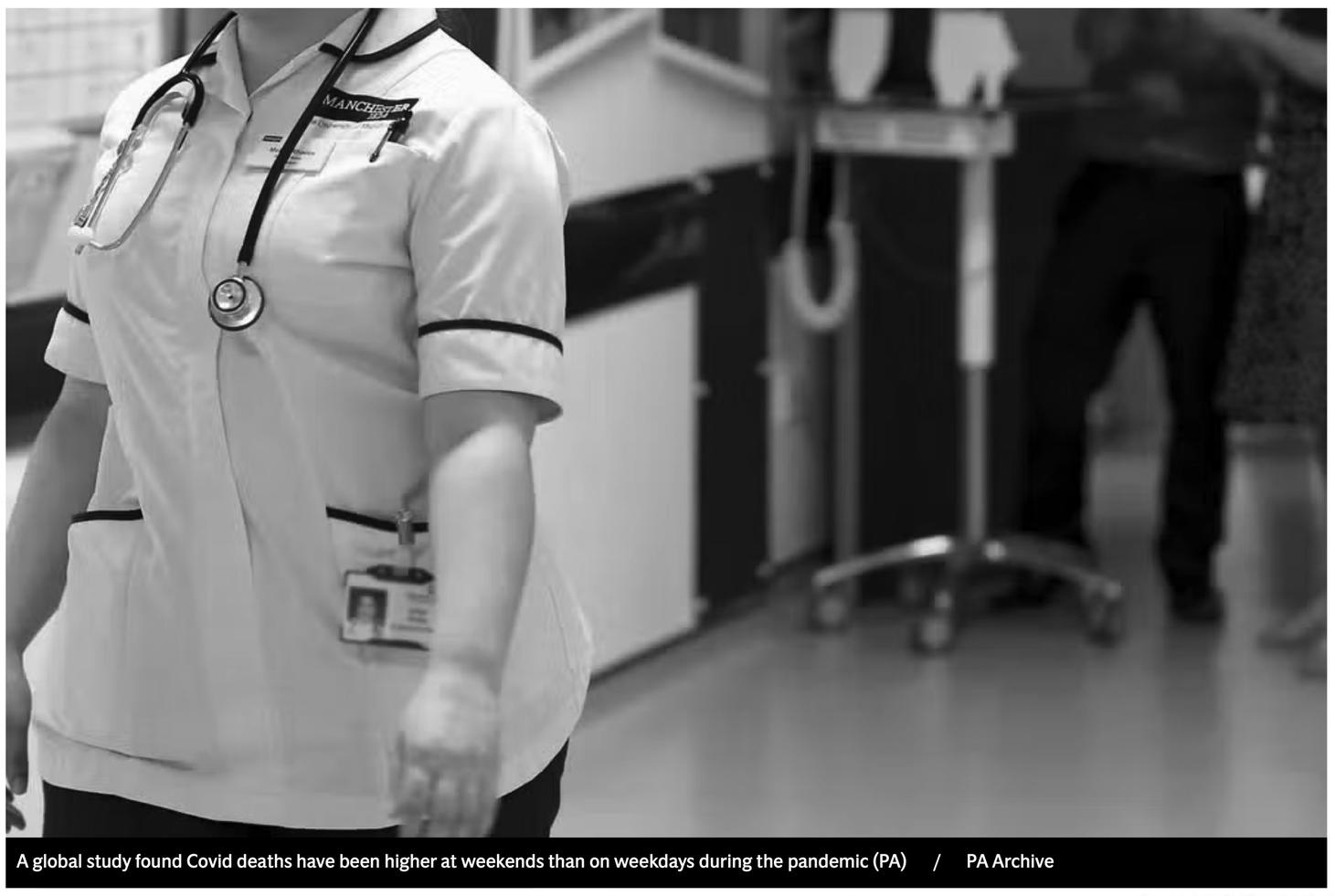
Further study looking at the average number of Covid deaths on individual days of the week found the increase was particularly big when comparing Sunday to Monday - 8,850 compared to 7,219 deaths - and Friday to Monday - 9,086 compared to 7,219. One of the researchers, Dr Fizza Manzoor, said delays in reporting deaths on weekends do not account completely for differences in different countries - with Germany reporting fewer average deaths at weekends (137) compared to weekdays (187).

Dr Manzoor said: "Bureaucratic delays on weekends alone do not explain why there are fewer documented Covid-19 deaths on Mondays compared to Fridays, and reporting lags alone cannot explain why the increase in weekend deaths was so substantial in the USA and not seen in Germany. Instead, the 'weekend effect' is also likely to be due to shortfalls in clinical staffing, capacity and experience."

The researchers accepted the conclusions of the study, which has been peer reviewed, could be limited by false negative results, missed cases, and data entry errors, and that the available data does not account for disease severity or explore the impact of local policies and public health interventions in individual countries.

Covid deaths higher at weekends than weekdays, global study finds

A researchers said the 'weekend effect' is likely due to shortfalls in clinical staffing, capacity, and experience – as well as reporting delays.



A global study found Covid deaths have been higher at weekends than on weekdays during the pandemic (PA) / PA Archive

By Aine Fox | 16 April 2022

Global Covid deaths on weekends have been higher compared to weekdays during the pandemic, according to a study.

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"Our findings suggest that this problem is not resolving, despite improved health system performance and awareness over the course of the pandemic"

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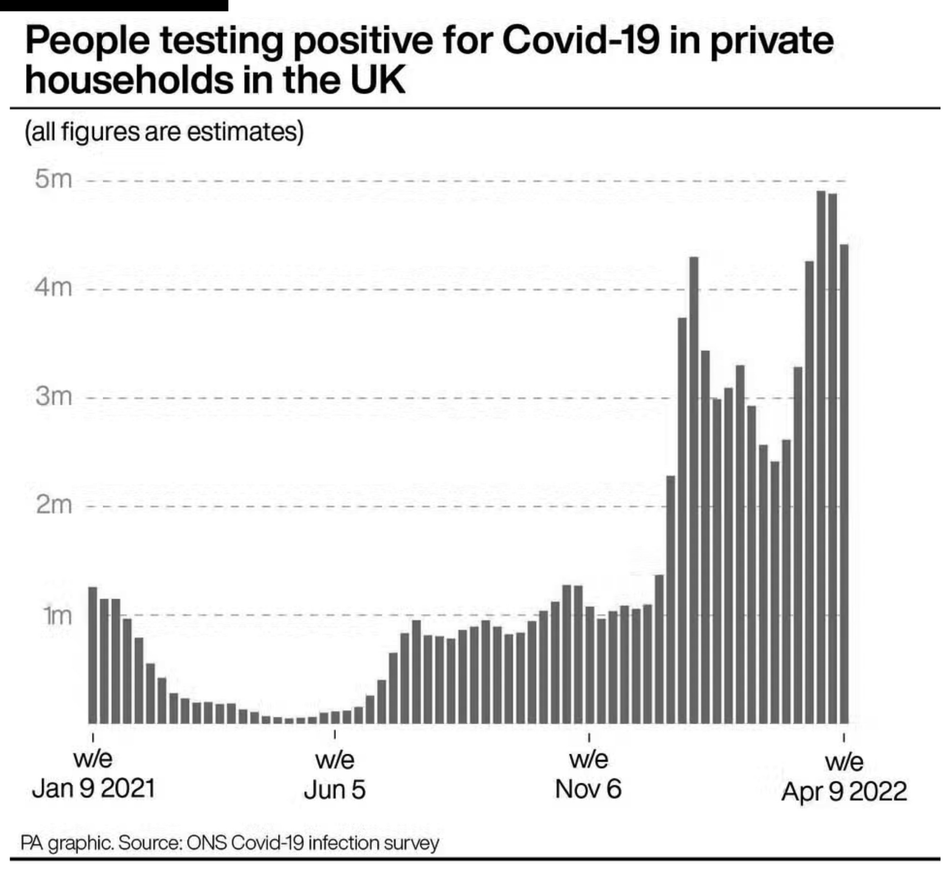

(PA Graphics) / PA Graphics

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CORONAVIRUS CHRONICLE

Covid deaths higher at weekends than weekdays, global study finds

Reuters

19 April, 2022, 10:50 am
Last modified: 19 April, 2022, 11:02 am

Gravediggers wearing protective suits carry a coffin as spotlights illuminate the graves during a night burial at Vila Formosa cemetery, amid the coronavirus disease (COVID-19) pandemic, in Sao Paulo, Brazil April 28, 2021. Picture taken April 28, 2021. REUTERS/Amanda Perobelli

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European Congress of Clinical Microbiology and Infectious Diseases

Infectious Disease News

By Ken Downey Jr.

+ Source/Disclosures

April 25, 2022 | 2 min read

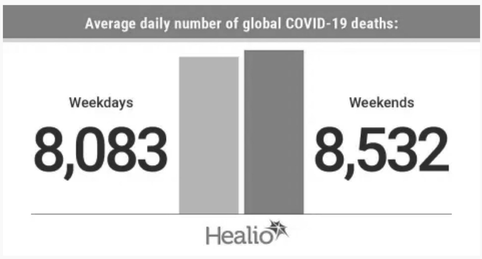
SAVE

Average daily COVID-19 deaths higher on weekends than weekdays, global study finds

ADD TOPIC TO EMAIL ALERTS

LISBON, Portugal — The average number of daily COVID-19 deaths is 6% higher on weekends compared with weekdays, according to a global study presented at the European Congress of Clinical Microbiology and Infectious Diseases.

Fizza Manzoor, MD, of the University of Toronto, and colleagues conducted a retrospective analysis of deaths reported to the WHO database from March 7, 2020, to March 7, 2022, to determine when COVID-19 deaths were occurring.



Manzoor KA, et al. Abstract 04960. Presented at: European Congress of Clinical Microbiology and Infectious Diseases; April 23-26, 2022; Lisbon, Portugal (hybrid meeting).

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What will be the most significant consequence of long COVID?

They calculated the average number of deaths on weekends and compared them with the average number of the preceding 5 days. This was repeated 10 times for the countries with the highest number of COVID-19 cases — the United States, United Kingdom, France, Germany, Italy, Spain, Russia, India, Brazil and Canada.

On average over the 2-year study period, more people died on a weekend day (n = 8,532) than a weekday (n = 8,083).

Among the 10 countries with the highest case counts, all but Germany reported higher death averages on the weekend when compared with weekdays. The highest absolute increase in weekend deaths occurred in the U.S. (22% increase), Brazil (29% increase) and the U.K. (11% increase).

"The 'weekend effect' is likely to be due to shortfalls in clinical staffing, capacity, and experience," Manzoor said in a statement. "What's more, our findings suggest that this problem is not resolving despite improved health system performance and awareness over the course of the pandemic. There is an opportunity for health systems to further improve clinical care on all days of the week."

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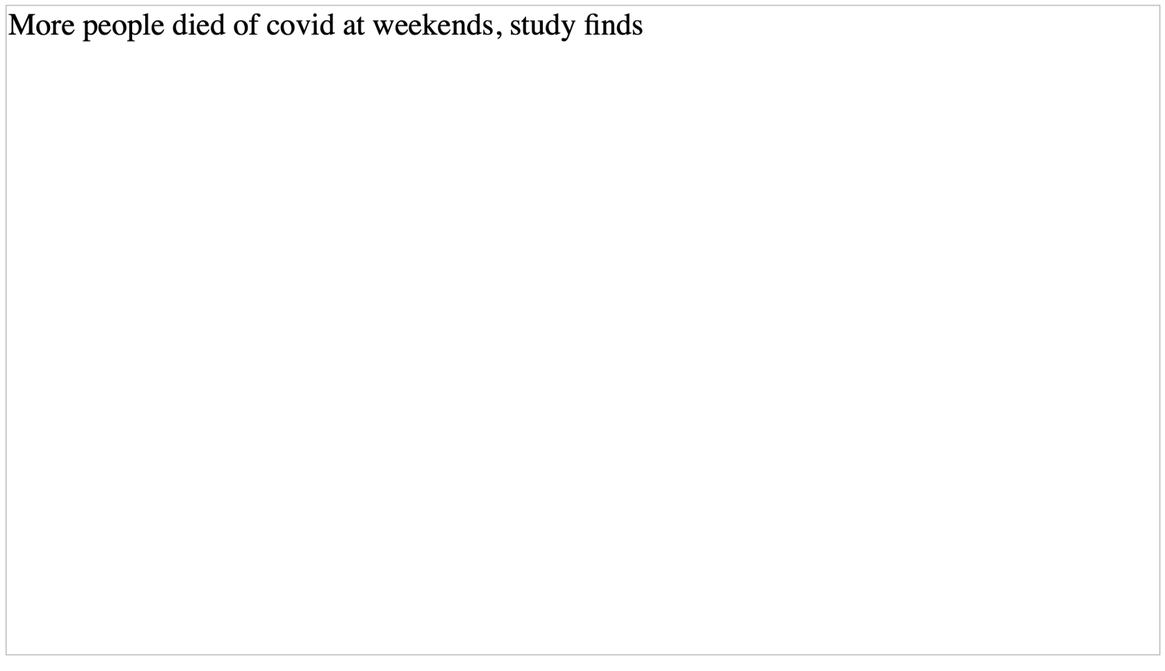
Because health care systems improved over the course of the pandemic, the researchers also compare weekend deaths from March 2020 to the first half of March 2021 with deaths from the latter half of March 2021 to March 2022. Weekend deaths remained elevated over the 2-year period, with an average of 641 additional weekend deaths in the first year (7,825 vs. 7,184) compared with an average of 257 weekend deaths in the second year (9,239 vs. 8,982).

When assessing average deaths on specific days of the week, Manzoor and colleagues reported larger increases when comparing Sunday with Monday (8,850 vs. 7,219) and Friday with Monday (9,086 vs. 7,219). When comparing average COVID-19 deaths for both weekend days, there was also a difference (Sunday, 8,850 vs. Saturday, 8,071).

"Further studies with detailed clinical data are needed to investigate the drivers of and causes for the risk of death on weekdays and weekends from COVID-19," Manzoor said.

Irish Examiner Logo

More people died of covid at weekends, study finds


More people died of covid at weekends, study finds

During the two years analsyed, they found the increase in deaths at weekends remained 'significant' during the early and later parts of those pandemic years. Picture: Denis Minihane

Wed, 23 Aug, 2023 - 02:00
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A study analysing covid-19 deaths across 10 countries found on average more people died at weekends than on week days during the pandemic up to March 2022.

The analysis of over 6m deaths between the start of the pandemic and March last year found: “the average number of daily global deaths from covid-19 was higher on weekends compared to weekdays”.

They found a difference of 8,532 vs 8,083, which they said was “equal to an absolute increase of 449 deaths and a 6% relative increase”.

The difference was significant, the study, carried out at the University of Toronto using data from the World Health Organisation, found.

They team said this was most marked in America, followed by Brazil among the countries analysed, which also included the United Kingdom and other European countries.

During the two years analsyed, they found the increase in deaths at weekends remained “significant” during the early and later parts of those pandemic years.

They also found this was the case during weeks of greater and lesser covid-19 case numbers.

Researchers, including University of Toronto Professor of medicne Donald Redelmeier, said they studied nearly 6m deaths over two years, using the World Health Organization covid-19 database.

They said they: “identified a persistent global anomaly in reported covid-19 deaths on weekends compared to weekdays.” These findings could have policy implications for public health care, the researchers suggested.

Findings showing “persistently high mortality” on weekends indicates there could be an opportunity for improving systems and care across all days of the week. They added:

An awareness of the weekend anomaly in covid-19 mortality might help guide policy, frame risks, and educate leaders.

They also pointed to a potential impact on public behaviour at a time of high cases.

This, they linked to typically seeing lower numbers of deaths reported at the weekends for various reasons while in reality more deaths were occurring at weekends.

This lower reporting could have occurred for a number of reasons, they suggested, among them delays in reporting, uneven staffing, a different mix of personnel, or decreased efficiency.

The analysis was replicated in ten countries: United States, United Kingdom, France, Germany, Italy, Spain, Canada, Russia, India and Brazil.

The study “covid-19 deaths on weekends” is available to read on the BMC Public Health journal for August.

Read More

BMC Public Health

RESEARCH

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COVID-19 deaths on weekends

Fizza Manzoor[1] and Donald A. Redelmeier[1,2,3*]

Abstract

Background Mortality statistics about daily deaths might change on weekends due to delays in reporting, uneven staffing, a different mix of personnel, or decreased efficiency. We hypothesized that reported deaths for COVID-19 might increase on weekends compared to weekdays.

Methods We collected data from the World Health Organization COVID-19 database. All deaths from March 7, 2020 to March 7, 2022 were included (two years). The primary analysis evaluated mean daily deaths on weekends compared to the preceding five workdays. Analyses were replicated in ten individual countries: United States, United Kingdom, France, Germany, Italy, Spain, Russia, India, Brazil, and Canada.

Results The mean COVID-19 daily deaths was higher on weekends compared to weekdays (8,532 vs. 8,083 $p < 0.001$), equal to a 6% relative increase (95% confidence interval 3% to 8%). The highest absolute increase was in the United States (1,483 vs. 1,220 deaths, $p < 0.001$). The second highest absolute increase was in Brazil (1,061 vs. 823 deaths, $p < 0.001$). The increase in deaths on weekends remained significant during the earlier and later months of the pandemic, as well as during the greater and lesser weeks of the pandemic.

Conclusions The apparent increased COVID-19 deaths reported on weekends might potentially reflect patient care, confound community trends, and affect the public perception of risk.

Keywords COVID-19, Weekend mortality, Risk perception, Healthy system performance, Daily trends, Pitfalls in reasoning

Background

Novel coronavirus disease (COVID-19) has resulted in over 6 million deaths worldwide [1]. Daily reports of COVID-19 deaths are closely tracked by the public, political leaders, healthcare professionals, and mainstream media. Mortality counts, however, might vary on weekends due to reporting delays, fallible documentation, decreased efficiency, uneven staffing, or other factors [2, 3]. Of course, the pandemic has affected healthcare systems worldwide, and trends in weekend mortality may have changed with greater awareness, funding, and incentives [4, 5].

Some studies have explored mortality during the COVID-19 pandemic. Early studies during the pandemic have demonstrated an increase in mortality on weekdays compared to weekends [6–8]. One study evaluated behaviour change and found an increase in mobility on weekdays as a potential proxy for social distancing and predictor of mortality risk [9]. No study has examined mortality trends longitudinally or across individual countries. We explored whether COVID-19 mortality was higher on weekends compared to weekdays throughout the pandemic.

Methods

We collected data from the World Health Organization COVID-19 database [10]. All global deaths related to COVID-19 between March 7, 2020 and March 7, 2022

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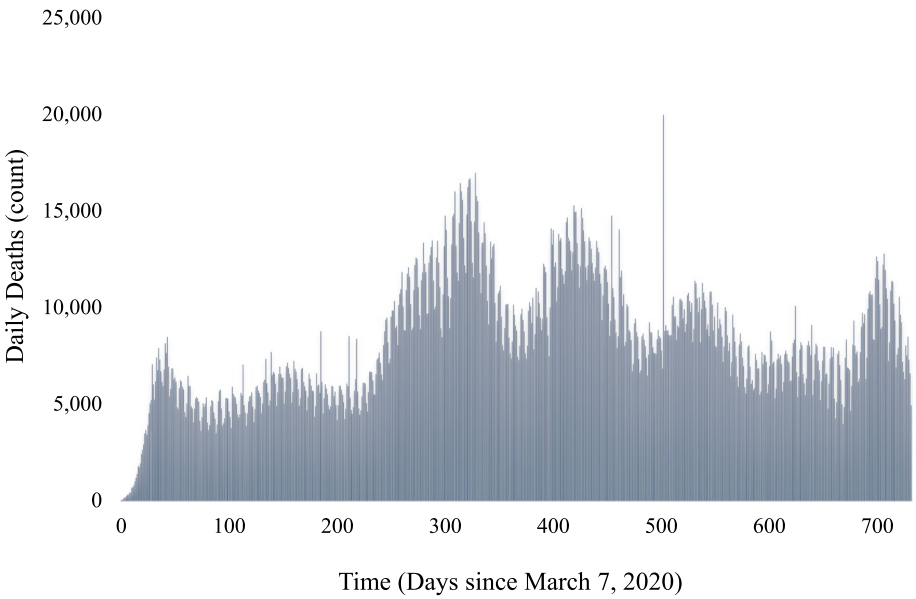
were included (104 weeks). The primary analysis evaluated the mean daily deaths on weekends (Saturday and Sunday) compared to the mean deaths on the immediately preceding five workdays using a paired t-test for comparisons. Stratified analyses examined deaths among the ten individual countries with the highest COVID-19 prevalence (United States, United Kingdom, Canada, France, Germany, Italy, Spain, Russia, India, Brazil) [11]. Analyses were adjusted for national holidays and long weekends for the ten individual countries [12]. All *p*-values were two-tailed with 95% confidence intervals calculated using Microsoft Excel (version 16.66.1).

Secondary analyses evaluated the mean daily incidence of new cases reported on weekends compared to the preceding five workdays. Additional analyses also evaluated weekend mortality for earlier and later months of the pandemic (midpoint = March 7, 2021, earlier = March 2020 to March 2021, later = March 2021 to March 2022). Supplementary analyses also evaluated whether weekend mortality varied with changes in the prevalence of COVID-19 (pandemic waves) by comparing deaths during weeks with weekend mortality greater than the mean (calculated over two years) compared to weeks with weekend mortality lesser than the two-year mean. Relative changes in mortality or incidence were calculated by dividing the absolute change by total number of deaths or new cases over a specific time-period.

Results

A total of 5,983,471 deaths and 444,961,484 new cases were identified during the two-year interval (Fig. 1). The average number of daily global deaths from COVID-19 was higher on weekends compared to weekdays (8,532 vs. 8,083 $p < 0.001$), equal to an absolute increase of 449 deaths and a 6% relative increase (95% confidence interval 3% to 8%). The average number of incident cases was also higher on weekends compared to weekdays (646,659 vs. 594,525, $p < 0.001$), equal to an absolute increase of 52,133 cases and a 9% relative increase (95% confidence interval 1% to 17%). A concurrent apparent increase in both weekend COVID-19 mortality and incidence was apparent for 78% of weeks (81 of 104).

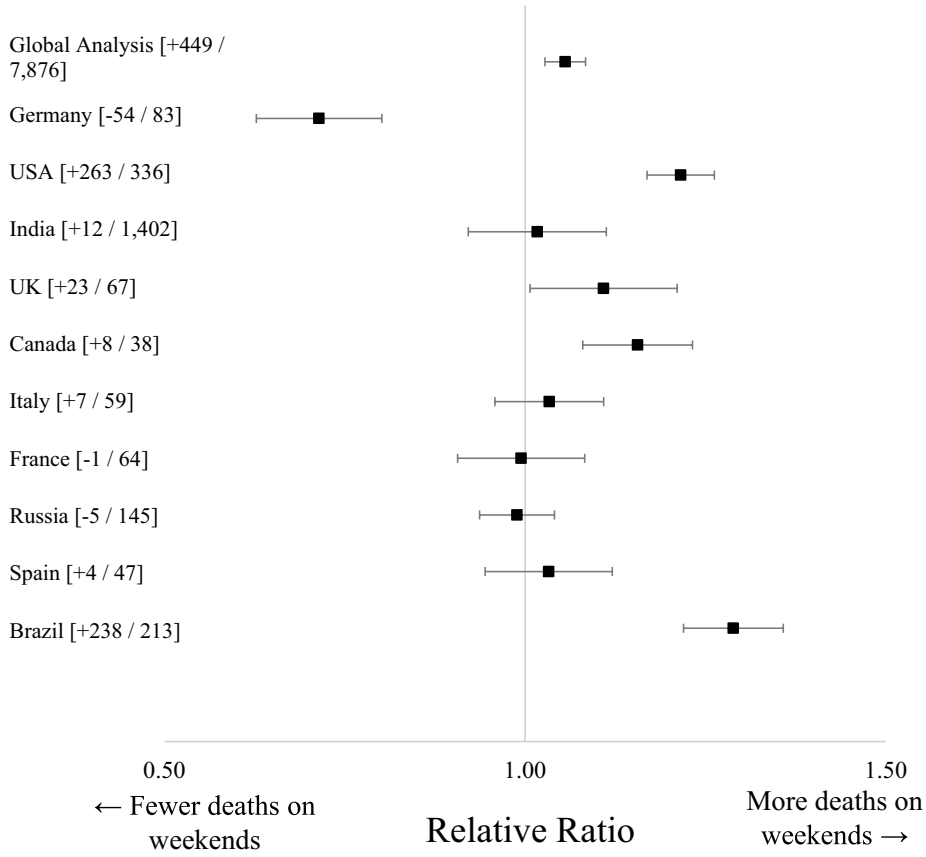
Replication of the primary analysis among the ten individual countries (Fig. 2) showed that four countries individually had significantly higher deaths on weekends: United States (1,483 vs. 1,220 deaths, $p < 0.001$), Brazil



Footnote

Daily statistics of absolute count of total COVID-19 deaths worldwide. X-axis shows number of days from March 7, 2020 to March 7, 2022 (two years). Y-axis shows total COVID-19 deaths (daily count). Results show fluctuation in reported deaths appearing as a serrated pattern each week (7 days). Anomalous day of nearly 20,000 deaths unexplained by current analysis (July 21, 2021).

Fig. 1 Daily deaths



Footnote

Forest plot showing global and country-specific risk of death on weekends compared to weekdays. X-axis denotes risk ratio with the null association indicated by a vertical line. Y-axis shows global analysis and individual country analysis. Solid squares indicate relative ratio estimates and horizontal lines indicate 95% confidence intervals. Values to the right of 1.00 denote increased risk and confidence intervals that exclude 1.00 are statistically significant ($p<0.05$). Square brackets show change in average death count on weekends (positive sign = increase, negative sign = decrease) and country population on January 1, 2021 (millions). Findings show increased deaths on weekends in global analysis, similar trends in 7 specific countries, and significant contrary result in 1 country (Germany).

Fig. 2 Global analysis of weekend deaths

(1,061 vs. 823 deaths, $p<0.001$), United Kingdom (239 vs. 215 deaths, $p<0.001$), and Canada (56 vs. 48 deaths, $p<0.001$). Three countries showed trends towards increased deaths on weekends that were not statistically significant. Only one country showed a significant opposite pattern: Germany (134 vs. 187 deaths, $p<0.001$).

We found the observed increase in weekend COVID-19 mortality in the global analysis persisted in the split analysis. The earlier half of the pandemic (March 2020 to March 2021) averaged 641 additional weekend deaths (7,825 vs. 7,184, $p<0.001$) and the later half of the pandemic (March 2021 to March 2022) averaged 257 additional weekend deaths (9,239 vs. 8,982, $p=0.009$). Of the ten countries, none had a significant contrary trend of weekend deaths over time, and all four countries with significantly more weekend deaths also showed the same trend in the later half of the study interval (United States, United Kingdom, Brazil, Canada).

We found the weekend COVID-19 mortality in the global analysis persisted regardless of overall mortality: the weeks with fewer deaths averaged 426 additional weekend deaths (6,390 vs. 5,963, $p<0.001$) and the weeks

with greater deaths averaged 476 additional weekend deaths (11,130 vs. 10,653, $p<0.001$). Of the ten specific countries, none had a significant contrary overall trend of weekend deaths.

Discussion

We studied nearly 6 million deaths over two years and identified a persistent global anomaly in reported COVID-19 deaths on weekends compared to weekdays. A lack of correction in the split analyses comparing earlier and later months of the pandemic further suggests this anomaly has not resolved over time. The illness course and case detection of COVID-19 does not explain variation in mortality based on the day of week [13]. We observe this anomaly in the majority of selected countries despite a diversity in public health approaches, health system structures, and funding models [14]. The main strength of our analysis is to highlight a weekly global anomaly in that COVID-19 mortality data that conflicts with the laws of nature.

Our study offers differing results compared to the current literature by showing an increase in weekend mortality during the COVID-10 pandemic [6–9]. One explanation might be delays in reporting on weekdays that are corrected on subsequent weekends. Additionally, shortfalls in staffing, hospital capacity, diagnostic services, community resources, and clinician experience may also be more common on weekends [15–18]. Furthermore, our results evaluate sustained trends throughout the pandemic that may not be identified in analyses over shorter time periods and smaller regions.

Our analysis has several limitations. We used a single database which may be limited by false negative results, missed cases, delayed updates, inconsistent taxonomy, evolving testing criteria, and data entry errors [19]. Additionally, the available data do not allow assessment of disease severity or the exact physiology underlying the increased mortality. Our analysis does not capture nuanced differences in microbiologic, systemic, and social factors affecting each separate wave of the pandemic. Although our analysis is global, the results do not explore the local policies and public health interventions in individual countries [20].

Potential solutions may consider staffing incentives, investments in community or outpatient services, public health initiatives, and weekend care model restructuring [21–23]. Furthermore, auditing database corrections of mortality counts may help identify and remedy anomalies due to reporting delays [24]. The impact of these interventions might extend beyond the COVID-19 pandemic and inform future public health response. Of course, further research is also needed to explore the specific organizational and individual factors on weekends that might increase COVID-19 mortality.

Conclusions

Daily reports of COVID-19 deaths draw disproportionate attention to day-to-day noise, might confound projections, and potentially skew the public perception of risk [25]. The apparent increased deaths on weekends might create a false sense of security among the public on the subsequent weekdays reporting fewer deaths. Additionally, the persistently high mortality on weekends over the pandemic suggests an opportunity for improving health systems and clinical care on all days of the week. An awareness of the weekend anomaly in COVID-19 mortality might help guide policy, frame risks, and educate leaders [26, 27].

Acknowledgements

Not applicable.

Authors' contributions

All authors contributed to study design, manuscript preparation, data analysis, results interpretation, critical revisions, and final decision to submit.

Funding

Canada Research Chair in Medical Decision Sciences (DAR) and the PSI Foundation of Ontario. The funding organizations had no role in the design and conduct of the study; collection, management, analysis, and interpretation of data; and preparation, review, or approval of the manuscript.

Availability of data and materials

Data for the study was obtained using the World Health Organization dataset (https://covid19.who.int/info).

Declarations

Ethics approval and consent to participate

The study did not involve human participants and ethics approval was not required.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

Received: 16 December 2022 Accepted: 3 August 2023
Published online: 22 August 2023

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Publisher's Note

Dear Editor

We believe the message of the article was seriously misconstrued, and that this could have been avoided had the referees (i) demanded more careful writing, especially in the parts of the abstract that the media tend to grab on to, and (ii) insisted that the Johns Hopkins dashboard -- where much of the world was getting its Covid news -- be looked at as well.

Trust in epidemiology research is falling, and this type of article only adds to the decline, especially when it is so easily mis-understood and imbalanced.

So, while the media mention may help promote a journal's visibility, we think it is also the journal's responsibility to ensure that what the media takes from an article is as accurate as possible, and that the resulting headlines are not an arbitrary product of an incomplete analysis -- one that in this case would have been reversed had the journal insisted on an analysis of all of the relevant dashboards..

We hope BMC Public Health will agree that it could have done better -- and also use the attached to correct the record, even if (as HR Haldeman said) the toothpaste is already out of the tube.

Sincerely

James Hanley et al.

December 26, 2003: this is an examination of the data that were and were not addressed in an article in BMC Public Health in August 2023. It was submitted to BMC Public Health in mid-October 2023.

Daily 'numbers' of deaths from COVID-19: A tale of 2 dashboards

James A. Hanley, Haoyu Wu, Yuqi Zhang, Epidemiology and Biostatistics, McGill University

The abstract of the BMC Public Health article "COVID-19 deaths on weekends" stated that globally the mean COVID-19 daily deaths was higher on weekends (8,532/day) compared to weekdays (8,083/day), with the highest absolute "increases" in the United States (1,483 vs. 1,220) and Brazil (1,061 vs. 823). These results prompted news headlines such as "more people died of Covid at weekends" and "Covid deaths higher at weekends than weekdays, global study finds." This "fake news" might have been avoided if the abstract emphasized sufficiently that the days referred to were when the counts were reported, not when the death occurred. Moreover, if instead of the WHO data, the data from the world's most popular COVID dashboard been examined, the same news media would have reported that "more people died of COVID on weekdays." To maintain science's credibility with the public, journals and press offices have a responsibility to issue abstracts and news releases that are less likely to be misconstrued by news media. And journal referees and editors have a responsibility to ask that all relevant datasets are examined.

The tracking of morbidity and mortality during epidemics goes back a long way. For example, Bills of Mortality were produced intermittently in the City of London from about 1592 onwards, particularly during outbreaks of plague. They were superseded by the weekly returns of the Registrar General from 1840 onwards. Published each Tuesday, and containing the returns up to the previous Saturday, they were an important source of data during the Cholera epidemics of 1849, 1854, and 1866. At a critical point during that last of these cholera epidemics, William Farr's insistence on *daily* returns, and his resulting prompt intervention against the East London Water Company ended the epidemic in that district.

This history came to mind as we located the BMC article [1] mentioned in the media articles. The media headlines went against the "serrated" curves we remembered seeing during COVID. Even before we read the article, we were already aware from an earlier study [2] that – unlike the media journalists who may not have read to the last sentence of the abstract, or did but missed this subtlety – the weekend vs. weekday probably referred to when the deaths were *registered/recorded*, not when the deaths *took place*. Thus, for example, pre-COVID, some of those who paid attention to the early 21st century "bills of mortality" for England were concerned that the higher numbers

of deaths for the second week of the New Year than the first reflected a worsening health system and portended a worsening winter[2]. But a large part of the jump was because it was the first full (5-day) work week in the New Year for the personnel who deal with the backlog of *registrations*.

The first sentence of the abstract does raise the possibility that "mortality statistics about daily deaths might change on weekends due to *delays in reporting*, uneven staffing, a different mix of personnel, or decreased efficiency." Despite the evidence, admittedly from early studies during the pandemic, of "an increase in mortality on weekdays compared to weekends," the authors 'hypothesized that reported deaths for COVID-19 might *increase* on *weekends* compared to weekdays." One possible reason for this may have been the finding that Ontario "patients with some serious medical conditions are more likely to die in the hospital if they are admitted on a weekend than if they are admitted on a weekday" [3] – and that in New Jersey patients admitted for a first acute myocardial infarction, "mortality at 30 days was significantly higher for those admitted on weekends [than weekdays]." [4]

Globally, what *was* the pattern in the WHO-*reported* numbers of daily deaths?

When we zoom in on Figure 2 in the BMC article, we do see the "serrated" weekly pattern the authors describe. However, the Figure does not distinguish the weekend and weekday days. But the text tells us that, in the WHO dataset that the article is based on, the mean was 8,532/day on weekends and 8,083/day on weekdays.

In order to whether this difference would be visible in an "*inter-ocular traumatic*" rather than a "*paired t*" test, we each independently downloaded and examined the World Health Organization dataset `WHO-COVID-19-global-data.csv`. It contains daily death counts for each of 236 countries. We restricted attention to the $52 \times 2 = 104$ full weeks[1] from Monday March 9, 2020 to Sunday March 6, 2022, so that there are $104 \times 2 = 208$ weekend days and $104 \times 5 = 520$ weekdays.[2]

The *broad* pattern seen in these 728 days, shown in our Figure 1, is quite similar to that seen in Figure 1 in the BMC article. However, the weekend vs. weekday difference, 10673/day vs. 7355/day, is much larger that the 8,532/day vs. 8,083/day reported in the BMC article. We first wondered about WHO work and database updating schedules, since for much of the two years,

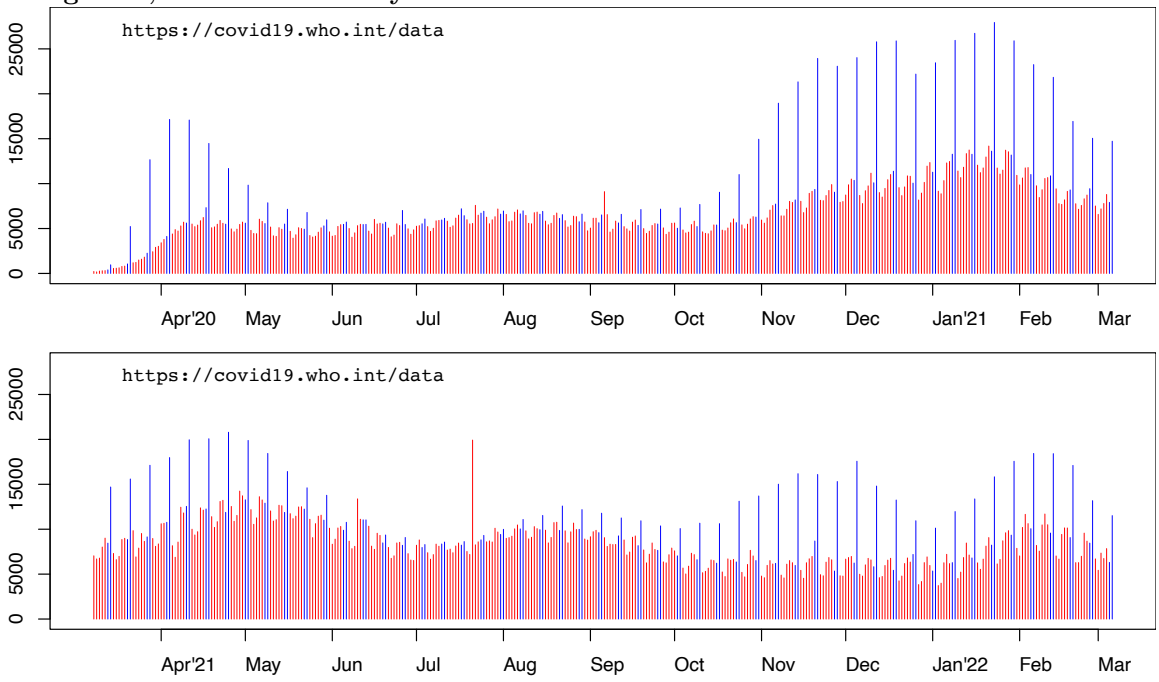
[1] The BMC article states that 'All global deaths related to COVID-19 between [Saturday] March 7, 2020 and [Monday] March 7, 2022 were included (104 weeks).' I presume unmatched days were discarded in the formal paired t-test.

[2] That the counts sum to 6.04 million deaths, whereas the BMC article reports 5.98 million deaths, probably reflects modifications/revisions to the file since it was downloaded for the MMC analyses.

Sunday counts are double those on other days of the week. We later noticed that several countries that had sizeable numbers of deaths only reported them to the WHO once a week, mostly on Sundays. And, of course, several countries follow a Friday-Saturday weekend.

To check whether we might each have made a mistake in collapsing the 237 country-specific time series into a single global series, we found another website (`https://ourworldindata.org`) whose `github` repository contained a file called `total.deaths.csv` that already contained daily '`World`' totals. However, this series had the same pattern that we found in the data from the WHO site.[3]

Figure 1, with weekend days in blue



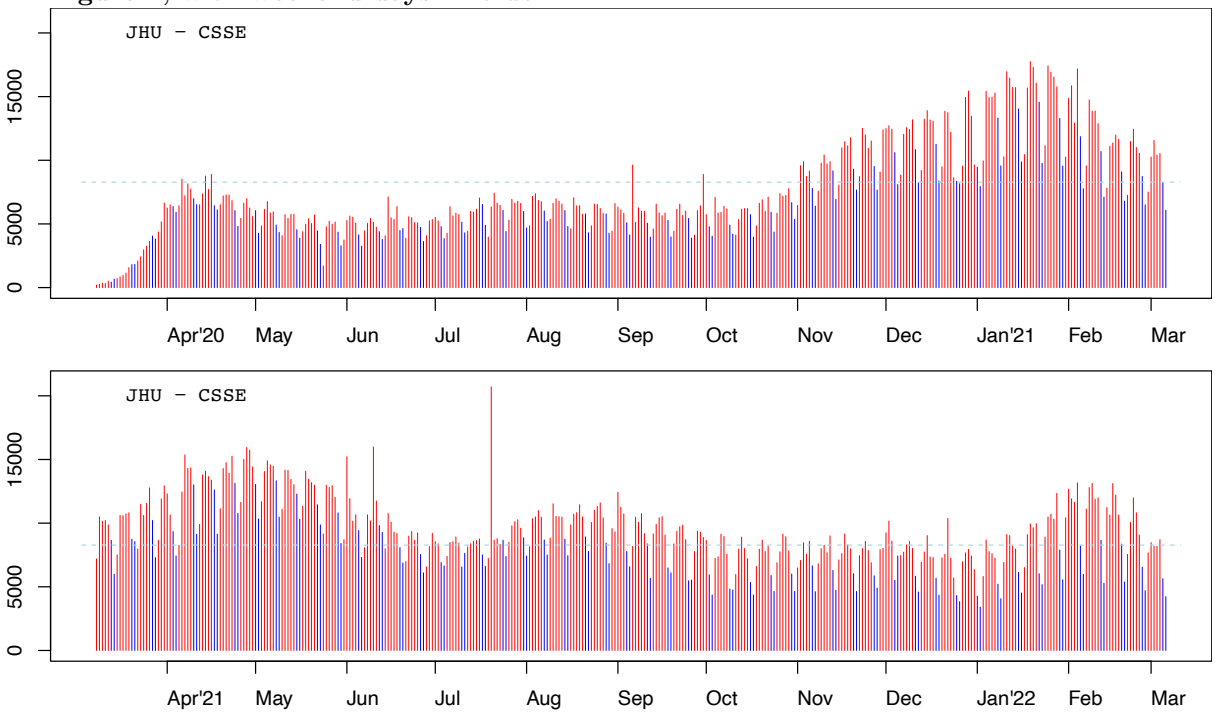
What *was* the pattern in the Johns Hopkins University dashboard?

The BMC article does acknowledge that one limitation was that "we used a single database." Given how easy it was to access the (also publicly available) datafile that was used in the widely-watched Johns Hopkins University dashboard [5], we were surprised that this was not done.

[3] This fits with the `ourworldindata` statement that "since Johns Hopkins University stopped updating its data on 10 March 2023, `ourworldindata.org` switched their primary source to the World Health Organization (WHO). We replaced the entire time series with WHO data on 8 March 2023."

It took each of us a few minutes to locate the file, and a few more to independently plot the 728 counts in Figure 2.

Figure 2, with weekend days in blue



The (also serrated) pattern in Figure 2 is more in line with what we all remember from watching local and national dashboards – counts were consistently *lower* for the two weekend days.[4] This much more understandable pattern, compatible with a 'still-there-but-changing' 5-day work week, was extensively commented on in the early months of the epidemic, and many authorities soon adopted a 7-day-rolling average to smooth out the embarrassing serrated pattern.

Commentary

The WHO website went to some lengths to emphasize that the numbers do not reflect day-of-death data, and that because of differences in reporting methods, cut-off times, retrospective data consolidation and reporting delays, "the number of new cases may not always reflect daily totals published by individual countries, territories or areas." The JHU dashboard appears to have been somewhat more responsive, but it too was only as timely as the publications by individual countries.

[4] The data at `https://worldometers.info/coronavirus/coronavirus-death-toll/` show the same pattern as Figure 2.

The authors claimed that "The main strength of [their] analysis is to highlight a weekly global anomaly in that COVID-19 mortality data that conflicts with the laws of nature." We believe that, at the time, most media and consumers quickly understood the reasons for the serrated patterns in the JHU and local dashboards, and recognized them for what they were, and their inevitability. This imperfection in reporting is preferable to the practice adopted by some countries [6].

To maintain science's credibility with the public, journals and press offices have a responsibility to issue abstracts and news releases that are less likely to be misconstrued by news media. And journal referees and editors have a responsibility to ask that the unexamined datasets are actually examined, rather than merely mentioned as a limitation.

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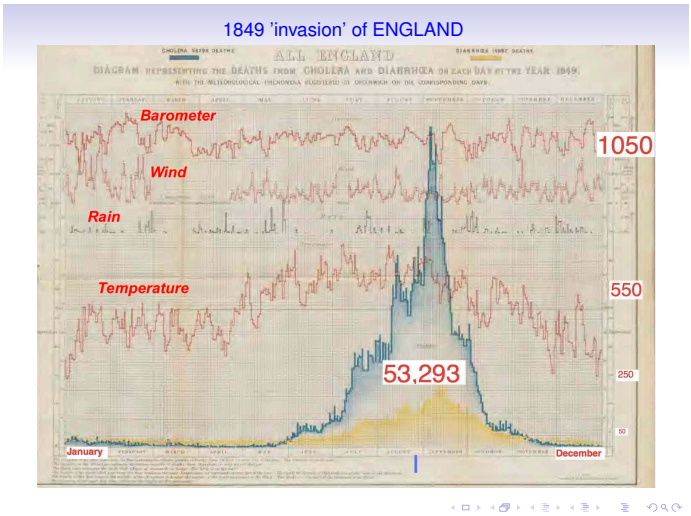

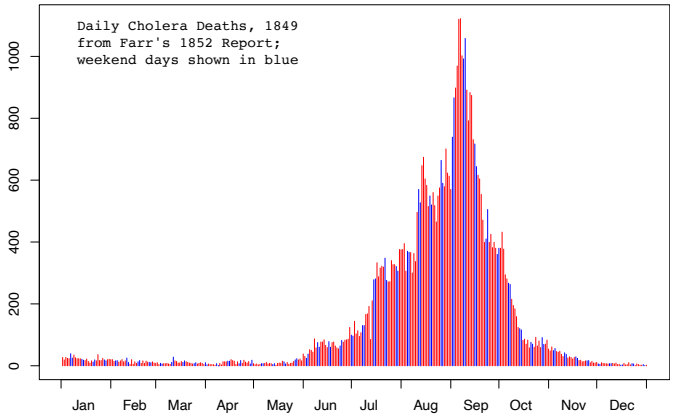

Appendix: Farr, revisited

After the 1849 cholera epidemic in England, which killed more than 50,000 people, Farr and his staff worked for 2 years to produce a 400 page Report on the Mortality of Cholera. The Lancet called it "One of the most remarkable productions of type and pen in any age or country". It included the graph shown at the top of this page.

With much (after-the-fact) effort, Farr produced detailed data that (inter alia) distinguished weekends from weekdays. These data do not "conflict with the laws of nature." None of the 1852 media carried the headline "Cholera deaths no higher at weekends than weekdays, national study finds."

Outlook

BMC Public Health - Decision on your manuscript

From BMC Public Health <bmcpublichealth@biomedcentral.com>
Date Mon 2023-12-18 7:50 AM
To James Hanley, Dr. <james.hanley@McGill.Ca>

[You don't often get email from bmcpublichealth@biomedcentral.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

Ref: Submission ID d36e9fa2-cc89-41db-aebc-f9072b55a58d

Dear Dr Hanley,

Your manuscript entitled "Daily 'numbers' of deaths from COVID-19: fake news and a tale of 2 dashboards" has now been reviewed. Any reviewer comments on the suitability of your manuscript have been appended below. As a result, I regret to inform you that we cannot publish your manuscript in BMC Public Health.

Editor comments
As stated in our guidelines here: https://can01.safelinks.protection.outlook.com/?url=https%3A%2F%2Fbmcpublichealth.biomedcentral.com%2Fsubmission-guidelines%2Fpreparing-your-manuscript%2Fmatters-arising&data=05%7C02%7Cjames.hanley%40mcgill.ca%7Caaac69d07eea48f6390508dbffc7eba7%7Ccd31967152e74a68afa9fcf8f89f09ea%7C0%7C0%7C638385006335054952%7CUnknown%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=U9sSESpgSRzALHDfxlFm4Dm6NB0p93qcUKsUsf4NSnI%3D&reserved=0, Matters Arising articles should aim to identify challenges, clarifications or, in some cases, replication of the published work. In this case, as your piece serves mainly to identify important errors or mistakes in the published paper, we are unable to consider this as a Matters Arising. Instead, we ask that you email your concerns to me at lorena.verduci@springernature.com as concerns such as these may lead to the publication of a clarification statement (correction or retraction, for example). We would need to ask the authors to respond to your concerns before we advise on the best plan of action.

Thank you for the opportunity to consider your work. I am sorry that we cannot be more positive on this occasion and hope you will not be deterred from submitting future work to BMC Public Health.

Kind regards,

Lorena Verduci
Editorial Board Member
BMC Public Health

Outlook

Re: BMC Public Health - Decision on your manuscript

From James Hanley, Dr. <james.hanley@mcgill.ca>
Date Mon 2023-12-18 8:39 AM
To BMC Public Health <bmcpublichealth@biomedcentral.com>
Cc Haoyu Wu <haoyu.wu2@mail.mcgill.ca>; Yuki Zhang <yuki.zhang@mail.mcgill.ca>

Dear Editor

Thank you for you email with your decision.

Initially (before being asked by your staff to submit it formally as Matters Arising) I did email you my concerns [they are the same ones that we address in the focal piece]. Do I understand correctly that you do not wish to consider this matter in any form?

Best

James Hanley

From: BMC Public Health <bmcpublichealth@biomedcentral.com>
Sent: December 18, 2023 7:50 AM
To: James Hanley, Dr.
Subject: BMC Public Health - Decision on your manuscript

[You don't often get email from bmcpublichealth@biomedcentral.com. Learn why this is important at https://aka.ms/LearnAboutSenderIdentification]

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n%7CTWFpbGZsb3d8eyJWIjoiMC4wLjAwMDAiLCJQIjoiV2luMzIiLCJBTiI6Ik1haWwiLCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=U9sSESpgSRzALHDfxlFm4Dm6NB0p93qcUKsUsf4NSnI%3D&reserved=0, Matters Arising articles should aim to identify challenges, clarifications or, in some cases, replication of the published work. In this case, as your piece serves mainly to identify important errors or mistakes in the published paper, we are unable to consider this as a Matters Arising. Instead, we ask that you email your concerns to me at lorena.verduci@springernature.com as concerns such as these may lead to the publication of a clarification statement (correction or retraction, for example). We would need to ask the authors to respond to your concerns before we advise on the best plan of action.

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Editorial Board Member
BMC Public Health

Outlook

Re: Re: BMC Public Health - Decision on your manuscript

From Sakshi Pareek <bmcpublichealth@biomedcentral.com>
Date Tue 2023-12-26 1:53 AM
To James Hanley, Dr. <james.hanley@McGill.Ca>

Dear Dr Hanley,

Apologies for the delayed response.

As the editor decision states that the manuscript cannot be consider as Matter -Arising. Rather, the editor has requested that you send an email to lorena.verduci@springernature.com with your concerns, as these kinds of concerns may result in the release of a clarification statement (a correction or retraction, for example). As Before recommending the right course of action, we would need to hear back from the authors regarding your concerns.

Best regards,

Sakshi Pareek
Editorial Support at **BMC**

> On Mon, 18 Dec at 1:39 PM , James Hanley, Dr. <james.hanley@mcgill.ca> wrote:
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