

## Excess mortality in men and women in Massachusetts during the COVID-19 pandemic

Suggestions that more men than women are dying from COVID-19 have appeared in scientific journals<sup>1</sup> and newspapers.<sup>2,3</sup> To our knowledge, however, no comparisons have been made of relative or absolute mortality differences between women and men. Both matter: a small relative increase in rates applied to a high baseline rate can lead to the same excess counts of deaths as a large relative increase applied to a lower baseline rate.

When assignment of cause of death to COVID-19 is dynamic and incomplete, given developing scientific evidence, one important strategy for assessing differential impacts of COVID-19 is that of evaluating the overall excess of deaths, as compared to the same time period in previous years.<sup>4</sup> We obtained Massachusetts mortality data for the period Jan 1 to April 14 for the years 2015–20. For people categorised as women and as men, we computed their age-standardised 2020 mortality rates and compared them, in both relative and absolute terms, to their average rates for 2015–19, by 2-week intervals.

Notably, the sharp rise in excess mortality observed during the first 2 weeks of April, 2020, was similar for women and men (appendix), whereby the age-standardised rate ratio for 2020 versus 2015–19 equalled 1.48 (95% CI 1.13–1.94) for women and 1.55 (1.19–2.03) for men. The corresponding age-standardised rate differences equalled 240.4 deaths per 100 000 person-years (95% CI 75.5–404.4) for women and 404.1 (158.8–648.1) for men, compared to the 2015–19 baseline age-standardised rates of 499.3 (95% CI 393.6–605.1) for women and 732.0 (578.9–885.0) for men.

Women and men in Massachusetts therefore experienced virtually identical

relative increases in the rise in the total burden of mortality as deaths from COVID-19 began their quick ascent, even though the absolute difference in mortality rates was larger for men. One implication is that it might be misleading to focus solely on men's higher death counts for COVID-19,<sup>1–3</sup> since absolute differences, by definition, will be higher, despite similar relative risk, given men's higher baseline mortality rates.

Debates over the extent to which biological expressions of gender, sex-linked biology, both, or neither matter for exposure, susceptibility, and health outcomes is long standing.<sup>5</sup> In the case of COVID-19, speculation has focused on both social aspects of gender (eg, greater likelihood of smoking and less handwashing among men compared to women) and biological susceptibility (eg, as perhaps related to sex hormones).<sup>1–3</sup> Robust evidence regarding both relative and absolute difference in rates is needed to inform these debates.

We declare no competing interests. We thank *The Boston Globe* for their assistance (uncompensated) in obtaining the Massachusetts mortality data. This research project was exempt from institutional review board review (decedents only; 45 CFR 46.102(f)).

**\*Nancy Krieger, Jarvis T Chen, Pamela D Waterman**  
nkrieger@hsph.harvard.edu

Department of Social and Behavioral Sciences,  
Harvard TH Chan School of Public Health, Boston,  
MA 02115, USA

- 1 The Lancet. The gendered dimensions of COVID-19. *Lancet* 2020; **395**: 1168.
- 2 Rabin RC. Can estrogen and other sex hormones help men survive Covid-19? April 27, 2020. <https://www.nytimes.com/2020/04/27/health/coronavirus-estrogen-men.html> (accessed May 21, 2020).
- 3 Devlin H. Men are much more likely to die from coronavirus – but why? April 16, 2020. <https://www.theguardian.com/world/2020/mar/26/men-are-much-more-likely-to-die-from-coronavirus-but-why> (accessed May 21, 2020).
- 4 Leon DA, Shkolnikov VM, Smeeth L, Magnus P, Pecholdová M, Jarvis CI. COVID-19: a need for real-time monitoring of weekly excess deaths. *Lancet* 2020; **395**: e81.
- 5 Krieger N. Genders, sexes, and health: what are the connections – and why does it matter? *Int J Epidemiol* 2003; **32**: 652–57.



Published Online  
May 27, 2020  
[https://doi.org/10.1016/S0140-6736\(20\)31234-4](https://doi.org/10.1016/S0140-6736(20)31234-4)

See Online for appendix

Submissions should be made via our electronic submission system at <http://ees.elsevier.com/thelancet/>